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2014 Stormwater Outfall Monitoring Report

APDES Permit No. AKS-052558

MUNICIPALITY OF ANCHORAGE
WATERSHED MANAGEMENT PROGRAM

FINAL REPORT

December 2014

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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. ADEC now administers the Permit 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 2014 was the last of four years of monitoring that was 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 had 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 four years, the 10 priority outfalls were sampled four times each summer when there was 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 that were 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 (BOD₅), 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 |
|--------------------------------------------|-----------------|---------------------|------------------------|--------------|---------------|
| 10 Identified Priority Outfalls | | | | | |
| 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 |
| Medium Priority Replacement Outfall | | | | | |
| 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 |
|----------------------------------------|------------|-----------------|-------------|-------------------|-------------|---------------|-------------------|---------|--------------------|
| Little Campbell Creek Watershed | | | | | | | | | |
| 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 |
| Campbell Creek Watershed | | | | | | | | | |
| 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 |
| Chester Creek Watershed | | | | | | | | | |
| 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

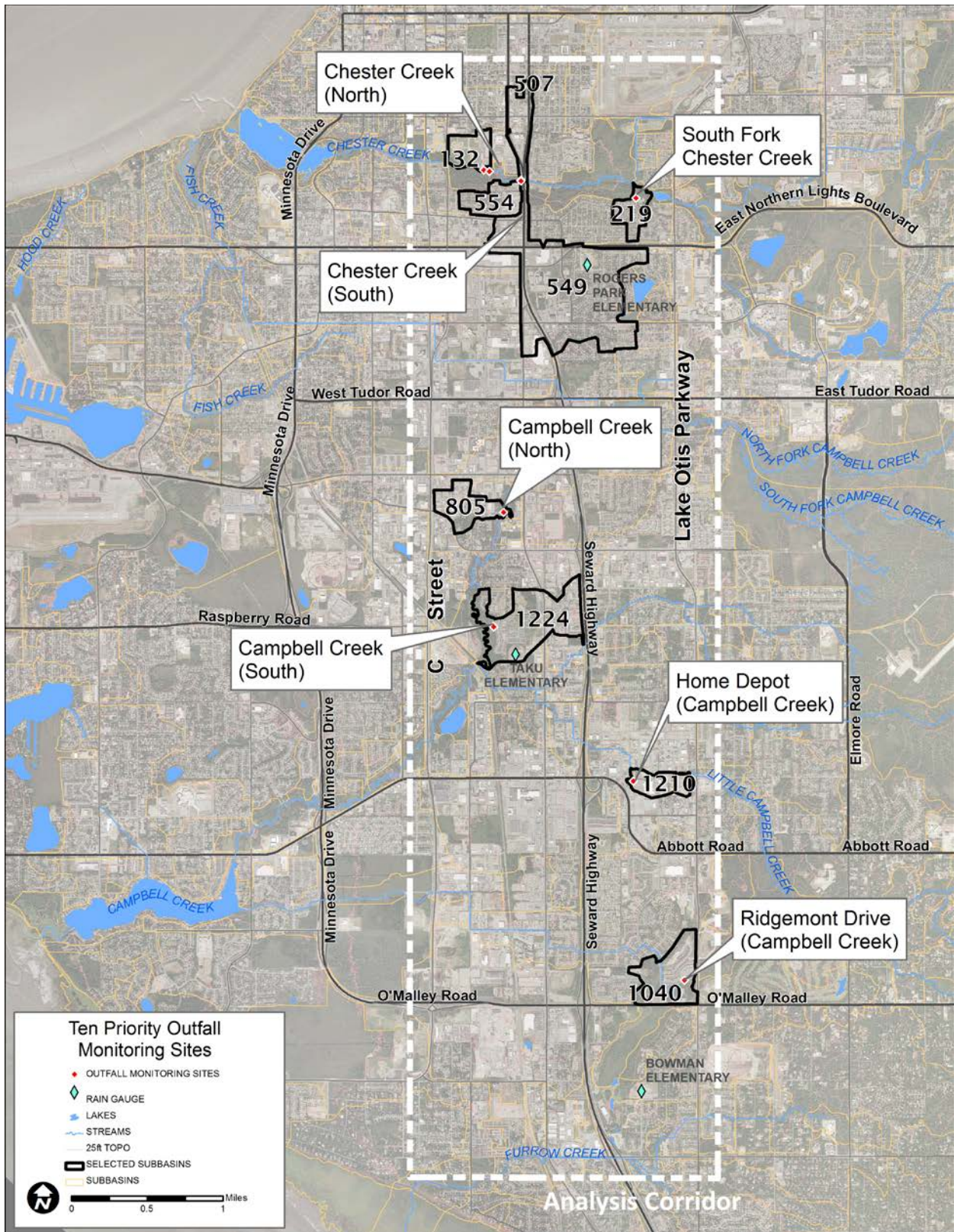


Figure 1. Overview Map of the Ten Final Outfall Monitoring Sites and Subbasins

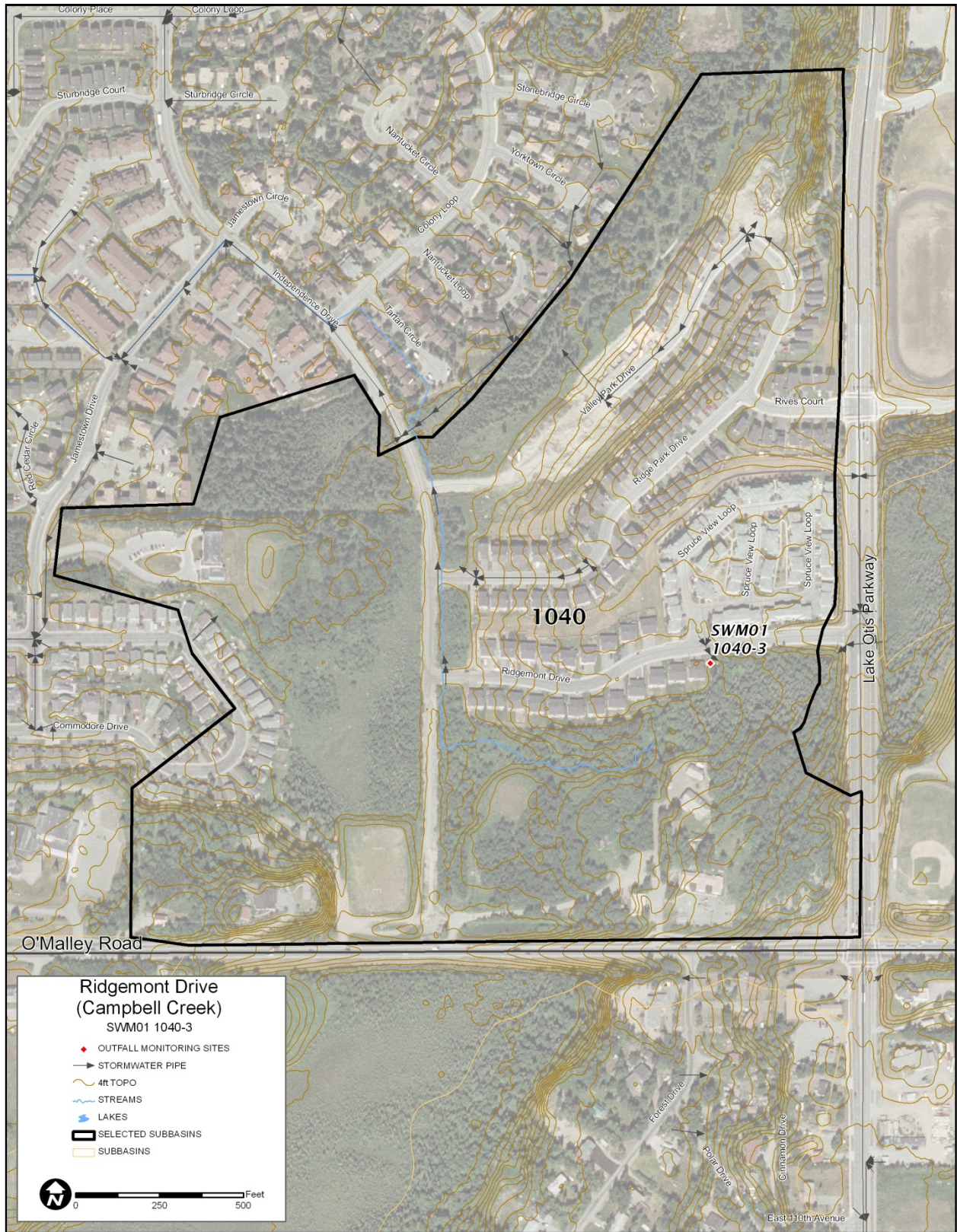


Figure 2. Outfall SWM01, Ridgmont Drive (Little Campbell Creek)



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

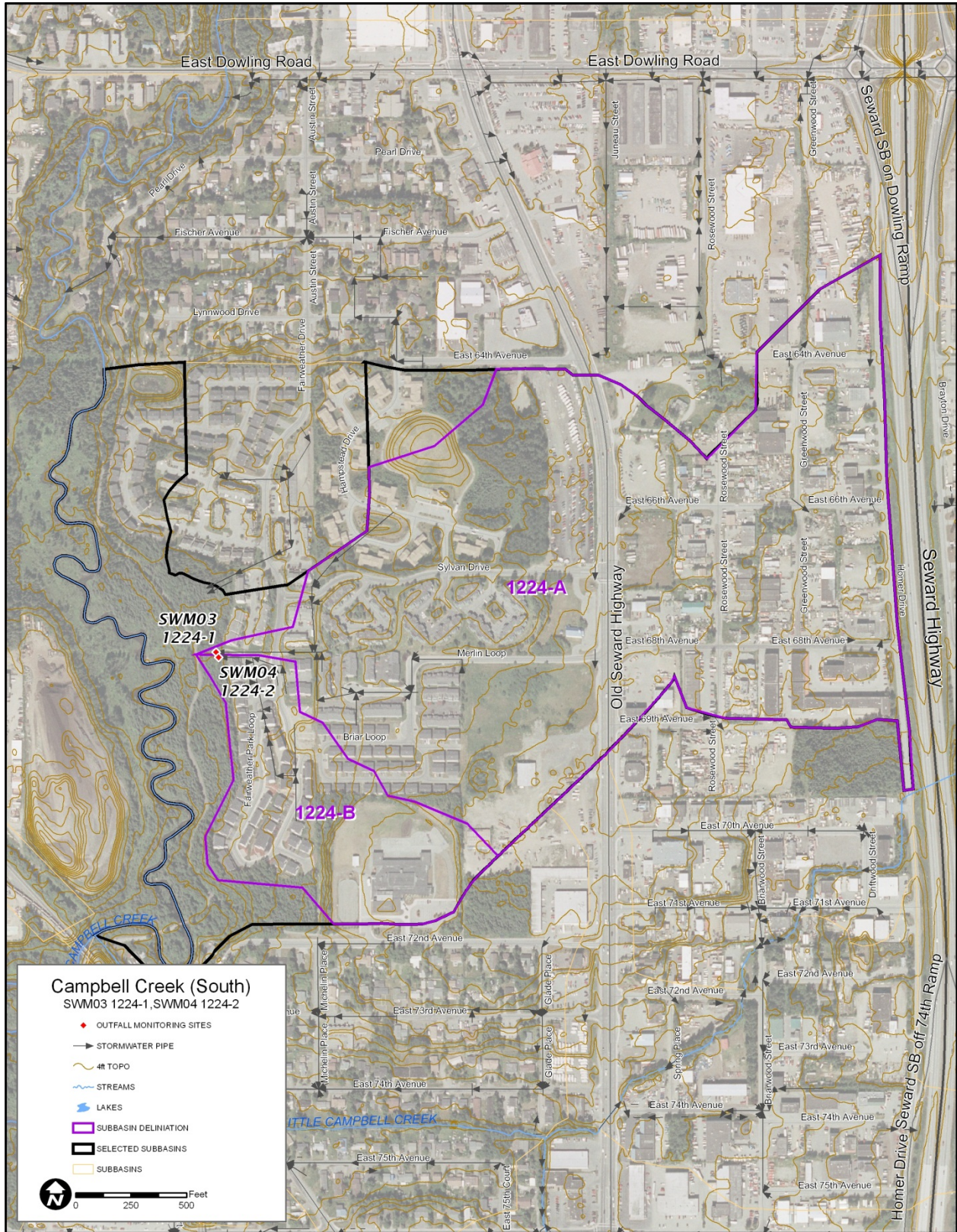


Figure 4. Outfalls SWM03 and SWM04, Fairweather Loop off Sylvan Drive (Campbell Creek)

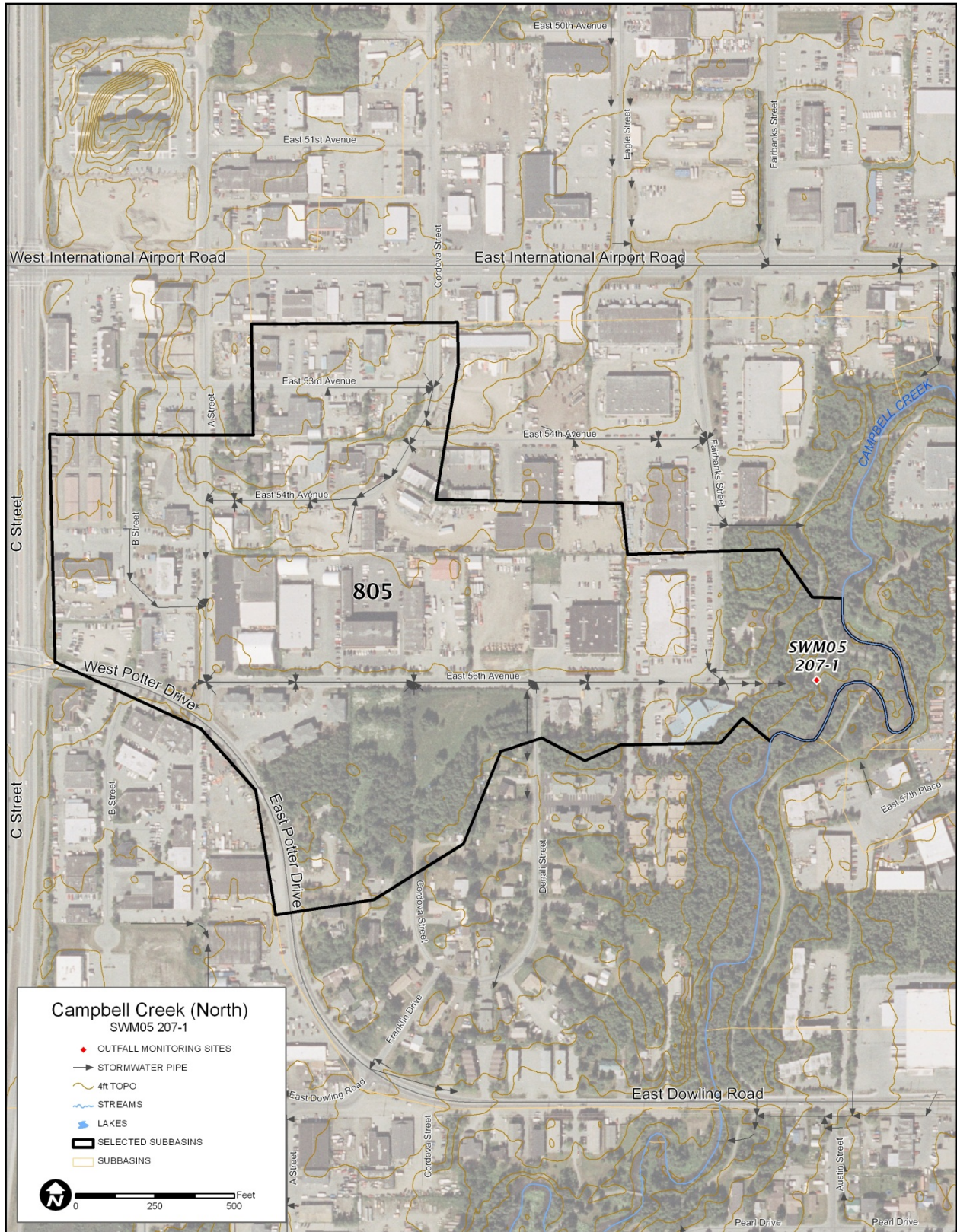


Figure 5. Outfall SWM05, East 56th Avenue (Campbell Creek)

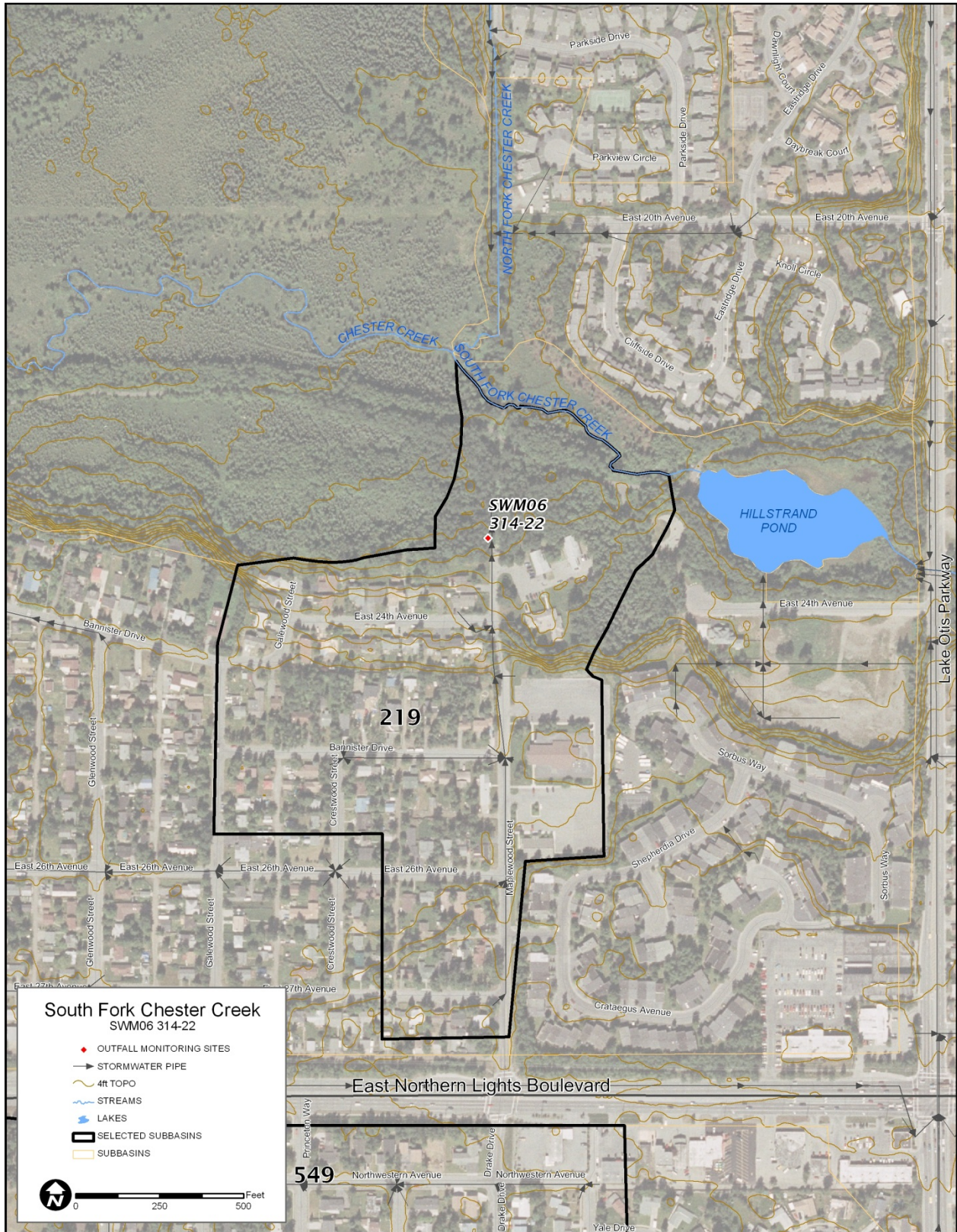


Figure 6. Outfall SWM06, Maplewood Street (South Fork Chester Creek)

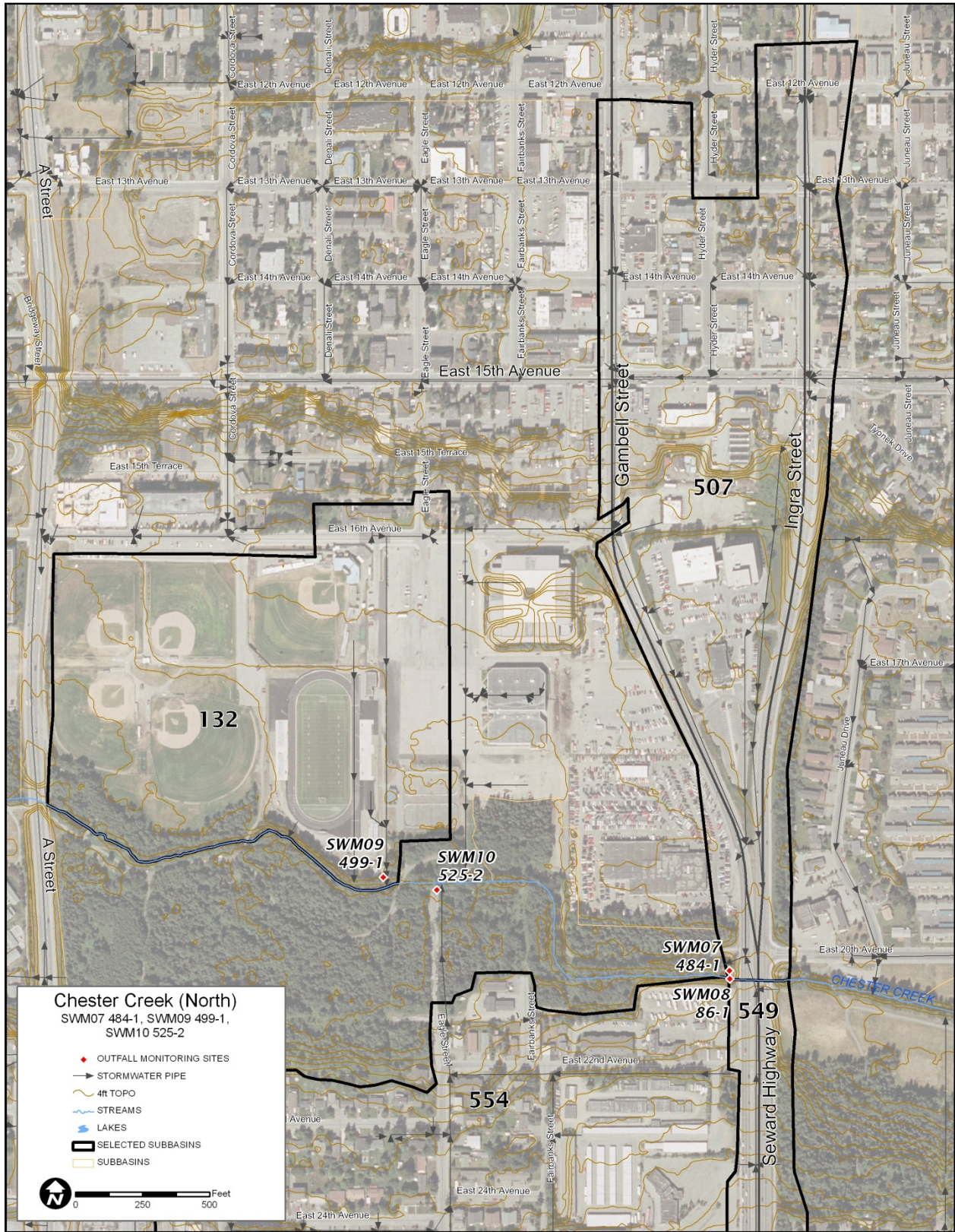


Figure 7. Outfalls SWM07, SWM09, & SWM10 (Chester Creek)

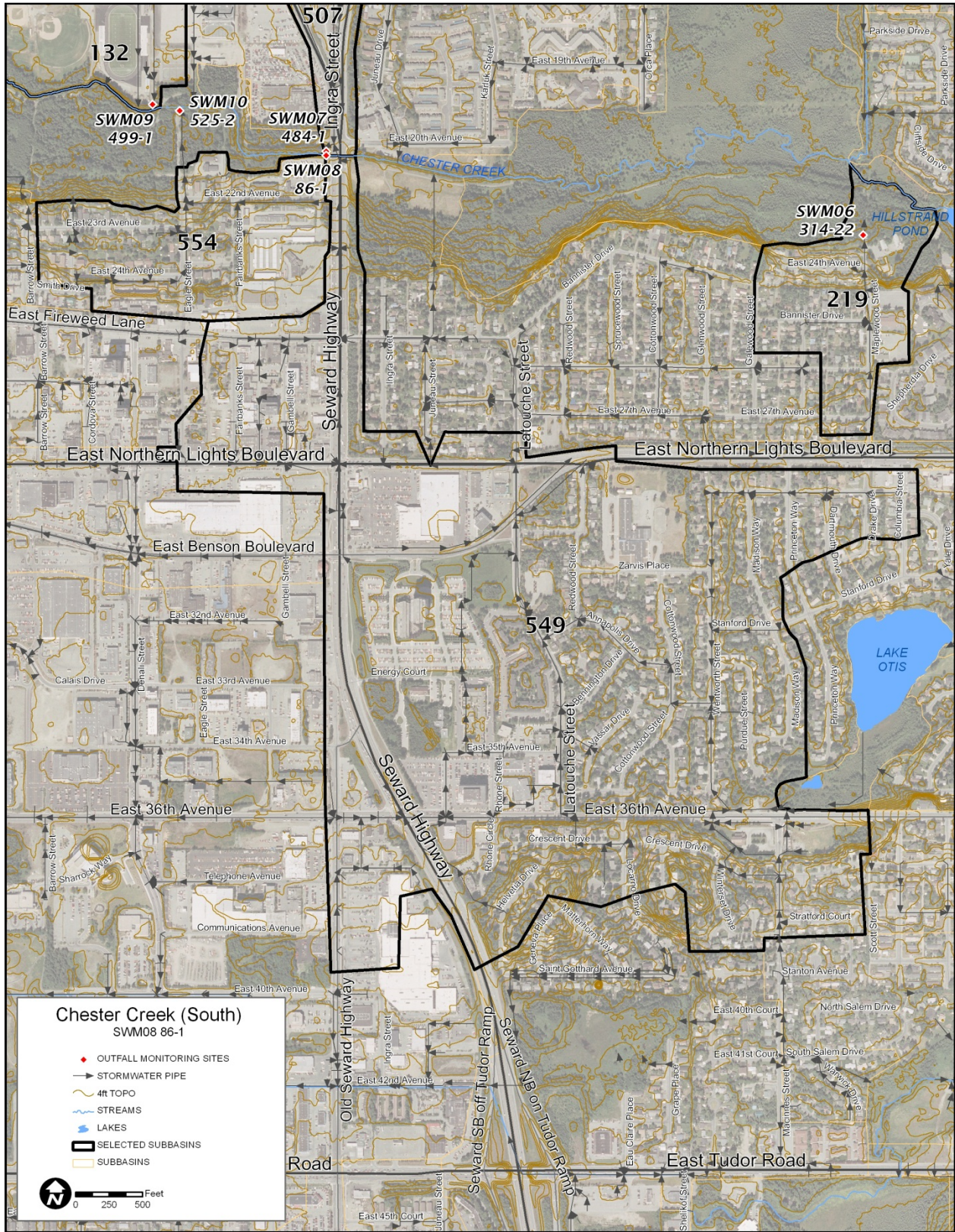


Figure 8. Outfall SWM08, New Seward Highway (Chester Creek)

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 ₅ | 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 (hr) 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-hr 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 rinse 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 a tipping bucket rain gauge and data logger recording in 0.01 inch increments. During precipitation events, the collection cup in the gauge 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 Bowman Elementary School and represented the northern, middle, and southern portions of the study area respectively (refer to Figure 1 for rain gauge locations). During 2014 the rain gauge on Forest Drive was relocated to a nearby location at Bowman Elementary School.

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-hr 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 2014 stormwater monitoring at the 10 long-term monitoring sites was initiated in June and comprised the fourth year of monitoring for the program. Approximately four inches of rain (including snow) had been measured in 2014 at the National Oceanic and Atmospheric Administration (NOAA) National Weather Service's PANC weather station located at the Anchorage International Airport (AIA) before the first event was sampled on 21 June (Figure 9). Four stormwater outfall monitoring events were conducted in 2014 as required by the *Stormwater Outfall Monitoring Plan* (MOA 2012) and the APDES Permit. Sampling events took place on 21 June, 10 July, 4 August, and 24 August and included sampling of all ten outfalls during each storm event. Based on the long-term historic record, rainfall for both June and July in 2014 was above normal with measured precipitation about twice the long-term average for those two months. The total rainfall in June of 3.33 inches was just short of the long-term monthly maximum of 3.4 inches. The precipitation in August and September 2014 was more similar to normal when compared to the long-term means (Figure 9). The highest precipitation during the year occurred in September after all sampling had been completed for the year.

4.1 Precipitation

A total of four events were sampled in 2014 starting on 21 June and ending on 24 August. Total rainfall as measured at the three stations in the monitoring area during each monitored event ranged from 0.07 to 0.17 inches during the third event to 0.59 to 0.70 inches during the first event. Rainfall during the the second and fourth events were similar in size ranging from 0.33 to 0.42 inches at the three rain gauges (Table 5 and Figure 10). The highest outfall flow rates occurred during either the first or second events depending on the outfall. The highest flow rate for any outfall was 6,439 gallons per minute (gpm) at SWM08 which drains the largest of the watersheds; this was over an order of magnitude 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.

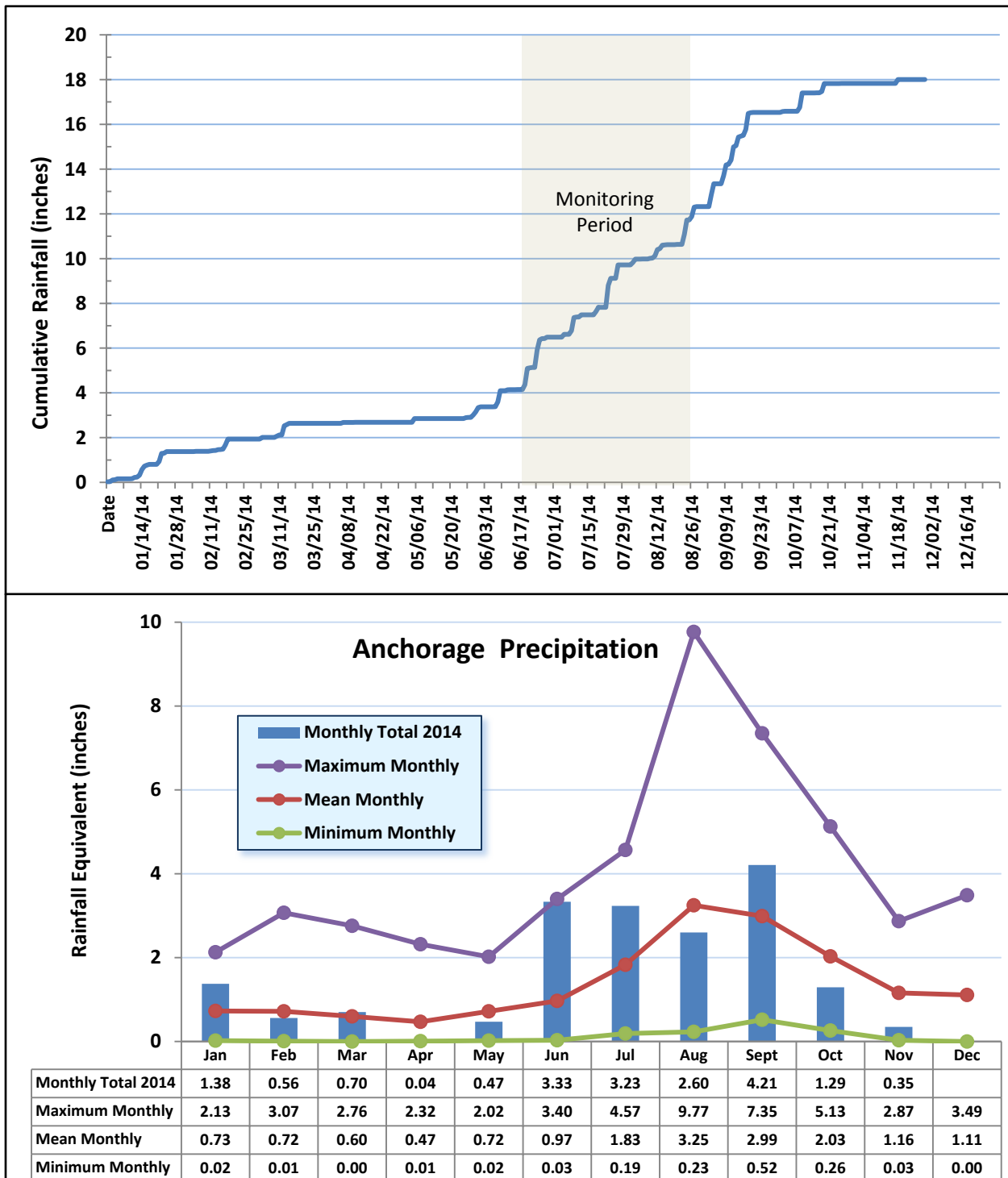
Daily rainfall records are illustrated in Figure 10 for each of the three rain gauges located along the sampling corridor. Since the three rain gauges were not active throughout the entire year, rainfall records from the PANC weather station at the AIA were used to supplement the three project rain gauges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

The first storm event took place on June 21st with rainfall ranging from 0.59 inches recorded at Rogers Park to 0.73 inches recorded at PANC. Precipitation during the preceding calendar day ranged from 0.06 to 0.22 inches with all of this rain taking place after 23:00 hours as part of the same storm that was sampled falling within the 24-hr criteria outlined in the QAPP. Sampling was initiated in the morning on 21 June approximately 10 hrs after the start of the rain event. Based on the recorded precipitation, the rainfall appeared to be fairly consistent across the Anchorage area.

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) | Bowman Elementary (in) |
|---------------------------|-------------------------------|------------------------------------|-----------------------------|-------------------------------|
| 06/14/14 | 0.01 | 0.01 | 0 | 0 |
| 06/15/14 | T | 0.04 | 0.05 | 0.06 |
| 06/16/14 | T | 0 | 0 | 0.01 |
| 06/17/14 | T | 0.01 | 0 | 0.02 |
| 06/18/14 | 0 | 0 | 0 | 0 |
| 06/19/14 | 0 | 0 | 0 | 0 |
| 06/20/14 | 0.22 | 0.13 | 0.23 | 0.06 |
| 06/21/14 (Event 1) | 0.73 | 0.59 | 0.70 | 0.65 |
| 07/03/14 | 0 | 0 | 0 | 0 |
| 07/04/14 | 0 | 0 | 0 | 0 |
| 07/05/14 | 0 | 0 | 0 | 0 |
| 07/06/14 | 0.13 | 0.19 | 0.10 | 0.14 |
| 07/07/14 | T | 0.01 | 0.01 | 0 |
| 07/08/14 | 0 | 0 | 0 | 0 |
| 07/09/14 | 0.16 | 0.06 | 0.10 | 0.04 |
| 07/10/14 (Event 2) | 0.59 | 0.34 | 0.36 | 0.33 |
| 07/28/14 | 0.60 | 0.46 | 0.55 | 0.55 |
| 07/29/14 | T | 0.01 | 0.02 | 0.01 |
| 07/30/14 | 0 | 0 | 0 | 0 |
| 07/31/14 | 0 | 0 | 0 | 0 |
| 08/01/14 | 0 | 0 | 0 | 0 |
| 08/02/14 | 0 | 0 | 0 | 0 |
| 08/03/14 | 0.11 | 0.06 | 0.08 | 0.15 |
| 08/04/14 (Event 3) | 0.15 | 0.12 | 0.17 | 0.07 |
| 08/17/14 | 0.01 | 0.02 | 0.01 | 0 |
| 08/18/14 | 0 | 0 | 0 | 0 |
| 08/19/14 | 0 | 0 | 0 | 0 |
| 08/20/14 | 0 | 0 | 0 | 0 |
| 08/21/14 | 0.01 | 0.05 | 0.03 | 0 |
| 08/22/14 | 0 | 0 | 0 | 0 |
| 08/23/14 | T | 0 | 0 | 0 |
| 08/24/14 (Event 4) | 0.45 | 0.39 | 0.41 | 0.42 |

T = Trace level measurement



Note: Data for 2014 is incomplete at this time and includes only the period of 1/1/14 through 11/30/14.

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

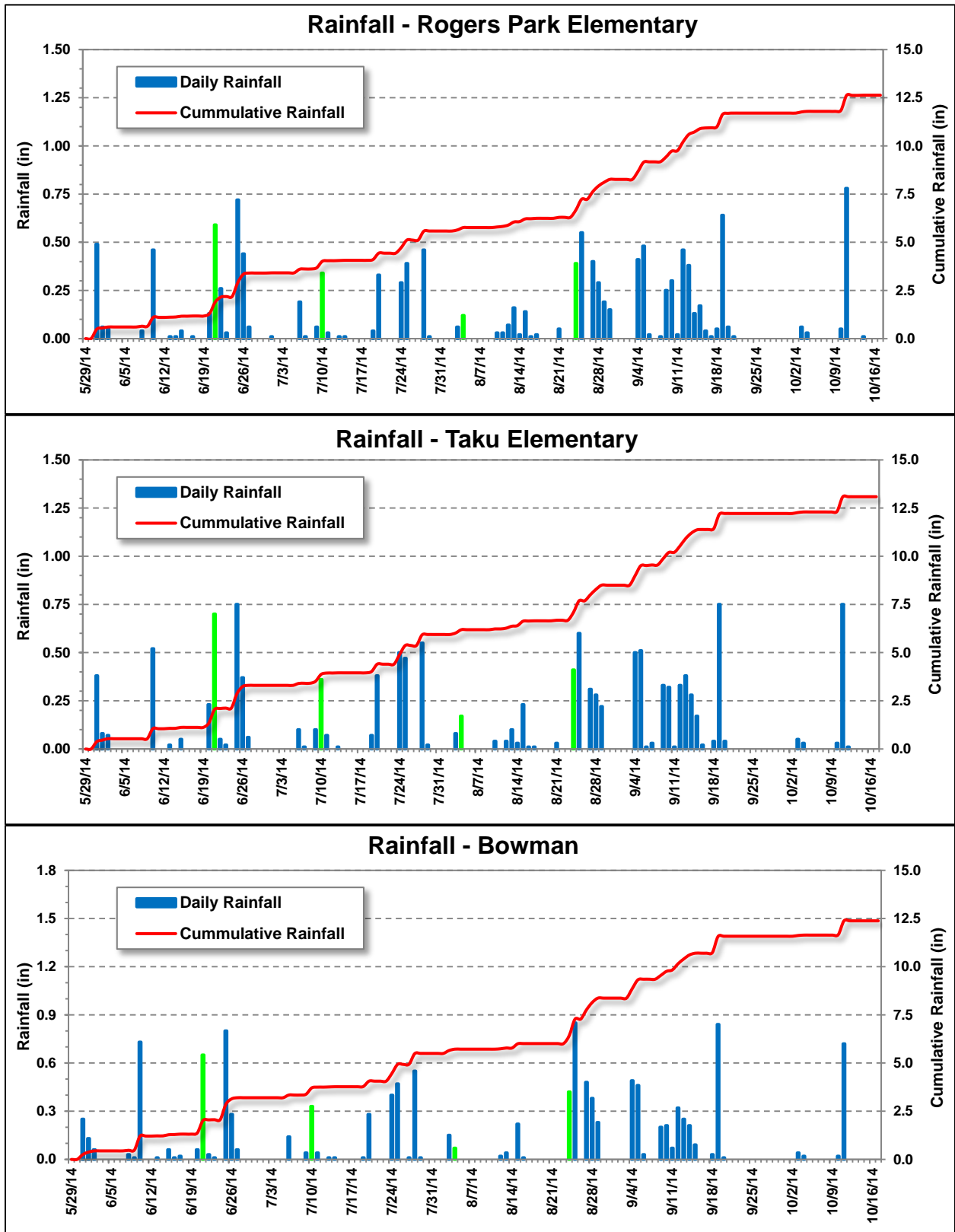


Figure 10. Rainfall Measured at the Three Monitoring Rain Gauges. (Note: sampling days highlighted in green.)

The second storm event occurred on July 10th with recorded rainfall ranging from 0.33 inches at Bowman to 0.59 inches at PANC. Some rain was recorded within the study area during the preceding calendar day but within the 24-hr period when sampling was initiated. Sampling for the second event was initiated within 10 hrs of the beginning of the storm during a period when the rainfall was fairly heavy and corresponding flow rates at most stations were elevated.

The third event took place on August 4th. On the day of sampling, precipitation ranged from 0.07 inches at Bowman to 0.17 inches recorded at Taku. Light precipitation occurred at all sites during the previous calendar day that ranged from 0.06 to 0.15 inches. The rain event began at approximately 9:00 in the morning, and sampling was initiated within 6 hrs of the beginning of the event.

The fourth monitoring event took place on August 24th. Precipitation for this event ranged from 0.39 inches at Rogers Park to 0.45 inches at PANC with no precipitation recorded at any of the three project rain gauges during the prior day. A trace level of precipitation was recorded at PANC on 23 August. Outfall monitoring for the fourth storm event began within 12 hrs of the start of the storm event with rainfall being light when sampling was initiated and fairly heavy near the end of the sampling effort.

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 three of the four storm events. Flow rates ranged from very low (<1 gallon per minute (gpm)) discharge at SWM01 during the three storm events to 6,439 gpm at SWM08 during the second storm event. The highest flows for seven of the ten locations occurred during the second event on 10 July. The remaining three locations (SWM01, SWM03, and SWM05) had the highest measured flow during the first storm event.

Mean turbidity levels ranged from a low of 3.4 Nephelometric Turbidity Units (NTU) at SWM02 to 275.4 NTU 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 this parameter 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.

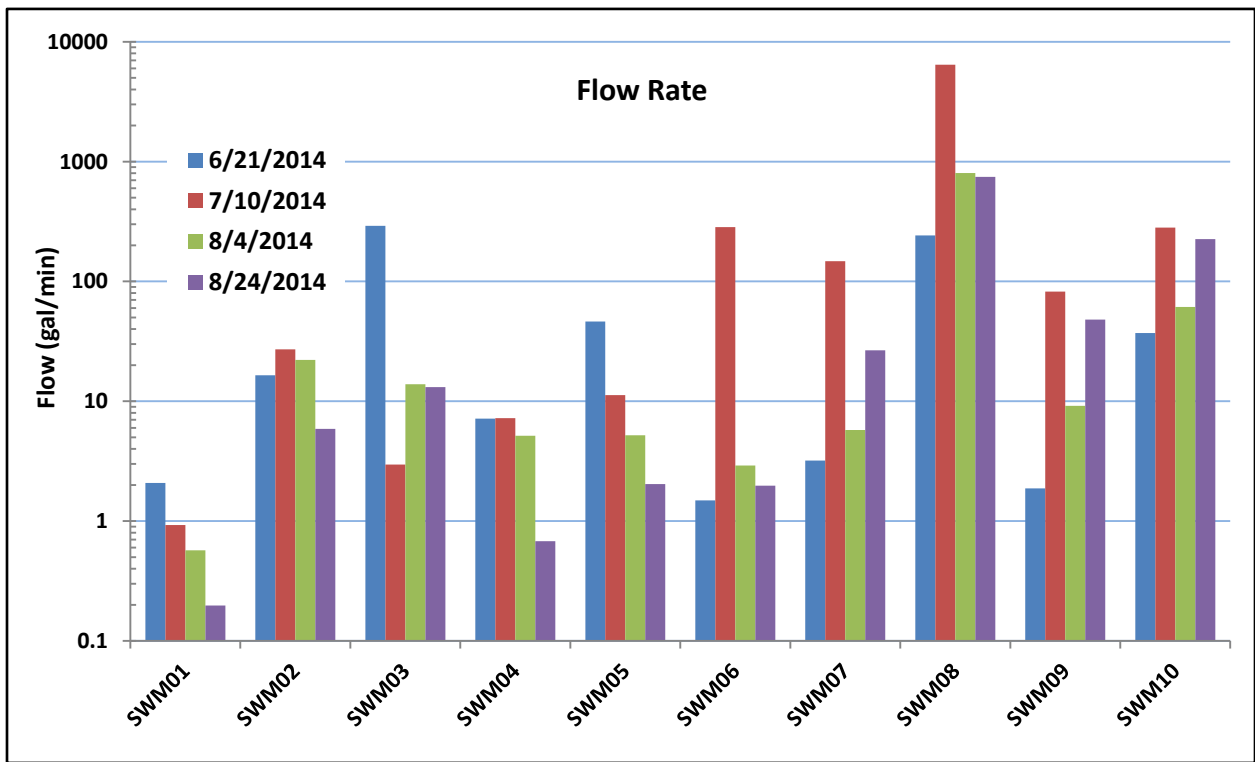


Figure 11. Flow Rates Measured at Monitoring Sites During all Four Events.

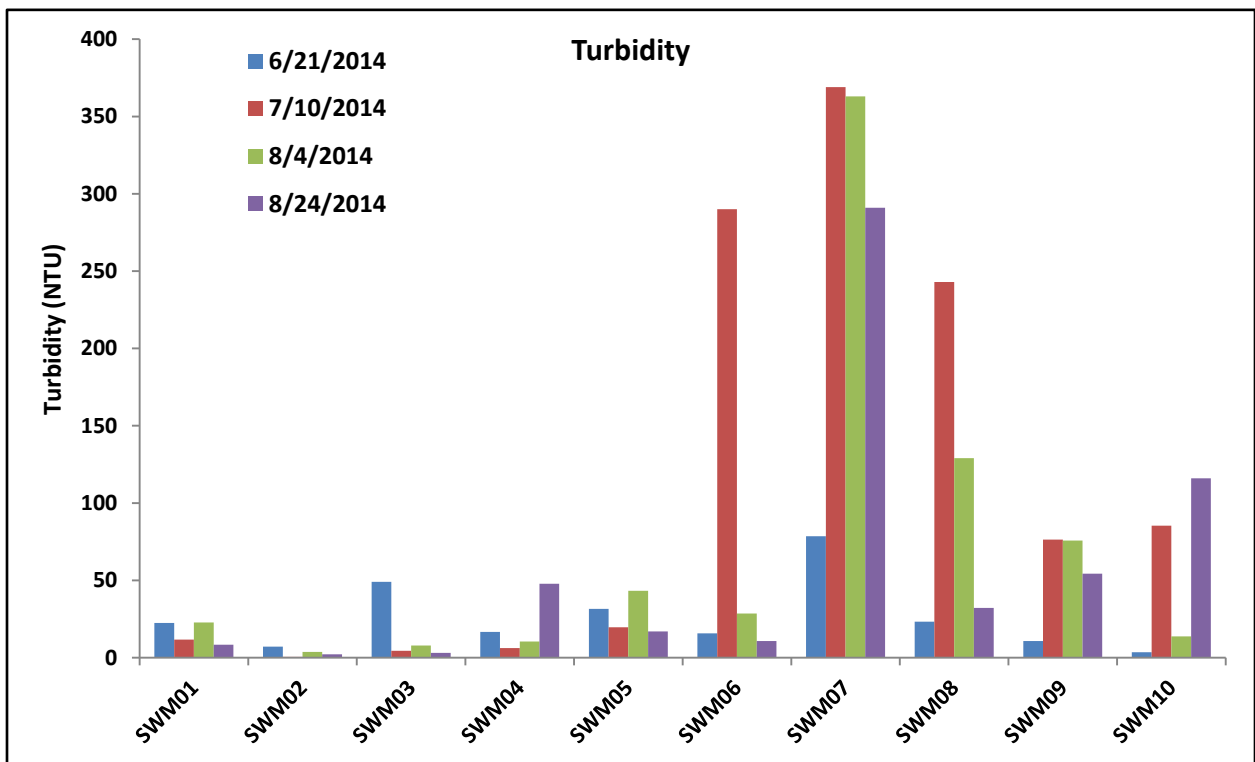


Figure 12. Turbidity Measured in Stormwater Sampled at Monitoring Sites During all Four Events.

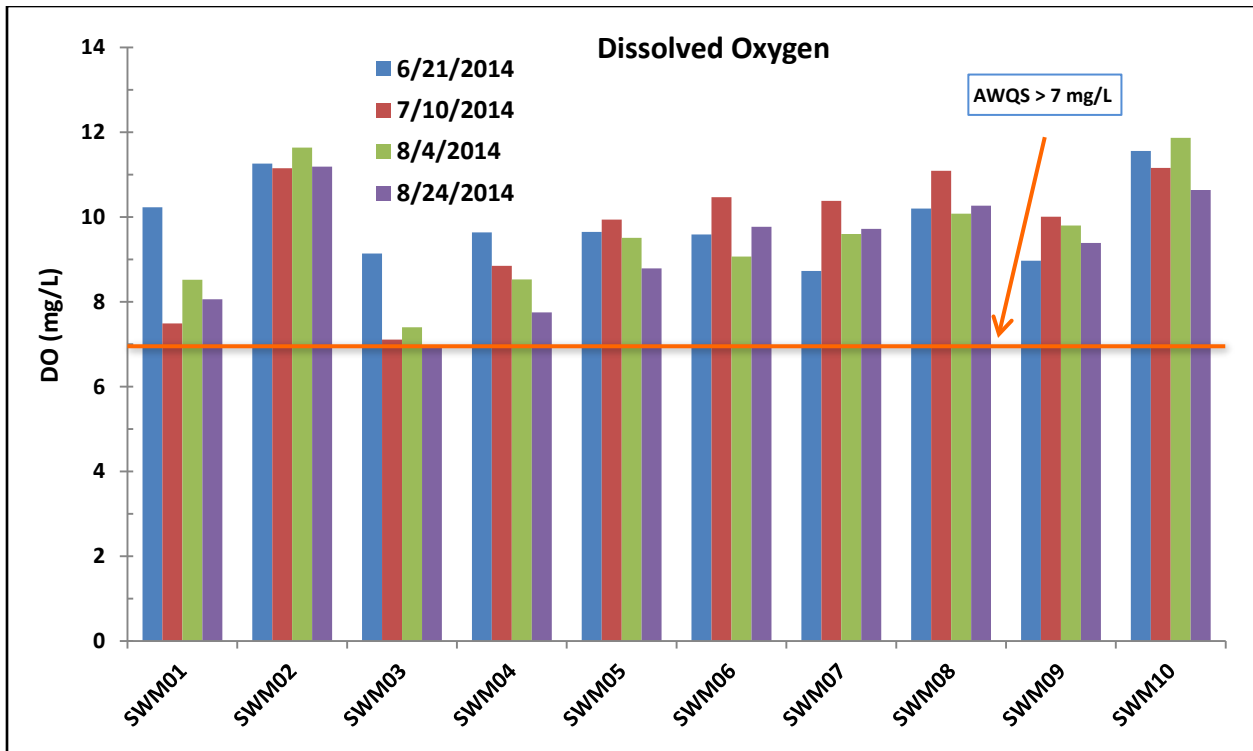


Figure 13. Dissolved Oxygen Measured in Stormwater Sampled at Monitoring Sites During all Four Events. (AWQS Criteria > 7 mg/L).

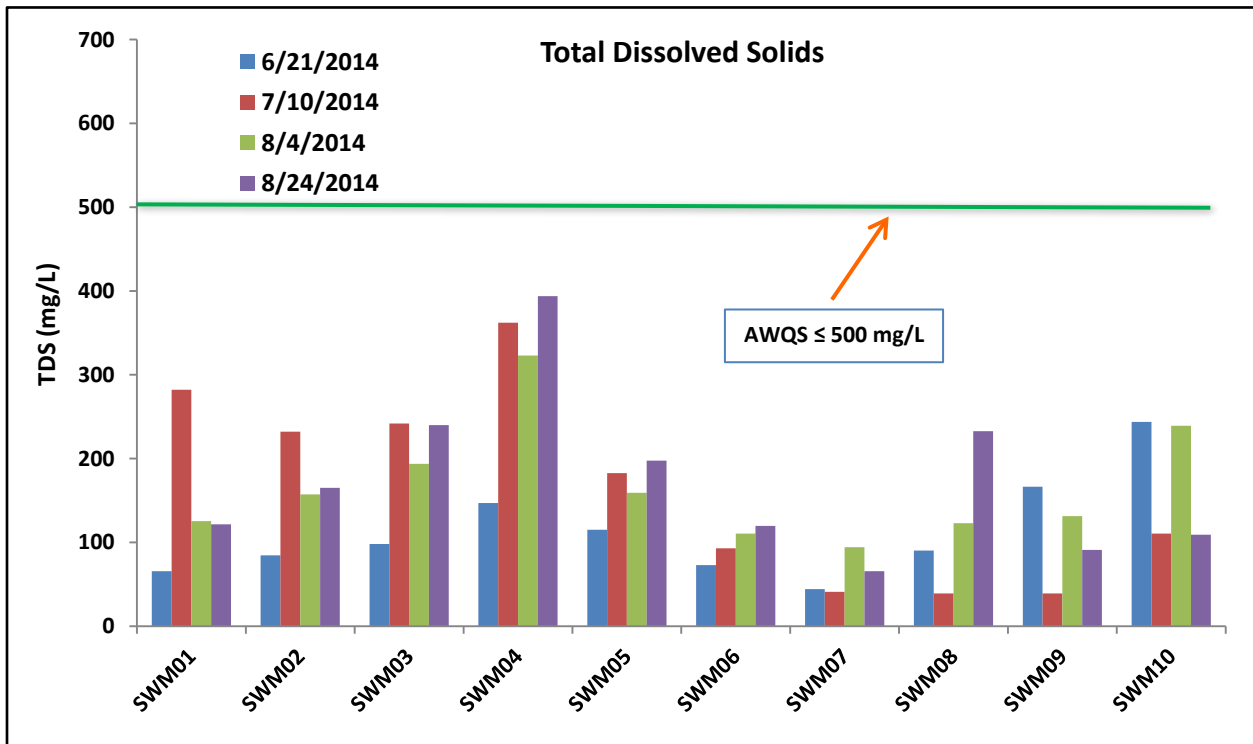
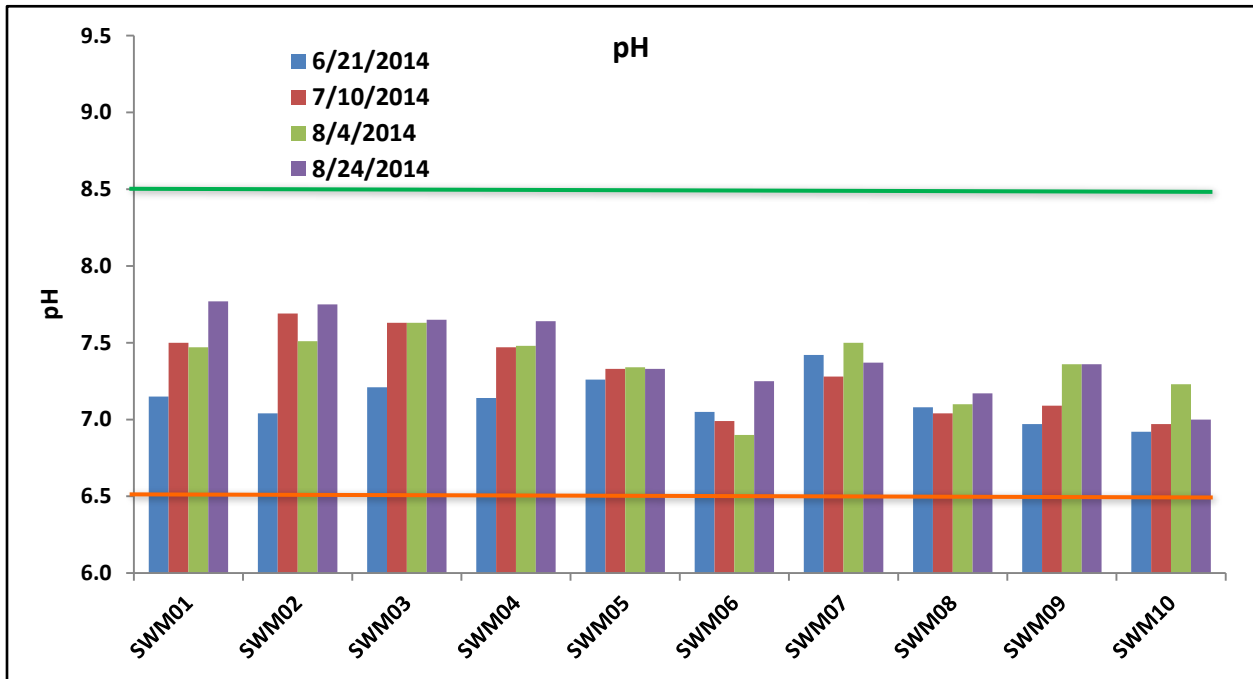
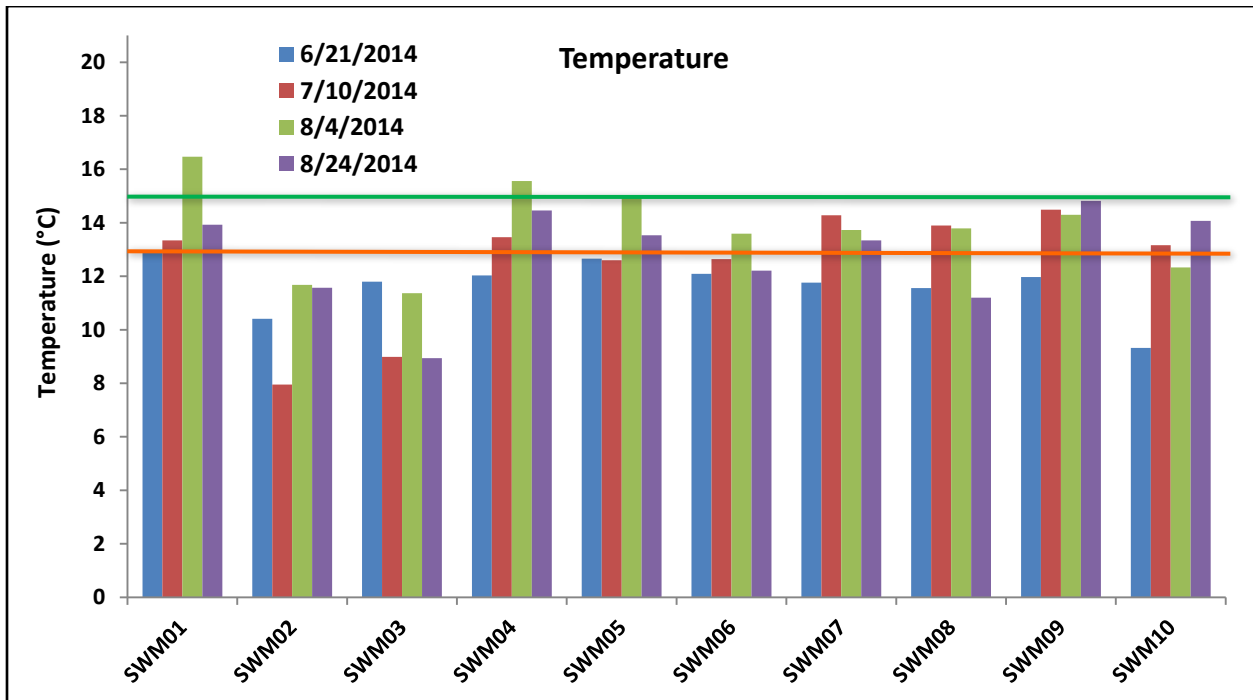


Figure 14. Total Dissolved Solids Measured in Stormwater Sampled at Monitoring Sites During all Four Events. (AWQS Criteria ≤ 500 mg/L).



Green line indicates the upper limit of 8.5 and 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 ≥ 6.5 and ≤ 8.5).



Red line indicates the upper limit of 13°C for spawning and 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 21-Jun-2014 | Event-02 10-Jul-2014 | Event-03 4-Aug-2014 | Event-04 24-Aug-2014 | Mean |
|------------------------|-------------------------|-------------------------|------------------------|-------------------------|-------------|
| Flow Rate (gpm) | | | | | |
| SWM01 | 2.1 | 0.9 | 0.6 | 0.2 | 0.9 |
| SWM02 | 16.5 | 27.1 | 22.2 | 5.9 | 17.9 |
| SWM03 | 291.3 | 3.0 | 13.9 | 13.1 | 80.3 |
| SWM04 | 7.1 | 7.2 | 5.1 | 0.7 | 5.1 |
| SWM05 | 46.2 | 11.3 | 5.2 | 2.0 | 16.2 |
| SWM06 | 1.5 | 284.2 | 2.9 | 2.0 | 72.6 |
| SWM07 | 3.2 | 147.6 | 5.8 | 26.6 | 45.8 |
| SWM08 | 242.1 | 6439 | 801.9 | 746.4 | 2057 |
| SWM09 | 1.9 | 82.4 | 9.2 | 48.0 | 35.4 |
| SWM10 | 37.1 | 281.3 | 61.3 | 225.3 | 151.2 |
| Turbidity (NTU) | | | | | |
| SWM01 | 22.4 | 11.7 | 22.8 | 8.4 | 16.3 |
| SWM02 | 7.2 | 0.5 | 3.7 | 2.2 | 3.4 |
| SWM03 | 49.0 | 4.5 | 7.8 | 3.1 | 16.1 |
| SWM04 | 16.6 | 6.2 | 10.4 | 47.8 | 20.3 |
| SWM05 | 31.5 | 19.6 | 43.2 | 17.0 | 27.8 |
| SWM06 | 15.7 | 290 | 28.5 | 10.8 | 86.3 |
| SWM07 | 78.5 | 369 | 363 | 291 | 275.4 |
| SWM08 | 23.3 | 243 | 129 | 32.2 | 106.9 |
| SWM09 | 10.7 | 76.4 | 75.7 | 54.3 | 54.3 |
| SWM10 | 3.6 | 85.4 | 13.8 | 116 | 54.7 |
| pH | | | | | |
| SWM01 | 7.15 | 7.50 | 7.47 | 7.77 | 7.15 – 7.77 |
| SWM02 | 7.04 | 7.69 | 7.51 | 7.75 | 7.04 – 7.75 |
| SWM03 | 7.21 | 7.63 | 7.63 | 7.65 | 7.21 – 7.65 |
| SWM04 | 7.14 | 7.47 | 7.48 | 7.64 | 7.14 – 7.64 |
| SWM05 | 7.26 | 7.33 | 7.34 | 7.33 | 7.26 – 7.34 |
| SWM06 | 7.05 | 6.99 | 6.90 | 7.25 | 6.90 – 7.25 |
| SWM07 | 7.42 | 7.28 | 7.50 | 7.37 | 7.28 – 7.50 |
| SWM08 | 7.08 | 7.04 | 7.10 | 7.17 | 7.04 – 7.17 |
| SWM09 | 6.97 | 7.09 | 7.36 | 7.36 | 6.97 – 7.36 |
| SWM10 | 6.92 | 6.97 | 7.23 | 7.00 | 6.92 – 7.23 |

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

| Station | Event-01 21-Jun-2014 | Event-02 10-Jul-2014 | Event-03 4-Aug-2014 | Event-04 24-Aug-2014 | Mean |
|---------------------------------------------|---------------------------------|---------------------------------|--------------------------------|---------------------------------|-------------|
| <i>Dissolved Oxygen (mg/L)</i> | | | | | |
| SWM01 | 10.23 | 7.49 | 8.52 | 8.06 | 8.58 |
| SWM02 | 11.26 | 11.15 | 11.64 | 11.19 | 11.31 |
| SWM03 | 9.14 | 7.11 | 7.40 | 6.92 | 7.64 |
| SWM04 | 9.64 | 8.85 | 8.53 | 7.75 | 8.69 |
| SWM05 | 9.65 | 9.94 | 9.51 | 8.79 | 9.47 |
| SWM06 | 9.59 | 10.47 | 9.07 | 9.77 | 9.73 |
| SWM07 | 8.73 | 10.38 | 9.60 | 9.72 | 9.61 |
| SWM08 | 10.20 | 11.09 | 10.08 | 10.27 | 10.41 |
| SWM09 | 8.97 | 10.01 | 9.80 | 9.39 | 9.54 |
| SWM10 | 11.56 | 11.16 | 11.87 | 10.64 | 11.31 |
| <i>Total Dissolved Solids (mg/L)</i> | | | | | |
| SWM01 | 65.7 | 282.1 | 125.5 | 121.6 | 148.7 |
| SWM02 | 84.5 | 232.1 | 157.3 | 165.1 | 159.7 |
| SWM03 | 98.2 | 241.8 | 193.7 | 239.9 | 193.4 |
| SWM04 | 146.9 | 362.1 | 323.1 | 393.9 | 306.5 |
| SWM05 | 115.1 | 182.7 | 159.3 | 197.6 | 163.6 |
| SWM06 | 72.8 | 93.0 | 110.5 | 119.6 | 99.0 |
| SWM07 | 44.2 | 41.0 | 94.3 | 65.7 | 61.3 |
| SWM08 | 90.4 | 39.0 | 122.9 | 232.7 | 121.2 |
| SWM09 | 166.4 | 39.0 | 131.3 | 91.0 | 106.9 |
| SWM10 | 243.8 | 110.5 | 239.2 | 109.2 | 175.7 |
| <i>Temperature (°C)</i> | | | | | |
| SWM01 | 12.90 | 13.34 | 16.47 | 13.93 | 14.16 |
| SWM02 | 10.41 | 7.95 | 11.68 | 11.57 | 10.40 |
| SWM03 | 11.80 | 8.99 | 11.37 | 8.94 | 10.28 |
| SWM04 | 12.03 | 13.46 | 15.56 | 14.46 | 13.88 |
| SWM05 | 12.66 | 12.60 | 15.00 | 13.53 | 13.45 |
| SWM06 | 12.09 | 12.64 | 13.59 | 12.21 | 12.63 |
| SWM07 | 11.76 | 14.28 | 13.73 | 13.34 | 13.28 |
| SWM08 | 11.56 | 13.90 | 13.79 | 11.20 | 12.61 |
| SWM09 | 11.97 | 14.49 | 14.30 | 14.82 | 13.90 |
| SWM10 | 9.32 | 13.16 | 12.33 | 14.07 | 12.22 |

Water from one site, SWM04, tended to have notably higher TDS levels as compared to other locations. Mean TDS concentrations ranged from 61.3 milligrams/liter (mg/L) at SWM07 to 306.5 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, no TDS concentrations were found that 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 five locations were seen during the second storm event. Many of the outfalls had fairly turbulent flows which tend to raise DO levels. Mean DO concentrations ranged from 7.64 to 11.31 mg/L. The lowest DO concentrations were seen at SWM03 with one concentration of 6.92 mg/L measured during the fourth storm event which was below the minimum AWQS criteria of 7.0 mg/L for the growth and propagation of fish, shellfish, and other aquatic life and wildlife.

All measurements of pH were within AWQS criteria for all storm events and locations. pH ranged from a low of 6.92 pH units at SWM10 to a high of 7.77 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. In 2014, six locations were found to be the coolest during the first sampling event. The coolest outfall discharge temperatures were seen at SWM03 for two of the four storm events with a mean temperature of 10.28°C, and the warmest temperatures were seen at SWM01, which drains a small residential area, with a mean temperature of 14.6°C. Temperature values were generally found to be less than the AWQS of 13°C for spawning and egg/fry incubation areas and, except for two individual measurements, temperatures 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. A hydrocarbon odor was noticed at SWM08 during all four sampling efforts and twice at SWM02 which receives runoff from the Home Depot parking lot. 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 several 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 (BOD₅ and TSS)

The 5-day biological oxygen demand (BOD₅) during 2014 was found to be fairly low at all locations for all four storm events with no clear seasonal pattern (Table 8 and Figure 17). Concentrations ranged from a low of not detected (ND) (<2 mg/L) at many sites a high of 19.2 mg/L measured at SWM07 during the third storm event. The highest BOD₅ concentrations were seen at SWM07 for two of the four sampling events with a mean concentration of 11.3 mg/L. The mean concentration at SWM07 was approximately twice as high as those seen at any other location. Outfall SWM04 exhibited the lowest BOD₅ overall with no detectable concentrations during three 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 which had the highest mean TSS also exhibited the highest turbidity levels (Table 6, Table 8, and Figure 18). TSS concentrations ranged from ND (<1.25 mg/L) at SWM02 to a high of 300.0 mg/L at SWM06 seen during the second storm event. The station mean concentrations ranged from 2.4 mg/L at SWM02 to 156.0 mg/L at SWM07. As noted with turbidity, large differences can occur for TSS since this parameter 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 milliliter (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, SWM02, had measured concentrations below the standard during all four surveys. Other sites with low geometric mean fecal coliform levels were SWM01 and SWM03, 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 SWM01 to a high of 2,213 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 1 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 in the mid-range of concentrations seen at most locations and storms during 2014.

Despite the fact that established fecal coliform standards were exceeded at least once at nine of the ten sites, overall concentrations were not alarming. The highest mean concentrations were seen at SWM04, SWM06, SWM07, SWM08, SWM09, and SWM10 with geometric means of 620, 418, 2213, 1470, 1189, and 2010 FC/100 mL, respectively, although elevated individual samples were also seen at a number of other locations (Table 8). An earlier analysis of fecal coliform in Anchorage streams indicated that highest loads would be most likely to occur in August/September in 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, whereas in 2014 the highest levels at each site were spread across all four storms.

Table 8. Concentrations of Microbiological and Conventional Parameters.

| Station | Event-01 21-Jun-2014 | Event-02 10-Jul-2014 | Event-03 4-Aug-2014 | Event-04 24-Aug-2014 | Mean |
|----------------------------------------|-------------------------|-------------------------|------------------------|-------------------------|-------|
| Fecal Coliform (CFU/100 ml) | | | | | |
| SWM01 | 15 | 8 | 1U | 580 | 14 |
| SWM02 | 37 | 27 | 72 | 51 | 44 |
| SWM03 | 560 | 1.64U | 44 | 20 | 25 |
| SWM04 | 3100 | 81 | 210 | 2800 | 620 |
| SWM05 | 250 | 1.64U | 41 | 350 | 41 |
| SWM06 | 78 | 220 | 5400 | 330 | 418 |
| SWM07 | 2400 | 3500 | 1360 | 2100 | 2213 |
| SWM08 | 340 | 9000 | 2000 | 764 | 1470 |
| SWM09 | 500 | 2900 | 1500 | 919 | 1189 |
| SWM10 | 618 | 1600 | 1400 | 11800 | 2010 |
| Biological Oxygen Demand (mg/L) | | | | | |
| SWM01 | 2.9 | 2U | 3.9 | 2.5 | 2.6 |
| SWM02 | 2.9 | 2U | 2U | 2U | 1.5 |
| SWM03 | 2.1 | 2U | 2.4 | 2U | 1.6 |
| SWM04 | 2U | 2U | 2U | 2.6 | 1.4 |
| SWM05 | 4.3 | 2.9 | 5.4 | 4.2 | 4.2 |
| SWM06 | 2.6 | 10.7 | 4.8 | 3.1 | 5.3 |
| SWM07 | 3.9 | 10.1 | 19.2 | 12.1 | 11.3 |
| SWM08 | 2.9 | 11.8 | 6.1 | 3.7 | 6.1 |
| SWM09 | 2.2 | 7.3 | 5.4 | 6.5 | 5.3 |
| SWM10 | 2U | 2.4 | 2U | 3.2 | 1.9 |
| Total Suspended Solids (mg/L) | | | | | |
| SWM01 | 16.0 | 7.7 | 8.5 | 6.7 | 9.7 |
| SWM02 | 4.0 | 1.25U | 2.3 | 2.5 | 2.4 |
| SWM03 | 86.0 | 1.7 | 3.3 | 4.0 | 23.8 |
| SWM04 | 6.0 | 2.7 | 3.7 | 9.7 | 5.5 |
| SWM05 | 10.7 | 4.0 | 8.5 | 6.0 | 7.3 |
| SWM06 | 4.0 | 300.0 | 8.0 | 6.7 | 79.7 |
| SWM07 | 15.7 | 278.0 | 232.0 | 98.3 | 156.0 |
| SWM08 | 8.0 | 227.0 | 25.3 | 28.5 | 72.2 |
| SWM09 | 9.0 | 63.5 | 45.0 | 39.0 | 39.1 |
| SWM10 | 5.5 | 50.0 | 13.0 | 87.3 | 39.0 |

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.

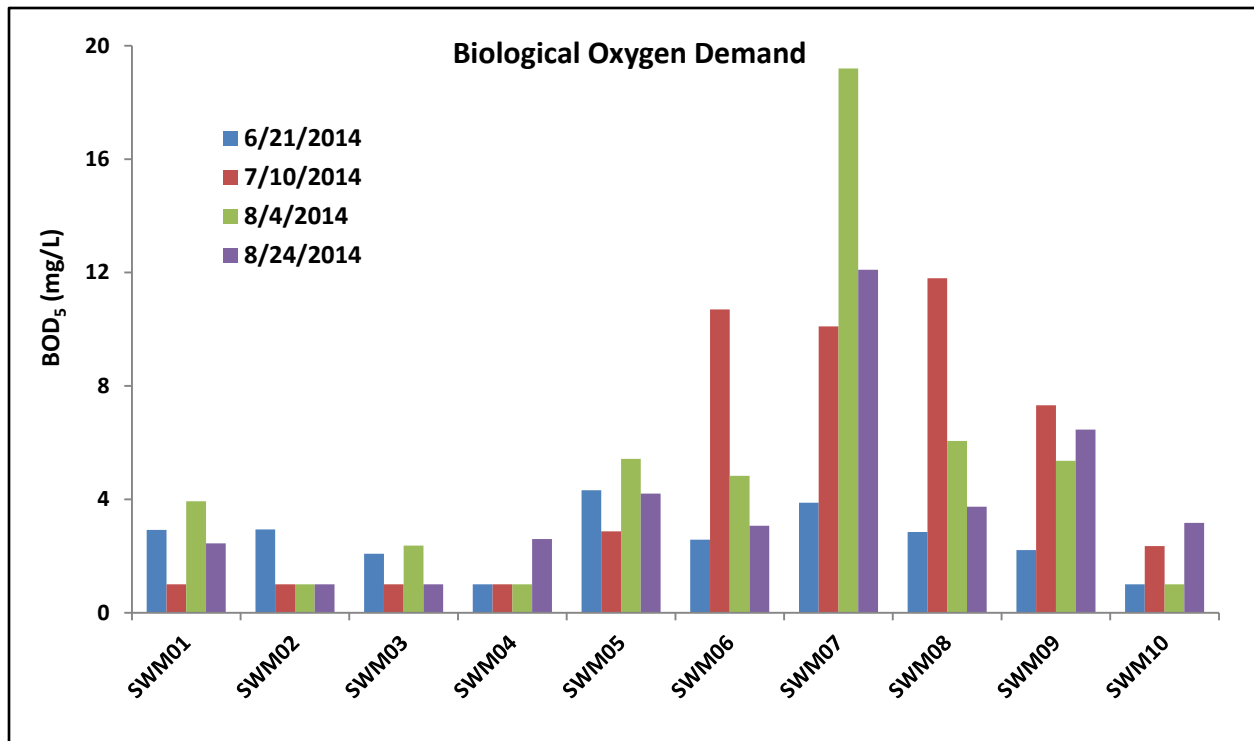


Figure 17. BOD₅ (mg/L) Measured in Stormwater Sampled at Monitoring Sites During all Four Events.

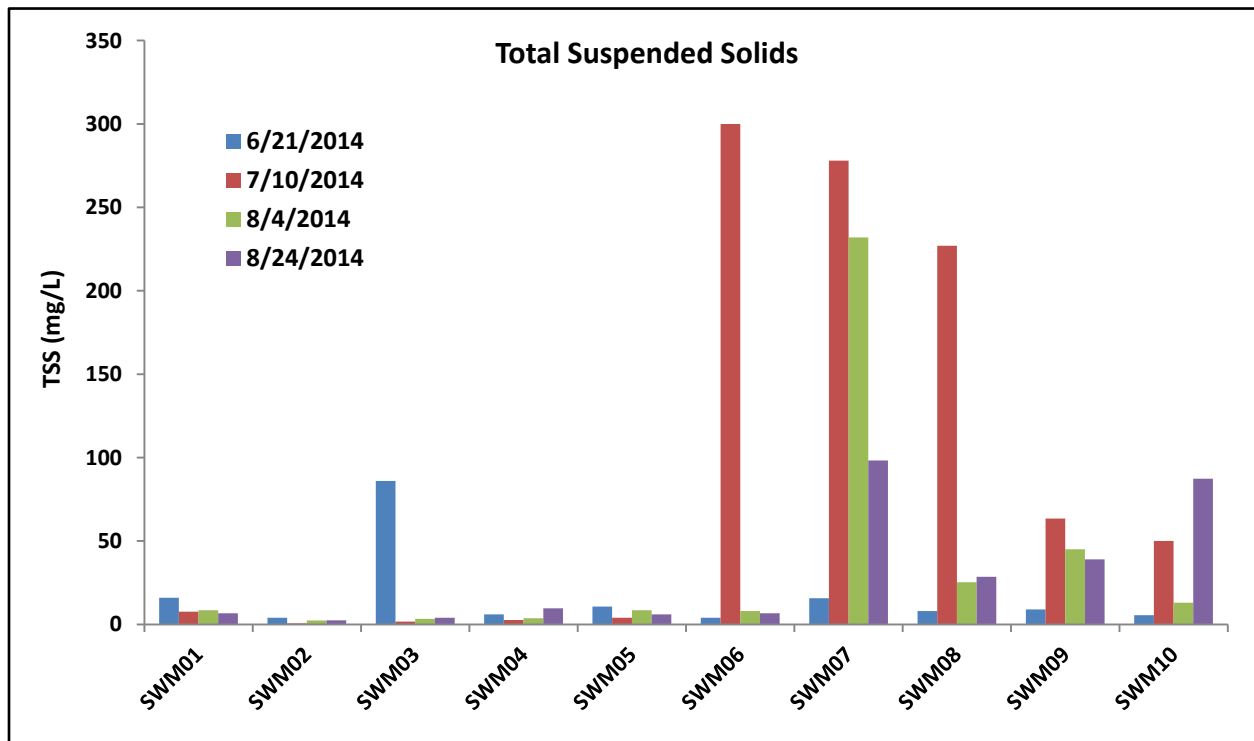


Figure 18. Total Suspended Solids Measured in Stormwater Sampled at Monitoring Sites During all Four Events

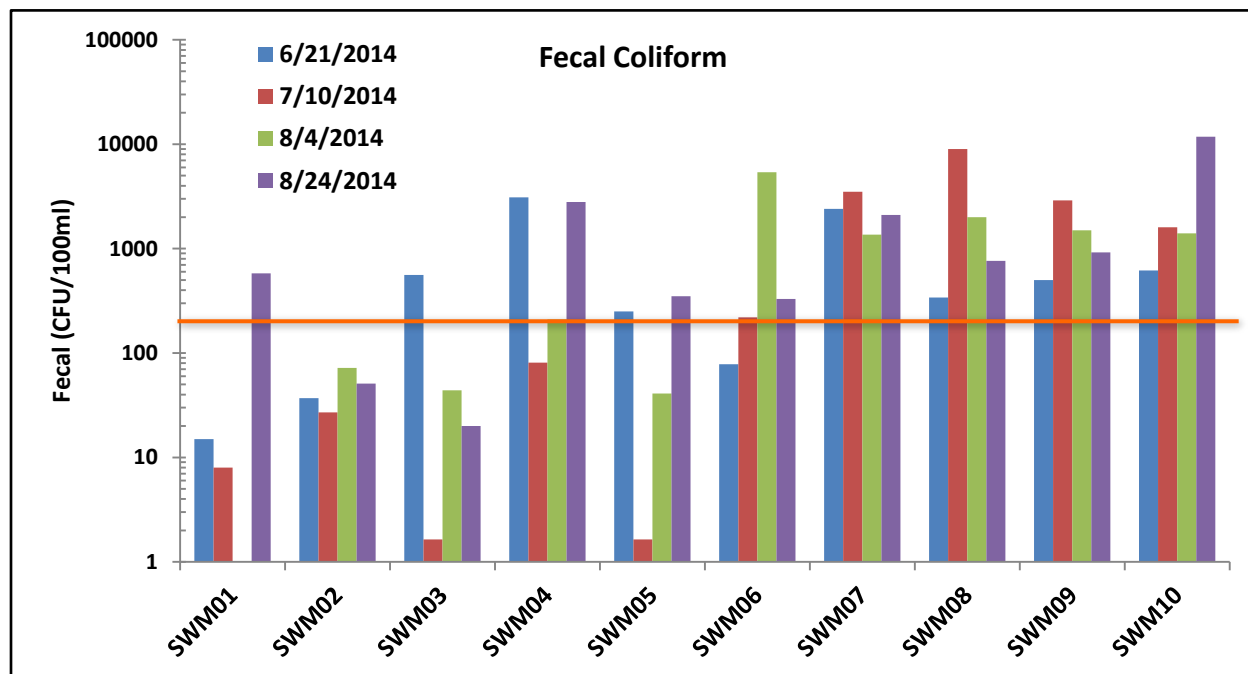


Figure 19. Fecal Coliform (FC/100 mL) Measured in Stormwater Sampled at Monitoring Sites during all Four Events (AWQS less than 200 FC/100mL).

No seasonal differences were readily apparent in the 2014 data since there were no late season storms. The high variability of fecal coliform measurements between both storm events and locations suggests the need to continue monitoring this parameter over a relatively extended time period to assess performance of control measures.

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 ND to 2.35 micrograms/liter ($\mu\text{g/L}$; 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 2.35 $\mu\text{g/L}$ which was seen at SWM09 during the third stormwater sampling event.

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

| | SWM02 - OGS (No) | | | | SWM05 - OGS (Yes) | | | | SWM07 - OGS (No) | | | | SMM09 - OGS (Yes) | | | |
|------------------------------------------------|------------------|---------|--------|---------------|-------------------|---------|--------|---------|------------------|--------------|---------------|---------------|-------------------|--------------|---------------|---------------|
| | 6/21/14 | 7/10/14 | 8/4/14 | 8/24/14 | 6/21/14 | 7/10/14 | 8/4/14 | 8/24/14 | 6/21/14 | 7/10/14 | 8/4/14 | 8/24/14 | 6/21/14 | 7/10/14 | 8/4/14 | 8/24/14 |
| <i>Polycyclic Aromatic Hydrocarbons (µg/L)</i> | | | | | | | | | | | | | | | | |
| Acenaphthene | 0.051U | 0.056U | 0.056U | 0.05U | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.052U | 0.05U | 0.05U | 0.067U | 0.055U | 0.074U | 0.053U |
| Acenaphthylene | 0.051U | 0.056U | 0.056U | 0.05U | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.052U | 0.05U | 0.05U | 0.067U | 0.055U | 0.074U | 0.053U |
| Anthracene | 0.051U | 0.056U | 0.056U | 0.05U | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.052U | 0.05U | 0.05U | 0.067U | 0.055U | 0.074U | 0.053U |
| Benzo(a)anthracene | 0.051U | 0.056U | 0.056U | 0.05U | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.052U | 0.05U | 0.05U | 0.067U | 0.101 | 0.136 | 0.0966 |
| Benzo(a)pyrene | 0.051U | 0.056U | 0.056U | 0.05U | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.052U | 0.05U | 0.05U | 0.067U | 0.114 | 0.134 | 0.0906 |
| Benzo(b)fluoranthene | 0.051U | 0.056U | 0.056U | 0.05U | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.157 | 0.05U | 0.05U | 0.067U | 0.354 | 0.329 | 0.341 |
| Benzo(g,h,i)perylene | 0.051U | 0.056U | 0.056U | 0.05U | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.117 | 0.05U | 0.0875 | 0.067U | 0.14 | 0.148 | 0.119 |
| Benzo(k)fluoranthene | 0.051U | 0.056U | 0.056U | 0.05U | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.052U | 0.05U | 0.05U | 0.067U | 0.055U | 0.0838 | 0.053U |
| Chrysene | 0.051U | 0.056U | 0.056U | 0.05U | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.177 | 0.0701 | 0.15 | 0.067U | 0.247 | 0.353 | 0.249 |
| Dibenzo(a,h)anthracene | 0.051U | 0.056U | 0.056U | 0.05U | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.052U | 0.05U | 0.05U | 0.067U | 0.055U | 0.074U | 0.053U |
| Fluoranthene | 0.139 | 0.056U | 0.056U | 0.0574 | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.173 | 0.082 | 0.183 | 0.168 | 0.47 | 0.602 | 0.489 |
| Fluorene | 0.051U | 0.056U | 0.056U | 0.05U | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.052U | 0.05U | 0.05U | 0.067U | 0.055U | 0.074U | 0.053U |
| Indeno(1,2,3-cd)pyrene | 0.051U | 0.056U | 0.056U | 0.05U | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.052U | 0.05U | 0.05U | 0.067U | 0.109 | 0.074U | 0.088 |
| Naphthalene | 0.102U | 0.119U | 0.111U | 0.1U | 0.1U | 0.109U | 0.105U | 0.1U | 0.1U | 0.104U | 0.1U | 0.1U | 0.133U | 0.11U | 0.147U | 0.106U |
| Phenanthrene | 0.051U | 0.056U | 0.056U | 0.05U | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.116 | 0.0539 | 0.116 | 0.0934 | 0.17 | 0.158 | 0.129 |
| Pyrene | 0.0675 | 0.056U | 0.056U | 0.05U | 0.05U | 0.054U | 0.052U | 0.05U | 0.05U | 0.193 | 0.149 | 0.257 | 0.0875 | 0.309 | 0.404 | 0.328 |
| <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 | 1U |
| 1,3-Dichlorobenzene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U |
| 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 | 0.5U |
| 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 | 0.4U |
| 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 | 0.5U |
| Ethylbenzene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U |
| o-Xylene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U |
| Toluene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U |
| Xylene, Isomers m & p | 2U | 2U | 2U | 2U | 2U | 2U | 2U | 2U | 2U | 2U | 2U | 2U | 2U | 2U | 2U | 2U |
| <i>Hydrocarbon Summary Parameters (µg/L)</i> | | | | | | | | | | | | | | | | |
| TPAH | 0.2065 | ND | ND | 0.0574 | ND | ND | ND | ND | ND | 0.933 | 0.355 | 0.7935 | 0.3489 | 2.014 | 2.3478 | 1.9302 |
| TAH as BETX | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| TAqH (TPAH + TAH) | 0.2065 | ND | ND | 0.0574 | ND | ND | ND | ND | ND | 0.933 | 0.355 | 0.7935 | 0.3489 | 2.014 | 2.3478 | 1.9302 |

Footnotes: U = not detected at the detection limit, ND = no concentration detected in any analyte tested.
All detected concentrations are shown in bold.

Table 10. Pertinent Numeric Alaska Water Quality Standard Criteria.

| Designated Use | Description of Standard |
|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fecal Coliform Bacteria | |
| (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. |
| Dissolved Oxygen (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. |
| pH | |
| (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. |
| Petroleum Hydrocarbons | |
| (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. |
| Dissolved Inorganic Substances (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. |
| Temperature (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 |

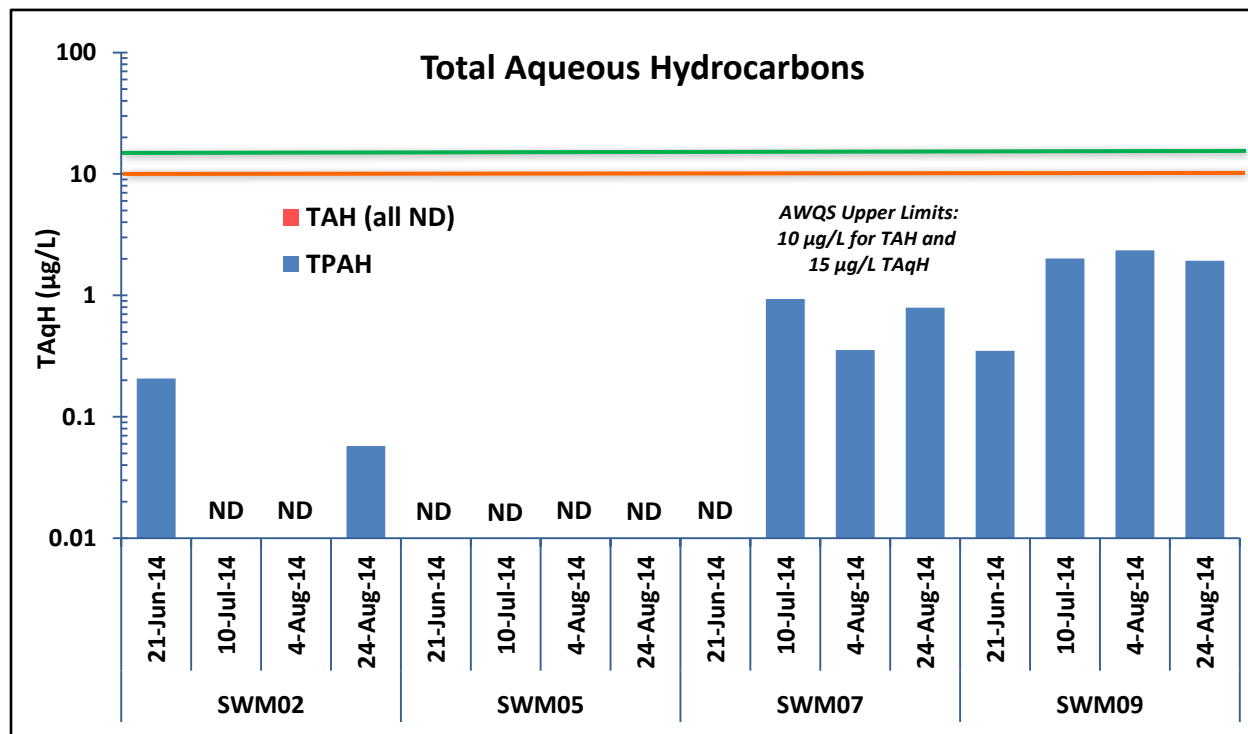


Figure 20. Total Aqueous Hydrocarbons (TAqH = TAH + TPAH) Measured in Stormwater Sampled at Monitoring Sites During all Four Events (AWQS $\leq 10 \mu\text{g/L}$ for TAH and $\leq 15 \mu\text{g/L}$ for TAqH).

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, benzo(g,h,i)perylene, and benzo(b)fluoranthene although small quantities of fluoranthene and phenanthrene were also seen in a number of samples. Concentrations of individual PAHs were found to be low and with the exception of one sample were all less than $0.5 \mu\text{g/L}$. PAHs were seen during only two storm events at SWM02, which captures runoff from a commercial area including a Home Depot parking lot, and in three of the four storms at 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 four storms events that were sampled. Site SWM09 is one of the sites that includes an oil/grit separator (OGS) device. No measurable PAH concentrations were seen at the last site, SWM05, during any of the four storm events during 2014. This site receives runoff from predominantly commercial and light industry land use areas and does include an OGS device.

In addition to the laboratory measurements of PAH and TAH, field observations were taken for any sheens or odors. A slight sheen was observed at SWM01 which drains a small residential area during the first storm event. No other sheens were observed during 2014 at any of the ten outfalls. The field team did note some hydrocarbon-type odor at SWM02 during two storm events and at SWM07 during one event. Although not sampled for hydrocarbons, a hydrocarbon odor was also noted at SWM08 during all four sampling events during 2014.

4.6 Site Trends

This report presents the last of four years of monitoring that were conducted for this program. 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, Figure 22, and Figure 23). The boxplots constitute the results from 15–16 samples that were collected at each location during 2011 through 2014 and 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 pH units. Outfall SWM03 had 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. Both of these outfalls drain primarily residential areas.

Dissolved oxygen was found to be fairly high and near saturation 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 BOD₅ concentration. However, this potential correlation did not hold true for SWM07 which had a median DO level of ~ 10 mg/L, above average, but which also had the highest BOD₅ concentration. For BOD₅, 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 which drains an area between the north and south-bound lanes of the Seward Highway near 15th Avenue.

For fecal coliform, SWM02 and SWM10 were found to be consistently lower than other locations, and SWM07 was found to be consistently higher. The sources of the higher concentrations seen at SWM07 are unknown, but these preliminary observations should be used to guide any future efforts and to focus subsequent analyses.

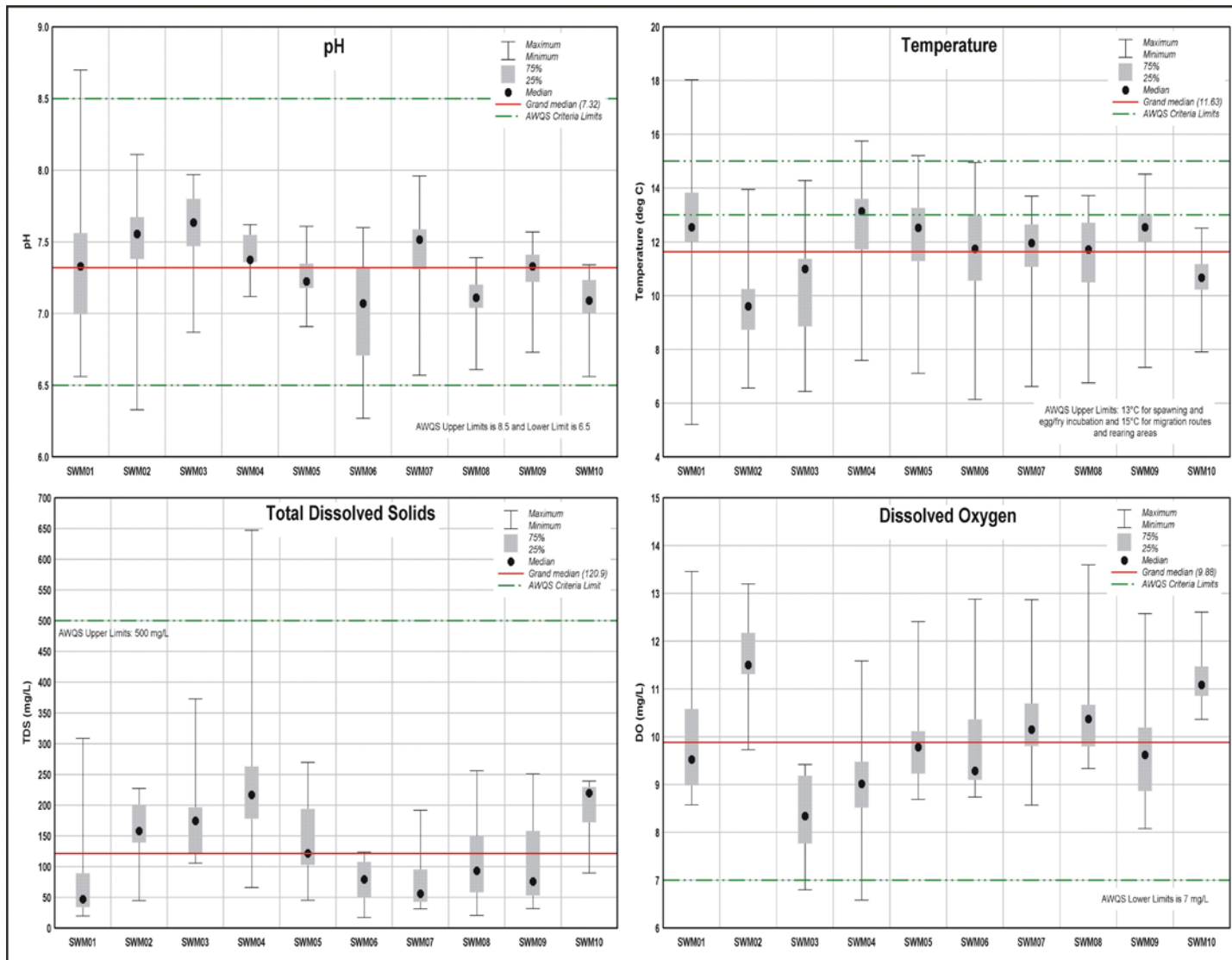


Figure 21. Station Boxplots of pH, Temperature, Total Dissolved Solids, and Dissolved Oxygen for 2011 thru 2014.

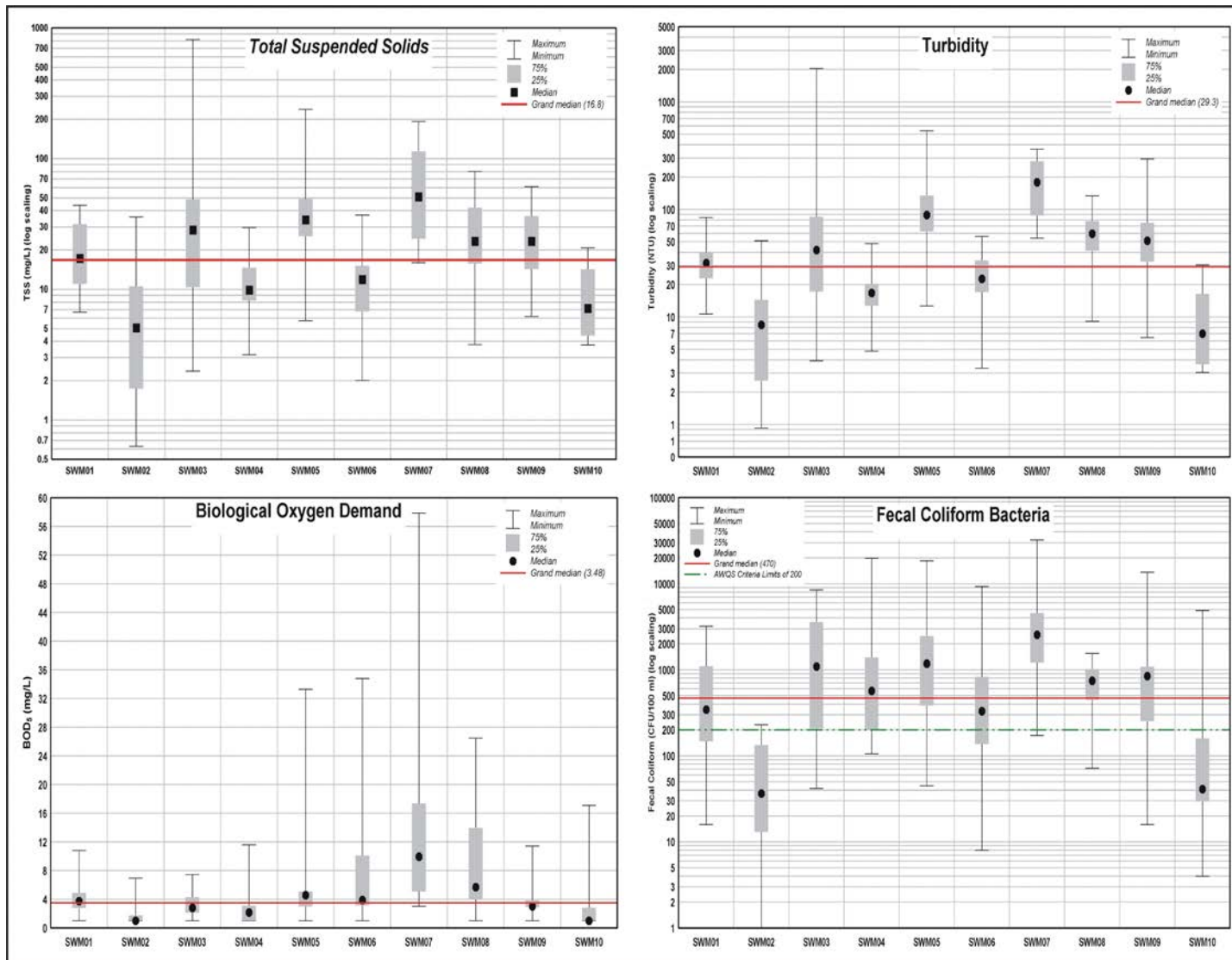


Figure 22. Station Boxplots of Total Suspended Solids, Turbidity, Biological Oxygen Demand, and Fecal Coliform for 2011 thru 2014.

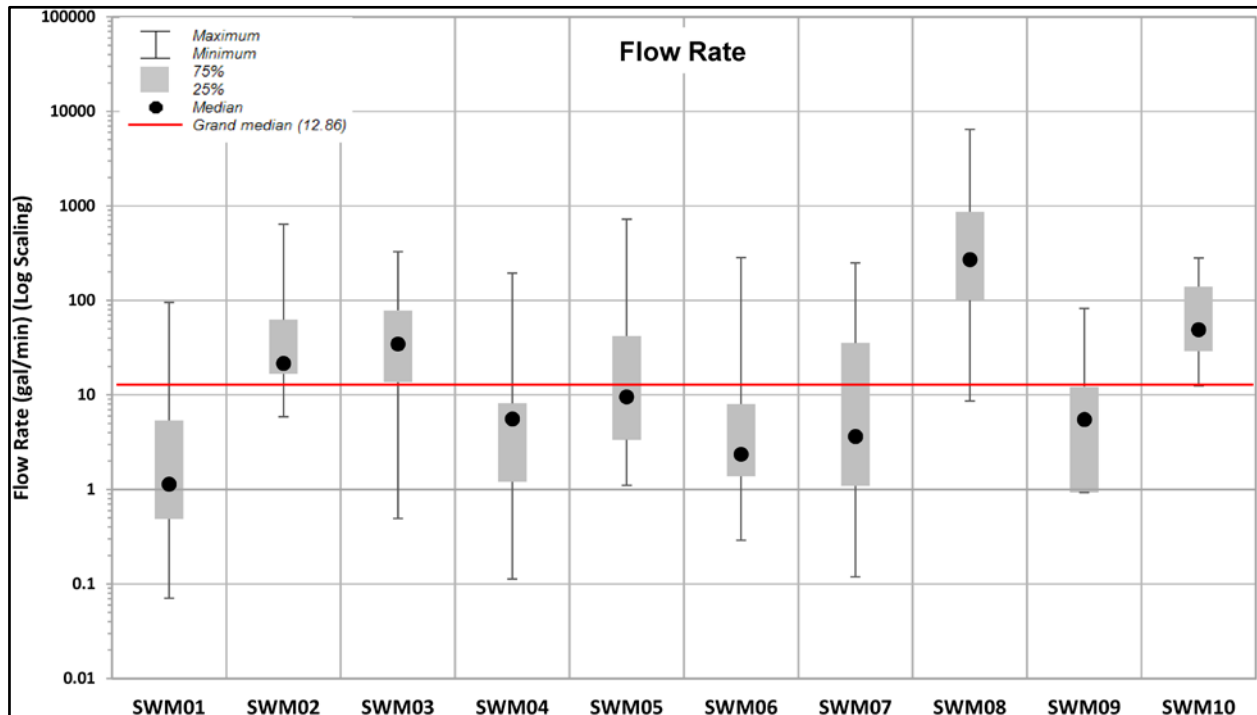


Figure 23. Station Box Plot of Outfall Flow Rate for 2011 thru 2014.

Flow rate was found to be highly variable between locations and between events. Outfall SWM08, which is a large 42-inch pipe that drains the largest basin, was found to have consistently higher flow rates than the other locations. The lowest flow was seen SWM01 which drains a small residential area. Flows at SWM02, SWM03, and SWM10 also were found to be relatively high compared to the other six locations, although some of the other locations exhibited high flows during some storm events. For most outfalls, flow rates were found to respond fairly rapidly to changes in precipitation.

4.7 Yearly and Seasonal Trends

The data were examined for any yearly or seasonal trends to determine if differences in the concentration of any parameter changed dramatically from one year to the next or if there were differences that could be attributed to seasonal timing. For example, historic studies that were conducted in the Anchorage watersheds indicated that there were seasonal influences on fecal coliform concentrations that were presumably tied to air and water temperatures where concentrations were generally higher during the summer months and lower during spring and fall (MOA, 2003). Most of the measurements taken over the four years of this study occurred during July and August, with only one storm event each during June, September, and October. Therefore, it is not possible to examine the spring time period of April, May, and early June since no sampling took place and since storms typically do not occur during this time period. Two sampling points did occur during the fall months of September and October which allow some seasonal trends to be examined.

Although many differences occurred between years for various parameters, no clear patterns were seen where the same fluctuations occurred across multiple locations. For example, fecal

coliform was highest at two locations during 2011, three locations in 2012, three locations in 2013, and two locations in 2014. Similar results were seen for other parameters where variability fluctuated between years. Also, other than TSS and turbidity, no patterns were seen where parameters were found to fluctuate together across multiple locations and years.

Some seasonal differences were noted in a few of the parameters. For example, as expected, temperature was found to be higher across all locations in July and August and lower in early June, September, and October (Figure 24). Since DO concentrations were found to be near saturation at most locations, DO would be expected to fluctuate inversely from temperature with higher DO concentrations during early summer and fall and lower concentrations during mid-summer. This seasonal trend in DO, as plotted against the day of year (DOY), can clearly be seen in the regression plot for all sites and years (Figure 24). Although not as consistent or as highly correlated as temperature or DO, fecal coliform concentrations followed a similar trend as that seen in temperature. Fecal coliform counts were generally found to be lower during June, September, and October and higher during July and August (Figure 24).

4.8 Annual Loading

The Simplified Method for calculation loading estimates was selected for determining annual loadings for fecal coliform and hydrocarbons for each of the subbasins that was examined in this study. The Simple Method was developed under an EPA grant to provide Phase II communities with tools to protect their local watersheds (SMRC, 2010). This method estimates stormwater runoff pollutant loads for urban areas and requires the following information: subbasin drainage area and percent impervious cover, flow weighted or event mean stormwater runoff pollutant concentrations, and annual precipitation. With the Simple Method, calculations can be based on specific land use areas, such as residential, commercial, industrial, and roadway to calculate annual pollutant loads for each type of land use. The method can also be used for more generalized pollutant comparisons by land uses such as new suburban areas, older urban areas, central business districts, and highways. Equations and calculation methodology that were utilized for the Simple Method are detailed in Attachment B-1 of the QAPP (MOA, 2012).

Loading information for each subbasin should be considered as estimates since one of the big limitations for this method is in applying data collected from a single grab sample for each storm event rather using flow-weighted data which would help eliminate some of the high variability. Also, note that available documentation for this method does not address its applicability to organic compounds such as petroleum hydrocarbons even though comparisons are provided here (SMRC, 2010). Therefore, loading data should be considered as broad estimates that can provide useful information in comparing subbasins and be used as a planning tool, but should not be considered precise for comparing similar loading estimates.

Annual loading estimates were determined for hydrocarbons and fecal coliform. For hydrocarbons, only TPAH was examined since with the exception of one sample in 2011 and one sample in 2012, all volatile aromatic hydrocarbons were found to be ND. Annual loadings for fecal coliform are presented in Figure 25 and for TPAH in Figure 26. For TPAH, loading calculations utilized the annual arithmetic mean for each location. Fecal loading calculations utilized annual geometric means for each location to account for some of the high variability.

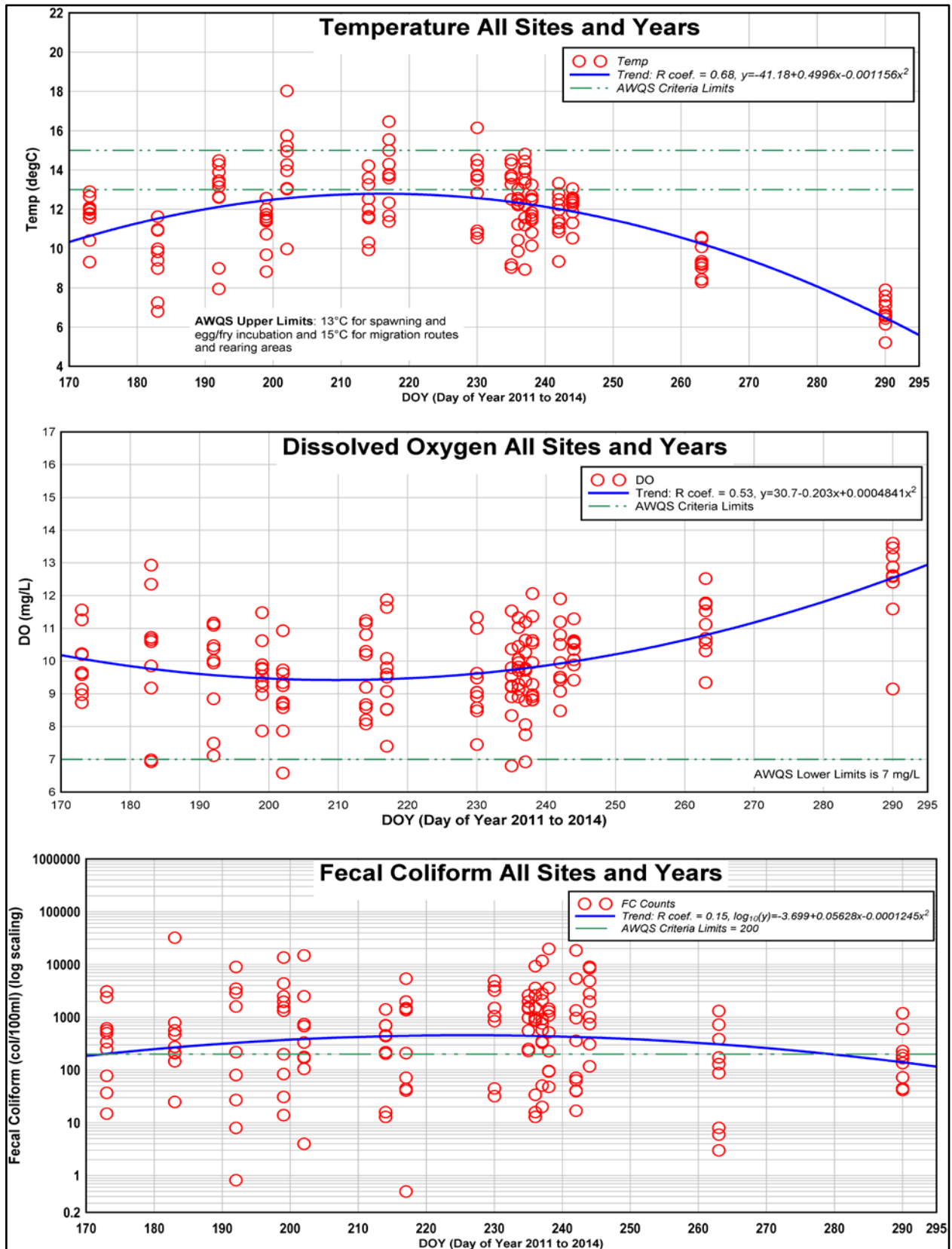


Figure 24. Seasonal Patterns for Temperature, DO, and Fecal Coliform, All Sites and All Years.

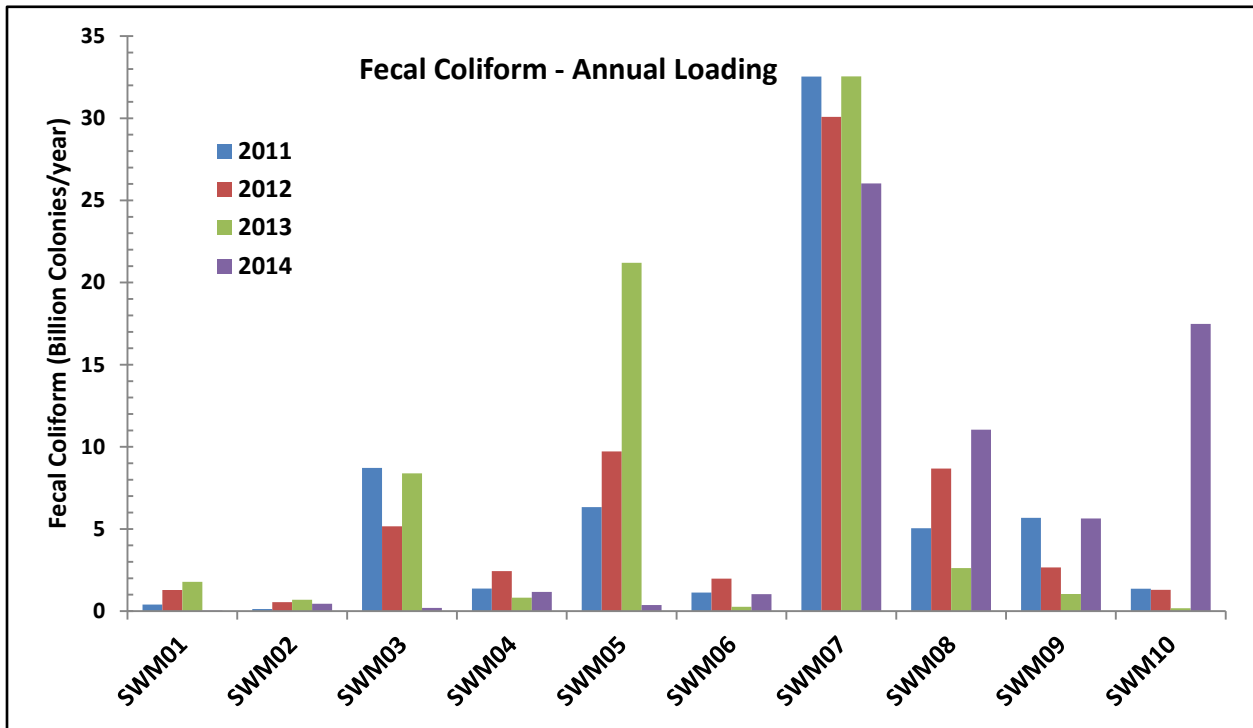


Figure 25. Fecal Coliform Annual Loading by Monitoring Site.

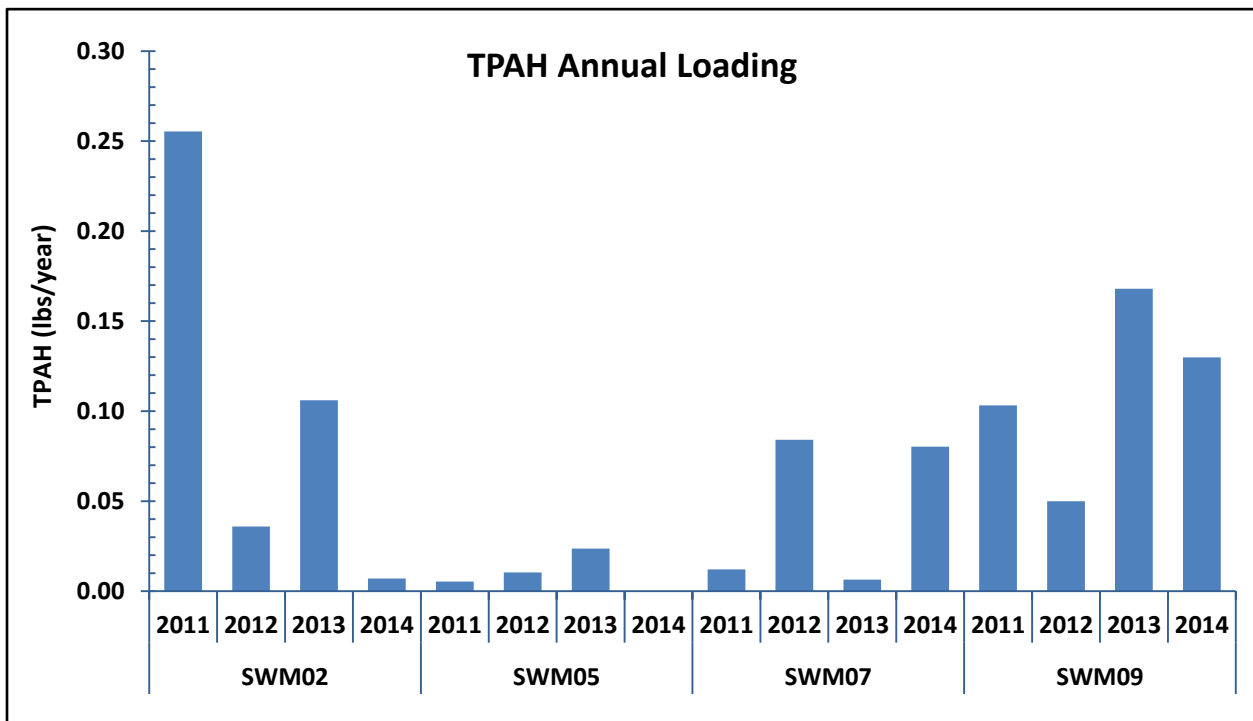


Figure 26. TPAH Annual Loading by Monitoring Site.

For fecal coliform, SWM07 clearly stands out as the subbasin with the highest annual loading for all four years of the study. Outfall SWM07 drains an area between the north and southbound lanes of the Seward Highway north of Chester Creek that is primarily a commercial industrial area with some single-family homes and multi-family complexes (refer to Figure 7). Other areas with relatively high fecal coliform loading were SWM03 (residential), SWM05 (commercial/industrial), SWM08 (mixed), and SWM09 (commercial industrial) which represent the three different land use categories that were examined in the study (refer to Table 1 and Table 2). The lowest fecal loading values were seen at SWM01 (residential), SWM02 (commercial/industrial), SWM04 (residential), SWM06 (residential), and SWM10 (mixed). Due to one high anomalous concentration, SWM10 indicated elevated levels of fecal coliform loading during 2014, although the other three storm events were more in line with historic measurements. With the exception of SWM03, the residential areas were generally found to be lower in fecal coliform loading when compared to the commercial/industrial areas.

Annual hydrocarbon loading as determined by TPAH measurements was generally found to be very low at all four locations that were measured. The highest loading seen was 0.25 lbs/year at SWM02 during 2011, although similar but slightly lower levels were seen at both SWM07 and SWM09 during some years. No clear pattern was seen between the outfalls that contained OGS units (SWM05 and SWM09) versus those that did not (SWM02 and SWM07), since SWM05 had some of the lowest loading values versus SWM09 which had some of the highest. Based on these four locations, and given that they were all similar in size in terms of acreage and were from the commercial/industrial land use categories, the efficacy of the OGS units could not be determined. It could be that the OGS units are effective in removing oil, grease, and grit but that hydrocarbons as measured by both TAH and TPAH are not removed since the majority are in the dissolved fraction that would pass through an OGS. Alternatively, there could just be large differences between the four areas examined that makes a determination of OGS effectiveness impossible. The best way to measure the efficacy of an OGS unit would be to take both up- and down-stream measurements so that a direct comparison could be made on the amount of hydrocarbons removed at a specific location. Hydrocarbon concentrations could also be measured in the oil and grit that is collected within the OGS unit itself.

5.0 Summary and Conclusions

This report describes the last of four years of sampling under the current APDES permit-specified monitoring program. The monitoring program began in 2011 and included sampling at ten representative locations during four storm events each year for a total of 16 storms. Results from this sampling effort 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 determine likely causes and take actions such as education and outreach or implementation of additional BMPs to reduce the pollutant loading.

No exceptions were noted in the 2014 sampling effort. The fourth 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.

Overall, there were no significant findings from any of the years 2011 through 2014 that would suggest the need for any special investigations to be initiated at this time. With the exception of

fecal coliforms, high TSS/turbidity that was seen at one location in 2011, and high aromatic 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 high 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 high turbidity or TSS concentrations have been seen at that location. In 2012, the one high hydrocarbon sample 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 anomalous 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 anomalous field measurements were noted in 2012, 2013, or 2014 that warranted further investigation.

Data were examined for station, yearly, and seasonal trends to determine if particular locations have pollutant problems, whether significant differences were seen on a year-to-year basis, and whether there were seasonal influences that could be discerned in the data. One location that stood out was SWM07 which drains the area between the north and southbound lanes of the Seward Highway north of Chester Creek. This location was found to consistently exhibit the highest BOD₅, fecal coliform, TSS, and turbidity concentrations. Although BOD₅ was consistently high, the DO levels were higher than a majority of other locations. High fecal coliform levels at SWM07 were, as expected, reflected in the annual loading estimates for that location. This site exhibited the highest annual loading of fecal coliform for all four years of the study.

Other trends that were observed were a general seasonal trend in temperature, DO, and fecal coliform where temperature and fecal coliform were highest during the mid-summer months and lower in early summer and fall. DO concentrations were found to have an inverse relationship with lower values in the summer and higher values in early summer and fall.

Hydrocarbon concentrations were examined in four of the ten subbasins that represented commercial/industrial land use category. Two of the locations had OGS units and two did not, which allowed comparisons to be made on their efficacy for stormwater pollutant control. Based on TPAH levels, no differences were seen that could be attributed to an OGS unit, although the measurement of TPAH may not be the best parameter to be used in this examination. In general, with the exception of two samples with elevated BTEX concentrations, all aromatic hydrocarbon concentrations were found to be below detection levels. PAH concentrations were also found to be very low and, when compared to ADEC's TAqH water quality standard, were all well below the criteria. Annual hydrocarbon loading was also found to be very low at all four locations.

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.
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- 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.
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- 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>
- SMRC. 2010. Stormwater Managers Resource Center. Monitoring and Assessment Guidance, The Simple Method. Website: <http://www.stormwatercenter.net>



Daniel A. Sullivan, Mayor

2014 Stormwater Outfall Monitoring Report

APDES Permit No. AKS-052558

APPENDICES

**MUNICIPALITY OF ANCHORAGE
WATERSHED MANAGEMENT PROGRAM**

FINAL REPORT

December 2014

Appendix A

Photographs

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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 56th 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.

Appendix B

Laboratory Data Packages & Chain of Custodies

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Appendix B1

Laboratory Data Package Storm Event #1

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Laboratory Report of Analysis

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

Report Number: **1142617**

Client Project: **5078 MOA Stormwater Managment**

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 Forest 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.

Forest Taylor
Project Manager
Forest.Taylor@sgs.com

Date

Print Date: 06/30/2014 12:39:55PM

Case Narrative

SGS Client: **Kinnetic Laboratories, Inc.**
SGS Project: **1142617**
Project Name/Site: **5078 MOA Stormwater Management**
Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

SWM02-01 MS (1142617003) BMS

8270D SIM - MS/MSD recovery for multiple analytes is outside of QC criteria (biased low) due to matrix interference.
Refer to LCS for accuracy.

SWM02-01 MSD (1142617004) BMSD

8270D SIM - MS/MSD recovery for multiple analytes is outside of QC criteria (biased low) due to matrix interference.
Refer to LCS for accuracy.

1142617001DUP (1216921) DUP

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. Refer to LCS/LCSD RPD for batch precision.

1142617005DUP (1216922) DUP

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. Refer to LCS/LCSD RPD for batch precision.

*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: 06/30/2014 12:39:56PM

Report of Manual Integrations

| <u>Laboratory ID</u> | <u>Client Sample ID</u> | <u>Analytical Batch</u> | <u>Analyte</u> | <u>Reason</u> |
|----------------------------|-------------------------|-------------------------|----------------------|---------------|
| EPA 625M SIMS (PAH) | | | | |
| 1142617002 | SWM02-01 | XMS8106 | Benzo[b]Fluoranthene | BLC |
| 1142617005 | SWM02-01 Dup | XMS8106 | Benzo[b]Fluoranthene | BLC |
| 1142617005 | SWM02-01 Dup | XMS8106 | 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.

Print Date: 06/30/2014 12:39:56PM

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>), 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., 1/2 of the LOQ) |
| 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> |
|-------------------------|----------------------|------------------|-----------------|-------------------------------|
| SWM01-01 | 1142617001 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM02-01 | 1142617002 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM02-01 MS | 1142617003 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM02-01 MSD | 1142617004 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM02-01 Dup | 1142617005 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM03-01 | 1142617006 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM04-01 | 1142617007 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM05-01 | 1142617008 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM06-01 | 1142617009 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM07-01 | 1142617010 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM08-01 | 1142617011 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM08-01 Dup | 1142617012 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM09-01 | 1142617013 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM10-01 | 1142617014 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| Trip Blank | 1142617015 | 06/21/2014 | 06/21/2014 | 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: **SWM01-01**

Lab Sample ID: 1142617001

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.92 | mg/L |
| Fecal Coliform | 15 | col/100mL |
| Total Suspended Solids | 16.0 | mg/L |

Client Sample ID: **SWM02-01**

Lab Sample ID: 1142617002

Microbiology Laboratory

Polynuclear Aromatics GC/MS

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.94 | mg/L |
| Fecal Coliform | 37 | col/100mL |
| Fluoranthene | 0.139 | ug/L |
| Pyrene | 0.0675 | ug/L |
| Total Suspended Solids | 4.00 | mg/L |

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

Lab Sample ID: 1142617005

Microbiology Laboratory

Polynuclear Aromatics GC/MS

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.88 | mg/L |
| Fecal Coliform | 38 | col/100mL |
| Benzo[b]Fluoranthene | 0.0602 | ug/L |
| Chrysene | 0.0653 | ug/L |
| Fluoranthene | 0.166 | ug/L |
| Phenanthrene | 0.0602 | ug/L |
| Pyrene | 0.0798 | ug/L |
| Total Suspended Solids | 3.67 | mg/L |

Client Sample ID: **SWM03-01**

Lab Sample ID: 1142617006

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.08 | mg/L |
| Fecal Coliform | 560 | col/100mL |
| Total Suspended Solids | 86.0 | mg/L |

Client Sample ID: **SWM04-01**

Lab Sample ID: 1142617007

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 3100 | col/100mL |
| Total Suspended Solids | 6.00 | mg/L |

Client Sample ID: **SWM05-01**

Lab Sample ID: 1142617008

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 4.32 | mg/L |
| Fecal Coliform | 250 | col/100mL |
| Total Suspended Solids | 10.7 | mg/L |

Client Sample ID: **SWM06-01**

Lab Sample ID: 1142617009

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.58 | mg/L |
| Fecal Coliform | 78 | col/100mL |
| Total Suspended Solids | 4.00 | mg/L |

Detectable Results Summary

Client Sample ID: **SWM07-01**

Lab Sample ID: 1142617010

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 3.88 | mg/L |
| Fecal Coliform | 2400 | col/100mL |
| Total Suspended Solids | 15.7 | mg/L |

Client Sample ID: **SWM08-01**

Lab Sample ID: 1142617011

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.85 | mg/L |
| Fecal Coliform | 340 | col/100mL |
| Total Suspended Solids | 8.00 | mg/L |

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

Lab Sample ID: 1142617012

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.85 | mg/L |
| Fecal Coliform | 400 | col/100mL |
| Total Suspended Solids | 10.7 | mg/L |

Client Sample ID: **SWM09-01**

Lab Sample ID: 1142617013

Microbiology Laboratory

Polynuclear Aromatics GC/MS

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.21 | mg/L |
| Fecal Coliform | 500 | col/100mL |
| Fluoranthene | 0.168 | ug/L |
| Phenanthrene | 0.0934 | ug/L |
| Pyrene | 0.0875 | ug/L |
| Total Suspended Solids | 9.00 | mg/L |

Client Sample ID: **SWM10-01**

Lab Sample ID: 1142617014

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 618 | col/100mL |
| Total Suspended Solids | 5.50 | mg/L |



Results of **SWM01-01**

Client Sample ID: **SWM01-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617001
Lab Project ID: 1142617

Collection Date: 06/21/14 09:54
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617001-A

| <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 | 15 | 1.67 | 1.67 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617001-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM01-01

Client Sample ID: **SWM01-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617001
Lab Project ID: 1142617

Collection Date: 06/21/14 09:54
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 16.0 | 1.67 | 0.500 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617001-C

Print Date: 06/30/2014 12:39:57PM



Results of SWM02-01

Client Sample ID: **SWM02-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617002
Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.94 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617002-A

| <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 | 37 | 1.67 | 1.67 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617002-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM02-01

Client Sample ID: **SWM02-01**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1142617002
 Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
 Received Date: 06/21/14 14:01
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|--------------------------|-------------|--------|--------|-------|----|------------------|----------------|
| Acenaphthene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Acenaphthylene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Anthracene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Benzo(a)Anthracene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Benzo[a]pyrene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Benzo[b]Fluoranthene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Benzo[g,h,i]perylene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Benzo[k]fluoranthene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Chrysene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Dibenzo[a,h]anthracene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Fluoranthene | 0.139 | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Fluorene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Indeno[1,2,3-c,d] pyrene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Naphthalene | 0.102 U | 0.102 | 0.0316 | ug/L | 1 | | 06/23/14 14:44 |
| Phenanthrene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Pyrene | 0.0675 | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 84.1 | 50-110 | | % | 1 | | 06/23/14 14:44 |
| Terphenyl-d14 | 108 | 50-135 | | % | 1 | | 06/23/14 14:44 |

Batch Information

Analytical Batch: XMS8106
 Analytical Method: EPA 625M SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 06/23/14 14:44
 Container ID: 1142617002-G

Prep Batch: XXX31236
 Prep Method: SW3520C
 Prep Date/Time: 06/22/14 08:45
 Prep Initial Wt./Vol.: 980 mL
 Prep Extract Vol: 1 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM02-01

Client Sample ID: **SWM02-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617002
Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|-----------------------|-------------|--------|-------|-------|----|------------------|----------------|
| 1,2-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:10 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:10 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 01:10 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 06/24/14 01:10 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 01:10 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:10 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:10 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 06/24/14 01:10 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:10 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 113 | 70-120 | | % | 1 | | 06/24/14 01:10 |
| 4-Bromofluorobenzene | 86 | 75-120 | | % | 1 | | 06/24/14 01:10 |
| Toluene-d8 | 102 | 85-120 | | % | 1 | | 06/24/14 01:10 |

Batch Information

Analytical Batch: VMS14228
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 06/24/14 01:10
Container ID: 1142617002-D

Prep Batch: VXX26030
Prep Method: SW5030B
Prep Date/Time: 06/23/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 06/30/2014 12:39:57PM



Results of **SWM02-01**

Client Sample ID: **SWM02-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617002
Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 4.00 | 1.25 | 0.375 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617002-C

Print Date: 06/30/2014 12:39:57PM



Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617005
Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.88 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617005-A

| <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 | 38 | 1.64 | 1.64 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617005-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1142617005
 Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
 Received Date: 06/21/14 14:01
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|--------------------------|-------------|--------|--------|-------|----|------------------|----------------|
| Acenaphthene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Acenaphthylene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Anthracene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Benzo(a)Anthracene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Benzo[a]pyrene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Benzo[b]Fluoranthene | 0.0602 | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Benzo[g,h,i]perylene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Benzo[k]fluoranthene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Chrysene | 0.0653 | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Dibenzo[a,h]anthracene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Fluoranthene | 0.166 | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Fluorene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Indeno[1,2,3-c,d] pyrene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Naphthalene | 0.103 U | 0.103 | 0.0320 | ug/L | 1 | | 06/23/14 15:30 |
| Phenanthrene | 0.0602 | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Pyrene | 0.0798 | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 96.5 | 50-110 | | % | 1 | | 06/23/14 15:30 |
| Terphenyl-d14 | 108 | 50-135 | | % | 1 | | 06/23/14 15:30 |

Batch Information

Analytical Batch: XMS8106
 Analytical Method: EPA 625M SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 06/23/14 15:30
 Container ID: 1142617005-G

Prep Batch: XXX31236
 Prep Method: SW3520C
 Prep Date/Time: 06/22/14 08:45
 Prep Initial Wt./Vol.: 970 mL
 Prep Extract Vol: 1 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1142617005
 Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
 Received Date: 06/21/14 14:01
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|-----------------------|-------------|--------|-------|-------|----|------------------|----------------|
| 1,2-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:27 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:27 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 01:27 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 06/24/14 01:27 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 01:27 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:27 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:27 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 06/24/14 01:27 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:27 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 113 | 70-120 | | % | 1 | | 06/24/14 01:27 |
| 4-Bromofluorobenzene | 93.2 | 75-120 | | % | 1 | | 06/24/14 01:27 |
| Toluene-d8 | 102 | 85-120 | | % | 1 | | 06/24/14 01:27 |

Batch Information

Analytical Batch: VMS14228
 Analytical Method: EPA 602/624
 Analyst: NRB
 Analytical Date/Time: 06/24/14 01:27
 Container ID: 1142617005-D

Prep Batch: VXX26030
 Prep Method: SW5030B
 Prep Date/Time: 06/23/14 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617005
Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.67 | 1.67 | 0.500 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617005-C

Print Date: 06/30/2014 12:39:57PM



Results of **SWM03-01**

Client Sample ID: **SWM03-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617006
Lab Project ID: 1142617

Collection Date: 06/21/14 10:59
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.08 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617006-A

| <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 | 560 | 10.0 | 10.0 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617006-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM03-01

Client Sample ID: **SWM03-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617006
Lab Project ID: 1142617

Collection Date: 06/21/14 10:59
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 86.0 | 2.50 | 0.750 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617006-C

Print Date: 06/30/2014 12:39:57PM



Results of **SWM04-01**

Client Sample ID: **SWM04-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617007
Lab Project ID: 1142617

Collection Date: 06/21/14 11:10
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617007-A

| <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 | 3100 | 100 | 100 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617007-A

Print Date: 06/30/2014 12:39:57PM



Results of **SWM04-01**

Client Sample ID: **SWM04-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617007
Lab Project ID: 1142617

Collection Date: 06/21/14 11:10
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 6.00 | 1.25 | 0.375 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617007-C

Print Date: 06/30/2014 12:39:57PM



Results of **SWM05-01**

Client Sample ID: **SWM05-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617008
Lab Project ID: 1142617

Collection Date: 06/21/14 11:35
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 4.32 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617008-A

| <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 | 250 | 10.0 | 10.0 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617008-A

Print Date: 06/30/2014 12:39:57PM



Results of **SWM05-01**

Client Sample ID: **SWM05-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617008
Lab Project ID: 1142617

Collection Date: 06/21/14 11:35
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 06/23/14 15:46 |
| Acenaphthylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Benzo(a)Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Benzo[a]pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Benzo[b]Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Benzo[g,h,i]perylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Benzo[k]fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Chrysene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Dibenzo[a,h]anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Fluorene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Indeno[1,2,3-c,d] pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Naphthalene | 0.100 U | 0.100 | 0.0310 | ug/L | 1 | | 06/23/14 15:46 |
| Phenanthrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 97.5 | 50-110 | | % | 1 | | 06/23/14 15:46 |
| Terphenyl-d14 | 117 | 50-135 | | % | 1 | | 06/23/14 15:46 |

Batch Information

Analytical Batch: XMS8106
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 06/23/14 15:46
Container ID: 1142617008-G

Prep Batch: XXX31236
Prep Method: SW3520C
Prep Date/Time: 06/22/14 08:45
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM05-01

Client Sample ID: **SWM05-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617008
Lab Project ID: 1142617

Collection Date: 06/21/14 11:35
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|-----------------------|-------------|--------|-------|-------|----|------------------|----------------|
| 1,2-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:19 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:19 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 00:19 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 06/24/14 00:19 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 00:19 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:19 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:19 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 06/24/14 00:19 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:19 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 111 | 70-120 | | % | 1 | | 06/24/14 00:19 |
| 4-Bromofluorobenzene | 88.7 | 75-120 | | % | 1 | | 06/24/14 00:19 |
| Toluene-d8 | 112 | 85-120 | | % | 1 | | 06/24/14 00:19 |

Batch Information

Analytical Batch: VMS14228
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 06/24/14 00:19
Container ID: 1142617008-D

Prep Batch: VXX26030
Prep Method: SW5030B
Prep Date/Time: 06/23/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 06/30/2014 12:39:57PM



Results of **SWM05-01**

Client Sample ID: **SWM05-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617008
Lab Project ID: 1142617

Collection Date: 06/21/14 11:35
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 10.7 | 1.67 | 0.500 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617008-C

Print Date: 06/30/2014 12:39:57PM



Results of SWM06-01

Client Sample ID: **SWM06-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617009
Lab Project ID: 1142617

Collection Date: 06/21/14 12:06
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.58 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617009-A

| <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 | 78 | 2.00 | 2.00 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617009-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM06-01

Client Sample ID: **SWM06-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617009
Lab Project ID: 1142617

Collection Date: 06/21/14 12:06
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 4.00 | 1.67 | 0.500 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617009-C

Print Date: 06/30/2014 12:39:57PM



Results of SWM07-01

Client Sample ID: **SWM07-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617010
Lab Project ID: 1142617

Collection Date: 06/21/14 12:40
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.88 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617010-A

| <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 | 2400 | 100 | 100 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617010-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM07-01

Client Sample ID: **SWM07-01**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1142617010
 Lab Project ID: 1142617

Collection Date: 06/21/14 12:40
 Received Date: 06/21/14 14:01
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

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 | | 06/23/14 16:02 |
| Acenaphthylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Benzo(a)Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Benzo[a]pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Benzo[b]Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Benzo[g,h,i]perylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Benzo[k]fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Chrysene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Dibenzo[a,h]anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Fluorene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Indeno[1,2,3-c,d] pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Naphthalene | 0.100 U | 0.100 | 0.0310 | ug/L | 1 | | 06/23/14 16:02 |
| Phenanthrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 89.6 | 50-110 | | % | 1 | | 06/23/14 16:02 |
| Terphenyl-d14 | 107 | 50-135 | | % | 1 | | 06/23/14 16:02 |

Batch Information

Analytical Batch: XMS8106
 Analytical Method: EPA 625M SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 06/23/14 16:02
 Container ID: 1142617010-G

Prep Batch: XXX31236
 Prep Method: SW3520C
 Prep Date/Time: 06/22/14 08:45
 Prep Initial Wt./Vol.: 1000 mL
 Prep Extract Vol: 1 mL

Print Date: 06/30/2014 12:39:57PM



Results of **SWM07-01**

Client Sample ID: **SWM07-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617010
Lab Project ID: 1142617

Collection Date: 06/21/14 12:40
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|-----------------------|-------------|--------|-------|-------|----|------------------|----------------|
| 1,2-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:36 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:36 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 00:36 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 06/24/14 00:36 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 00:36 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:36 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:36 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 06/24/14 00:36 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:36 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 113 | 70-120 | | % | 1 | | 06/24/14 00:36 |
| 4-Bromofluorobenzene | 79.1 | 75-120 | | % | 1 | | 06/24/14 00:36 |
| Toluene-d8 | 101 | 85-120 | | % | 1 | | 06/24/14 00:36 |

Batch Information

Analytical Batch: VMS14228
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 06/24/14 00:36
Container ID: 1142617010-D

Prep Batch: VXX26030
Prep Method: SW5030B
Prep Date/Time: 06/23/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM07-01

Client Sample ID: **SWM07-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617010
Lab Project ID: 1142617

Collection Date: 06/21/14 12:40
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 15.7 | 1.67 | 0.500 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617010-C

Print Date: 06/30/2014 12:39:57PM



Results of SWM08-01

Client Sample ID: **SWM08-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617011
Lab Project ID: 1142617

Collection Date: 06/21/14 12:30
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.85 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617011-A

| <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 | 340 | 10.0 | 10.0 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617011-A

Print Date: 06/30/2014 12:39:57PM



Results of **SWM08-01**

Client Sample ID: **SWM08-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617011
Lab Project ID: 1142617

Collection Date: 06/21/14 12:30
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 8.00 | 1.67 | 0.500 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617011-C

Print Date: 06/30/2014 12:39:57PM



Results of SWM08-01 Dup

Client Sample ID: **SWM08-01 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617012
Lab Project ID: 1142617

Collection Date: 06/21/14 12:30
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.85 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617012-A

| <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 | 400 | 10.0 | 10.0 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617012-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM08-01 Dup

Client Sample ID: **SWM08-01 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617012
Lab Project ID: 1142617

Collection Date: 06/21/14 12:30
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 10.7 | 1.67 | 0.500 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617012-C

Print Date: 06/30/2014 12:39:57PM



Results of **SWM09-01**

Client Sample ID: **SWM09-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617013
Lab Project ID: 1142617

Collection Date: 06/21/14 13:15
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.21 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617013-A

| <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 | 500 | 10.0 | 10.0 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617013-A

Print Date: 06/30/2014 12:39:57PM



Results of **SWM09-01**

Client Sample ID: **SWM09-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617013
Lab Project ID: 1142617

Collection Date: 06/21/14 13:15
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|--------------------------|-------------|--------|--------|-------|----|------------------|----------------|
| Acenaphthene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Acenaphthylene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Anthracene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Benzo(a)Anthracene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Benzo[a]pyrene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Benzo[b]Fluoranthene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Benzo[g,h,i]perylene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Benzo[k]fluoranthene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Chrysene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Dibenzo[a,h]anthracene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Fluoranthene | 0.168 | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Fluorene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Indeno[1,2,3-c,d] pyrene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Naphthalene | 0.133 U | 0.133 | 0.0413 | ug/L | 1 | | 06/23/14 16:17 |
| Phenanthrene | 0.0934 | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Pyrene | 0.0875 | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 88.1 | 50-110 | | % | 1 | | 06/23/14 16:17 |
| Terphenyl-d14 | 106 | 50-135 | | % | 1 | | 06/23/14 16:17 |

Batch Information

Analytical Batch: XMS8106
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 06/23/14 16:17
Container ID: 1142617013-G

Prep Batch: XXX31236
Prep Method: SW3520C
Prep Date/Time: 06/22/14 08:45
Prep Initial Wt./Vol.: 750 mL
Prep Extract Vol: 1 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM09-01

Client Sample ID: **SWM09-01**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1142617013
 Lab Project ID: 1142617

Collection Date: 06/21/14 13:15
 Received Date: 06/21/14 14:01
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|-----------------------|-------------|--------|-------|-------|----|------------------|----------------|
| 1,2-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:53 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:53 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 00:53 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 06/24/14 00:53 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 00:53 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:53 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:53 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 06/24/14 00:53 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:53 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 112 | 70-120 | | % | 1 | | 06/24/14 00:53 |
| 4-Bromofluorobenzene | 82.9 | 75-120 | | % | 1 | | 06/24/14 00:53 |
| Toluene-d8 | 101 | 85-120 | | % | 1 | | 06/24/14 00:53 |

Batch Information

Analytical Batch: VMS14228
 Analytical Method: EPA 602/624
 Analyst: NRB
 Analytical Date/Time: 06/24/14 00:53
 Container ID: 1142617013-D

Prep Batch: VXX26030
 Prep Method: SW5030B
 Prep Date/Time: 06/23/14 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM09-01

Client Sample ID: **SWM09-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617013
Lab Project ID: 1142617

Collection Date: 06/21/14 13:15
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 9.00 | 1.25 | 0.375 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617013-C

Print Date: 06/30/2014 12:39:57PM



Results of SWM10-01

Client Sample ID: **SWM10-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617014
Lab Project ID: 1142617

Collection Date: 06/21/14 13:15
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617014-A

| <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 | 618 | 9.09 | 9.09 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617014-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM10-01

Client Sample ID: **SWM10-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617014
Lab Project ID: 1142617

Collection Date: 06/21/14 13:15
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 5.50 | 2.50 | 0.750 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617014-C

Print Date: 06/30/2014 12:39:57PM



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617015
Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 06/23/14 21:29 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/23/14 21:29 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/23/14 21:29 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 06/23/14 21:29 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/23/14 21:29 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/23/14 21:29 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/23/14 21:29 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 06/23/14 21:29 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/23/14 21:29 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 108 | 70-120 | | % | 1 | | 06/23/14 21:29 |
| 4-Bromofluorobenzene | 100 | 75-120 | | % | 1 | | 06/23/14 21:29 |
| Toluene-d8 | 104 | 85-120 | | % | 1 | | 06/23/14 21:29 |

Batch Information

Analytical Batch: VMS14228
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 06/23/14 21:29
Container ID: 1142617015-A

Prep Batch: VXX26030
Prep Method: SW5030B
Prep Date/Time: 06/23/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 06/30/2014 12:39:57PM



Method Blank

Blank ID: MB for HBN 1590663 [BOD/4962]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1217625

QC for Samples:

1142617001, 1142617002, 1142617005, 1142617006, 1142617007, 1142617008, 1142617009, 1142617010, 1142617011, 1142617012, 1142617013, 1142617014

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: BOD4962

Analytical Method: SM21 5210B

Instrument:

Analyst: SLC

Analytical Date/Time: 6/23/2014 9:20:00AM

Print Date: 06/30/2014 12:39:59PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1142617 [BOD4962]
Blank Spike Lab ID: 1217626
Date Analyzed: 06/23/2014 09:20

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1142617001, 1142617002, 1142617005, 1142617006, 1142617007, 1142617008, 1142617009, 1142617010, 1142617011, 1142617012, 1142617013, 1142617014

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: **BOD4962**
Analytical Method: **SM21 5210B**
Instrument:
Analyst: **SLC**

Prep Batch:
Prep Method:
Prep Date/Time:
Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL
Dup Init Wt./Vol.: Extract Vol:

Print Date: 06/30/2014 12:40:00PM



Method Blank

Blank ID: MB for HBN 1582763 [BTF/13574]
Blank Lab ID: 1216242

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1142617001, 1142617002, 1142617005, 1142617006, 1142617007, 1142617008, 1142617009, 1142617010, 1142617011, 1142617012, 1142617013, 1142617014

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: BTF13574
Analytical Method: SM21 9222D
Instrument:
Analyst: SLC
Analytical Date/Time: 6/21/2014 4:15:00PM

Print Date: 06/30/2014 12:40:01PM



Method Blank

Blank ID: MB for HBN 1585173 [STS/4422]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1216918

QC for Samples:

1142617001, 1142617002, 1142617005, 1142617006, 1142617007, 1142617008, 1142617009, 1142617010, 1142617011, 1142617012, 1142617013, 1142617014

Results by SM21 2540D

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|------------------------|----------------|---------------|-----------|--------------|
| Total Suspended Solids | 0.250U | 0.500 | 0.150 | mg/L |

Batch Information

Analytical Batch: STS4422

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Analytical Date/Time: 6/26/2014 1:20:59PM

Print Date: 06/30/2014 12:40:01PM



Duplicate Sample Summary

Original Sample ID: 1142617001

Duplicate Sample ID: 1216921

QC for Samples:

1142617001, 1142617002, 1142617005

Analysis Date: 06/26/2014 13:20

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 | 16.0 | 17.0 | 6.10* | 5.00 |

Batch Information

Analytical Batch: STS4422

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 06/30/2014 12:40:02PM



Duplicate Sample Summary

Original Sample ID: 1142617005

Duplicate Sample ID: 1216922

Analysis Date: 06/26/2014 13:20

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1142617002, 1142617005, 1142617006, 1142617007, 1142617008, 1142617009, 1142617010, 1142617011, 1142617012, 1142617013, 1142617014

Results by SM21 2540D

| <u>NAME</u> | <u>Original ()</u> | <u>Duplicate ()</u> | <u>RPD (%)</u> | <u>RPD CL</u> |
|------------------------|---------------------|----------------------|----------------|---------------|
| Total Suspended Solids | 3.67 | 5.33 | 37.00* | 5.00 |

Batch Information

Analytical Batch: STS4422

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 06/30/2014 12:40:02PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1142617 [STS4422]
Blank Spike Lab ID: 1216919
Date Analyzed: 06/26/2014 13:20

Spike Duplicate ID: LCSD for HBN 1142617 [STS4422]
Spike Duplicate Lab ID: 1216920
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1142617001, 1142617002, 1142617005, 1142617006, 1142617007, 1142617008, 1142617009, 1142617010, 1142617011, 1142617012, 1142617013, 1142617014

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 | 45.9 | 92 | 50 | 46.0 | 92 | (75-125) | 0.22 | (< 5) |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Instrument:
Analyst: WLF

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

Print Date: 06/30/2014 12:40:02PM



Method Blank

Blank ID: MB for HBN 1583465 [VXX/26030]
Blank Lab ID: 1216425

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1142617002, 1142617005, 1142617008, 1142617010, 1142617013, 1142617015

Results by EPA 602/624

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|-----------------------|----------------|---------------|-----------|--------------|
| 1,2-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,3-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,4-Dichlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Benzene | 0.200U | 0.400 | 0.120 | ug/L |
| Chlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Ethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| o-Xylene | 0.500U | 1.00 | 0.310 | ug/L |
| P & M -Xylene | 1.00U | 2.00 | 0.620 | ug/L |
| Toluene | 0.500U | 1.00 | 0.310 | ug/L |
| Surrogates | | | | |
| 1,2-Dichloroethane-D4 | 116 | 70-120 | | % |
| 4-Bromofluorobenzene | 109 | 75-120 | | % |
| Toluene-d8 | 107 | 85-120 | | % |

Batch Information

Analytical Batch: VMS14228
Analytical Method: EPA 602/624
Instrument: VPA 780/5975 GC/MS
Analyst: NRB
Analytical Date/Time: 6/23/2014 5:06:00PM

Prep Batch: VXX26030
Prep Method: SW5030B
Prep Date/Time: 6/23/2014 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 06/30/2014 12:40:03PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1142617 [VXX26030]
 Blank Spike Lab ID: 1216426
 Date Analyzed: 06/23/2014 17:51

Spike Duplicate ID: LCSD for HBN 1142617
 [VXX26030]
 Spike Duplicate Lab ID: 1216427
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1142617002, 1142617005, 1142617008, 1142617010, 1142617013, 1142617015

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 | 30.4 | 101 | 30 | 29.3 | 98 | (70-120) | 3.70 | (< 20) |
| 1,3-Dichlorobenzene | 30 | 31.4 | 105 | 30 | 32.1 | 107 | (75-125) | 2.20 | (< 20) |
| 1,4-Dichlorobenzene | 30 | 31.3 | 104 | 30 | 32.1 | 107 | (75-125) | 2.30 | (< 20) |
| Benzene | 30 | 30.3 | 101 | 30 | 29.3 | 98 | (80-120) | 3.40 | (< 20) |
| Chlorobenzene | 30 | 33.0 | 110 | 30 | 30.2 | 101 | (80-120) | 8.80 | (< 20) |
| Ethylbenzene | 30 | 34.6 | 115 | 30 | 31.0 | 103 | (75-125) | 11.00 | (< 20) |
| o-Xylene | 30 | 34.4 | 115 | 30 | 30.6 | 102 | (80-120) | 11.50 | (< 20) |
| P & M -Xylene | 60 | 69.6 | 116 | 60 | 62.6 | 104 | (75-130) | 10.70 | (< 20) |
| Toluene | 30 | 32.3 | 108 | 30 | 29.0 | 97 | (75-120) | 10.90 | (< 20) |

Surrogates

| | | | | | | | | | |
|-----------------------|----|--|-----|----|--|-----|------------|------|--|
| 1,2-Dichloroethane-D4 | 30 | | 96 | 30 | | 96 | (70-120) | 0.45 | |
| 4-Bromofluorobenzene | 30 | | 104 | 30 | | 109 | (75-120) | 4.50 | |
| Toluene-d8 | 30 | | 111 | 30 | | 104 | (85-120) | 6.10 | |

Batch Information

Analytical Batch: **VMS14228**
 Analytical Method: **EPA 602/624**
 Instrument: **VPA 780/5975 GC/MS**
 Analyst: **NRB**

Prep Batch: **VXX26030**
 Prep Method: **SW5030B**
 Prep Date/Time: **06/23/2014 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dup Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 06/30/2014 12:40:03PM



Billable Matrix Spike Summary

Original Sample ID: 1142617002
MS Sample ID: 1142617003 BMS
MSD Sample ID: 1142617004 BMSD

Analysis Date: 06/24/2014 1:10
Analysis Date: 06/23/2014 21:45
Analysis Date: 06/23/2014 22:03
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 | 29.5 | 98 | 30.0 | 29.7 | 99 | 70-120 | 0.88 | (< 20) |
| 1,3-Dichlorobenzene | 1.00U | 30.0 | 30.1 | 100 | 30.0 | 30.3 | 101 | 75-125 | 0.56 | (< 20) |
| 1,4-Dichlorobenzene | 0.500U | 30.0 | 29.9 | 100 | 30.0 | 30.1 | 100 | 75-125 | 0.67 | (< 20) |
| Benzene | 0.400U | 30.0 | 29.6 | 99 | 30.0 | 29.4 | 98 | 80-120 | 0.81 | (< 20) |
| Chlorobenzene | 0.500U | 30.0 | 29.6 | 99 | 30.0 | 30.3 | 101 | 80-120 | 2.30 | (< 20) |
| Ethylbenzene | 1.00U | 30.0 | 31.5 | 105 | 30.0 | 30.8 | 103 | 75-125 | 2.30 | (< 20) |
| o-Xylene | 1.00U | 30.0 | 27.7 | 92 | 30.0 | 30.5 | 102 | 80-120 | 9.80 | (< 20) |
| P & M -Xylene | 2.00U | 60.0 | 55.9 | 93 | 60.0 | 62.1 | 104 | 75-130 | 10.60 | (< 20) |
| Toluene | 1.00U | 30.0 | 29.9 | 100 | 30.0 | 29.1 | 97 | 75-120 | 2.70 | (< 20) |
| Surrogates | | | | | | | | | | |
| 1,2-Dichloroethane-D4 | | 30.0 | 28.9 | 96 | 30.0 | 29.9 | 100 | 70-120 | 3.60 | |
| 4-Bromofluorobenzene | | 30.0 | 28.4 | 95 | 30.0 | 28.3 | 94 | 75-120 | 0.53 | |
| Toluene-d8 | | 30.0 | 31.8 | 106 | 30.0 | 32.1 | 107 | 85-120 | 0.85 | |

Batch Information

Analytical Batch: VMS14228
Analytical Method: EPA 602/624
Instrument: VPA 780/5975 GC/MS
Analyst: NRB
Analytical Date/Time: 6/23/2014 9:45:00PM

Prep Batch: VXX26030
Prep Method: Volatiles Extraction 8240/8260 FULL
Prep Date/Time: 6/23/2014 6:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 06/30/2014 12:40:04PM



Method Blank

Blank ID: MB for HBN 1582170 [XXX/31236]
Blank Lab ID: 1215906

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1142617002, 1142617005, 1142617008, 1142617010, 1142617013

Results by EPA 625M SIMS (PAH)

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|--------------------------|----------------|---------------|-----------|--------------|
| Acenaphthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Acenaphthylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo(a)Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[a]pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[b]Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[g,h,i]perylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[k]fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Chrysene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Dibenzo[a,h]anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluorene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Naphthalene | 0.0500U | 0.100 | 0.0310 | ug/L |
| Phenanthrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Surrogates | | | | |
| 2-Fluorobiphenyl | 84.4 | 50-110 | | % |
| Terphenyl-d14 | 108 | 50-135 | | % |

Batch Information

Analytical Batch: XMS8106
Analytical Method: EPA 625M SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 6/23/2014 1:26:00PM

Prep Batch: XXX31236
Prep Method: SW3520C
Prep Date/Time: 6/22/2014 8:45:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 06/30/2014 12:40:04PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1142617 [XXX31236]
 Blank Spike Lab ID: 1215907
 Date Analyzed: 06/23/2014 13:41

Spike Duplicate ID: LCSD for HBN 1142617
 [XXX31236]
 Spike Duplicate Lab ID: 1215908
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1142617002, 1142617005, 1142617008, 1142617010, 1142617013

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 | 0.378 | 76 | (45-110) | 4.30 | (< 30) |
| Acenaphthylene | 0.5 | 0.380 | 76 | 0.5 | 0.370 | 74 | (50-105) | 2.70 | (< 30) |
| Anthracene | 0.5 | 0.439 | 88 | 0.5 | 0.421 | 84 | (55-110) | 4.20 | (< 30) |
| Benzo(a)Anthracene | 0.5 | 0.421 | 84 | 0.5 | 0.401 | 80 | (55-110) | 4.80 | (< 30) |
| Benzo[a]pyrene | 0.5 | 0.418 | 84 | 0.5 | 0.396 | 79 | (55-110) | 5.50 | (< 30) |
| Benzo[b]Fluoranthene | 0.5 | 0.421 | 84 | 0.5 | 0.417 | 83 | (45-120) | 0.89 | (< 30) |
| Benzo[g,h,i]perylene | 0.5 | 0.442 | 88 | 0.5 | 0.409 | 82 | (40-125) | 7.70 | (< 30) |
| Benzo[k]fluoranthene | 0.5 | 0.485 | 97 | 0.5 | 0.446 | 89 | (45-125) | 8.50 | (< 30) |
| Chrysene | 0.5 | 0.468 | 94 | 0.5 | 0.471 | 94 | (55-110) | 0.72 | (< 30) |
| Dibenzo[a,h]anthracene | 0.5 | 0.414 | 83 | 0.5 | 0.390 | 78 | (40-125) | 5.90 | (< 30) |
| Fluoranthene | 0.5 | 0.436 | 87 | 0.5 | 0.428 | 86 | (55-115) | 2.00 | (< 30) |
| Fluorene | 0.5 | 0.415 | 83 | 0.5 | 0.404 | 81 | (50-110) | 2.70 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.5 | 0.437 | 87 | 0.5 | 0.403 | 81 | (45-125) | 7.90 | (< 30) |
| Naphthalene | 0.5 | 0.338 | 68 | 0.5 | 0.328 | 66 | (40-100) | 3.20 | (< 30) |
| Phenanthrene | 0.5 | 0.439 | 88 | 0.5 | 0.426 | 85 | (50-115) | 2.90 | (< 30) |
| Pyrene | 0.5 | 0.419 | 84 | 0.5 | 0.416 | 83 | (50-130) | 0.64 | (< 30) |
| Surrogates | | | | | | | | | |
| 2-Fluorobiphenyl | 0.5 | | 91 | 0.5 | | 86 | (50-110) | 6.00 | |
| Terphenyl-d14 | 0.5 | | 108 | 0.5 | | 102 | (50-135) | 5.50 | |

Batch Information

Analytical Batch: XMS8106
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS

Prep Batch: XXX31236
 Prep Method: SW3520C
 Prep Date/Time: 06/22/2014 08:45
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL
 Dup Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Print Date: 06/30/2014 12:40:05PM



Billable Matrix Spike Summary

Original Sample ID: 1142617002
 MS Sample ID: 1142617003 BMS
 MSD Sample ID: 1142617004 BMSD

Analysis Date: 06/23/2014 14:44
 Analysis Date: 06/23/2014 14:59
 Analysis Date: 06/23/2014 15:15
 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 | 0.0510U | 0.515 | .355 | 69 | 0.500 | 0.388 | 78 | 45-110 | 9.00 | (< 30) |
| Acenaphthylene | 0.0510U | 0.515 | .341 | 66 | 0.500 | 0.370 | 74 | 50-105 | 8.20 | (< 30) |
| Anthracene | 0.0510U | 0.515 | .391 | 76 | 0.500 | 0.427 | 86 | 55-110 | 8.90 | (< 30) |
| Benzo(a)Anthracene | 0.0510U | 0.515 | .313 | 61 | 0.500 | 0.348 | 70 | 55-110 | 10.60 | (< 30) |
| Benzo[a]pyrene | 0.0510U | 0.515 | .194 | 38 * | 0.500 | 0.215 | 43 * | 55-110 | 10.30 | (< 30) |
| Benzo[b]Fluoranthene | 0.0510U | 0.515 | .261 | 51 | 0.500 | 0.306 | 61 | 45-120 | 15.80 | (< 30) |
| Benzo[g,h,i]perylene | 0.0510U | 0.515 | .152 | 30 * | 0.500 | 0.176 | 35 * | 40-125 | 14.60 | (< 30) |
| Benzo[k]fluoranthene | 0.0510U | 0.515 | .208 | 40 * | 0.500 | 0.231 | 46 | 45-125 | 10.40 | (< 30) |
| Chrysene | 0.0510U | 0.515 | .389 | 76 | 0.500 | 0.431 | 86 | 55-110 | 10.00 | (< 30) |
| Dibenzo[a,h]anthracene | 0.0510U | 0.515 | .121 | 24 * | 0.500 | 0.142 | 29 * | 40-125 | 16.00 | (< 30) |
| Fluoranthene | 0.139 | 0.515 | .519 | 74 | 0.500 | 0.603 | 93 | 55-115 | 15.10 | (< 30) |
| Fluorene | 0.0510U | 0.515 | .368 | 71 | 0.500 | 0.417 | 83 | 50-110 | 12.50 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.0510U | 0.515 | .144 | 28 * | 0.500 | 0.164 | 33 * | 45-125 | 13.00 | (< 30) |
| Naphthalene | 0.102U | 0.515 | .317 | 62 | 0.500 | 0.360 | 72 | 40-100 | 12.70 | (< 30) |
| Phenanthrene | 0.0510U | 0.515 | .433 | 84 | 0.500 | 0.484 | 97 | 50-115 | 11.20 | (< 30) |
| Pyrene | 0.0675 | 0.515 | .438 | 72 | 0.500 | 0.493 | 85 | 50-130 | 11.90 | (< 30) |
| Surrogates | | | | | | | | | | |
| 2-Fluorobiphenyl | | 0.515 | .465 | 90 | 0.500 | 0.470 | 94 | 50-110 | 1.00 | |
| Terphenyl-d14 | | 0.515 | .555 | 108 | 0.500 | 0.581 | 116 | 50-135 | 4.60 | |

Batch Information

Analytical Batch: XMS8106
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS
 Analytical Date/Time: 6/23/2014 2:59:00PM

Prep Batch: XXX31236
 Prep Method: Liquid/Liquid Extraction for 625 SIMS
 Prep Date/Time: 6/22/2014 8:45:44AM
 Prep Initial Wt./Vol.: 970.00mL
 Prep Extract Vol: 1.00mL

Print Date: 06/30/2014 12:40:05PM

Chain of Custody Record

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | From: Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |
| SGS Quote No. 9901 Date Received: 1142617 Lab # | Project #: 5078 Matrix: Water in sodium thiosulfate for dechlorination |

| | |
|--------------------------------------------------------------------------|----------------------------|
| Project: MOA Stormwater Management Complete by: 2 weeks | Barcode Project #: 5078 |
|--------------------------------------------------------------------------|----------------------------|

| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|------------------|------------|-------------|-------------|-------------|------------------|----------------|--------|----------------|--------|------------------------|
| ① A SWM01-01 | 1040-3 | 6/21/14 | 0954 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ② A SWM02-01 | 847-1 | | 1025 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ③ A SWM02-01 Dup | 847-1 | | 1025 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ④ A SWM03-01 | 1224-1 | | 1059 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑤ A SWM04-01 | 1224-2 | | 1110 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑥ A SWM05-01 | 207-1 | | 1135 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑦ A SWM06-01 | 314-22 | | 1206 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑧ A SWM07-01 | 484-1 | | 1210 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑨ A SWM08-01 | 86-1 | | 1230 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑩ A SWM08-01 Dup | 86-1 | | 1230 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑪ A SWM09-01 | 499-1 | | 1315 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑫ A SWM10-01 | 525-2 | ✓ | 1315 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |

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: <i>Man Avon</i> | Received By: <i>[Signature]</i> |
| Date/Time: 6/21/14 | Date/Time: |
| Relinquished By: <i>[Signature]</i> | Received By: <i>[Signature]</i> |
| Date/Time: | Date/Time: 6/21/14 1430 |

Chain of Custody Record

To: SGS Environmental Services, Inc.
2100 West Potter Drive
Anchorage, AK 99518
(907) 562-2343
(907) 561-5301 Fax
Contact: Forest Taylor

From: Kinnetic Laboratories, Inc
1102 West 7th Avenue
Anchorage, AK 99501
(907) 276-6178
(907) 278-6881 Fax
Contact: Mark Savoie

SGS Quote No. 9901
Date Received: **1142617**
Lab #



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 |
|----------------|------------|-------------|-------------|-------------|----------------|-----------|--------|----------------|--------|------------------------|
| ① SWM01-01 | 1040-3 | 6/21/14 | 0954 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ② SWM02-01 | 847-1 | | 1025 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ③ SWM02-01 Dup | 847-1 | | 1025 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ④ SWM03-01 | 1224-1 | | 1059 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑤ SWM04-01 | 1224-2 | | 1110 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑥ SWM05-01 | 207-1 | | 1135 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑦ SWM06-01 | 314-22 | | 1204 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑧ SWM07-01 | 484-1 | | 1240 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑨ SWM08-01 | 86-1 | | 1230 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑩ SWM08-01 Dup | 86-1 | | 1230 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑪ SWM09-01 | 499-1 | | 1315 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑫ SWM10-01 | 525-2 | | 1335 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |

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>Manahua</i> | 6/21/14 | <i>hand</i> | | |
| | | | <i>Teri Duogor</i> | 6/21/14 14:01 |

Chain of Custody Record

To: SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 (907) 561-5301 Fax
 Contact: Forest Taylor

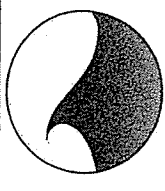
From: Kinnetic Laboratories, Inc
 1102 West 7th Avenue
 Anchorage, AK 99501
 (907) 276-6178
 (907) 278-6881 Fax
 Contact: Mark Savoie

SGS Quote No. 9901
Date Received:
Lal 1142617



Project: MOA Stormwater Management
Complete by: 2 weeks

Matrix: Water **Project #:** 5078




| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|------------------|------------|-------------|-------------|-------------|----------------|-----------|--------|----------------|--------|------------------------|
| ① C SWM01-01 | 1040-3 | 6/21/14 | 0954 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ② C SWM02-01 | 847-1 | | 1025 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑤ C SWM02-01 Dup | 847-1 | | 1025 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑥ C SWM03-01 | 1224-1 | | 1059 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑦ C SWM04-01 | 1224-2 | | 1110 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑧ C SWM05-01 | 207-1 | | 1135 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑨ C SWM06-01 | 314-22 | | 1206 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑩ C SWM07-01 | 484-1 | | 1240 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑪ C SWM08-01 | 86-1 | | 1230 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑫ C SWM08-01 Dup | 86-1 | | 1230 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑬ C SWM09-01 | 499-1 | | 1315 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑭ C SWM10-01 | 525-2 | | 1335 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |

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>Maria Juan</i> | 6/21/14 | <i>hand</i> | <i>[Signature]</i> | |
| <i>[Signature]</i> | | | <i>[Signature]</i> | 6/21/14 14:01 |

Chain of Custody Record

| | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | SGS Quote No. 9901 Date Received: 1142617  L | 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 Complete by: 2 weeks | | Project #: 5078 |
| Matrix: Water | | |

| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|-----------------------|------------|-------------|-------------|-------------|-------------------|-----------|-----------|----------------|--------|------------------------|
| ② DF SWM02-01 ③ AC | 847-1 | 6/21/14 | 1025 | Samp/MS/MSD | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 9 | | |
| ⑤ DF SWM02-01 Dup | 847-1 | | 1025 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑧ DF SWM05-01 | 207-1 | | 1135 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑩ DF SWM07-01 | 484-1 | | 1240 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑬ DF SWM09-01 | 499-1 | | 1315 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑮ AC Trip Blank | N/A | N/A | N/A | TB | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
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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: | Transporter: | Received By: | Date/Time: |
| <i>Mark Taylor</i> | <i>hms</i> | <i>Mark Taylor</i> | 6/21/14 |
| Relinquished By: | Transporter: | Received By: | Date/Time: |
| <i>Mark Taylor</i> | <i>hms</i> | <i>Mark Taylor</i> | 6/21/14 14:01 |

Chain of Custody Record

To: SGS Environmental Services, Inc.
2100 West Potter Drive
Anchorage, AK 99518
(907) 562-2343
(907) 561-5301 Fax
Contact: Forest Taylor

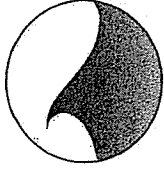
SGS Quote No. 9901

Date Received:

1142617



From: Kinnetic Laboratories, Inc
1102 West 7th Avenue
Anchorage, AK 99501
(907) 276-6178
(907) 278-6881 Fax
Contact: Mark Savoie



Matrix: Water Project #: 5078

Project: MOA Stormwater Manag

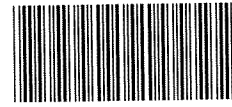
Complete by: 2 weeks

| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|-------------------------------|------------|-------------|-------------|-------------|---------------------|-----------|--------|----------------|--------|------------------------|
| ② 4-H SWM02-01 ③ D-E ④ D-E | 847-1 | 6/21/14 | 1025 | Samp/MS/MSD | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 6 | | |
| ⑤ G-SW02-01 Dup | 847-1 | | 1025 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑥ G-H SWM05-01 | 207-1 | | 1135 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑦ G-K SWM07-01 | 484-1 | | 1240 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑧ G-H SWM09-01 | 499-1 | √ | 1315 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
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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>Mark Taylor</i> | 6/21/14 | <i>hand</i> | <i>[Signature]</i> | |
| Relinquished By: | Date/Time: | Transporter: | Received By: | Date/Time: |
| <i>[Signature]</i> | | | <i>Terri Duoege</i> | 6/21/14 14:01 |



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</u> @ <u>2.4</u> w/ Therm.ID: <u>241</u> Cooler ID: <u>2</u> @ <u>3.6</u> w/ Therm.ID: <u>246</u> Cooler ID: <u>3</u> @ <u>2.6</u> w/ Therm.ID: <u>241</u> Cooler ID: <u>4</u> @ <u>4.0</u> w/ Therm.ID: <u>241</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? | <u>Yes</u> No N/A Yes No <u>N/A</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 <u>or N/A</u> Yes No <u>N/A</u> | |
| → 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. | | <u>N/A</u> SRF Initiated by: <u>TLD</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 <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 | <u>CRD 6/21/14</u> <u>A-C had no sample times or date collected, COC dated and times were used.</u> <u>(14) A-C as well</u> |
| 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 | |
| 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 <u>Yes</u> 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 Yes <u>No</u> N/A | <u>*</u> |
| For special handling (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)? | <u>Yes</u> No <u>N/A</u> <u>TLD</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? | Yes No N/A | <u>BOD, fecal</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 N/A | SRF Completed by: <u>TLD</u> PM = <u>N/A</u> |
| Was PEER REVIEW of sample numbering/labeling completed? | Yes No N/A | Peer Reviewed by: <u>N/A</u> |

Additional notes (if applicable):
* Container 2D-F, 8-D-F, 10 & D-F, 13D-F were not in cooler with the trip Blank.

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



Sample Containers and Preservatives

| <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> | <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> |
|---------------------|-------------------------------------------------------------------|----------------------------|---------------------|-------------------------------------------------------------------|----------------------------|
| 1142617001-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1142617008-H | No Preservative Required | OK |
| 1142617001-B | No Preservative Required | OK | 1142617009-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1142617001-C | No Preservative Required | OK | 1142617009-B | No Preservative Required | OK |
| 1142617002-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1142617009-C | No Preservative Required | OK |
| 1142617002-B | No Preservative Required | OK | 1142617010-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1142617002-C | No Preservative Required | OK | 1142617010-B | No Preservative Required | OK |
| 1142617002-D | HCL to pH < 2 | OK | 1142617010-C | No Preservative Required | OK |
| 1142617002-E | HCL to pH < 2 | OK | 1142617010-D | HCL to pH < 2 | OK |
| 1142617002-F | HCL to pH < 2 | OK | 1142617010-E | HCL to pH < 2 | OK |
| 1142617002-G | No Preservative Required | OK | 1142617010-F | HCL to pH < 2 | OK |
| 1142617002-H | No Preservative Required | OK | 1142617010-G | No Preservative Required | OK |
| 1142617003-A | HCL to pH < 2 | OK | 1142617010-H | No Preservative Required | OK |
| 1142617003-B | HCL to pH < 2 | OK | 1142617011-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1142617003-C | HCL to pH < 2 | OK | 1142617011-B | No Preservative Required | OK |
| 1142617003-D | No Preservative Required | OK | 1142617011-C | No Preservative Required | OK |
| 1142617003-E | No Preservative Required | OK | 1142617012-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1142617004-A | HCL to pH < 2 | OK | 1142617012-B | No Preservative Required | OK |
| 1142617004-B | HCL to pH < 2 | OK | 1142617012-C | No Preservative Required | OK |
| 1142617004-C | HCL to pH < 2 | OK | 1142617013-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1142617004-D | No Preservative Required | OK | 1142617013-B | No Preservative Required | OK |
| 1142617004-E | No Preservative Required | OK | 1142617013-C | No Preservative Required | OK |
| 1142617005-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1142617013-D | HCL to pH < 2 | OK |
| 1142617005-B | No Preservative Required | OK | 1142617013-E | HCL to pH < 2 | OK |
| 1142617005-C | No Preservative Required | OK | 1142617013-F | HCL to pH < 2 | OK |
| 1142617005-D | HCL to pH < 2 | OK | 1142617013-G | No Preservative Required | OK |
| 1142617005-E | HCL to pH < 2 | OK | 1142617013-H | No Preservative Required | OK |
| 1142617005-F | HCL to pH < 2 | OK | 1142617014-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1142617005-G | No Preservative Required | OK | 1142617014-B | No Preservative Required | OK |
| 1142617005-H | No Preservative Required | OK | 1142617014-C | No Preservative Required | OK |
| 1142617006-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1142617015-A | HCL to pH < 2 | OK |
| 1142617006-B | No Preservative Required | OK | 1142617015-B | HCL to pH < 2 | OK |
| 1142617006-C | No Preservative Required | OK | 1142617015-C | HCL to pH < 2 | OK |
| 1142617007-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | | | |
| 1142617007-B | No Preservative Required | OK | | | |
| 1142617007-C | No Preservative Required | OK | | | |
| 1142617008-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | | | |
| 1142617008-B | No Preservative Required | OK | | | |
| 1142617008-C | No Preservative Required | OK | | | |
| 1142617008-D | HCL to pH < 2 | OK | | | |
| 1142617008-E | HCL to pH < 2 | OK | | | |
| 1142617008-F | HCL to pH < 2 | OK | | | |
| 1142617008-G | No Preservative Required | OK | | | |

Appendix B2

Laboratory Data Package Storm Event #2

Intentionally left blank



Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.
704 W 2nd Avenue
Anchorage, AK 99501
(907)276-6178

Report Number: **1143039**

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 Forest 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.

Forest Taylor
Project Manager
Forest.Taylor@sgs.com

Date

Print Date: 07/17/2014 1:35:05PM

Case Narrative

SGS Client: **Kinnetic Laboratories, Inc.**
SGS Project: **1143039**
Project Name/Site: **5078 MOA Stormwater Management**
Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

SWM07-02 (1143039010) PS

8270D SIM - Benzo[k]fluoranthene integrated as benzo[b]fluoranthene due to colution with benzo[b]fluoranthene peak.

SWM09-02 (1143039013) PS

8270D SIM - Benzo[k]fluoranthene integrated as benzo[b]fluoranthene due to colution with benzo[b]fluoranthene peak.

1143046005DUP (1219830) DUP

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. Refer to LCS/LCSD RPD for batch precision.

*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: 07/17/2014 1:35:07PM

Report of Manual Integrations

| <u>Laboratory ID</u> | <u>Client Sample ID</u> | <u>Analytical Batch</u> | <u>Analyte</u> | <u>Reason</u> |
|----------------------------|-------------------------|-------------------------|----------------------|---------------|
| EPA 625M SIMS (PAH) | | | | |
| 1143039010 | SWM07-02 | XMS8153 | Benzo[b]Fluoranthene | IT |
| 1143039013 | SWM09-02 | XMS8153 | 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.

Print Date: 07/17/2014 1:35:08PM

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>), 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., 1/2 of the LOQ) |
| 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 | 1143039001 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM02-02 | 1143039002 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM02-02 MS | 1143039003 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM02-02 MSD | 1143039004 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM02-02 DUP | 1143039005 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM03-02 | 1143039006 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM04-02 | 1143039007 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM05-02 | 1143039008 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM06-02 | 1143039009 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM07-02 | 1143039010 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM08-02 | 1143039011 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM08-02 DUP | 1143039012 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM09-02 | 1143039013 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM10-02 | 1143039014 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| Trip Blank | 1143039015 | 07/10/2014 | 07/10/2014 | 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: 1143039001 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| Waters Department | Fecal Coliform | 8.0 | col/100mL |
| | Total Suspended Solids | 7.67 | mg/L |
| Client Sample ID: SWM02-02 | | | |
| Lab Sample ID: 1143039002 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| | Fecal Coliform | 27 | col/100mL |
| Client Sample ID: SWM02-02 DUP | | | |
| Lab Sample ID: 1143039005 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| | Fecal Coliform | 20 | col/100mL |
| Client Sample ID: SWM03-02 | | | |
| Lab Sample ID: 1143039006 | | | |
| Waters Department | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| | Total Suspended Solids | 1.67 | mg/L |
| Client Sample ID: SWM04-02 | | | |
| Lab Sample ID: 1143039007 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| Waters Department | Fecal Coliform | 81 | col/100mL |
| | Total Suspended Solids | 2.67 | mg/L |
| Client Sample ID: SWM05-02 | | | |
| Lab Sample ID: 1143039008 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| Waters Department | Biochemical Oxygen Demand | 2.87 | mg/L |
| | Total Suspended Solids | 4.00 | mg/L |
| Client Sample ID: SWM06-02 | | | |
| Lab Sample ID: 1143039009 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| | Biochemical Oxygen Demand | 10.7 | mg/L |
| | Fecal Coliform | 220 | col/100mL |
| Waters Department | Total Suspended Solids | 300 | mg/L |
| Client Sample ID: SWM07-02 | | | |
| Lab Sample ID: 1143039010 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| | Biochemical Oxygen Demand | 10.1 | mg/L |
| | Fecal Coliform | 3500 | col/100mL |
| Polynuclear Aromatics GC/MS | Benzo[b]Fluoranthene | 0.157 | ug/L |
| | Benzo[g,h,i]perylene | 0.117 | ug/L |
| | Chrysene | 0.177 | ug/L |
| | Fluoranthene | 0.173 | ug/L |
| | Phenanthrene | 0.116 | ug/L |
| | Pyrene | 0.193 | ug/L |
| Waters Department | Total Suspended Solids | 278 | mg/L |
| Client Sample ID: SWM08-02 | | | |
| Lab Sample ID: 1143039011 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| | Biochemical Oxygen Demand | 11.8 | mg/L |
| | Fecal Coliform | 9000 | col/100mL |
| Waters Department | Total Suspended Solids | 227 | mg/L |

Print Date: 07/17/2014 1:35:11PM

Detectable Results Summary

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

Lab Sample ID: 1143039012

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 9.72 | mg/L |
| Fecal Coliform | 13000 | col/100mL |
| Total Suspended Solids | 242 | mg/L |

Client Sample ID: **SWM09-02**

Lab Sample ID: 1143039013

Microbiology Laboratory

Polynuclear Aromatics GC/MS

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 7.32 | mg/L |
| Fecal Coliform | 2900 | col/100mL |
| Benzo(a)Anthracene | 0.101 | ug/L |
| Benzo[a]pyrene | 0.114 | ug/L |
| Benzo[b]Fluoranthene | 0.354 | ug/L |
| Benzo[g,h,i]perylene | 0.140 | ug/L |
| Chrysene | 0.247 | ug/L |
| Fluoranthene | 0.470 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.109 | ug/L |
| Phenanthrene | 0.170 | ug/L |
| Pyrene | 0.309 | ug/L |
| Total Suspended Solids | 63.5 | mg/L |

Waters Department

Client Sample ID: **SWM10-02**

Lab Sample ID: 1143039014

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.35 | mg/L |
| Fecal Coliform | 1600 | col/100mL |
| Total Suspended Solids | 50.0 | mg/L |



Results of SWM01-02

Client Sample ID: **SWM01-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039001
Lab Project ID: 1143039

Collection Date: 07/10/14 09:27
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039001-B

| <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 | | 07/10/14 17:23 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 17:23
Container ID: 1143039001-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM01-02

Client Sample ID: **SWM01-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039001
Lab Project ID: 1143039

Collection Date: 07/10/14 09:27
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 7.67 | 1.67 | 0.500 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039001-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM02-02

Client Sample ID: **SWM02-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039002
Lab Project ID: 1143039

Collection Date: 07/10/14 09:58
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039002-B

| <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 | 27 | 1.00 | 1.00 | col/100mL | 1 | | 07/10/14 17:23 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 17:23
Container ID: 1143039002-A

Print Date: 07/17/2014 1:35:12PM



Results of **SWM02-02**

Client Sample ID: **SWM02-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039002
Lab Project ID: 1143039

Collection Date: 07/10/14 09:58
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Acenaphthylene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Anthracene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Benzo(a)Anthracene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Benzo[a]pyrene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Benzo[b]Fluoranthene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Benzo[g,h,i]perylene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Benzo[k]fluoranthene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Chrysene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Dibenzo[a,h]anthracene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Fluoranthene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Fluorene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Indeno[1,2,3-c,d] pyrene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Naphthalene | 0.119 U | 0.119 | 0.0369 | ug/L | 1 | | 07/15/14 15:00 |
| Phenanthrene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Pyrene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 80.2 | 50-110 | | % | 1 | | 07/15/14 15:00 |
| Terphenyl-d14 | 94.4 | 50-135 | | % | 1 | | 07/15/14 15:00 |

Batch Information

Analytical Batch: XMS8153
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 07/15/14 15:00
Container ID: 1143039002-D

Prep Batch: XXX31391
Prep Method: SW3520C
Prep Date/Time: 07/12/14 10:45
Prep Initial Wt./Vol.: 840 mL
Prep Extract Vol: 1 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM02-02

Client Sample ID: **SWM02-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039002
Lab Project ID: 1143039

Collection Date: 07/10/14 09:58
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/15/14 11:31 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 11:31 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 11:31 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 07/15/14 11:31 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 11:31 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 11:31 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 11:31 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 07/15/14 11:31 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 11:31 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 100 | 70-120 | | % | 1 | | 07/15/14 11:31 |
| 4-Bromofluorobenzene | 103 | 75-120 | | % | 1 | | 07/15/14 11:31 |
| Toluene-d8 | 99.1 | 85-120 | | % | 1 | | 07/15/14 11:31 |

Batch Information

Analytical Batch: VMS14277
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 07/15/14 11:31
Container ID: 1143039002-F

Prep Batch: VXX26115
Prep Method: SW5030B
Prep Date/Time: 07/15/14 05:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM02-02

Client Sample ID: **SWM02-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039002
Lab Project ID: 1143039

Collection Date: 07/10/14 09:58
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039002-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM02-02 DUP

Client Sample ID: **SWM02-02 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039005
Lab Project ID: 1143039

Collection Date: 07/10/14 10:06
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039005-B

| <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 | 20 | 1.00 | 1.00 | col/100mL | 1 | | 07/10/14 17:23 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 17:23
Container ID: 1143039005-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM02-02 DUP

Client Sample ID: SWM02-02 DUP
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1143039005
Lab Project ID: 1143039

Collection Date: 07/10/14 10:06
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS8153
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 07/15/14 15:46
Container ID: 1143039005-D

Prep Batch: XXX31391
Prep Method: SW3520C
Prep Date/Time: 07/12/14 10:45
Prep Initial Wt./Vol.: 965 mL
Prep Extract Vol: 1 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM02-02 DUP

Client Sample ID: **SWM02-02 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039005
Lab Project ID: 1143039

Collection Date: 07/10/14 10:06
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/15/14 13:43 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 13:43 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 13:43 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 07/15/14 13:43 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 13:43 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 13:43 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 13:43 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 07/15/14 13:43 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 13:43 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 102 | 70-120 | | % | 1 | | 07/15/14 13:43 |
| 4-Bromofluorobenzene | 104 | 75-120 | | % | 1 | | 07/15/14 13:43 |
| Toluene-d8 | 98.9 | 85-120 | | % | 1 | | 07/15/14 13:43 |

Batch Information

Analytical Batch: VMS14277
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 07/15/14 13:43
Container ID: 1143039005-F

Prep Batch: VXX26115
Prep Method: SW5030B
Prep Date/Time: 07/15/14 05:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM02-02 DUP

Client Sample ID: **SWM02-02 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039005
Lab Project ID: 1143039

Collection Date: 07/10/14 10:06
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039005-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM03-02

Client Sample ID: **SWM03-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039006
Lab Project ID: 1143039

Collection Date: 07/10/14 10:45
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039006-B

| <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 | 1.64 U | 1.64 | 1.64 | col/100mL | 1 | | 07/10/14 17:23 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 17:23
Container ID: 1143039006-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM03-02

Client Sample ID: **SWM03-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039006
Lab Project ID: 1143039

Collection Date: 07/10/14 10:45
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 1.67 | 1.67 | 0.500 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039006-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM04-02

Client Sample ID: **SWM04-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039007
Lab Project ID: 1143039

Collection Date: 07/10/14 10:51
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039007-B

| <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 | 81 | 9.01 | 9.01 | col/100mL | 1 | | 07/10/14 18:50 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 18:50
Container ID: 1143039007-A

Print Date: 07/17/2014 1:35:12PM



Results of **SWM04-02**

Client Sample ID: **SWM04-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039007
Lab Project ID: 1143039

Collection Date: 07/10/14 10:51
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.67 | 1.67 | 0.500 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039007-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM05-02

Client Sample ID: **SWM05-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039008
Lab Project ID: 1143039

Collection Date: 07/10/14 11:20
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.87 | 2.00 | 2.00 | mg/L | 1 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039008-B

| <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 | 1.64 U | 1.64 | 1.64 | col/100mL | 1 | | 07/10/14 18:50 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 18:50
Container ID: 1143039008-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM05-02

Client Sample ID: **SWM05-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039008
Lab Project ID: 1143039

Collection Date: 07/10/14 11:20
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Acenaphthylene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Anthracene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Benzo(a)Anthracene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Benzo[a]pyrene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Benzo[b]Fluoranthene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Benzo[g,h,i]perylene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Benzo[k]fluoranthene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Chrysene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Dibenzo[a,h]anthracene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Fluoranthene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Fluorene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Indeno[1,2,3-c,d] pyrene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Naphthalene | 0.109 U | 0.109 | 0.0337 | ug/L | 1 | | 07/15/14 16:02 |
| Phenanthrene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Pyrene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 58.3 | 50-110 | | % | 1 | | 07/15/14 16:02 |
| Terphenyl-d14 | 104 | 50-135 | | % | 1 | | 07/15/14 16:02 |

Batch Information

Analytical Batch: XMS8153
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 07/15/14 16:02
Container ID: 1143039008-D

Prep Batch: XXX31391
Prep Method: SW3520C
Prep Date/Time: 07/12/14 10:45
Prep Initial Wt./Vol.: 920 mL
Prep Extract Vol: 1 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM05-02

Client Sample ID: **SWM05-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039008
Lab Project ID: 1143039

Collection Date: 07/10/14 11:20
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/15/14 14:00 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:00 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 14:00 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 07/15/14 14:00 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 14:00 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:00 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:00 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 07/15/14 14:00 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:00 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 96 | 70-120 | | % | 1 | | 07/15/14 14:00 |
| 4-Bromofluorobenzene | 98.8 | 75-120 | | % | 1 | | 07/15/14 14:00 |
| Toluene-d8 | 97.4 | 85-120 | | % | 1 | | 07/15/14 14:00 |

Batch Information

Analytical Batch: VMS14277
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 07/15/14 14:00
Container ID: 1143039008-F

Prep Batch: VXX26115
Prep Method: SW5030B
Prep Date/Time: 07/15/14 05:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM05-02

Client Sample ID: **SWM05-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039008
Lab Project ID: 1143039

Collection Date: 07/10/14 11:20
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 4.00 | 2.50 | 0.750 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039008-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM06-02

Client Sample ID: **SWM06-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039009
Lab Project ID: 1143039

Collection Date: 07/10/14 12:00
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 10.7 | 2.00 | 2.00 | mg/L | 1 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039009-B

| <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 | 220 | 10.0 | 10.0 | col/100mL | 1 | | 07/10/14 18:50 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 18:50
Container ID: 1143039009-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM06-02

Client Sample ID: **SWM06-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039009
Lab Project ID: 1143039

Collection Date: 07/10/14 12:00
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 300 | 10.0 | 3.00 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039009-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM07-02

Client Sample ID: **SWM07-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039010
Lab Project ID: 1143039

Collection Date: 07/10/14 12:30
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 10.1 | 2.00 | 2.00 | mg/L | 1 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039010-B

| <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 | 3500 | 100 | 100 | col/100mL | 1 | | 07/10/14 19:08 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 19:08
Container ID: 1143039010-A

Print Date: 07/17/2014 1:35:12PM



Results of **SWM07-02**

Client Sample ID: **SWM07-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039010
Lab Project ID: 1143039

Collection Date: 07/10/14 12:30
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Acenaphthylene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Anthracene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Benzo(a)Anthracene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Benzo[a]pyrene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Benzo[b]Fluoranthene | 0.157 | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Benzo[g,h,i]perylene | 0.117 | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Benzo[k]fluoranthene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Chrysene | 0.177 | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Dibenzo[a,h]anthracene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Fluoranthene | 0.173 | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Fluorene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Indeno[1,2,3-c,d] pyrene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Naphthalene | 0.104 U | 0.104 | 0.0323 | ug/L | 1 | | 07/15/14 16:17 |
| Phenanthrene | 0.116 | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Pyrene | 0.193 | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 58.3 | 50-110 | | % | 1 | | 07/15/14 16:17 |
| Terphenyl-d14 | 91.4 | 50-135 | | % | 1 | | 07/15/14 16:17 |

Batch Information

Analytical Batch: XMS8153
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 07/15/14 16:17
Container ID: 1143039010-D

Prep Batch: XXX31391
Prep Method: SW3520C
Prep Date/Time: 07/12/14 10:45
Prep Initial Wt./Vol.: 960 mL
Prep Extract Vol: 1 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM07-02

Client Sample ID: **SWM07-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039010
Lab Project ID: 1143039

Collection Date: 07/10/14 12:30
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/16/14 08:51 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 08:51 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/16/14 08:51 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 07/16/14 08:51 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/16/14 08:51 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 08:51 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 08:51 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 07/16/14 08:51 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 08:51 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 101 | 70-120 | | % | 1 | | 07/16/14 08:51 |
| 4-Bromofluorobenzene | 103 | 75-120 | | % | 1 | | 07/16/14 08:51 |
| Toluene-d8 | 101 | 85-120 | | % | 1 | | 07/16/14 08:51 |

Batch Information

Analytical Batch: VMS14280
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 07/16/14 08:51
Container ID: 1143039010-F

Prep Batch: VXX26119
Prep Method: SW5030B
Prep Date/Time: 07/16/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM07-02

Client Sample ID: **SWM07-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039010
Lab Project ID: 1143039

Collection Date: 07/10/14 12:30
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 278 | 10.0 | 3.00 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039010-C

Print Date: 07/17/2014 1:35:12PM



Results of **SWM08-02**

Client Sample ID: **SWM08-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039011
Lab Project ID: 1143039

Collection Date: 07/10/14 12:41
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 11.8 | 2.00 | 2.00 | mg/L | 1 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039011-B

| <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 | 9000 | 100 | 100 | col/100mL | 1 | | 07/10/14 19:08 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 19:08
Container ID: 1143039011-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM08-02

Client Sample ID: **SWM08-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039011
Lab Project ID: 1143039

Collection Date: 07/10/14 12:41
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 227 | 5.00 | 1.50 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039011-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM08-02 DUP

Client Sample ID: **SWM08-02 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039012
Lab Project ID: 1143039

Collection Date: 07/10/14 12:41
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 9.72 | 2.00 | 2.00 | mg/L | 1 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039012-B

| <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 | 13000 | 100 | 100 | col/100mL | 1 | | 07/10/14 19:08 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 19:08
Container ID: 1143039012-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM08-02 DUP

Client Sample ID: **SWM08-02 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039012
Lab Project ID: 1143039

Collection Date: 07/10/14 12:41
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 242 | 5.00 | 1.50 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039012-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM09-02

Client Sample ID: **SWM09-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039013
Lab Project ID: 1143039

Collection Date: 07/10/14 13:10
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 7.32 | 2.00 | 2.00 | mg/L | 1 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039013-B

| <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 | 2900 | 100 | 100 | col/100mL | 1 | | 07/10/14 19:08 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 19:08
Container ID: 1143039013-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM09-02

Client Sample ID: **SWM09-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039013
Lab Project ID: 1143039

Collection Date: 07/10/14 13:10
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/15/14 16:33 |
| Acenaphthylene | 0.0552 U | 0.0552 | 0.0166 | ug/L | 1 | | 07/15/14 16:33 |
| Anthracene | 0.0552 U | 0.0552 | 0.0166 | ug/L | 1 | | 07/15/14 16:33 |
| Benzo(a)Anthracene | 0.101 | 0.0552 | 0.0166 | ug/L | 1 | | 07/15/14 16:33 |
| Benzo[a]pyrene | 0.114 | 0.0552 | 0.0166 | ug/L | 1 | | 07/15/14 16:33 |
| Benzo[b]Fluoranthene | 0.354 | 0.0552 | 0.0166 | ug/L | 1 | | 07/15/14 16:33 |
| Benzo[g,h,i]perylene | 0.140 | 0.0552 | 0.0166 | ug/L | 1 | | 07/15/14 16:33 |
| Benzo[k]fluoranthene | 0.0552 U | 0.0552 | 0.0166 | ug/L | 1 | | 07/15/14 16:33 |
| Chrysene | 0.247 | 0.0552 | 0.0166 | ug/L | 1 | | 07/15/14 16:33 |
| Dibenzo[a,h]anthracene | 0.0552 U | 0.0552 | 0.0166 | ug/L | 1 | | 07/15/14 16:33 |
| Fluoranthene | 0.470 | 0.0552 | 0.0166 | ug/L | 1 | | 07/15/14 16:33 |
| Fluorene | 0.0552 U | 0.0552 | 0.0166 | ug/L | 1 | | 07/15/14 16:33 |
| Indeno[1,2,3-c,d] pyrene | 0.109 | 0.0552 | 0.0166 | ug/L | 1 | | 07/15/14 16:33 |
| Naphthalene | 0.110 U | 0.110 | 0.0343 | ug/L | 1 | | 07/15/14 16:33 |
| Phenanthrene | 0.170 | 0.0552 | 0.0166 | ug/L | 1 | | 07/15/14 16:33 |
| Pyrene | 0.309 | 0.0552 | 0.0166 | ug/L | 1 | | 07/15/14 16:33 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 60.2 | 50-110 | | % | 1 | | 07/15/14 16:33 |
| Terphenyl-d14 | 107 | 50-135 | | % | 1 | | 07/15/14 16:33 |

Batch Information

Analytical Batch: XMS8153
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 07/15/14 16:33
Container ID: 1143039013-D

Prep Batch: XXX31391
Prep Method: SW3520C
Prep Date/Time: 07/12/14 10:45
Prep Initial Wt./Vol.: 905 mL
Prep Extract Vol: 1 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM09-02

Client Sample ID: **SWM09-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039013
Lab Project ID: 1143039

Collection Date: 07/10/14 13:10
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/16/14 09:07 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 09:07 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/16/14 09:07 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 07/16/14 09:07 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/16/14 09:07 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 09:07 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 09:07 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 07/16/14 09:07 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 09:07 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 100 | 70-120 | | % | 1 | | 07/16/14 09:07 |
| 4-Bromofluorobenzene | 98.5 | 75-120 | | % | 1 | | 07/16/14 09:07 |
| Toluene-d8 | 98.1 | 85-120 | | % | 1 | | 07/16/14 09:07 |

Batch Information

Analytical Batch: VMS14280
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 07/16/14 09:07
Container ID: 1143039013-F

Prep Batch: VXX26119
Prep Method: SW5030B
Prep Date/Time: 07/16/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM09-02

Client Sample ID: **SWM09-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039013
Lab Project ID: 1143039

Collection Date: 07/10/14 13:10
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 63.5 | 2.50 | 0.750 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039013-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM10-02

Client Sample ID: **SWM10-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039014
Lab Project ID: 1143039

Collection Date: 07/10/14 13:21
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.35 | 2.00 | 2.00 | mg/L | 1 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039014-B

| <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 | 1600 | 100 | 100 | col/100mL | 1 | | 07/10/14 19:08 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 19:08
Container ID: 1143039014-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM10-02

Client Sample ID: **SWM10-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039014
Lab Project ID: 1143039

Collection Date: 07/10/14 13:21
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 50.0 | 2.50 | 0.750 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039014-C

Print Date: 07/17/2014 1:35:12PM



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039015
Lab Project ID: 1143039

Collection Date: 07/10/14 09:27
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/15/14 14:16 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:16 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 14:16 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 07/15/14 14:16 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 14:16 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:16 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:16 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 07/15/14 14:16 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:16 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 98 | 70-120 | | % | 1 | | 07/15/14 14:16 |
| 4-Bromofluorobenzene | 96.5 | 75-120 | | % | 1 | | 07/15/14 14:16 |
| Toluene-d8 | 94.9 | 85-120 | | % | 1 | | 07/15/14 14:16 |

Batch Information

Analytical Batch: VMS14277
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 07/15/14 14:16
Container ID: 1143039015-A

Prep Batch: VXX26115
Prep Method: SW5030B
Prep Date/Time: 07/15/14 05:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:12PM



Method Blank

Blank ID: MB for HBN 1624165 [BOD/4979]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1220704

QC for Samples:

1143039001, 1143039002, 1143039005, 1143039006, 1143039007, 1143039008, 1143039009, 1143039010, 1143039011, 1143039012, 1143039013, 1143039014

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: BOD4979

Analytical Method: SM21 5210B

Instrument:

Analyst: SLC

Analytical Date/Time: 7/11/2014 3:45:00PM

Print Date: 07/17/2014 1:35:15PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143039 [BOD4979]

Blank Spike Lab ID: 1220705

Date Analyzed: 07/11/2014 15:45

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143039001, 1143039002, 1143039005, 1143039006, 1143039007, 1143039008, 1143039009, 1143039010, 1143039011, 1143039012, 1143039013, 1143039014

Results by SM21 5210B

| Parameter | Blank Spike (mg/L) | | | CL |
|---------------------------|--------------------|--------|---------|--------------|
| | Spike | Result | Rec (%) | |
| Biochemical Oxygen Demand | 198 | 222 | 112 | (84.6-115.4 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Instrument:
Analyst: SLC

Prep Batch:
Prep Method:
Prep Date/Time:
Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL
Dup Init Wt./Vol.: Extract Vol:

Print Date: 07/17/2014 1:35:16PM



Method Blank

Blank ID: MB for HBN 1623778 [BTF/13619]
Blank Lab ID: 1220123

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1143039001, 1143039002, 1143039005, 1143039006, 1143039007, 1143039008, 1143039009, 1143039010, 1143039011, 1143039012, 1143039013, 1143039014

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: BTF13619
Analytical Method: SM21 9222D
Instrument:
Analyst: MEV
Analytical Date/Time: 7/10/2014 4:51:00PM

Print Date: 07/17/2014 1:35:18PM



Method Blank

Blank ID: MB for HBN 1621361 [STS/4451]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1219826

QC for Samples:

1143039001, 1143039002, 1143039005, 1143039006, 1143039007, 1143039008, 1143039009, 1143039010, 1143039011, 1143039012, 1143039013, 1143039014

Results by SM21 2540D

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|------------------------|----------------|---------------|-----------|--------------|
| Total Suspended Solids | 0.250U | 0.500 | 0.150 | mg/L |

Batch Information

Analytical Batch: STS4451

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Analytical Date/Time: 7/11/2014 3:10:44PM

Print Date: 07/17/2014 1:35:20PM

Duplicate Sample Summary

Original Sample ID: 1143039011

Duplicate Sample ID: 1219829

Analysis Date: 07/11/2014 15:10

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1143039001, 1143039002, 1143039005, 1143039006, 1143039007, 1143039008, 1143039009, 1143039010, 1143039011, 1143039012, 1143039013, 1143039014

Results by SM21 2540D

| <u>NAME</u> | <u>Original ()</u> | <u>Duplicate ()</u> | <u>RPD (%)</u> | <u>RPD CL</u> |
|------------------------|--------------------|---------------------|----------------|---------------|
| Total Suspended Solids | 227 | 234 | 3.00 | 5.00 |

Batch Information

Analytical Batch: STS4451

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 07/17/2014 1:35:21PM



Duplicate Sample Summary

Original Sample ID: 1143046005

Duplicate Sample ID: 1219830

QC for Samples:

1143039012, 1143039013, 1143039014

Analysis Date: 07/11/2014 15:10

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 | 12.7 | 13.3 | 5.10* | 5.00 |

Batch Information

Analytical Batch: STS4451

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 07/17/2014 1:35:21PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143039 [STS4451]
Blank Spike Lab ID: 1219827
Date Analyzed: 07/11/2014 15:10

Spike Duplicate ID: LCSD for HBN 1143039 [STS4451]
Spike Duplicate Lab ID: 1219828
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143039001, 1143039002, 1143039005, 1143039006, 1143039007, 1143039008, 1143039009, 1143039010, 1143039011, 1143039012, 1143039013, 1143039014

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 | 45.8 | 92 | 50 | 46.1 | 92 | (75-125) | 0.65 | (< 5) |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Instrument:
Analyst: WLF

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

Print Date: 07/17/2014 1:35:22PM



Method Blank

Blank ID: MB for HBN 1624097 [VXX/26115]
Blank Lab ID: 1220377

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1143039002, 1143039005, 1143039008, 1143039015

Results by EPA 602/624

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|-----------------------|----------------|---------------|-----------|--------------|
| 1,2-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,3-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,4-Dichlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Benzene | 0.200U | 0.400 | 0.120 | ug/L |
| Chlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Ethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| o-Xylene | 0.500U | 1.00 | 0.310 | ug/L |
| P & M -Xylene | 1.00U | 2.00 | 0.620 | ug/L |
| Toluene | 0.500U | 1.00 | 0.310 | ug/L |
| Surrogates | | | | |
| 1,2-Dichloroethane-D4 | 96.9 | 70-120 | | % |
| 4-Bromofluorobenzene | 102 | 75-120 | | % |
| Toluene-d8 | 99.4 | 85-120 | | % |

Batch Information

Analytical Batch: VMS14277
Analytical Method: EPA 602/624
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 7/15/2014 5:40:00AM

Prep Batch: VXX26115
Prep Method: SW5030B
Prep Date/Time: 7/15/2014 5:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:24PM



Leaching Blank

Blank ID: LB for HBN 1623581 [TCLP/7411]
Blank Lab ID: 1220031

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1143039002, 1143039005, 1143039008, 1143039015

Results by EPA 602/624

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|-----------------------|----------------|---------------|-----------|--------------|
| 1,4-Dichlorobenzene | 12.5U | 25.0 | 7.50 | ug/L |
| Benzene | 10.0U | 20.0 | 6.00 | ug/L |
| Chlorobenzene | 12.5U | 25.0 | 7.50 | ug/L |
| Surrogates | | | | |
| 1,2-Dichloroethane-D4 | 101 | 70-120 | | % |
| 4-Bromofluorobenzene | 104 | 75-120 | | % |
| Toluene-d8 | 98.3 | 85-120 | | % |

Batch Information

Analytical Batch: VMS14277
Analytical Method: EPA 602/624
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 7/15/2014 8:30:00AM

Prep Batch: VXX26115
Prep Method: SW5030B
Prep Date/Time: 7/15/2014 5:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:24PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143039 [VXX26115]
 Blank Spike Lab ID: 1220378
 Date Analyzed: 07/15/2014 06:05

Spike Duplicate ID: LCSD for HBN 1143039 [VXX26115]
 Spike Duplicate Lab ID: 1220379
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143039002, 1143039005, 1143039008, 1143039015

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 | 27.9 | 93 | 30 | 29.8 | 99 | (70-120) | 6.60 | (< 20) |
| 1,3-Dichlorobenzene | 30 | 26.0 | 87 | 30 | 27.9 | 93 | (75-125) | 7.20 | (< 20) |
| 1,4-Dichlorobenzene | 30 | 27.9 | 93 | 30 | 29.7 | 99 | (75-125) | 6.50 | (< 20) |
| Benzene | 30 | 29.5 | 98 | 30 | 31.0 | 103 | (80-120) | 5.00 | (< 20) |
| Chlorobenzene | 30 | 27.1 | 91 | 30 | 29.0 | 97 | (80-120) | 6.60 | (< 20) |
| Ethylbenzene | 30 | 29.3 | 98 | 30 | 30.5 | 102 | (75-125) | 4.10 | (< 20) |
| o-Xylene | 30 | 27.2 | 91 | 30 | 29.7 | 99 | (80-120) | 8.70 | (< 20) |
| P & M -Xylene | 60 | 55.5 | 93 | 60 | 59.1 | 99 | (75-130) | 6.40 | (< 20) |
| Toluene | 30 | 28.3 | 94 | 30 | 29.5 | 98 | (75-120) | 4.00 | (< 20) |

Surrogates

| | | | | | | | | | |
|-----------------------|----|--|----|----|--|----|------------|------|--|
| 1,2-Dichloroethane-D4 | 30 | | 95 | 30 | | 96 | (70-120) | 1.00 | |
| 4-Bromofluorobenzene | 30 | | 98 | 30 | | 96 | (75-120) | 1.30 | |
| Toluene-d8 | 30 | | 98 | 30 | | 97 | (85-120) | 0.72 | |

Batch Information

Analytical Batch: **VMS14277**
 Analytical Method: **EPA 602/624**
 Instrument: **HP 5890 Series II MS3 VNA**
 Analyst: **NRB**

Prep Batch: **VXX26115**
 Prep Method: **SW5030B**
 Prep Date/Time: **07/15/2014 05:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dup Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:25PM



Billable Matrix Spike Summary

Original Sample ID: 1143039002
MS Sample ID: 1143039003 BMS
MSD Sample ID: 1143039004 BMSD

Analysis Date: 07/15/2014 11:31
Analysis Date: 07/15/2014 7:08
Analysis Date: 07/15/2014 7:24
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 | 30.1 | 100 | 30.0 | 29.6 | 99 | 70-120 | 1.70 | (< 20) |
| 1,3-Dichlorobenzene | 1.00U | 30.0 | 28.6 | 95 | 30.0 | 28.7 | 96 | 75-125 | 0.42 | (< 20) |
| 1,4-Dichlorobenzene | 0.500U | 30.0 | 29.8 | 99 | 30.0 | 30.4 | 101 | 75-125 | 2.00 | (< 20) |
| Benzene | 0.400U | 30.0 | 31.2 | 104 | 30.0 | 30.9 | 103 | 80-120 | 0.84 | (< 20) |
| Chlorobenzene | 0.500U | 30.0 | 29.8 | 99 | 30.0 | 29.4 | 98 | 80-120 | 1.20 | (< 20) |
| Ethylbenzene | 1.00U | 30.0 | 30.9 | 103 | 30.0 | 30.5 | 102 | 75-125 | 1.50 | (< 20) |
| o-Xylene | 1.00U | 30.0 | 29.2 | 97 | 30.0 | 29.2 | 97 | 80-120 | 0.07 | (< 20) |
| P & M -Xylene | 2.00U | 60.0 | 60.5 | 101 | 60.0 | 60.3 | 100 | 75-130 | 0.45 | (< 20) |
| Toluene | 1.00U | 30.0 | 31.1 | 104 | 30.0 | 30.1 | 100 | 75-120 | 3.40 | (< 20) |
| Surrogates | | | | | | | | | | |
| 1,2-Dichloroethane-D4 | | 30.0 | 29.8 | 100 | 30.0 | 30.7 | 102 | 70-120 | 2.80 | |
| 4-Bromofluorobenzene | | 30.0 | 31 | 103 | 30.0 | 30.5 | 102 | 75-120 | 1.60 | |
| Toluene-d8 | | 30.0 | 31.5 | 105 | 30.0 | 31.2 | 104 | 85-120 | 1.00 | |

Batch Information

Analytical Batch: VMS14277
Analytical Method: EPA 602/624
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 7/15/2014 7:08:00AM

Prep Batch: VXX26115
Prep Method: Volatiles Extraction 8240/8260 FULL
Prep Date/Time: 7/15/2014 5:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 07/17/2014 1:35:27PM



Method Blank

Blank ID: MB for HBN 1624145 [VXX/26119]

Blank Lab ID: 1220617

QC for Samples:

1143039010, 1143039013

Matrix: Water (Surface, Eff., Ground)

Results by EPA 602/624

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|-----------------------|----------------|---------------|-----------|--------------|
| 1,2-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,3-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,4-Dichlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Benzene | 0.200U | 0.400 | 0.120 | ug/L |
| Chlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Ethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| o-Xylene | 0.500U | 1.00 | 0.310 | ug/L |
| P & M -Xylene | 1.00U | 2.00 | 0.620 | ug/L |
| Toluene | 0.500U | 1.00 | 0.310 | ug/L |
| Surrogates | | | | |
| 1,2-Dichloroethane-D4 | 95.7 | 70-120 | | % |
| 4-Bromofluorobenzene | 99.6 | 75-120 | | % |
| Toluene-d8 | 97.5 | 85-120 | | % |

Batch Information

Analytical Batch: VMS14280
Analytical Method: EPA 602/624
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 7/16/2014 6:31:00AM

Prep Batch: VXX26119
Prep Method: SW5030B
Prep Date/Time: 7/16/2014 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:28PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1143039 [VXX26119]
 Blank Spike Lab ID: 1220618
 Date Analyzed: 07/16/2014 07:12

Spike Duplicate ID: LCSD for HBN 1143039 [VXX26119]
 Spike Duplicate Lab ID: 1220619
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143039010, 1143039013

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 | 29.4 | 98 | 30 | 29.9 | 100 | (70-120) | 1.80 | (< 20) |
| 1,3-Dichlorobenzene | 30 | 27.3 | 91 | 30 | 28.2 | 94 | (75-125) | 3.10 | (< 20) |
| 1,4-Dichlorobenzene | 30 | 29.0 | 97 | 30 | 29.4 | 98 | (75-125) | 1.40 | (< 20) |
| Benzene | 30 | 31.2 | 104 | 30 | 31.9 | 106 | (80-120) | 2.50 | (< 20) |
| Chlorobenzene | 30 | 28.7 | 96 | 30 | 29.8 | 99 | (80-120) | 3.60 | (< 20) |
| Ethylbenzene | 30 | 30.1 | 100 | 30 | 31.5 | 105 | (75-125) | 4.50 | (< 20) |
| o-Xylene | 30 | 28.9 | 97 | 30 | 29.3 | 98 | (80-120) | 1.20 | (< 20) |
| P & M -Xylene | 60 | 59.1 | 99 | 60 | 62.5 | 104 | (75-130) | 5.70 | (< 20) |
| Toluene | 30 | 29.4 | 98 | 30 | 29.8 | 100 | (75-120) | 1.60 | (< 20) |

Surrogates

| | | | | | | | | | |
|-----------------------|----|--|-----|----|--|-----|------------|------|--|
| 1,2-Dichloroethane-D4 | 30 | | 99 | 30 | | 98 | (70-120) | 0.92 | |
| 4-Bromofluorobenzene | 30 | | 96 | 30 | | 98 | (75-120) | 2.00 | |
| Toluene-d8 | 30 | | 102 | 30 | | 102 | (85-120) | 0.07 | |

Batch Information

Analytical Batch: **VMS14280**
 Analytical Method: **EPA 602/624**
 Instrument: **HP 5890 Series II MS3 VNA**
 Analyst: **NRB**

Prep Batch: **VXX26119**
 Prep Method: **SW5030B**
 Prep Date/Time: **07/16/2014 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dup Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1622963 [XXX/31391]
Blank Lab ID: 1219928

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1143039002, 1143039005, 1143039008, 1143039010, 1143039013

Results by EPA 625M SIMS (PAH)

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|--------------------------|----------------|---------------|-----------|--------------|
| Acenaphthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Acenaphthylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo(a)Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[a]pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[b]Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[g,h,i]perylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[k]fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Chrysene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Dibenzo[a,h]anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluorene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Naphthalene | 0.0500U | 0.100 | 0.0310 | ug/L |
| Phenanthrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Surrogates | | | | |
| 2-Fluorobiphenyl | 67.3 | 50-110 | | % |
| Terphenyl-d14 | 105 | 50-135 | | % |

Batch Information

Analytical Batch: XMS8152
Analytical Method: EPA 625M SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 7/14/2014 11:21:00PM

Prep Batch: XXX31391
Prep Method: SW3520C
Prep Date/Time: 7/12/2014 10:45:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 07/17/2014 1:35:31PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143039 [XXX31391]
 Blank Spike Lab ID: 1219929
 Date Analyzed: 07/14/2014 23:36

Spike Duplicate ID: LCSD for HBN 1143039 [XXX31391]
 Spike Duplicate Lab ID: 1219930
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143039002, 1143039005, 1143039008, 1143039010, 1143039013

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 | 0.353 | 71 | 0.5 | 0.374 | 75 | (45-110) | 5.70 | (< 30) |
| Acenaphthylene | 0.5 | 0.349 | 70 | 0.5 | 0.367 | 73 | (50-105) | 5.10 | (< 30) |
| Anthracene | 0.5 | 0.372 | 74 | 0.5 | 0.385 | 77 | (55-110) | 3.30 | (< 30) |
| Benzo(a)Anthracene | 0.5 | 0.485 | 97 | 0.5 | 0.489 | 98 | (55-110) | 0.85 | (< 30) |
| Benzo[a]pyrene | 0.5 | 0.413 | 83 | 0.5 | 0.436 | 87 | (55-110) | 5.40 | (< 30) |
| Benzo[b]Fluoranthene | 0.5 | 0.495 | 99 | 0.5 | 0.505 | 101 | (45-120) | 2.00 | (< 30) |
| Benzo[g,h,i]perylene | 0.5 | 0.377 | 76 | 0.5 | 0.435 | 87 | (40-125) | 14.20 | (< 30) |
| Benzo[k]fluoranthene | 0.5 | 0.433 | 87 | 0.5 | 0.447 | 89 | (45-125) | 3.10 | (< 30) |
| Chrysene | 0.5 | 0.527 | 105 | 0.5 | 0.522 | 104 | (55-110) | 1.00 | (< 30) |
| Dibenzo[a,h]anthracene | 0.5 | 0.383 | 77 | 0.5 | 0.425 | 85 | (40-125) | 10.50 | (< 30) |
| Fluoranthene | 0.5 | 0.494 | 99 | 0.5 | 0.498 | 100 | (55-115) | 0.74 | (< 30) |
| Fluorene | 0.5 | 0.350 | 70 | 0.5 | 0.378 | 76 | (50-110) | 7.50 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.5 | 0.386 | 77 | 0.5 | 0.430 | 86 | (45-125) | 10.70 | (< 30) |
| Naphthalene | 0.5 | 0.354 | 71 | 0.5 | 0.395 | 79 | (40-100) | 10.80 | (< 30) |
| Phenanthrene | 0.5 | 0.389 | 78 | 0.5 | 0.408 | 82 | (50-115) | 4.80 | (< 30) |
| Pyrene | 0.5 | 0.468 | 94 | 0.5 | 0.475 | 95 | (50-130) | 1.50 | (< 30) |
| Surrogates | | | | | | | | | |
| 2-Fluorobiphenyl | 0.5 | | 74 | 0.5 | | 79 | (50-110) | 6.70 | |
| Terphenyl-d14 | 0.5 | | 113 | 0.5 | | 111 | (50-135) | 1.90 | |

Batch Information

Analytical Batch: XMS8152
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS

Prep Batch: XXX31391
 Prep Method: SW3520C
 Prep Date/Time: 07/12/2014 10:45
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL
 Dup Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Print Date: 07/17/2014 1:35:32PM



Billable Matrix Spike Summary

Original Sample ID: 1143039002
 MS Sample ID: 1143039003 BMS
 MSD Sample ID: 1143039004 BMSD

Analysis Date: 07/15/2014 15:00
 Analysis Date: 07/15/2014 15:15
 Analysis Date: 07/15/2014 15:31
 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 | 0.0595U | 0.575 | .353 | 62 | 0.581 | 0.415 | 71 | 45-110 | 16.10 | (< 30) |
| Acenaphthylene | 0.0595U | 0.575 | .336 | 59 | 0.581 | 0.400 | 69 | 50-105 | 17.40 | (< 30) |
| Anthracene | 0.0595U | 0.575 | .449 | 78 | 0.581 | 0.491 | 85 | 55-110 | 9.00 | (< 30) |
| Benzo(a)Anthracene | 0.0595U | 0.575 | .533 | 93 | 0.581 | 0.516 | 89 | 55-110 | 3.10 | (< 30) |
| Benzo[a]pyrene | 0.0595U | 0.575 | .527 | 92 | 0.581 | 0.508 | 87 | 55-110 | 3.70 | (< 30) |
| Benzo[b]Fluoranthene | 0.0595U | 0.575 | .53 | 92 | 0.581 | 0.555 | 95 | 45-120 | 4.60 | (< 30) |
| Benzo[g,h,i]perylene | 0.0595U | 0.575 | .605 | 105 | 0.581 | 0.571 | 98 | 40-125 | 5.80 | (< 30) |
| Benzo[k]fluoranthene | 0.0595U | 0.575 | .535 | 93 | 0.581 | 0.510 | 88 | 45-125 | 4.80 | (< 30) |
| Chrysene | 0.0595U | 0.575 | .558 | 97 | 0.581 | 0.543 | 93 | 55-110 | 2.70 | (< 30) |
| Dibenzo[a,h]anthracene | 0.0595U | 0.575 | .59 | 103 | 0.581 | 0.558 | 96 | 40-125 | 5.60 | (< 30) |
| Fluoranthene | 0.0595U | 0.575 | .506 | 88 | 0.581 | 0.517 | 89 | 55-115 | 2.20 | (< 30) |
| Fluorene | 0.0595U | 0.575 | .363 | 63 | 0.581 | 0.424 | 73 | 50-110 | 15.60 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.0595U | 0.575 | .594 | 103 | 0.581 | 0.559 | 96 | 45-125 | 6.20 | (< 30) |
| Naphthalene | 0.119U | 0.575 | .348 | 61 | 0.581 | 0.399 | 69 | 40-100 | 13.60 | (< 30) |
| Phenanthrene | 0.0595U | 0.575 | .487 | 85 | 0.581 | 0.541 | 93 | 50-115 | 10.40 | (< 30) |
| Pyrene | 0.0595U | 0.575 | .481 | 84 | 0.581 | 0.491 | 85 | 50-130 | 2.20 | (< 30) |
| Surrogates | | | | | | | | | | |
| 2-Fluorobiphenyl | | 0.575 | .359 | 62 | 0.581 | 0.413 | 71 | 50-110 | 14.10 | |
| Terphenyl-d14 | | 0.575 | .577 | 100 | 0.581 | 0.568 | 98 | 50-135 | 1.50 | |


Batch Information

Analytical Batch: XMS8153
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS
 Analytical Date/Time: 7/15/2014 3:15:00PM

Prep Batch: XXX31391
 Prep Method: Liquid/Liquid Extraction for 625 SIMS
 Prep Date/Time: 7/12/2014 10:45:44AM
 Prep Initial Wt./Vol.: 870.00mL
 Prep Extract Vol: 1.00mL

Print Date: 07/17/2014 1:35:33PM

Chain of Custody Record

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | From: Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |
| SGS Quote No. 9901 Date Received: Lab #: | 1143039  |

Project: MOA Stormwater Management **Project #:** 5078
Matrix: Water

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 |
|------------------|------------|-------------|-------------|-------------|------------------|----------------|--------|----------------|--------|------------------------|
| 1A SWM01-02 | 1040-3 | 7/10/14 | 0927 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| 2A SWM02-02 | 847-1 | | 0958 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| 3A SWM02-02 Dup | 847-1 | | 1006 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| 4A SWM03-02 | 1224-1 | | 1045 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| 5A SWM04-02 | 1224-2 | | 1051 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| 6A SWM05-02 | 207-1 | | 1120 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| 7A SWM06-02 | 314-22 | | 1200 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| 8A SWM07-02 | 484-1 | | 1230 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| 9A SWM08-02 | 86-1 | | 1241 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| 10A SWM08-02 Dup | 86-1 | | 1241 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| 11A SWM09-02 | 499-1 | | 1310 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| 12A SWM10-02 | 525-2 | | 1321 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |

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>Manish J Savoie</i> | 7/10 13:56 | <i>by hand</i> | <i>[Signature]</i> | |
| | | | <i>[Signature]</i> | 7/10/14 13:56 |

1143039



Chain of Custody Record

To: SGS Environmental Services, Inc.
2100 West Potter Drive
Anchorage, AK 99518
(907) 562-2343
(907) 561-5301 Fax
Contact: Forest Taylor

From: Kinnetic Laboratories, Inc
704 West 2nd Avenue
Anchorage, AK 99501
(907) 276-6178
(907) 278-6881 Fax
Contact: Mark Savoie

SGS Quote No. 9901

Date Received:

Lab #:

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 |
|-----------------|------------|-------------|-------------|-------------|----------------|-----------|--------|----------------|--------|------------------------|
| 1 SWM01-02 | 1040-3 | 7/10/14 | 0927 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 2 SWM02-02 | 847-1 | | 0958 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 3 SWM02-02 Dup | 847-1 | | 1006 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 4 SWM03-02 | 1224-1 | | 1045 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 5 SWM04-02 | 1224-2 | | 1051 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 6 SWM05-02 | 207-1 | | 1120 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 7 SWM06-02 | 314-22 | | 1200 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 8 SWM07-02 | 484-1 | | 1230 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 9 SWM08-02 | 86-1 | | 1241 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 10 SWM08-02 Dup | 86-1 | | 1241 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 11 SWM09-02 | 499-1 | | 1310 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 12 SWM10-02 | 525-2 | | 1321 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |

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: |
|------------------------------|---------------|-------------|--------------|---------------|
| Markoif Savoy | 7/10/14 13:56 | MJS | | |
| | | | Jenni Daugh | 7/10/14 13:56 |

5.9 °C #240 4.9 °C
8.1 °C #240

Chain of Custody Record

| | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | SGS Quote No. 9901 Date Received: Lab #: | From: Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|

1143039



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|-------------------------------------------------------------------|-----------------------------------------|
| Project: MOA Stormwater Management Complete by: 2 weeks | Matrix: Water Project #: 5078 |
|-------------------------------------------------------------------|-----------------------------------------|

| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|----------------|------------|-------------|-------------|-------------|----------------|-----------|--------|----------------|--------|------------------------|
| ① SWM01-02 | 1040-3 | 7/10/14 | 0927 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ② SWM02-02 | 847-1 | | 0958 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑤ SWM02-02 Dup | 847-1 | | 1006 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑥ SWM03-02 | 1224-1 | | 1045 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑦ SWM04-02 | 1224-2 | | 1051 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑧ SWM05-02 | 207-1 | | 1120 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑨ SWM06-02 | 314-22 | | 1200 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑩ SWM07-02 | 484-1 | | 1230 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑪ SWM08-02 | 86-1 | | 1241 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑫ SWM08-02 Dup | 86-1 | | 1241 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑬ SWM09-02 | 499-1 | | 1310 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑭ SWM10-02 | 525-2 | | 1321 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |

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: <i>Mariah J Savoie</i> | Date/Time: 7/0 13:56 | Transporter <i>boy hand</i> | Received By: <i>Lori Draeger</i> | Date/Time: 7/10/14 13:56 |
| Relinquished By: | Date/Time: | Transporter | Received By: | Date/Time: |

Chain of Custody Record

| | | |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 Contact: Forest Taylor | SGS Quote No. 9901 Date Received: Lab #: | From: Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|

1143039



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 |
|-----------------------------------------------------------------|------------|-------------|-------------|-------------|---------------------|-----------|--------|----------------|--------|------------------------|
| ② 0-E SWM02-02 (3) A-B (4) A-B | 847-1 | 7/10/14 | 0958 | Samp/MS/MSD | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 6 | | |
| ⑤ 0-E SWM02-02 Dup | 847-1 | (| 1006 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑧ 0-E SWM05-02 | 207-1 | (| 1020 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑩ 0-E SWM07-02 | 484-1 |) | 1230 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑬ 0-E SWM09-02 | 499-1 | ↓ | 1310 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
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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: <i>Manish J Sato</i> | Date/Time: 7/10 13:56 | Transporter | Received By: <i>[Signature]</i> | Date/Time: |
| Relinquished By: | | Transporter | Received By: <i>Jenni Dragoon</i> | Date/Time: 7/10/14 13:56 |

Chain of Custody Record

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | SGS Quote No. 9901 Date Received: Lab #: |
| From: Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |  1143039 |

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 |
|-----------------------------------|------------|-------------|-------------|-------------|-------------------|-----------|-----------|----------------|--------|------------------------|
| ② F-SWM02-02 (3) 847-1 | 847-1 | 7/10/14 | 0958 | Samp/MS/MSD | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 9 | | |
| ⑤ F-SWM02-02 Dup | 847-1 | | 1006 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑧ F-SWM05-02 | 207-1 | | 1120 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑩ F-SWM07-02 | 484-1 | | 1230 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑬ F-SWM09-02 | 499-1 | | 1310 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑮ A-Trip Blank | N/A | N/A | N/A | TB | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| | | | | | | | | | | |
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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>Mark J Savoie</i> | 7/10 13:56 | by hand | | |
| | | | <i>Leri D. Saeger</i> | 7/10/14 13:56 |



SAMPLE RECEIPT FORM

| Review Criteria: | Condition: | Comments/Action Taken: |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Were custody seals intact? Note # & location, if applicable. COC accompanied samples? | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> | |
| Temperature blank compliant* (i.e., 0-6°C after CF)? * Note: Exemption permitted for chilled samples collected less than 8 hours ago. Cooler ID: <u>1</u> @ <u>5.9</u> w/ Therm.ID: <u>240</u> Cooler ID: <u>2</u> @ <u>8.1</u> w/ Therm.ID: <u>240</u> Cooler ID: <u>3</u> @ <u>4.9</u> w/ Therm.ID: <u>240</u> 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 <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="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> | Less than 8 hrs. ago collected |
| 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="checkbox"/> N/A Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> | |
| → 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>KMN</u> <input checked="" type="checkbox"/> N/A <input type="checkbox"/> |
| Were samples received within hold time? Note: Refer to form F-083 "Sample Guide" for hold time information. 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. Were analyses requested unambiguous? | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> | |
| Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other: | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> | |
| Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)? Were all soil VOAs field extracted with MeOH+BFB? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> | |
| Were proper containers (type/mass/volume/preservative*) used? * Note: Exemption permitted for waters to be analyzed for metals. Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> | |
| For special handling (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> | |
| 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 <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> | |
| For RUSH/SHORT Hold Time , were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable? | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> | BOD, FC |
| For SITE-SPECIFIC QC , e.g. BMS/BMSD/BDUP , were containers / paperwork flagged accordingly? | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> | |
| For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> | SRF Completed by: <u>KMN</u> PM = _____ N/A |
| Was PEER REVIEW of sample numbering/labeling completed? | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> | Peer Reviewed by: <u>JAN</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.



Sample Containers and Preservatives

| <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> | <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> |
|---------------------|-----------------------------|----------------------------|---------------------|--------------------------|----------------------------|
| 1143039001-A | Na2S2O3 for Chlorine Reduct | OK | 1143039008-H | HCL to pH < 2 | OK |
| 1143039001-B | No Preservative Required | OK | 1143039009-A | No Preservative Required | OK |
| 1143039001-C | No Preservative Required | OK | 1143039009-B | No Preservative Required | OK |
| 1143039002-A | Na2S2O3 for Chlorine Reduct | OK | 1143039009-C | No Preservative Required | OK |
| 1143039002-B | No Preservative Required | OK | 1143039010-A | No Preservative Required | OK |
| 1143039002-C | No Preservative Required | OK | 1143039010-B | No Preservative Required | OK |
| 1143039002-D | No Preservative Required | OK | 1143039010-C | No Preservative Required | OK |
| 1143039002-E | No Preservative Required | OK | 1143039010-D | No Preservative Required | OK |
| 1143039002-F | HCL to pH < 2 | OK | 1143039010-E | No Preservative Required | OK |
| 1143039002-G | HCL to pH < 2 | OK | 1143039010-F | HCL to pH < 2 | OK |
| 1143039002-H | HCL to pH < 2 | OK | 1143039010-G | HCL to pH < 2 | OK |
| 1143039003-A | No Preservative Required | OK | 1143039011-A | No Preservative Required | OK |
| 1143039003-B | No Preservative Required | OK | 1143039011-B | No Preservative Required | OK |
| 1143039003-C | HCL to pH < 2 | OK | 1143039011-C | No Preservative Required | OK |
| 1143039003-D | HCL to pH < 2 | OK | 1143039012-A | No Preservative Required | OK |
| 1143039003-E | HCL to pH < 2 | OK | 1143039012-B | No Preservative Required | OK |
| 1143039004-A | No Preservative Required | OK | 1143039012-C | No Preservative Required | OK |
| 1143039004-B | No Preservative Required | OK | 1143039013-A | No Preservative Required | OK |
| 1143039004-C | HCL to pH < 2 | OK | 1143039013-B | No Preservative Required | OK |
| 1143039004-D | HCL to pH < 2 | OK | 1143039013-C | No Preservative Required | OK |
| 1143039004-E | HCL to pH < 2 | OK | 1143039013-D | No Preservative Required | OK |
| 1143039005-A | No Preservative Required | OK | 1143039013-E | No Preservative Required | OK |
| 1143039005-B | No Preservative Required | OK | 1143039013-F | HCL to pH < 2 | OK |
| 1143039005-C | No Preservative Required | OK | 1143039013-G | HCL to pH < 2 | OK |
| 1143039005-D | No Preservative Required | OK | 1143039013-H | HCL to pH < 2 | OK |
| 1143039005-E | No Preservative Required | OK | 1143039014-A | No Preservative Required | OK |
| 1143039005-F | HCL to pH < 2 | OK | 1143039014-B | No Preservative Required | OK |
| 1143039005-G | HCL to pH < 2 | OK | 1143039014-C | No Preservative Required | OK |
| 1143039005-H | HCL to pH < 2 | OK | 1143039015-A | HCL to pH < 2 | OK |
| 1143039006-A | No Preservative Required | OK | 1143039015-B | HCL to pH < 2 | OK |
| 1143039006-B | No Preservative Required | OK | 1143039015-C | HCL to pH < 2 | OK |
| 1143039006-C | No Preservative Required | OK | | | |
| 1143039007-A | No Preservative Required | OK | | | |
| 1143039007-B | No Preservative Required | OK | | | |
| 1143039007-C | No Preservative Required | OK | | | |
| 1143039008-A | No Preservative Required | OK | | | |
| 1143039008-B | No Preservative Required | OK | | | |
| 1143039008-C | No Preservative Required | OK | | | |
| 1143039008-D | No Preservative Required | OK | | | |
| 1143039008-E | No Preservative Required | OK | | | |
| 1143039008-F | HCL to pH < 2 | OK | | | |
| 1143039008-G | HCL to pH < 2 | OK | | | |

Container Id

Preservative

Container Condition

Container Id

Preservative

Container Condition

Container Condition Glossary

OK - The container was received at an acceptable pH for the analysis requested.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

BU - The container was received with headspace greater than 6mm.

Appendix B3

Laboratory Data Package Storm Event #3

Intentionally left blank



Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.
704 W 2nd Avenue
Anchorage, AK 99501
(907)276-6178

Report Number: **1143552**

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 Forest 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.

Forest Taylor
Project Manager
Forest.Taylor@sgs.com

Date

Print Date: 08/12/2014 2:27:27PM

Case Narrative

SGS Client: **Kinnetic Laboratories, Inc.**
SGS Project: **1143552**
Project Name/Site: **5078 MOA Stormwater Management**
Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

*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: 08/12/2014 2:27:28PM

Report of Manual Integrations

| <u>Laboratory ID</u> | <u>Client Sample ID</u> | <u>Analytical Batch</u> | <u>Analyte</u> | <u>Reason</u> |
|----------------------------|-------------------------|-------------------------|----------------------|---------------|
| EPA 625M SIMS (PAH) | | | | |
| 1143552013 | SWM09-03 | XMS8218 | Benzo[b]Fluoranthene | BLC |
| 1143552013 | SWM09-03 | XMS8218 | 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.

Print Date: 08/12/2014 2:27:29PM

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>), 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., 1/2 of the LOQ) |
| 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 | 1143552001 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM02-03 | 1143552002 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM02-03 MS | 1143552003 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM02-03 MSD | 1143552004 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM02-03 Dup | 1143552005 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM03-03 | 1143552006 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM04-03 | 1143552007 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM05-03 | 1143552008 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM06-03 | 1143552009 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM07-03 | 1143552010 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM08-03 | 1143552011 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM08-03 Dup | 1143552012 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM09-03 | 1143552013 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM10-03 | 1143552014 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| Trip Blank | 1143552015 | 08/04/2014 | 08/04/2014 | 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: SWM01-03 | | | |
| Lab Sample ID: 1143552001 | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| Microbiology Laboratory | Biochemical Oxygen Demand | 3.93 | mg/L |
| Waters Department | Total Suspended Solids | 8.50 | mg/L |
| Client Sample ID: SWM02-03 | | | |
| Lab Sample ID: 1143552002 | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| Microbiology Laboratory | Fecal Coliform | 72 | col/100mL |
| Waters Department | Total Suspended Solids | 2.33 | mg/L |
| Client Sample ID: SWM02-03 Dup | | | |
| Lab Sample ID: 1143552005 | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| Microbiology Laboratory | Fecal Coliform | 47 | col/100mL |
| Waters Department | Total Suspended Solids | 2.00 | mg/L |
| Client Sample ID: SWM03-03 | | | |
| Lab Sample ID: 1143552006 | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| Microbiology Laboratory | Biochemical Oxygen Demand | 2.37 | mg/L |
| | Fecal Coliform | 44 | col/100mL |
| Waters Department | Total Suspended Solids | 3.33 | mg/L |
| Client Sample ID: SWM04-03 | | | |
| Lab Sample ID: 1143552007 | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| Microbiology Laboratory | Fecal Coliform | 210 | col/100mL |
| Waters Department | Total Suspended Solids | 3.67 | mg/L |
| Client Sample ID: SWM05-03 | | | |
| Lab Sample ID: 1143552008 | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| Microbiology Laboratory | Biochemical Oxygen Demand | 5.43 | mg/L |
| | Fecal Coliform | 41 | col/100mL |
| Waters Department | Total Suspended Solids | 8.50 | mg/L |
| Client Sample ID: SWM06-03 | | | |
| Lab Sample ID: 1143552009 | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| Microbiology Laboratory | Biochemical Oxygen Demand | 4.83 | mg/L |
| | Fecal Coliform | 5400 | col/100mL |
| Waters Department | Total Suspended Solids | 8.00 | mg/L |
| Client Sample ID: SWM07-03 | | | |
| Lab Sample ID: 1143552010 | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| Microbiology Laboratory | Biochemical Oxygen Demand | 19.2 | mg/L |
| | Fecal Coliform | 1360 | col/100mL |
| Polynuclear Aromatics GC/MS | Chrysene | 0.0701 | ug/L |
| | Fluoranthene | 0.0820 | ug/L |
| | Phenanthrene | 0.0539 | ug/L |
| | Pyrene | 0.149 | ug/L |
| Waters Department | Total Suspended Solids | 232 | mg/L |

Print Date: 08/12/2014 2:27:32PM

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

Detectable Results Summary

Client Sample ID: **SWM08-03**

Lab Sample ID: 1143552011

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 6.06 | mg/L |
| Fecal Coliform | 2000 | col/100mL |
| Total Suspended Solids | 25.3 | mg/L |

Client Sample ID: **SWM08-03 Dup**

Lab Sample ID: 1143552012

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 6.50 | mg/L |
| Fecal Coliform | 2500 | col/100mL |
| Total Suspended Solids | 25.3 | mg/L |

Client Sample ID: **SWM09-03**

Lab Sample ID: 1143552013

Microbiology Laboratory

Polynuclear Aromatics GC/MS

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 5.36 | mg/L |
| Fecal Coliform | 1500 | col/100mL |
| Benzo(a)Anthracene | 0.136 | ug/L |
| Benzo[a]pyrene | 0.134 | ug/L |
| Benzo[b]Fluoranthene | 0.329 | ug/L |
| Benzo[g,h,i]perylene | 0.148 | ug/L |
| Benzo[k]fluoranthene | 0.0838 | ug/L |
| Chrysene | 0.353 | ug/L |
| Fluoranthene | 0.602 | ug/L |
| Phenanthrene | 0.158 | ug/L |
| Pyrene | 0.404 | ug/L |
| Total Suspended Solids | 45.0 | mg/L |

Waters Department

Client Sample ID: **SWM10-03**

Lab Sample ID: 1143552014

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 1400 | col/100mL |
| Total Suspended Solids | 13.0 | mg/L |



Results of **SWM01-03**

Client Sample ID: **SWM01-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552001
Lab Project ID: 1143552

Collection Date: 08/04/14 14:30
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.93 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552001-C

| <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 | 1.00 U | 1.00 | 1.00 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552001-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM01-03

Client Sample ID: **SWM01-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552001
Lab Project ID: 1143552

Collection Date: 08/04/14 14:30
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 8.50 | 2.50 | 0.750 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552001-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03

Client Sample ID: **SWM02-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552002
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552002-C

| <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 | 1.00 | 1.00 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552002-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03

Client Sample ID: **SWM02-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552002
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/11/14 18:15 |
| Acenaphthylene | 0.0556 U | 0.0556 | 0.0167 | ug/L | 1 | | 08/11/14 18:15 |
| Anthracene | 0.0556 U | 0.0556 | 0.0167 | ug/L | 1 | | 08/11/14 18:15 |
| Benzo(a)Anthracene | 0.0556 U | 0.0556 | 0.0167 | ug/L | 1 | | 08/11/14 18:15 |
| Benzo[a]pyrene | 0.0556 U | 0.0556 | 0.0167 | ug/L | 1 | | 08/11/14 18:15 |
| Benzo[b]Fluoranthene | 0.0556 U | 0.0556 | 0.0167 | ug/L | 1 | | 08/11/14 18:15 |
| Benzo[g,h,i]perylene | 0.0556 U | 0.0556 | 0.0167 | ug/L | 1 | | 08/11/14 18:15 |
| Benzo[k]fluoranthene | 0.0556 U | 0.0556 | 0.0167 | ug/L | 1 | | 08/11/14 18:15 |
| Chrysene | 0.0556 U | 0.0556 | 0.0167 | ug/L | 1 | | 08/11/14 18:15 |
| Dibenzo[a,h]anthracene | 0.0556 U | 0.0556 | 0.0167 | ug/L | 1 | | 08/11/14 18:15 |
| Fluoranthene | 0.0556 U | 0.0556 | 0.0167 | ug/L | 1 | | 08/11/14 18:15 |
| Fluorene | 0.0556 U | 0.0556 | 0.0167 | ug/L | 1 | | 08/11/14 18:15 |
| Indeno[1,2,3-c,d] pyrene | 0.0556 U | 0.0556 | 0.0167 | ug/L | 1 | | 08/11/14 18:15 |
| Naphthalene | 0.111 U | 0.111 | 0.0344 | ug/L | 1 | | 08/11/14 18:15 |
| Phenanthrene | 0.0556 U | 0.0556 | 0.0167 | ug/L | 1 | | 08/11/14 18:15 |
| Pyrene | 0.0556 U | 0.0556 | 0.0167 | ug/L | 1 | | 08/11/14 18:15 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 69.1 | 50-110 | | % | 1 | | 08/11/14 18:15 |
| Terphenyl-d14 | 98 | 50-135 | | % | 1 | | 08/11/14 18:15 |

Batch Information

Analytical Batch: XMS8218
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/11/14 18:15
Container ID: 1143552002-E

Prep Batch: XXX31654
Prep Method: SW3520C
Prep Date/Time: 08/10/14 11:10
Prep Initial Wt./Vol.: 900 mL
Prep Extract Vol: 1 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03

Client Sample ID: **SWM02-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552002
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/06/14 21:13 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:13 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 21:13 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/06/14 21:13 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 21:13 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:13 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:13 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/06/14 21:13 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:13 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 119 | 70-120 | | % | 1 | | 08/06/14 21:13 |
| 4-Bromofluorobenzene | 96.5 | 75-120 | | % | 1 | | 08/06/14 21:13 |
| Toluene-d8 | 94.9 | 85-120 | | % | 1 | | 08/06/14 21:13 |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Analyst: KCT
Analytical Date/Time: 08/06/14 21:13
Container ID: 1143552002-F

Prep Batch: VXX26236
Prep Method: SW5030B
Prep Date/Time: 08/06/14 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03

Client Sample ID: **SWM02-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552002
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.33 | 1.67 | 0.500 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552002-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03 Dup

Client Sample ID: **SWM02-03 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552005
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552005-C

| <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 | 47 | 1.00 | 1.00 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552005-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03 Dup

Client Sample ID: SWM02-03 Dup
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1143552005
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS8218
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/11/14 19:00
Container ID: 1143552005-E

Prep Batch: XXX31654
Prep Method: SW3520C
Prep Date/Time: 08/10/14 11:10
Prep Initial Wt./Vol.: 885 mL
Prep Extract Vol: 1 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03 Dup

Client Sample ID: **SWM02-03 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552005
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/06/14 21:30 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:30 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 21:30 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/06/14 21:30 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 21:30 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:30 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:30 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/06/14 21:30 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:30 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 114 | 70-120 | | % | 1 | | 08/06/14 21:30 |
| 4-Bromofluorobenzene | 108 | 75-120 | | % | 1 | | 08/06/14 21:30 |
| Toluene-d8 | 94.2 | 85-120 | | % | 1 | | 08/06/14 21:30 |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Analyst: KCT
Analytical Date/Time: 08/06/14 21:30
Container ID: 1143552005-F

Prep Batch: VXX26236
Prep Method: SW5030B
Prep Date/Time: 08/06/14 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03 Dup

Client Sample ID: **SWM02-03 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552005
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 1.67 | 0.500 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552005-B

Print Date: 08/12/2014 2:27:33PM



Results of **SWM03-03**

Client Sample ID: **SWM03-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552006
Lab Project ID: 1143552

Collection Date: 08/04/14 15:54
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.37 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552006-C

| <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 | 44 | 1.00 | 1.00 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552006-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM03-03

Client Sample ID: **SWM03-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552006
Lab Project ID: 1143552

Collection Date: 08/04/14 15:54
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.33 | 1.67 | 0.500 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552006-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM04-03

Client Sample ID: **SWM04-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552007
Lab Project ID: 1143552

Collection Date: 08/04/14 16:01
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552007-C

| <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 | 210 | 10.0 | 10.0 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552007-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM04-03

Client Sample ID: **SWM04-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552007
Lab Project ID: 1143552

Collection Date: 08/04/14 16:01
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.67 | 1.67 | 0.500 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552007-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM05-03

Client Sample ID: **SWM05-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552008
Lab Project ID: 1143552

Collection Date: 08/04/14 16:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 5.43 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552008-C

| <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 | 1.00 | 1.00 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552008-A

Print Date: 08/12/2014 2:27:33PM



Results of **SWM05-03**

Client Sample ID: **SWM05-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552008
Lab Project ID: 1143552

Collection Date: 08/04/14 16:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Acenaphthylene | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Anthracene | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Benzo(a)Anthracene | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Benzo[a]pyrene | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Benzo[b]Fluoranthene | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Benzo[g,h,i]perylene | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Benzo[k]fluoranthene | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Chrysene | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Dibenzo[a,h]anthracene | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Fluoranthene | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Fluorene | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Indeno[1,2,3-c,d] pyrene | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Naphthalene | 0.105 U | 0.105 | 0.0325 | ug/L | 1 | | 08/11/14 22:44 |
| Phenanthrene | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Pyrene | 0.0524 U | 0.0524 | 0.0157 | ug/L | 1 | | 08/11/14 22:44 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 69.4 | 50-110 | | % | 1 | | 08/11/14 22:44 |
| Terphenyl-d14 | 106 | 50-135 | | % | 1 | | 08/11/14 22:44 |

Batch Information

Analytical Batch: XMS8218
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/11/14 22:44
Container ID: 1143552008-E

Prep Batch: XXX31654
Prep Method: SW3520C
Prep Date/Time: 08/10/14 11:10
Prep Initial Wt./Vol.: 955 mL
Prep Extract Vol: 1 mL

Print Date: 08/12/2014 2:27:33PM



Results of **SWM05-03**

Client Sample ID: **SWM05-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552008
Lab Project ID: 1143552

Collection Date: 08/04/14 16:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/06/14 21:46 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:46 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 21:46 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/06/14 21:46 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 21:46 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:46 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:46 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/06/14 21:46 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:46 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 115 | 70-120 | | % | 1 | | 08/06/14 21:46 |
| 4-Bromofluorobenzene | 99.9 | 75-120 | | % | 1 | | 08/06/14 21:46 |
| Toluene-d8 | 94.3 | 85-120 | | % | 1 | | 08/06/14 21:46 |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Analyst: KCT
Analytical Date/Time: 08/06/14 21:46
Container ID: 1143552008-F

Prep Batch: VXX26236
Prep Method: SW5030B
Prep Date/Time: 08/06/14 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM05-03

Client Sample ID: **SWM05-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552008
Lab Project ID: 1143552

Collection Date: 08/04/14 16:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 8.50 | 2.50 | 0.750 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552008-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM06-03

Client Sample ID: **SWM06-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552009
Lab Project ID: 1143552

Collection Date: 08/04/14 17:10
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 4.83 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552009-C

| <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 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552009-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM06-03

Client Sample ID: **SWM06-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552009
Lab Project ID: 1143552

Collection Date: 08/04/14 17:10
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 8.00 | 1.67 | 0.500 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552009-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM07-03

Client Sample ID: **SWM07-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552010
Lab Project ID: 1143552

Collection Date: 08/04/14 17:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 19.2 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552010-C

| <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 | 1360 | 90.9 | 90.9 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552010-A

Print Date: 08/12/2014 2:27:33PM



Results of **SWM07-03**

Client Sample ID: **SWM07-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552010
Lab Project ID: 1143552

Collection Date: 08/04/14 17:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/11/14 22:59 |
| Acenaphthylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Benzo(a)Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Benzo[a]pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Benzo[b]Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Benzo[g,h,i]perylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Benzo[k]fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Chrysene | 0.0701 | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Dibenzo[a,h]anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Fluoranthene | 0.0820 | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Fluorene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Indeno[1,2,3-c,d] pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Naphthalene | 0.100 U | 0.100 | 0.0310 | ug/L | 1 | | 08/11/14 22:59 |
| Phenanthrene | 0.0539 | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Pyrene | 0.149 | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 59.9 | 50-110 | | % | 1 | | 08/11/14 22:59 |
| Terphenyl-d14 | 90.7 | 50-135 | | % | 1 | | 08/11/14 22:59 |

Batch Information

Analytical Batch: XMS8218
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/11/14 22:59
Container ID: 1143552010-E

Prep Batch: XXX31654
Prep Method: SW3520C
Prep Date/Time: 08/10/14 11:10
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM07-03

Client Sample ID: **SWM07-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552010
Lab Project ID: 1143552

Collection Date: 08/04/14 17:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/06/14 22:03 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:03 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 22:03 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/06/14 22:03 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 22:03 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:03 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:03 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/06/14 22:03 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:03 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 112 | 70-120 | | % | 1 | | 08/06/14 22:03 |
| 4-Bromofluorobenzene | 99.9 | 75-120 | | % | 1 | | 08/06/14 22:03 |
| Toluene-d8 | 95.2 | 85-120 | | % | 1 | | 08/06/14 22:03 |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Analyst: KCT
Analytical Date/Time: 08/06/14 22:03
Container ID: 1143552010-F

Prep Batch: VXX26236
Prep Method: SW5030B
Prep Date/Time: 08/06/14 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM07-03

Client Sample ID: **SWM07-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552010
Lab Project ID: 1143552

Collection Date: 08/04/14 17:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 232 | 10.0 | 3.00 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552010-B

Print Date: 08/12/2014 2:27:33PM



Results of **SWM08-03**

Client Sample ID: **SWM08-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552011
Lab Project ID: 1143552

Collection Date: 08/04/14 17:56
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 6.06 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552011-C

| <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 | 2000 | 9.01 | 9.01 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552011-A

Print Date: 08/12/2014 2:27:33PM



Results of **SWM08-03**

Client Sample ID: **SWM08-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552011
Lab Project ID: 1143552

Collection Date: 08/04/14 17:56
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 25.3 | 3.33 | 1.00 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552011-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM08-03 Dup

Client Sample ID: **SWM08-03 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552012
Lab Project ID: 1143552

Collection Date: 08/04/14 17:59
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 6.50 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552012-C

| <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 | 2500 | 100 | 100 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552012-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM08-03 Dup

Client Sample ID: **SWM08-03 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552012
Lab Project ID: 1143552

Collection Date: 08/04/14 17:59
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 25.3 | 3.33 | 1.00 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552012-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM09-03

Client Sample ID: **SWM09-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552013
Lab Project ID: 1143552

Collection Date: 08/04/14 18:21
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 5.36 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552013-C

| <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 | 1500 | 9.01 | 9.01 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552013-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM09-03

Client Sample ID: **SWM09-03**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1143552013
 Lab Project ID: 1143552

Collection Date: 08/04/14 18:21
 Received Date: 08/04/14 19:03
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

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 | 0.0735 U | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Acenaphthylene | 0.0735 U | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Anthracene | 0.0735 U | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Benzo(a)Anthracene | 0.136 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Benzo[a]pyrene | 0.134 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Benzo[b]Fluoranthene | 0.329 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Benzo[g,h,i]perylene | 0.148 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Benzo[k]fluoranthene | 0.0838 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Chrysene | 0.353 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Dibenzo[a,h]anthracene | 0.0735 U | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Fluoranthene | 0.602 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Fluorene | 0.0735 U | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Indeno[1,2,3-c,d] pyrene | 0.0735 U | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Naphthalene | 0.147 U | 0.147 | 0.0456 | ug/L | 1 | | 08/11/14 23:14 |
| Phenanthrene | 0.158 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Pyrene | 0.404 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 72.6 | 50-110 | | % | 1 | | 08/11/14 23:14 |
| Terphenyl-d14 | 105 | 50-135 | | % | 1 | | 08/11/14 23:14 |

Batch Information

Analytical Batch: XMS8218
 Analytical Method: EPA 625M SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 08/11/14 23:14
 Container ID: 1143552013-E

Prep Batch: XXX31654
 Prep Method: SW3520C
 Prep Date/Time: 08/10/14 11:10
 Prep Initial Wt./Vol.: 680 mL
 Prep Extract Vol: 1 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM09-03

Client Sample ID: **SWM09-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552013
Lab Project ID: 1143552

Collection Date: 08/04/14 18:21
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/06/14 22:19 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:19 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 22:19 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/06/14 22:19 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 22:19 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:19 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:19 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/06/14 22:19 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:19 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 114 | 70-120 | | % | 1 | | 08/06/14 22:19 |
| 4-Bromofluorobenzene | 98.5 | 75-120 | | % | 1 | | 08/06/14 22:19 |
| Toluene-d8 | 87.1 | 85-120 | | % | 1 | | 08/06/14 22:19 |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Analyst: KCT
Analytical Date/Time: 08/06/14 22:19
Container ID: 1143552013-F

Prep Batch: VXX26236
Prep Method: SW5030B
Prep Date/Time: 08/06/14 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM09-03

Client Sample ID: **SWM09-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552013
Lab Project ID: 1143552

Collection Date: 08/04/14 18:21
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 45.0 | 5.00 | 1.50 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552013-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM10-03

Client Sample ID: **SWM10-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552014
Lab Project ID: 1143552

Collection Date: 08/04/14 18:38
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552014-C

| <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 | 1400 | 9.01 | 9.01 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552014-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM10-03

Client Sample ID: **SWM10-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552014
Lab Project ID: 1143552

Collection Date: 08/04/14 18:38
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 13.0 | 5.00 | 1.50 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552014-B

Print Date: 08/12/2014 2:27:33PM



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552015
Lab Project ID: 1143552

Collection Date: 08/04/14 14:30
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/06/14 20:40 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 20:40 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 20:40 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/06/14 20:40 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 20:40 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 20:40 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 20:40 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/06/14 20:40 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 20:40 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 120 | 70-120 | | % | 1 | | 08/06/14 20:40 |
| 4-Bromofluorobenzene | 98.4 | 75-120 | | % | 1 | | 08/06/14 20:40 |
| Toluene-d8 | 92.8 | 85-120 | | % | 1 | | 08/06/14 20:40 |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Analyst: KCT
Analytical Date/Time: 08/06/14 20:40
Container ID: 1143552015-A

Prep Batch: VXX26236
Prep Method: SW5030B
Prep Date/Time: 08/06/14 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:33PM



Method Blank

Blank ID: MB for HBN 1625159 [BOD/4999]
Blank Lab ID: 1225022

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1143552001, 1143552002, 1143552005, 1143552006, 1143552007, 1143552008, 1143552009, 1143552010, 1143552011, 1143552012, 1143552013, 1143552014

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: BOD4999
Analytical Method: SM21 5210B
Instrument:
Analyst: WLF
Analytical Date/Time: 8/5/2014 3:00:00PM

Print Date: 08/12/2014 2:27:37PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143552 [BOD4999]

Blank Spike Lab ID: 1225023

Date Analyzed: 08/05/2014 15:00

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143552001, 1143552002, 1143552005, 1143552006, 1143552007, 1143552008, 1143552009, 1143552010, 1143552011, 1143552012, 1143552013, 1143552014

Results by SM21 5210B

| Parameter | Blank Spike (mg/L) | | | CL |
|---------------------------|--------------------|--------|---------|--------------|
| | Spike | Result | Rec (%) | |
| Biochemical Oxygen Demand | 198 | 198 | 100 | (84.6-115.4 |

Batch Information

Analytical Batch: **BOD4999**
Analytical Method: **SM21 5210B**
Instrument:
Analyst: **WLF**

Prep Batch:
Prep Method:
Prep Date/Time:
Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL
Dup Init Wt./Vol.: Extract Vol:

Print Date: 08/12/2014 2:27:38PM



Method Blank

Blank ID: MB for HBN 1625116 [BTF/13661]
Blank Lab ID: 1224884

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1143552001, 1143552002, 1143552005, 1143552006, 1143552007, 1143552008, 1143552009, 1143552010, 1143552011, 1143552012, 1143552013, 1143552014

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: BTF13661
Analytical Method: SM21 9222D
Instrument:
Analyst: MEV
Analytical Date/Time: 8/4/2014 9:16:00PM

Print Date: 08/12/2014 2:27:40PM



Method Blank

Blank ID: MB for HBN 1625132 [STS/4486]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1224933

QC for Samples:

1143552001, 1143552002, 1143552005, 1143552006, 1143552007, 1143552008, 1143552009, 1143552010, 1143552011, 1143552012, 1143552013, 1143552014

Results by SM21 2540D

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|------------------------|----------------|---------------|-----------|--------------|
| Total Suspended Solids | 0.250U | 0.500 | 0.150 | mg/L |

Batch Information

Analytical Batch: STS4486

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Analytical Date/Time: 8/5/2014 4:23:44PM

Print Date: 08/12/2014 2:27:42PM



Duplicate Sample Summary

Original Sample ID: 1143516004

Duplicate Sample ID: 1224936

QC for Samples:

1143552001, 1143552002, 1143552005, 1143552006, 1143552007, 1143552008

Analysis Date: 08/05/2014 16:23

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 | 1520 | 1540 | 1.30 | 5.00 |

Batch Information

Analytical Batch: STS4486

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 08/12/2014 2:27:43PM



Duplicate Sample Summary

Original Sample ID: 1143552008

Duplicate Sample ID: 1224937

QC for Samples:

1143552001, 1143552002, 1143552005, 1143552006, 1143552007, 1143552008, 1143552009, 1143552010, 1143552011, 1143552012, 1143552013, 1143552014

Analysis Date: 08/05/2014 16:23

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 | 8.50 | 8.50 | 0.00 | 5.00 |

Batch Information

Analytical Batch: STS4486

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 08/12/2014 2:27:43PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143552 [STS4486]
Blank Spike Lab ID: 1224934
Date Analyzed: 08/05/2014 16:23

Spike Duplicate ID: LCSD for HBN 1143552 [STS4486]
Spike Duplicate Lab ID: 1224935
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143552001, 1143552002, 1143552005, 1143552006, 1143552007, 1143552008, 1143552009, 1143552010, 1143552011, 1143552012, 1143552013, 1143552014

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 | 45.5 | 91 | 50 | 46.0 | 92 | (75-125) | 1.10 | (< 5) |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Instrument:
Analyst: WLF

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

Print Date: 08/12/2014 2:27:45PM



Method Blank

Blank ID: MB for HBN 1625317 [VXX/26236]
Blank Lab ID: 1225708

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1143552002, 1143552005, 1143552008, 1143552010, 1143552013, 1143552015

Results by EPA 602/624

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|-----------------------|----------------|---------------|-----------|--------------|
| 1,2-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,3-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,4-Dichlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Benzene | 0.200U | 0.400 | 0.120 | ug/L |
| Chlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Ethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| o-Xylene | 0.500U | 1.00 | 0.310 | ug/L |
| P & M -Xylene | 1.00U | 2.00 | 0.620 | ug/L |
| Toluene | 0.500U | 1.00 | 0.310 | ug/L |
| Surrogates | | | | |
| 1,2-Dichloroethane-D4 | 110 | 70-120 | | % |
| 4-Bromofluorobenzene | 101 | 75-120 | | % |
| Toluene-d8 | 97.6 | 85-120 | | % |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Instrument: VPA 780/5975 GC/MS
Analyst: KCT
Analytical Date/Time: 8/6/2014 4:50:00PM

Prep Batch: VXX26236
Prep Method: SW5030B
Prep Date/Time: 8/6/2014 12:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:46PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143552 [VXX26236]
 Blank Spike Lab ID: 1225709
 Date Analyzed: 08/06/2014 17:14

Spike Duplicate ID: LCSD for HBN 1143552
 [VXX26236]
 Spike Duplicate Lab ID: 1225710
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143552002, 1143552005, 1143552008, 1143552010, 1143552013, 1143552015

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 | 32.0 | 107 | 30 | 32.6 | 109 | (70-120) | 1.90 | (< 20) |
| 1,3-Dichlorobenzene | 30 | 33.6 | 112 | 30 | 32.4 | 108 | (75-125) | 3.80 | (< 20) |
| 1,4-Dichlorobenzene | 30 | 34.1 | 114 | 30 | 33.8 | 113 | (75-125) | 0.85 | (< 20) |
| Benzene | 30 | 31.3 | 104 | 30 | 32.2 | 107 | (80-120) | 2.60 | (< 20) |
| Chlorobenzene | 30 | 32.2 | 107 | 30 | 30.2 | 101 | (80-120) | 6.40 | (< 20) |
| Ethylbenzene | 30 | 29.8 | 100 | 30 | 29.9 | 100 | (75-125) | 0.27 | (< 20) |
| o-Xylene | 30 | 33.2 | 111 | 30 | 32.8 | 109 | (80-120) | 1.30 | (< 20) |
| P & M -Xylene | 60 | 66.6 | 111 | 60 | 67.3 | 112 | (75-130) | 1.00 | (< 20) |
| Toluene | 30 | 32.1 | 107 | 30 | 35.3 | 118 | (75-120) | 9.60 | (< 20) |

Surrogates

| | | | | | | | | | |
|-----------------------|----|--|-----|----|--|-----|------------|------|--|
| 1,2-Dichloroethane-D4 | 30 | | 103 | 30 | | 100 | (70-120) | 3.60 | |
| 4-Bromofluorobenzene | 30 | | 103 | 30 | | 98 | (75-120) | 4.30 | |
| Toluene-d8 | 30 | | 99 | 30 | | 108 | (85-120) | 8.40 | |

Batch Information

Analytical Batch: **VMS14346**
 Analytical Method: **EPA 602/624**
 Instrument: **VPA 780/5975 GC/MS**
 Analyst: **KCT**

Prep Batch: **VXX26236**
 Prep Method: **SW5030B**
 Prep Date/Time: **08/06/2014 00:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dup Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:47PM



Billable Matrix Spike Summary

Original Sample ID: 1143552002
MS Sample ID: 1143552003 BMS
MSD Sample ID: 1143552004 BMSD

Analysis Date: 08/06/2014 21:13
Analysis Date: 08/06/2014 18:11
Analysis Date: 08/06/2014 18:28
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 | 31.5 | 105 | 30.0 | 33.0 | 110 | 70-120 | 4.60 | (< 20) |
| 1,3-Dichlorobenzene | 1.00U | 30.0 | 32.1 | 107 | 30.0 | 34.1 | 114 | 75-125 | 6.00 | (< 20) |
| 1,4-Dichlorobenzene | 0.500U | 30.0 | 32.7 | 109 | 30.0 | 34.4 | 115 | 75-125 | 5.10 | (< 20) |
| Benzene | 0.400U | 30.0 | 31.3 | 104 | 30.0 | 32.6 | 109 | 80-120 | 3.90 | (< 20) |
| Chlorobenzene | 0.500U | 30.0 | 31.5 | 105 | 30.0 | 32.4 | 108 | 80-120 | 3.00 | (< 20) |
| Ethylbenzene | 1.00U | 30.0 | 29.1 | 97 | 30.0 | 30.3 | 101 | 75-125 | 4.10 | (< 20) |
| o-Xylene | 1.00U | 30.0 | 31.7 | 106 | 30.0 | 33.2 | 111 | 80-120 | 4.60 | (< 20) |
| P & M -Xylene | 2.00U | 60.0 | 64.2 | 107 | 60.0 | 67.5 | 112 | 75-130 | 5.00 | (< 20) |
| Toluene | 1.00U | 30.0 | 31.4 | 105 | 30.0 | 32.2 | 107 | 75-120 | 2.40 | (< 20) |
| Surrogates | | | | | | | | | | |
| 1,2-Dichloroethane-D4 | | 30.0 | 32.1 | 107 | 30.0 | 29.5 | 98 | 70-120 | 8.50 | |
| 4-Bromofluorobenzene | | 30.0 | 29.9 | 100 | 30.0 | 29.7 | 99 | 75-120 | 0.70 | |
| Toluene-d8 | | 30.0 | 29 | 97 | 30.0 | 29.5 | 98 | 85-120 | 1.60 | |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Instrument: VPA 780/5975 GC/MS
Analyst: KCT
Analytical Date/Time: 8/6/2014 6:11:00PM

Prep Batch: VXX26236
Prep Method: Volatiles Extraction 8240/8260 FULL
Prep Date/Time: 8/6/2014 12:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 08/12/2014 2:27:49PM



Method Blank

Blank ID: MB for HBN 1625361 [XXX/31654]
Blank Lab ID: 1225850

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1143552002, 1143552005, 1143552008, 1143552010, 1143552013

Results by EPA 625M SIMS (PAH)

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|--------------------------|----------------|---------------|-----------|--------------|
| Acenaphthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Acenaphthylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo(a)Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[a]pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[b]Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[g,h,i]perylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[k]fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Chrysene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Dibenzo[a,h]anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluorene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Naphthalene | 0.0500U | 0.100 | 0.0310 | ug/L |
| Phenanthrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Surrogates | | | | |
| 2-Fluorobiphenyl | 76.1 | 50-110 | | % |
| Terphenyl-d14 | 96 | 50-135 | | % |

Batch Information

Analytical Batch: XMS8218
Analytical Method: EPA 625M SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 8/11/2014 5:30:00PM

Prep Batch: XXX31654
Prep Method: SW3520C
Prep Date/Time: 8/10/2014 11:10:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 08/12/2014 2:27:49PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143552 [XXX31654]
 Blank Spike Lab ID: 1225851
 Date Analyzed: 08/11/2014 17:45

Spike Duplicate ID: LCSD for HBN 1143552
 [XXX31654]
 Spike Duplicate Lab ID: 1225852
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143552002, 1143552005, 1143552008, 1143552010, 1143552013

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 | 0.323 | 65 | 0.5 | 0.335 | 67 | (45-110) | 3.70 | (< 30) |
| Acenaphthylene | 0.5 | 0.321 | 64 | 0.5 | 0.338 | 68 | (50-105) | 5.30 | (< 30) |
| Anthracene | 0.5 | 0.372 | 74 | 0.5 | 0.388 | 78 | (55-110) | 4.40 | (< 30) |
| Benzo(a)Anthracene | 0.5 | 0.436 | 87 | 0.5 | 0.441 | 88 | (55-110) | 0.96 | (< 30) |
| Benzo[a]pyrene | 0.5 | 0.426 | 85 | 0.5 | 0.439 | 88 | (55-110) | 3.10 | (< 30) |
| Benzo[b]Fluoranthene | 0.5 | 0.460 | 92 | 0.5 | 0.485 | 97 | (45-120) | 5.30 | (< 30) |
| Benzo[g,h,i]perylene | 0.5 | 0.467 | 93 | 0.5 | 0.463 | 93 | (40-125) | 0.73 | (< 30) |
| Benzo[k]fluoranthene | 0.5 | 0.482 | 96 | 0.5 | 0.442 | 89 | (45-125) | 8.60 | (< 30) |
| Chrysene | 0.5 | 0.455 | 91 | 0.5 | 0.454 | 91 | (55-110) | 0.21 | (< 30) |
| Dibenzo[a,h]anthracene | 0.5 | 0.479 | 96 | 0.5 | 0.472 | 94 | (40-125) | 1.50 | (< 30) |
| Fluoranthene | 0.5 | 0.397 | 79 | 0.5 | 0.395 | 79 | (55-115) | 0.64 | (< 30) |
| Fluorene | 0.5 | 0.336 | 67 | 0.5 | 0.347 | 69 | (50-110) | 3.20 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.5 | 0.476 | 95 | 0.5 | 0.467 | 93 | (45-125) | 2.00 | (< 30) |
| Naphthalene | 0.5 | 0.301 | 60 | 0.5 | 0.313 | 63 | (40-100) | 3.60 | (< 30) |
| Phenanthrene | 0.5 | 0.366 | 73 | 0.5 | 0.390 | 78 | (50-115) | 6.50 | (< 30) |
| Pyrene | 0.5 | 0.386 | 77 | 0.5 | 0.389 | 78 | (50-130) | 0.81 | (< 30) |
| Surrogates | | | | | | | | | |
| 2-Fluorobiphenyl | 0.5 | | 71 | 0.5 | | 71 | (50-110) | 0.70 | |
| Terphenyl-d14 | 0.5 | | 94 | 0.5 | | 91 | (50-135) | 3.10 | |

Batch Information

Analytical Batch: XMS8218
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS

Prep Batch: XXX31654
 Prep Method: SW3520C
 Prep Date/Time: 08/10/2014 11:10
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL
 Dup Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Print Date: 08/12/2014 2:27:51PM



Billable Matrix Spike Summary

Original Sample ID: 1143552002
 MS Sample ID: 1143552003 BMS
 MSD Sample ID: 1143552004 BMSD

Analysis Date: 08/11/2014 18:15
 Analysis Date: 08/11/2014 18:30
 Analysis Date: 08/11/2014 18:45
 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 | 0.556 | .357 | 64 | 0.575 | 0.319 | 56 | 45-110 | 11.40 | (< 30) |
| Acenaphthylene | 0.0556U | 0.556 | .358 | 65 | 0.575 | 0.324 | 56 | 50-105 | 10.20 | (< 30) |
| Anthracene | 0.0556U | 0.556 | .426 | 77 | 0.575 | 0.404 | 70 | 55-110 | 5.10 | (< 30) |
| Benzo(a)Anthracene | 0.0556U | 0.556 | .477 | 86 | 0.575 | 0.500 | 87 | 55-110 | 4.80 | (< 30) |
| Benzo[a]pyrene | 0.0556U | 0.556 | .427 | 77 | 0.575 | 0.410 | 71 | 55-110 | 4.00 | (< 30) |
| Benzo[b]Fluoranthene | 0.0556U | 0.556 | .479 | 86 | 0.575 | 0.532 | 93 | 45-120 | 10.40 | (< 30) |
| Benzo[g,h,i]perylene | 0.0556U | 0.556 | .437 | 79 | 0.575 | 0.418 | 73 | 40-125 | 4.50 | (< 30) |
| Benzo[k]fluoranthene | 0.0556U | 0.556 | .49 | 88 | 0.575 | 0.453 | 79 | 45-125 | 8.00 | (< 30) |
| Chrysene | 0.0556U | 0.556 | .519 | 94 | 0.575 | 0.520 | 91 | 55-110 | 0.10 | (< 30) |
| Dibenzo[a,h]anthracene | 0.0556U | 0.556 | .452 | 81 | 0.575 | 0.432 | 75 | 40-125 | 4.60 | (< 30) |
| Fluoranthene | 0.0556U | 0.556 | .51 | 92 | 0.575 | 0.540 | 94 | 55-115 | 5.70 | (< 30) |
| Fluorene | 0.0556U | 0.556 | .377 | 68 | 0.575 | 0.351 | 61 | 50-110 | 7.20 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.0556U | 0.556 | .442 | 80 | 0.575 | 0.419 | 73 | 45-125 | 5.20 | (< 30) |
| Naphthalene | 0.111U | 0.556 | .32 | 58 | 0.575 | 0.266 | 46 | 40-100 | 18.40 | (< 30) |
| Phenanthrene | 0.0556U | 0.556 | .436 | 78 | 0.575 | 0.426 | 74 | 50-115 | 2.20 | (< 30) |
| Pyrene | 0.0556U | 0.556 | .474 | 85 | 0.575 | 0.507 | 88 | 50-130 | 6.70 | (< 30) |
| Surrogates | | | | | | | | | | |
| 2-Fluorobiphenyl | | 0.556 | .389 | 70 | 0.575 | 0.357 | 62 | 50-110 | 8.40 | |
| Terphenyl-d14 | | 0.556 | .526 | 95 | 0.575 | 0.585 | 102 | 50-135 | 10.70 | |

Batch Information

Analytical Batch: XMS8218
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS
 Analytical Date/Time: 8/11/2014 6:30:00PM

Prep Batch: XXX31654
 Prep Method: Liquid/Liquid Extraction for 625 SIMS
 Prep Date/Time: 8/10/2014 11:10:44AM
 Prep Initial Wt./Vol.: 900.00mL
 Prep Extract Vol: 1.00mL

Print Date: 08/12/2014 2:27:52PM

Chain of Custody Record

1143552



| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | From: Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |
| SGS Quote No. 9901 Date Received: Lab #: | Project #: 5078 |

Project: MOA Stormwater Management **Matrix:** Water **Note:** Samples contain sodium thiosulfate for dechlorination
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 | 8/4/14 | 1430 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ① A | |
| SWM02-03 | 847-1 | } | 1503 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ② A | |
| SWM02-03 Dup | 847-1 | | 1503 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ③ A | |
| SWM03-03 | 1224-1 | | 1554 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ④ A | |
| SWM04-03 | 1224-2 | } | 1601 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑤ A | |
| SWM05-03 | 207-1 | | 1634 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑥ A | |
| SWM06-03 | 314-22 | } | 1710 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑦ A | |
| SWM07-03 | 484-1 | | 1734 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑧ A | |
| SWM08-03 | 86-1 | | 1754 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑨ A | |
| SWM08-03 Dup | 86-1 | } | 1759 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑩ A | |
| SWM09-03 | 499-1 | | 1821 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑪ A | |
| SWM10-03 | 525-2 | ↙ | 1838 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑫ 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: <i>Mark J Savoie</i> | Transporter: <i>by hand</i> | Received By: <i>[Signature]</i> |
| Relinquished By: | Date/Time: 8/4/14 1856 | Date/Time: |
| | Transporter: | Date/Time: 8/4/14 1903 |

Chain of Custody Record

To:
 SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 (907) 561-5301 Fax
 Contact: Forest Taylor

SGS Quote No. 9901

Date Received:

Lab #:

From:
 Kinnetic Laboratories, Inc
 704 West 2nd Avenue
 Anchorage, AK 99501
 (907) 276-6178
 (907) 278-6881 Fax
 Contact: Mark Savoie

1143552



Project: MOA Stormwater Management **Matrix:** Water
Project #: 5078

| 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 | 8/2/14 | 1430 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ① B | |
| SWM02-03 | 847-1 | } | 1503 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ② B | |
| SWM02-03 Dup | 847-1 | | 1503 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ③ B | |
| SWM03-03 | 1224-1 | | 1554 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ④ B | |
| SWM04-03 | 1224-2 | | 1601 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑤ B | |
| SWM05-03 | 207-1 | | 1634 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑥ B | |
| SWM06-03 | 314-22 | | 1716 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑦ B | |
| SWM07-03 | 484-1 | | 1734 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑧ B | |
| SWM08-03 | 86-1 | | 1756 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑩ B | |
| SWM08-03 Dup | 86-1 | | 1759 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑪ B | |
| SWM09-03 | 499-1 | | 1821 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑫ B | |
| SWM10-03 | 525-2 | 1838 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑭ 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.

| Sampled and Relinquished By: | Date/Time: | Transporter | Received By: | Date/Time: |
|------------------------------|-------------|-------------|---------------------|--------------|
| <i>Maniah J Savoie</i> | 8/4/14 1856 | by hand | <i>[Signature]</i> | |
| Relinquished By: | Date/Time: | Transporter | Received By: | Date/Time: |
| | | | <i>Mark Dragger</i> | 8/4/14 19:03 |

6.5 #200
5.9 #238
3.4 #71

Special Instructions/Comments:

Chain of Custody Record

| | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | SGS Quote No. 9901 Date Received: Lab #: | From: Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|

1143552



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 | 8/4/14 | 1430 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ① C | |
| SWM02-03 | 847-1 | | 1503 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ② C | |
| SWM02-03 Dup | 847-1 | | 1503 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ③ C | |
| SWM03-03 | 1224-1 | | 1534 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ④ C | |
| SWM04-03 | 1224-2 | | 1601 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑦ C | |
| SWM05-03 | 207-1 | | 1634 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑧ C | |
| SWM06-03 | 314-22 | | 1710 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑨ C | |
| SWM07-03 | 484-1 | | 1734 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑩ C | |
| SWM08-03 | 86-1 | | 1756 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑪ C | |
| SWM08-03 Dup | 86-1 | | 1759 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑫ C | |
| SWM09-03 | 499-1 | | 1821 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑬ C | |
| SWM10-03 | 525-2 | 1838 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑭ 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: <i>Mark J Savoie</i> | Transporter: <i>by hand</i> | Received By: |
| Date/Time: 8/4/14 1856 | Date/Time: | Date/Time: |
| Relinquished By: | Transporter: | Received By: <i>Mark J Savoie</i> |
| Date/Time: | Date/Time: | Date/Time: 8/4/14 19:03 |

Chain of Custody Record

To:
 SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 (907) 561-5301 Fax
 Contact: Forest Taylor

From:
 Kinnetic Laboratories, Inc
 704 West 2nd Avenue
 Anchorage, AK 99501
 (907) 276-6178
 (907) 278-6881 Fax
 Contact: Mark Savoie

SGS Quote No. 9901
Date Received:
Lab #:

1143552



| Project: MOA Stormwater Management | | Matrix: Water | | Project #. 0000 | | | | | | |
|------------------------------------|------------|---------------|-------------|-----------------|---------------------|-----------|--------|----------------|----------|------------------------|
| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
| SWM02-03 | 847-1 | 8/4/14 | 1503 | Samp/MS/MSD | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 6 | 234 | 234 A-B |
| SWM02-03 Dup | 847-1 | ↙ ↘ | 1503 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | 5 P-E | |
| SWM05-03 | 207-1 | | 1634 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | 6 D-E | |
| SWM07-03 | 484-1 | | 1734 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | 10 D-E | |
| SWM09-03 | 499-1 | | 1821 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | 13 D-E | |
| | | | | | | | | | 28814/14 | |
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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: |
|------------------------------|-------------|-------------|--------------------|--------------|
| Mariah J Savoie | 8/4/14 1856 | by hand | <i>[Signature]</i> | |
| Relinquished By: | | Transporter | Received By: | Date/Time: |
| <i>[Signature]</i> | | | <i>[Signature]</i> | 8/4/14 19203 |

Chain of Custody Record

| | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | SGS Quote No. 9901 Date Received: Lab #: | From: Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|

1143552



| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|--------------|------------|-------------|-------------|-------------|-------------------|-----------|-----------|----------------|--------|------------------------|
| SWM02-03 | 847-1 | 8/4/14 | 1503 | Samp/MS/MSD | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 9 | 2 F-H | 8/4/14 C-E |
| SWM02-03 Dup | 847-1 | } | 1503 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | 5 F-H | |
| SWM05-03 | 207-1 | | 1634 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | 8 F-H | |
| SWM07-03 | 484-1 | | 1734 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | 10 F-H | |
| SWM09-03 | 499-1 | | 1821 | 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 | |
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Project: MOA Stormwater Management **Matrix:** Water **Project #:** 5078

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 KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

| Sampled and Relinquished By: | Date/Time: | Received By: | Date/Time: |
|------------------------------|-------------|--------------------|--------------|
| <i>Manish J Saver</i> | 8/4/14 1856 | <i>[Signature]</i> | |
| Relinquished By: | Date/Time: | Received By: | Date/Time: |
| <i>[Signature]</i> | | <i>[Signature]</i> | 8/4/14 19:03 |

Special Instructions/Comments:



1143552



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 | <input checked="" type="checkbox"/> Exemption permitted if sampler hand carries/delivers. |
| Temperature blank compliant* (i.e., 0-6°C after CF)? If >6°C, were samples collected <8 hours ago? If <0°C, were all sample containers ice free? Cooler ID: <u>1</u> @ <u>6.5</u> w/ Therm.ID: <u>200</u> Cooler ID: <u>2</u> @ <u>5.9</u> w/ Therm.ID: <u># 238</u> Cooler ID: <u>3</u> @ <u>3.4</u> w/ Therm.ID: <u># 71</u> Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ 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." | Yes <u>No</u> N/A <u>Yes</u> No N/A <u>Yes</u> No N/A | <input type="checkbox"/> Exemption permitted if chilled & collected <8 hrs ago. <i>Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.</i> |
| Delivery method (specify all that apply): <u>Client (hand carried)</u> USPS Lynden AK Air Alert Courier UPS FedEx RAVN C&D Delivery Carlisle Pen Air Warp Speed Other: _____ → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog? | Tracking/AB # or see attached or <u>N/A</u> Yes No <u>N/A</u> | |
| → For samples received with payment, note amount (\$) and whether cash / check / CC (circle one) was received. → For samples received in FBKS , ANCH staff will verify all criteria are reviewed. SRF initiated in FBKS by: | | |
| Were samples received within hold time? Do samples match COC* (i.e., sample IDs, dates/times collected)? Were analyses requested unambiguous? | <u>Yes</u> No N/A <u>Yes</u> No N/A <u>Yes</u> No N/A | <i>Note: Refer to form F-083 "Sample Guide" for hold times. Note: If times differ <1hr, record details and login per COC.</i> |
| Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other: | <u>Yes</u> No | |
| Were proper containers (type/mass/volume/preservative*) used? Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? 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 <u>Yes</u> No N/A <u>Yes</u> No N/A Yes No <u>N/A</u> | <input type="checkbox"/> Exemption permitted for metals (e.g., 200.8/6020A). |
| 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 special handling (e.g., "MI" soils, foreign soils, lab filter for dissolved..., lab extract for volatiles, Ref Lab, limited volume), were bottles/paperwork flagged (e.g., sticker)? | 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 <u>N/A</u> | <u>2/28/17</u> <u>Fecal, TSS, BOD</u> |
| For SITE-SPECIFIC QC , e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly? | <u>Yes</u> No N/A | <u>MS, MSD</u> |
| 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>TL</u> PM notified: N/A |
| Was PEER REVIEW of <i>sample numbering/labeling completed</i> ? | Yes No <u>N/A</u> | Peer Reviewed by: N/A |
| Additional notes (if applicable): | | |

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



Sample Containers and Preservatives

| <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> | <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> |
|---------------------|-------------------------------------------------------------------|----------------------------|---------------------|-------------------------------------------------------------------|----------------------------|
| 1143552001-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1143552008-H | HCL to pH < 2 | OK |
| 1143552001-B | No Preservative Required | OK | 1143552009-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1143552001-C | No Preservative Required | OK | 1143552009-B | No Preservative Required | OK |
| 1143552002-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1143552009-C | No Preservative Required | OK |
| 1143552002-B | No Preservative Required | OK | 1143552010-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1143552002-C | No Preservative Required | OK | 1143552010-B | No Preservative Required | OK |
| 1143552002-D | No Preservative Required | OK | 1143552010-C | No Preservative Required | OK |
| 1143552002-E | No Preservative Required | OK | 1143552010-D | No Preservative Required | OK |
| 1143552002-F | HCL to pH < 2 | OK | 1143552010-E | No Preservative Required | OK |
| 1143552002-G | HCL to pH < 2 | OK | 1143552010-F | HCL to pH < 2 | OK |
| 1143552002-H | HCL to pH < 2 | OK | 1143552010-G | HCL to pH < 2 | OK |
| 1143552003-A | No Preservative Required | OK | 1143552010-H | HCL to pH < 2 | OK |
| 1143552003-B | No Preservative Required | OK | 1143552011-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1143552003-C | HCL to pH < 2 | OK | 1143552011-B | No Preservative Required | OK |
| 1143552003-D | HCL to pH < 2 | OK | 1143552011-C | No Preservative Required | OK |
| 1143552003-E | HCL to pH < 2 | OK | 1143552012-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1143552004-A | No Preservative Required | OK | 1143552012-B | No Preservative Required | OK |
| 1143552004-B | No Preservative Required | OK | 1143552012-C | No Preservative Required | OK |
| 1143552004-C | HCL to pH < 2 | OK | 1143552013-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1143552004-D | HCL to pH < 2 | OK | 1143552013-B | No Preservative Required | OK |
| 1143552004-E | HCL to pH < 2 | OK | 1143552013-C | No Preservative Required | OK |
| 1143552005-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1143552013-D | No Preservative Required | OK |
| 1143552005-B | No Preservative Required | OK | 1143552013-E | No Preservative Required | OK |
| 1143552005-C | No Preservative Required | OK | 1143552013-F | HCL to pH < 2 | OK |
| 1143552005-D | No Preservative Required | OK | 1143552013-G | HCL to pH < 2 | OK |
| 1143552005-E | No Preservative Required | OK | 1143552013-H | HCL to pH < 2 | OK |
| 1143552005-F | HCL to pH < 2 | OK | 1143552014-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1143552005-G | HCL to pH < 2 | OK | 1143552014-B | No Preservative Required | OK |
| 1143552005-H | HCL to pH < 2 | OK | 1143552014-C | No Preservative Required | OK |
| 1143552006-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1143552015-A | HCL to pH < 2 | OK |
| 1143552006-B | No Preservative Required | OK | 1143552015-B | HCL to pH < 2 | OK |
| 1143552006-C | No Preservative Required | OK | 1143552015-C | HCL to pH < 2 | OK |
| 1143552007-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | | | |
| 1143552007-B | No Preservative Required | OK | | | |
| 1143552007-C | No Preservative Required | OK | | | |
| 1143552008-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | | | |
| 1143552008-B | No Preservative Required | OK | | | |
| 1143552008-C | No Preservative Required | OK | | | |
| 1143552008-D | No Preservative Required | OK | | | |
| 1143552008-E | No Preservative Required | OK | | | |
| 1143552008-F | HCL to pH < 2 | OK | | | |
| 1143552008-G | HCL to pH < 2 | OK | | | |

Appendix B4

Laboratory Data Package Storm Event #4

Intentionally left blank



Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.
704 W 2nd Avenue
Anchorage, AK 99501
(907)276-6178

Report Number: **1144034**

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 Forest 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.

Forest Taylor
Project Manager
Forest.Taylor@sgs.com

Date

Print Date: 09/04/2014 12:16:02PM

Case Narrative

SGS Client: **Kinnetic Laboratories, Inc.**
SGS Project: **1144034**
Project Name/Site: **5078 MOA Stormwater Management**
Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

*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: 09/04/2014 12:16:02PM

Report of Manual Integrations

| <u>Laboratory ID</u> | <u>Client Sample ID</u> | <u>Analytical Batch</u> | <u>Analyte</u> | <u>Reason</u> |
|----------------------------|--------------------------------|-------------------------|----------------------|---------------|
| EPA 625M SIMS (PAH) | | | | |
| 1144034010 | SWM07-04 | XMS8258 | Chrysene | BLC |
| 1144034010 | SWM07-04 | XMS8258 | Pyrene | RP |
| 1144034013 | SWM09-04 | XMS8258 | Benzo[b]Fluoranthene | BLC |
| 1229808 | LCS for HBN 1626268 [XXX/31831 | XMS8258 | Benzo[b]Fluoranthene | PNF |
| 1229808 | LCS for HBN 1626268 [XXX/31831 | XMS8258 | Benzo[k]fluoranthene | RP |
| 1229808 | LCS for HBN 1626268 [XXX/31831 | XMS8258 | Chrysene | RP |
| 1229809 | LCSD for HBN 1626268 [XXX/3183 | XMS8258 | Benzo[b]Fluoranthene | PNF |
| 1229809 | LCSD for HBN 1626268 [XXX/3183 | XMS8258 | Benzo[k]fluoranthene | RP |
| 1229809 | LCSD for HBN 1626268 [XXX/3183 | XMS8258 | Chrysene | 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.

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>), 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., 1/2 of the LOQ) |
| 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 | 1144034001 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM02-04 | 1144034002 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM02-04 MS | 1144034003 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM02-04 MSD | 1144034004 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM02-04 DUP | 1144034005 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM03-04 | 1144034006 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM04-04 | 1144034007 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM05-04 | 1144034008 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM06-04 | 1144034009 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM07-04 | 1144034010 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM08-04 | 1144034011 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM08-04 DUP | 1144034012 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM09-04 | 1144034013 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM10-04 | 1144034014 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| Trip Blank | 1144034015 | 08/24/2014 | 08/24/2014 | 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: **SWM01-04**

Lab Sample ID: 1144034001

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.45 | mg/L |
| Fecal Coliform | 580 | col/100mL |
| Total Suspended Solids | 6.67 | mg/L |

Client Sample ID: **SWM02-04**

Lab Sample ID: 1144034002

Microbiology Laboratory

Polynuclear Aromatics GC/MS

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 51 | col/100mL |
| Fluoranthene | 0.0574 | ug/L |
| Total Suspended Solids | 2.50 | mg/L |

Client Sample ID: **SWM02-04 DUP**

Lab Sample ID: 1144034005

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 45 | col/100mL |
| Total Suspended Solids | 2.50 | mg/L |

Client Sample ID: **SWM03-04**

Lab Sample ID: 1144034006

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 20 | col/100mL |
| Total Suspended Solids | 4.00 | mg/L |

Client Sample ID: **SWM04-04**

Lab Sample ID: 1144034007

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.60 | mg/L |
| Fecal Coliform | 2800 | col/100mL |
| Total Suspended Solids | 9.67 | mg/L |

Client Sample ID: **SWM05-04**

Lab Sample ID: 1144034008

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 4.20 | mg/L |
| Fecal Coliform | 350 | col/100mL |
| Total Suspended Solids | 6.00 | mg/L |

Client Sample ID: **SWM06-04**

Lab Sample ID: 1144034009

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 3.07 | mg/L |
| Fecal Coliform | 330 | col/100mL |
| Total Suspended Solids | 6.67 | mg/L |

Client Sample ID: **SWM07-04**

Lab Sample ID: 1144034010

Microbiology Laboratory

Polynuclear Aromatics GC/MS

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 12.1 | mg/L |
| Fecal Coliform | 2100 | col/100mL |
| Benzo[g,h,i]perylene | 0.0875 | ug/L |
| Chrysene | 0.150 | ug/L |
| Fluoranthene | 0.183 | ug/L |
| Phenanthrene | 0.116 | ug/L |
| Pyrene | 0.257 | ug/L |
| Total Suspended Solids | 98.3 | mg/L |

Detectable Results Summary

Client Sample ID: **SWM08-04**

Lab Sample ID: 1144034011

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 3.74 | mg/L |
| Fecal Coliform | 764 | col/100mL |
| Total Suspended Solids | 28.5 | mg/L |

Client Sample ID: **SWM08-04 DUP**

Lab Sample ID: 1144034012

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 3.47 | mg/L |
| Fecal Coliform | 580 | col/100mL |
| Total Suspended Solids | 28.5 | mg/L |

Client Sample ID: **SWM09-04**

Lab Sample ID: 1144034013

Microbiology Laboratory

Polynuclear Aromatics GC/MS

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 6.46 | mg/L |
| Fecal Coliform | 919 | col/100mL |
| Benzo(a)Anthracene | 0.0966 | ug/L |
| Benzo[a]pyrene | 0.0906 | ug/L |
| Benzo[b]Fluoranthene | 0.341 | ug/L |
| Benzo[g,h,i]perylene | 0.119 | ug/L |
| Chrysene | 0.249 | ug/L |
| Fluoranthene | 0.489 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.0880 | ug/L |
| Phenanthrene | 0.129 | ug/L |
| Pyrene | 0.328 | ug/L |
| Total Suspended Solids | 39.0 | mg/L |

Waters Department

Client Sample ID: **SWM10-04**

Lab Sample ID: 1144034014

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 3.17 | mg/L |
| Fecal Coliform | 11800 | col/100mL |
| Total Suspended Solids | 87.3 | mg/L |



Results of **SWM01-04**

Client Sample ID: **SWM01-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034001
Lab Project ID: 1144034

Collection Date: 08/24/14 13:30
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.45 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034001-B

| <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 | 580 | 10.0 | 10.0 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034001-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM01-04

Client Sample ID: **SWM01-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034001
Lab Project ID: 1144034

Collection Date: 08/24/14 13:30
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 1.67 | 0.500 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034001-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM02-04**

Client Sample ID: **SWM02-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034002
Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034002-B

| <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 | 51 | 1.00 | 1.00 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034002-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM02-04

Client Sample ID: **SWM02-04**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1144034002
 Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
 Received Date: 08/24/14 17:52
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

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 | | 08/28/14 15:22 |
| Acenaphthylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 15:22 |
| Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 15:22 |
| Benzo(a)Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Benzo[a]pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Benzo[b]Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Benzo[g,h,i]perylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Benzo[k]fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Chrysene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Dibenzo[a,h]anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Fluoranthene | 0.0574 | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Fluorene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 15:22 |
| Indeno[1,2,3-c,d] pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Naphthalene | 0.100 U | 0.100 | 0.0310 | ug/L | 1 | | 08/28/14 15:22 |
| Phenanthrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 15:22 |
| Pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 63.8 | 50-110 | | % | 1 | | 08/28/14 15:22 |
| Terphenyl-d14 | 91.4 | 50-135 | | % | 1 | | 08/29/14 15:27 |

Batch Information

Analytical Batch: XMS8258
 Analytical Method: EPA 625M SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 08/28/14 15:22
 Container ID: 1144034002-G

Prep Batch: XXX31831
 Prep Method: SW3520C
 Prep Date/Time: 08/27/14 08:55
 Prep Initial Wt./Vol.: 1000 mL
 Prep Extract Vol: 1 mL

Analytical Batch: XMS8262
 Analytical Method: EPA 625M SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 08/29/14 15:27
 Container ID: 1144034002-G

Prep Batch: XXX31831
 Prep Method: SW3520C
 Prep Date/Time: 08/27/14 08:55
 Prep Initial Wt./Vol.: 1000 mL
 Prep Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:06PM



Results of SWM02-04

Client Sample ID: **SWM02-04**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1144034002
 Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
 Received Date: 08/24/14 17:52
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

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 | | 08/25/14 22:08 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:08 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:08 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/25/14 22:08 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:08 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:08 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:08 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/25/14 22:08 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:08 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 101 | 70-120 | | % | 1 | | 08/25/14 22:08 |
| 4-Bromofluorobenzene | 104 | 75-120 | | % | 1 | | 08/25/14 22:08 |
| Toluene-d8 | 98 | 85-120 | | % | 1 | | 08/25/14 22:08 |

Batch Information

Analytical Batch: VMS14404
 Analytical Method: EPA 602/624
 Analyst: NRB
 Analytical Date/Time: 08/25/14 22:08
 Container ID: 1144034002-E

Prep Batch: VXX26335
 Prep Method: SW5030B
 Prep Date/Time: 08/25/14 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:06PM



Results of SWM02-04

Client Sample ID: **SWM02-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034002
Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.50 | 1.25 | 0.375 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034002-C

Print Date: 09/04/2014 12:16:06PM



Results of SWM02-04 DUP

Client Sample ID: **SWM02-04 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034005
Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034005-B

| <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 | 45 | 1.00 | 1.00 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034005-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM02-04 DUP

Client Sample ID: SWM02-04 DUP
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1144034005
Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS8258
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/28/14 16:06
Container ID: 1144034005-G

Prep Batch: XXX31831
Prep Method: SW3520C
Prep Date/Time: 08/27/14 08:55
Prep Initial Wt./Vol.: 830 mL
Prep Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:06PM



Results of **SWM02-04 DUP**

Client Sample ID: **SWM02-04 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034005
Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 22:24 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:24 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:24 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/25/14 22:24 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:24 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:24 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:24 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/25/14 22:24 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:24 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 99.8 | 70-120 | | % | 1 | | 08/25/14 22:24 |
| 4-Bromofluorobenzene | 106 | 75-120 | | % | 1 | | 08/25/14 22:24 |
| Toluene-d8 | 96.3 | 85-120 | | % | 1 | | 08/25/14 22:24 |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 08/25/14 22:24
Container ID: 1144034005-E

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 08/25/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:06PM



Results of SWM02-04 DUP

Client Sample ID: **SWM02-04 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034005
Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.50 | 1.25 | 0.375 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034005-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM03-04**

Client Sample ID: **SWM03-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034006
Lab Project ID: 1144034

Collection Date: 08/24/14 14:45
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034006-B

| <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 | 20 | 1.00 | 1.00 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034006-A

Print Date: 09/04/2014 12:16:06PM



Results of **SWM03-04**

Client Sample ID: **SWM03-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034006
Lab Project ID: 1144034

Collection Date: 08/24/14 14:45
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 4.00 | 1.67 | 0.500 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034006-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM04-04**

Client Sample ID: **SWM04-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034007
Lab Project ID: 1144034

Collection Date: 08/24/14 14:53
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.60 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034007-B

| <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 | 2800 | 100 | 100 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034007-A

Print Date: 09/04/2014 12:16:06PM



Results of **SWM04-04**

Client Sample ID: **SWM04-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034007
Lab Project ID: 1144034

Collection Date: 08/24/14 14:53
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 9.67 | 1.67 | 0.500 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034007-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM05-04**

Client Sample ID: **SWM05-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034008
Lab Project ID: 1144034

Collection Date: 08/24/14 15:20
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 4.20 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034008-B

| <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 | 350 | 10.0 | 10.0 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034008-A

Print Date: 09/04/2014 12:16:06PM



Results of **SWM05-04**

Client Sample ID: **SWM05-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034008
Lab Project ID: 1144034

Collection Date: 08/24/14 15:20
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 09/02/14 16:51 |
| Acenaphthylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 09/02/14 16:51 |
| Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 09/02/14 16:51 |
| Benzo(a)Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 09/02/14 16:51 |
| Benzo[a]pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 09/02/14 16:51 |
| Benzo[b]Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 09/02/14 16:51 |
| Benzo[g,h,i]perylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 09/02/14 16:51 |
| Benzo[k]fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 09/02/14 16:51 |
| Chrysene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 09/02/14 16:51 |
| Dibenzo[a,h]anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 09/02/14 16:51 |
| Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 09/02/14 16:51 |
| Fluorene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 09/02/14 16:51 |
| Indeno[1,2,3-c,d] pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 09/02/14 16:51 |
| Naphthalene | 0.100 U | 0.100 | 0.0310 | ug/L | 1 | | 09/02/14 16:51 |
| Phenanthrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 09/02/14 16:51 |
| Pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 09/02/14 16:51 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 65.3 | 50-110 | | % | 1 | | 09/02/14 16:51 |
| Terphenyl-d14 | 83.3 | 50-135 | | % | 1 | | 09/02/14 16:51 |

Batch Information

Analytical Batch: XMS8264
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 09/02/14 16:51
Container ID: 1144034008-H

Prep Batch: XXX31868
Prep Method: SW3520C
Prep Date/Time: 08/30/14 09:20
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:06PM



Results of **SWM05-04**

Client Sample ID: **SWM05-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034008
Lab Project ID: 1144034

Collection Date: 08/24/14 15:20
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 22:41 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:41 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:41 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/25/14 22:41 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:41 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:41 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:41 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/25/14 22:41 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:41 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 104 | 70-120 | | % | 1 | | 08/25/14 22:41 |
| 4-Bromofluorobenzene | 108 | 75-120 | | % | 1 | | 08/25/14 22:41 |
| Toluene-d8 | 98.4 | 85-120 | | % | 1 | | 08/25/14 22:41 |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 08/25/14 22:41
Container ID: 1144034008-E

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 08/25/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:06PM



Results of SWM05-04

Client Sample ID: **SWM05-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034008
Lab Project ID: 1144034

Collection Date: 08/24/14 15:20
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 6.00 | 1.67 | 0.500 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034008-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM06-04**

Client Sample ID: **SWM06-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034009
Lab Project ID: 1144034

Collection Date: 08/24/14 16:01
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.07 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034009-B

| <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 | 330 | 10.0 | 10.0 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034009-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM06-04

Client Sample ID: **SWM06-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034009
Lab Project ID: 1144034

Collection Date: 08/24/14 16:01
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 1.67 | 0.500 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034009-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM07-04**

Client Sample ID: **SWM07-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034010
Lab Project ID: 1144034

Collection Date: 08/24/14 16:27
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 12.1 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034010-B

| <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 | 2100 | 100 | 100 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034010-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM07-04

Client Sample ID: SWM07-04
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1144034010
Lab Project ID: 1144034

Collection Date: 08/24/14 16:27
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS8258
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/28/14 16:50
Container ID: 1144034010-G

Prep Batch: XXX31831
Prep Method: SW3520C
Prep Date/Time: 08/27/14 08:55
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL



Results of SWM07-04

Client Sample ID: **SWM07-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034010
Lab Project ID: 1144034

Collection Date: 08/24/14 16:27
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 22:57 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:57 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:57 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/25/14 22:57 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:57 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:57 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:57 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/25/14 22:57 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:57 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 103 | 70-120 | | % | 1 | | 08/25/14 22:57 |
| 4-Bromofluorobenzene | 106 | 75-120 | | % | 1 | | 08/25/14 22:57 |
| Toluene-d8 | 101 | 85-120 | | % | 1 | | 08/25/14 22:57 |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 08/25/14 22:57
Container ID: 1144034010-E

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 08/25/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:06PM



Results of **SWM07-04**

Client Sample ID: **SWM07-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034010
Lab Project ID: 1144034

Collection Date: 08/24/14 16:27
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 98.3 | 4.17 | 1.25 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034010-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM08-04**

Client Sample ID: **SWM08-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034011
Lab Project ID: 1144034

Collection Date: 08/24/14 16:40
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.74 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034011-B

| <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 | 764 | 9.09 | 9.09 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034011-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM08-04

Client Sample ID: **SWM08-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034011
Lab Project ID: 1144034

Collection Date: 08/24/14 16:40
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 28.5 | 2.50 | 0.750 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034011-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM08-04 DUP**

Client Sample ID: **SWM08-04 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034012
Lab Project ID: 1144034

Collection Date: 08/24/14 16:40
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.47 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034012-B

| <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 | 580 | 10.0 | 10.0 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034012-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM08-04 DUP

Client Sample ID: **SWM08-04 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034012
Lab Project ID: 1144034

Collection Date: 08/24/14 16:40
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 28.5 | 2.50 | 0.750 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034012-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM09-04**

Client Sample ID: **SWM09-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034013
Lab Project ID: 1144034

Collection Date: 08/24/14 17:10
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 6.46 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034013-B

| <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 | 919 | 9.01 | 9.01 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034013-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM09-04

Client Sample ID: SWM09-04
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1144034013
Lab Project ID: 1144034

Collection Date: 08/24/14 17:10
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS8258
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/28/14 16:35
Container ID: 1144034013-G

Prep Batch: XXX31831
Prep Method: SW3520C
Prep Date/Time: 08/27/14 08:55
Prep Initial Wt./Vol.: 940 mL
Prep Extract Vol: 1 mL



Results of **SWM09-04**

Client Sample ID: **SWM09-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034013
Lab Project ID: 1144034

Collection Date: 08/24/14 17:10
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 23:13 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 23:13 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 23:13 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/25/14 23:13 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 23:13 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 23:13 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 23:13 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/25/14 23:13 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 23:13 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 102 | 70-120 | | % | 1 | | 08/25/14 23:13 |
| 4-Bromofluorobenzene | 103 | 75-120 | | % | 1 | | 08/25/14 23:13 |
| Toluene-d8 | 99.8 | 85-120 | | % | 1 | | 08/25/14 23:13 |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 08/25/14 23:13
Container ID: 1144034013-E

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 08/25/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:06PM



Results of **SWM09-04**

Client Sample ID: **SWM09-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034013
Lab Project ID: 1144034

Collection Date: 08/24/14 17:10
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 39.0 | 2.50 | 0.750 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034013-C

Print Date: 09/04/2014 12:16:06PM



Results of SWM10-04

Client Sample ID: **SWM10-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034014
Lab Project ID: 1144034

Collection Date: 08/24/14 17:25
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.17 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034014-B

| <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 | 11800 | 90.9 | 90.9 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034014-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM10-04

Client Sample ID: **SWM10-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034014
Lab Project ID: 1144034

Collection Date: 08/24/14 17:25
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 87.3 | 3.33 | 1.00 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034014-C

Print Date: 09/04/2014 12:16:06PM



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034015
Lab Project ID: 1144034

Collection Date: 08/24/14 13:30
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 21:35 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 21:35 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 21:35 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/25/14 21:35 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 21:35 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 21:35 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 21:35 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/25/14 21:35 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 21:35 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 97.6 | 70-120 | | % | 1 | | 08/25/14 21:35 |
| 4-Bromofluorobenzene | 106 | 75-120 | | % | 1 | | 08/25/14 21:35 |
| Toluene-d8 | 104 | 85-120 | | % | 1 | | 08/25/14 21:35 |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 08/25/14 21:35
Container ID: 1144034015-B

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 08/25/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:06PM



Method Blank

Blank ID: MB for HBN 1626155 [BOD/5016]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1229295

QC for Samples:

1144034001, 1144034002, 1144034005, 1144034006, 1144034007, 1144034008, 1144034009, 1144034010, 1144034011, 1144034012, 1144034013, 1144034014

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: BOD5016

Analytical Method: SM21 5210B

Instrument:

Analyst: WLF

Analytical Date/Time: 8/25/2014 9:58:00AM

Print Date: 09/04/2014 12:16:10PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144034 [BOD5016]

Blank Spike Lab ID: 1229296

Date Analyzed: 08/25/2014 09:58

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144034001, 1144034002, 1144034005, 1144034006, 1144034007, 1144034008, 1144034009, 1144034010, 1144034011, 1144034012, 1144034013, 1144034014

Results by SM21 5210B

| Parameter | Blank Spike (mg/L) | | | CL |
|---------------------------|--------------------|--------|---------|--------------|
| | Spike | Result | Rec (%) | |
| Biochemical Oxygen Demand | 198 | 194 | 98 | (84.6-115.4 |

Batch Information

Analytical Batch: **BOD5016**
Analytical Method: **SM21 5210B**
Instrument:
Analyst: **WLF**

Prep Batch:
Prep Method:
Prep Date/Time:
Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL
Dup Init Wt./Vol.: Extract Vol:

Print Date: 09/04/2014 12:16:11PM



Method Blank

Blank ID: MB for HBN 1626157 [BTF/13705]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1229315

QC for Samples:

1144034001, 1144034002, 1144034005, 1144034006, 1144034007, 1144034008, 1144034009, 1144034010, 1144034011, 1144034012, 1144034013, 1144034014

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: BTF13705

Analytical Method: SM21 9222D

Instrument:

Analyst: SLC

Analytical Date/Time: 8/24/2014 7:55:00PM

Print Date: 09/04/2014 12:16:14PM



Method Blank

Blank ID: MB for HBN 1626174 [STS/4514]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1229388

QC for Samples:

1144034001, 1144034002, 1144034005, 1144034006, 1144034007, 1144034008, 1144034009, 1144034010, 1144034011, 1144034012, 1144034013, 1144034014

Results by SM21 2540D

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|------------------------|----------------|---------------|-----------|--------------|
| Total Suspended Solids | 0.250U | 0.500 | 0.150 | mg/L |

Batch Information

Analytical Batch: STS4514

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Analytical Date/Time: 8/26/2014 9:16:44AM

Print Date: 09/04/2014 12:16:15PM

Duplicate Sample Summary

Original Sample ID: 1144034001

Duplicate Sample ID: 1229391

QC for Samples:

1144034001, 1144034002, 1144034005, 1144034006

Analysis Date: 08/26/2014 09:16

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 | 6.67 | 6.67 | 0.00 | 5.00 |

Batch Information

Analytical Batch: STS4514

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 09/04/2014 12:16:16PM



Duplicate Sample Summary

Original Sample ID: 1144034006

Duplicate Sample ID: 1229392

Analysis Date: 08/26/2014 09:16

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1144034002, 1144034005, 1144034006, 1144034007, 1144034008, 1144034009, 1144034010, 1144034011, 1144034012, 1144034013, 1144034014

Results by SM21 2540D

| <u>NAME</u> | <u>Original ()</u> | <u>Duplicate ()</u> | <u>RPD (%)</u> | <u>RPD CL</u> |
|------------------------|---------------------|----------------------|----------------|---------------|
| Total Suspended Solids | 4.00 | 4.00 | 0.00 | 5.00 |

Batch Information

Analytical Batch: STS4514

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 09/04/2014 12:16:16PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144034 [STS4514]
Blank Spike Lab ID: 1229389
Date Analyzed: 08/26/2014 09:16

Spike Duplicate ID: LCSD for HBN 1144034 [STS4514]
Spike Duplicate Lab ID: 1229390
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144034001, 1144034002, 1144034005, 1144034006, 1144034007, 1144034008, 1144034009, 1144034010, 1144034011, 1144034012, 1144034013, 1144034014

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 | 48.5 | 97 | 50 | 49.0 | 98 | (75-125) | 1.00 | (< 5) |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Instrument:
Analyst: WLF

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

Print Date: 09/04/2014 12:16:17PM



Method Blank

Blank ID: MB for HBN 1626182 [VXX/26335]
Blank Lab ID: 1229424

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1144034002, 1144034005, 1144034008, 1144034010, 1144034013, 1144034015

Results by EPA 602/624

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|-----------------------|----------------|---------------|-----------|--------------|
| 1,2-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,3-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,4-Dichlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Benzene | 0.200U | 0.400 | 0.120 | ug/L |
| Chlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Ethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| o-Xylene | 0.500U | 1.00 | 0.310 | ug/L |
| P & M -Xylene | 1.00U | 2.00 | 0.620 | ug/L |
| Toluene | 0.500U | 1.00 | 0.310 | ug/L |
| Surrogates | | | | |
| 1,2-Dichloroethane-D4 | 101 | 70-120 | | % |
| 4-Bromofluorobenzene | 104 | 75-120 | | % |
| Toluene-d8 | 102 | 85-120 | | % |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 8/25/2014 7:10:00PM

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 8/25/2014 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:18PM



Leaching Blank

Blank ID: LB for HBN 1626181 [TCLP/7483]
Blank Lab ID: 1229412

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1144034002, 1144034005, 1144034008, 1144034010, 1144034013, 1144034015

Results by EPA 602/624

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|-----------------------|----------------|---------------|-----------|--------------|
| 1,4-Dichlorobenzene | 12.5U | 25.0 | 7.50 | ug/L |
| Benzene | 10.0U | 20.0 | 6.00 | ug/L |
| Chlorobenzene | 12.5U | 25.0 | 7.50 | ug/L |
| Surrogates | | | | |
| 1,2-Dichloroethane-D4 | 100 | 70-120 | | % |
| 4-Bromofluorobenzene | 107 | 75-120 | | % |
| Toluene-d8 | 99.7 | 85-120 | | % |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 8/25/2014 9:51:00PM

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 8/25/2014 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:18PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144034 [VXX26335]
 Blank Spike Lab ID: 1229425
 Date Analyzed: 08/25/2014 19:31

Spike Duplicate ID: LCSD for HBN 1144034 [VXX26335]
 Spike Duplicate Lab ID: 1229426
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144034002, 1144034005, 1144034008, 1144034010, 1144034013, 1144034015

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 | 26.0 | 87 | 30 | 27.3 | 91 | (70-120) | 4.80 | (< 20) |
| 1,3-Dichlorobenzene | 30 | 27.6 | 92 | 30 | 28.2 | 94 | (75-125) | 2.10 | (< 20) |
| 1,4-Dichlorobenzene | 30 | 27.8 | 93 | 30 | 28.8 | 96 | (75-125) | 3.40 | (< 20) |
| Benzene | 30 | 27.8 | 93 | 30 | 28.7 | 96 | (80-120) | 3.20 | (< 20) |
| Chlorobenzene | 30 | 26.9 | 90 | 30 | 27.9 | 93 | (80-120) | 3.80 | (< 20) |
| Ethylbenzene | 30 | 28.0 | 94 | 30 | 28.1 | 94 | (75-125) | 0.14 | (< 20) |
| o-Xylene | 30 | 28.3 | 94 | 30 | 29.2 | 97 | (80-120) | 2.90 | (< 20) |
| P & M -Xylene | 60 | 56.6 | 94 | 60 | 57.9 | 97 | (75-130) | 2.30 | (< 20) |
| Toluene | 30 | 26.5 | 88 | 30 | 26.6 | 89 | (75-120) | 0.49 | (< 20) |

Surrogates

| | | | | | | | | | |
|-----------------------|----|--|----|----|--|-----|------------|------|--|
| 1,2-Dichloroethane-D4 | 30 | | 98 | 30 | | 100 | (70-120) | 2.60 | |
| 4-Bromofluorobenzene | 30 | | 94 | 30 | | 96 | (75-120) | 2.80 | |
| Toluene-d8 | 30 | | 98 | 30 | | 100 | (85-120) | 1.60 | |

Batch Information

Analytical Batch: **VMS14404**
 Analytical Method: **EPA 602/624**
 Instrument: **HP 5890 Series II MS3 VNA**
 Analyst: **NRB**

Prep Batch: **VXX26335**
 Prep Method: **SW5030B**
 Prep Date/Time: **08/25/2014 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dup Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:19PM



Billable Matrix Spike Summary

Original Sample ID: 1144034002
MS Sample ID: 1144034003 BMS
MSD Sample ID: 1144034004 BMSD

Analysis Date: 08/25/2014 22:08
Analysis Date: 08/25/2014 20:12
Analysis Date: 08/25/2014 20:29
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 | 27.8 | 93 | 30.0 | 28.0 | 93 | 70-120 | 0.64 | (< 20) |
| 1,3-Dichlorobenzene | 1.00U | 30.0 | 28.4 | 95 | 30.0 | 28.4 | 95 | 75-125 | 0.32 | (< 20) |
| 1,4-Dichlorobenzene | 0.500U | 30.0 | 29.3 | 98 | 30.0 | 29.4 | 98 | 75-125 | 0.44 | (< 20) |
| Benzene | 0.400U | 30.0 | 28.7 | 96 | 30.0 | 29.6 | 99 | 80-120 | 2.90 | (< 20) |
| Chlorobenzene | 0.500U | 30.0 | 29.1 | 97 | 30.0 | 29.9 | 100 | 80-120 | 2.60 | (< 20) |
| Ethylbenzene | 1.00U | 30.0 | 29.9 | 100 | 30.0 | 30.8 | 103 | 75-125 | 3.00 | (< 20) |
| o-Xylene | 1.00U | 30.0 | 30.6 | 102 | 30.0 | 30.8 | 103 | 80-120 | 0.62 | (< 20) |
| P & M -Xylene | 2.00U | 60.0 | 62.4 | 104 | 60.0 | 61.8 | 103 | 75-130 | 0.98 | (< 20) |
| Toluene | 1.00U | 30.0 | 28.5 | 95 | 30.0 | 28.8 | 96 | 75-120 | 1.10 | (< 20) |
| Surrogates | | | | | | | | | | |
| 1,2-Dichloroethane-D4 | | 30.0 | 30.2 | 101 | 30.0 | 29.5 | 98 | 70-120 | 2.30 | |
| 4-Bromofluorobenzene | | 30.0 | 28.6 | 95 | 30.0 | 28.3 | 94 | 75-120 | 1.20 | |
| Toluene-d8 | | 30.0 | 30.6 | 102 | 30.0 | 31.0 | 103 | 85-120 | 1.30 | |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 8/25/2014 8:12:00PM

Prep Batch: VXX26335
Prep Method: Volatiles Extraction 8240/8260 FULL
Prep Date/Time: 8/25/2014 6:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 09/04/2014 12:16:20PM



Method Blank

Blank ID: MB for HBN 1626268 [XXX/31831]
Blank Lab ID: 1229807

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1144034002, 1144034005, 1144034010, 1144034013

Results by EPA 625M SIMS (PAH)

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|--------------------------|----------------|---------------|-----------|--------------|
| Acenaphthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Acenaphthylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo(a)Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[a]pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[b]Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[g,h,i]perylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[k]fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Chrysene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Dibenzo[a,h]anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluorene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Naphthalene | 0.0500U | 0.100 | 0.0310 | ug/L |
| Phenanthrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Surrogates | | | | |
| 2-Fluorobiphenyl | 80.1 | 50-110 | | % |
| Terphenyl-d14 | 109 | 50-135 | | % |

Batch Information

Analytical Batch: XMS8258
Analytical Method: EPA 625M SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 8/28/2014 2:25:00PM

Prep Batch: XXX31831
Prep Method: SW3520C
Prep Date/Time: 8/27/2014 8:55:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:20PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144034 [XXX31831]
 Blank Spike Lab ID: 1229808
 Date Analyzed: 08/28/2014 14:39

Spike Duplicate ID: LCSD for HBN 1144034
 [XXX31831]
 Spike Duplicate Lab ID: 1229809
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144034002, 1144034005, 1144034010, 1144034013

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 | 0.387 | 77 | 0.5 | 0.339 | 68 | (45-110) | 13.10 | (< 30) |
| Acenaphthylene | 0.5 | 0.378 | 76 | 0.5 | 0.335 | 67 | (50-105) | 11.80 | (< 30) |
| Anthracene | 0.5 | 0.390 | 78 | 0.5 | 0.357 | 71 | (55-110) | 8.80 | (< 30) |
| Benzo(a)Anthracene | 0.5 | 0.437 | 87 | 0.5 | 0.405 | 81 | (55-110) | 7.50 | (< 30) |
| Benzo[a]pyrene | 0.5 | 0.373 | 75 | 0.5 | 0.342 | 68 | (55-110) | 8.70 | (< 30) |
| Benzo[b]Fluoranthene | 0.5 | 0.416 | 83 | 0.5 | 0.418 | 84 | (45-120) | 0.55 | (< 30) |
| Benzo[g,h,i]perylene | 0.5 | 0.363 | 73 | 0.5 | 0.331 | 66 | (40-125) | 9.50 | (< 30) |
| Benzo[k]fluoranthene | 0.5 | 0.520 | 104 | 0.5 | 0.430 | 86 | (45-125) | 19.10 | (< 30) |
| Chrysene | 0.5 | 0.510 | 102 | 0.5 | 0.475 | 95 | (55-110) | 7.10 | (< 30) |
| Dibenzo[a,h]anthracene | 0.5 | 0.391 | 78 | 0.5 | 0.336 | 67 | (40-125) | 15.20 | (< 30) |
| Fluoranthene | 0.5 | 0.499 | 100 | 0.5 | 0.488 | 98 | (55-115) | 2.30 | (< 30) |
| Fluorene | 0.5 | 0.375 | 75 | 0.5 | 0.338 | 68 | (50-110) | 10.50 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.5 | 0.391 | 78 | 0.5 | 0.335 | 67 | (45-125) | 15.30 | (< 30) |
| Naphthalene | 0.5 | 0.350 | 70 | 0.5 | 0.334 | 67 | (40-100) | 5.00 | (< 30) |
| Phenanthrene | 0.5 | 0.383 | 77 | 0.5 | 0.351 | 70 | (50-115) | 8.90 | (< 30) |
| Pyrene | 0.5 | 0.477 | 96 | 0.5 | 0.444 | 89 | (50-130) | 7.20 | (< 30) |
| Surrogates | | | | | | | | | |
| 2-Fluorobiphenyl | 0.5 | | 80 | 0.5 | | 71 | (50-110) | 11.60 | |
| Terphenyl-d14 | 0.5 | | 102 | 0.5 | | 99 | (50-135) | 3.60 | |

Batch Information

Analytical Batch: XMS8258
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS

Prep Batch: XXX31831
 Prep Method: SW3520C
 Prep Date/Time: 08/27/2014 08:55
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL
 Dup Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:21PM



Billable Matrix Spike Summary

Original Sample ID: 1144034002
 MS Sample ID: 1144034003 BMS
 MSD Sample ID: 1144034004 BMSD

Analysis Date: 08/28/2014 15:22
 Analysis Date: 08/28/2014 15:37
 Analysis Date: 08/28/2014 15:51
 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 | 0.500 | .385 | 77 | 0.549 | 0.395 | 72 | 45-110 | 2.70 | (< 30) |
| Acenaphthylene | 0.0500U | 0.500 | .386 | 77 | 0.549 | 0.418 | 76 | 50-105 | 8.00 | (< 30) |
| Anthracene | 0.0500U | 0.500 | .436 | 87 | 0.549 | 0.450 | 82 | 55-110 | 3.20 | (< 30) |
| Fluorene | 0.0500U | 0.500 | .412 | 82 | 0.549 | 0.414 | 75 | 50-110 | 0.57 | (< 30) |
| Naphthalene | 0.100U | 0.500 | .371 | 74 | 0.549 | 0.392 | 71 | 40-100 | 5.40 | (< 30) |
| Phenanthrene | 0.0500U | 0.500 | .441 | 88 | 0.549 | 0.442 | 80 | 50-115 | 0.01 | (< 30) |
| Benzo(a)Anthracene | 0.0500U | 0.500 | .482 | 96 | 0.549 | 0.503 | 92 | 55-110 | 4.20 | (< 30) |
| Benzo[a]pyrene | 0.0500U | 0.500 | .433 | 87 | 0.549 | 0.460 | 84 | 55-110 | 6.00 | (< 30) |
| Benzo[b]Fluoranthene | 0.0500U | 0.500 | .558 | 112 | 0.549 | 0.555 | 101 | 45-120 | 0.66 | (< 30) |
| Benzo[g,h,i]perylene | 0.0500U | 0.500 | .502 | 100 | 0.549 | 0.517 | 94 | 40-125 | 3.10 | (< 30) |
| Benzo[k]fluoranthene | 0.0500U | 0.500 | .463 | 93 | 0.549 | 0.502 | 91 | 45-125 | 8.10 | (< 30) |
| Chrysene | 0.0500U | 0.500 | .533 | 107 | 0.549 | 0.553 | 101 | 55-110 | 3.70 | (< 30) |
| Dibenzo[a,h]anthracene | 0.0500U | 0.500 | .476 | 95 | 0.549 | 0.498 | 91 | 40-125 | 4.50 | (< 30) |
| Fluoranthene | 0.0574 | 0.500 | .554 | 99 | 0.549 | 0.549 | 89 | 55-115 | 0.99 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.0500U | 0.500 | .493 | 99 | 0.549 | 0.508 | 93 | 45-125 | 3.10 | (< 30) |
| Pyrene | 0.0500U | 0.500 | .513 | 103 | 0.549 | 0.524 | 96 | 50-130 | 2.30 | (< 30) |
| Surrogates | | | | | | | | | | |
| 2-Fluorobiphenyl | | 0.500 | .385 | 77 | 0.549 | 0.400 | 73 | 50-110 | 3.80 | |
| Terphenyl-d14 | | 0.500 | .521 | 104 | 0.549 | 0.557 | 101 | 50-135 | 6.70 | |

Batch Information

Analytical Batch: XMS8258
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS
 Analytical Date/Time: 8/28/2014 3:37:00PM

Prep Batch: XXX31831
 Prep Method: Liquid/Liquid Extraction for 625 SIMS
 Prep Date/Time: 8/27/2014 8:55:44AM
 Prep Initial Wt./Vol.: 1,000.00mL
 Prep Extract Vol: 1.00mL

Print Date: 09/04/2014 12:16:22PM



Method Blank

Blank ID: MB for HBN 1629262 [XXX/31868]
Blank Lab ID: 1230669

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1144034008

Results by EPA 625M SIMS (PAH)

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|--------------------------|----------------|---------------|-----------|--------------|
| Acenaphthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Acenaphthylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo(a)Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[a]pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[b]Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[g,h,i]perylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[k]fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Chrysene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Dibenzo[a,h]anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluorene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Naphthalene | 0.0500U | 0.100 | 0.0310 | ug/L |
| Phenanthrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Surrogates | | | | |
| 2-Fluorobiphenyl | 70.3 | 50-110 | | % |
| Terphenyl-d14 | 93.3 | 50-135 | | % |

Batch Information

Analytical Batch: XMS8264
Analytical Method: EPA 625M SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 9/2/2014 4:08:00PM

Prep Batch: XXX31868
Prep Method: SW3520C
Prep Date/Time: 8/30/2014 9:20:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:22PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144034 [XXX31868]
 Blank Spike Lab ID: 1230670
 Date Analyzed: 09/02/2014 16:23

Spike Duplicate ID: LCSD for HBN 1144034 [XXX31868]
 Spike Duplicate Lab ID: 1230671
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144034008

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 | 0.359 | 72 | 0.5 | 0.369 | 74 | (45-110) | 2.70 | (< 30) |
| Acenaphthylene | 0.5 | 0.355 | 71 | 0.5 | 0.354 | 71 | (50-105) | 0.26 | (< 30) |
| Anthracene | 0.5 | 0.405 | 81 | 0.5 | 0.384 | 77 | (55-110) | 5.30 | (< 30) |
| Benzo(a)Anthracene | 0.5 | 0.465 | 93 | 0.5 | 0.444 | 89 | (55-110) | 4.60 | (< 30) |
| Benzo[a]pyrene | 0.5 | 0.399 | 80 | 0.5 | 0.394 | 79 | (55-110) | 1.50 | (< 30) |
| Benzo[b]Fluoranthene | 0.5 | 0.459 | 92 | 0.5 | 0.428 | 86 | (45-120) | 7.00 | (< 30) |
| Benzo[g,h,i]perylene | 0.5 | 0.415 | 83 | 0.5 | 0.421 | 84 | (40-125) | 1.50 | (< 30) |
| Benzo[k]fluoranthene | 0.5 | 0.462 | 92 | 0.5 | 0.469 | 94 | (45-125) | 1.60 | (< 30) |
| Chrysene | 0.5 | 0.492 | 98 | 0.5 | 0.471 | 94 | (55-110) | 4.40 | (< 30) |
| Dibenzo[a,h]anthracene | 0.5 | 0.389 | 78 | 0.5 | 0.383 | 77 | (40-125) | 1.40 | (< 30) |
| Fluoranthene | 0.5 | 0.469 | 94 | 0.5 | 0.467 | 94 | (55-115) | 0.45 | (< 30) |
| Fluorene | 0.5 | 0.398 | 80 | 0.5 | 0.399 | 80 | (50-110) | 0.21 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.5 | 0.406 | 81 | 0.5 | 0.411 | 82 | (45-125) | 1.20 | (< 30) |
| Naphthalene | 0.5 | 0.345 | 69 | 0.5 | 0.348 | 70 | (40-100) | 0.99 | (< 30) |
| Phenanthrene | 0.5 | 0.395 | 79 | 0.5 | 0.410 | 82 | (50-115) | 3.70 | (< 30) |
| Pyrene | 0.5 | 0.462 | 93 | 0.5 | 0.456 | 91 | (50-130) | 1.40 | (< 30) |
| Surrogates | | | | | | | | | |
| 2-Fluorobiphenyl | 0.5 | | 72 | 0.5 | | 77 | (50-110) | 7.60 | |
| Terphenyl-d14 | 0.5 | | 92 | 0.5 | | 90 | (50-135) | 1.70 | |

Batch Information

Analytical Batch: XMS8264
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS

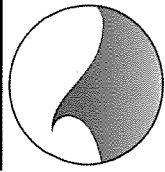
Prep Batch: XXX31868
 Prep Method: SW3520C
 Prep Date/Time: 08/30/2014 09:20
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL
 Dup Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:23PM

1144034



Chain of Custody Record



To: SGS Environmental Services, Inc.
2100 West Potter Drive
Anchorage, AK 99518
(907) 562-2343
(907) 561-5301 Fax
Contact: Forest Taylor

From: Kinnetic Labor
704 West 2nd Avenue
Anchorage, AK 99501
(907) 276-6178
(907) 278-6881 Fax
Contact: Mark Savoie

SGS Quote No. 9901
Date Received:
Lab #:

Project: MOA Stormwater Management Matrix: Water Project #: 5078

Note: Samples contain sodium thiosulfate for dechlorination

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 |
|-----------------|------------|-------------|-------------|-------------|--------------------|----------------|--------|----------------|--------|------------------------|
| ①A SWM01-04 | 1040-3 | 8/24/14 | 1330 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ②A SWM02-04 | 847-1 | | 1413 | Samp | Fecal (SM 9222D) ✓ | 125-ml sterile | <10 °C | 1 | | |
| ③A SWM02-04 Dup | 847-1 | | 1413 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ④A SWM03-04 | 1224-1 | | 1445 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑤A SWM04-04 | 1224-2 | | 1453 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑥A SWM05-04 | 207-1 | | 1520 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑦A SWM06-04 | 314-22 | | 1601 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑧A SWM07-04 | 484-1 | | 1627 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑨A SWM08-04 | 86-1 | | 1646 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑩A SWM08-04 Dup | 86-1 | | 1640 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑪A SWM09-04 | 499-1 | | 1710 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑫A SWM10-04 | 525-2 | ✓ | 1725 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |

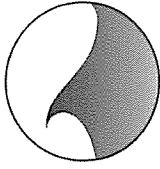
Date Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet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

Special Instructions/Comments:

TR: 2.1 ✓
#2: 2.0 ✓
#3: 1.3 ✓

| Sampled and Relinquished By: | Date/Time: | Transporter | Received By: | Date/Time: |
|------------------------------|--------------|-------------|--------------|--------------|
| Maria Ann | 8/24/14 1750 | hend | Jawit Jyl | 8/24/14 1750 |
| Relinquished By: | | Transporter | Received By: | |

1144034



Chain of Custody Record

To: SGS Environmental Services, Inc.
2100 West Potter Drive
Anchorage, AK 99518
(907) 562-2343
(907) 561-5301 Fax
Contact: Forest Taylor

From: Kinnetic Lab
704 West 2nd Avenue
Anchorage, AK 99501
(907) 276-6178
(907) 278-6881 Fax
Contact: Mark Savoie

SGS Quote No. 9901
Date Received:
Lab #:

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 |
|-----------------|------------|-------------|-------------|-------------|----------------|-----------|--------|----------------|--------|------------------------|
| ①B SWM01-04 | 1040-3 | 8/24/14 | 1330 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ②B SWM02-04 | 847-1 | | 1413 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ③B SWM02-04 Dup | 847-1 | | 1413 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ④B SWM03-04 | 1224-1 | | 1445 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑤B SWM04-04 | 1224-2 | | 1453 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑥B SWM05-04 | 207-1 | | 1520 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑦B SWM06-04 | 314-22 | | 1601 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑧B SWM07-04 | 484-1 | | 1627 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑨B SWM08-04 | 86-1 | | 1640 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑩B SWM08-04 Dup | 86-1 | | 1640 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑪B SWM09-04 | 499-1 | | 1710 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑫B SWM10-04 | 525-2 | | 1725 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |

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: |
|------------------------------|--------------|-------------|--------------|--------------|
| Mark A An | 8/24/14 1750 | Mark | Mark Savoie | 8/24/14 1750 |
| | | | | |

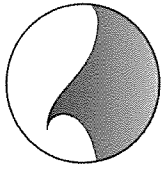
1144034



Chain of Custody Record

To: SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 (907) 561-5301 Fax
 Contact: Forest Taylor

From: Kinnetic Laboratories
 704 West 2nd 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

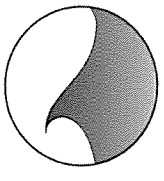
| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|-----------------|------------|-------------|-------------|-------------|----------------|-----------|--------|----------------|--------|------------------------|
| ①C SWM01-04 | 1040-3 | 8/24/14 | 1330 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ②C SWM02-04 | 847-1 | | 1413 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ③C SWM02-04 Dup | 847-1 | | 1413 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ④C SWM03-04 | 1224-1 | | 1445 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑤C SWM04-04 | 1224-2 | | 1453 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑥C SWM05-04 | 207-1 | | 1520 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑦C SWM06-04 | 314-22 | | 1601 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑧C SWM07-04 | 484-1 | | 1627 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑨C SWM08-04 | 86-1 | | 1640 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑩C SWM08-04 Dup | 86-1 | | 1640 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑪C SWM09-04 | 499-1 | | 1710 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑫C SWM10-04 | 525-2 | | 1725 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |

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>Mark Am...</i> | 8/24/14 1750 | <i>herg</i> | <i>Mark Am...</i> | |
| <i>Mark Am...</i> | | | <i>Mark Am...</i> | 8/24/14 1750 |

1144034



Chain of Custody Record

To: SGS Environmental Services, Inc.
2100 West Potter Drive
Anchorage, AK 99518
(907) 562-2343
(907) 561-5301 Fax
Contact: Forest Taylor

SGS Quote No. 9901

Date Received:

Lab #:

From: Kinnetic Laboratories, Inc.
704 West 2nd Avenue
Anchorage, AK 99501
(907) 276-6178
(907) 278-6881 Fax
Contact: Mark Savoie

Project: MOA Stormwater Management Matrix: Water

Complete by: 2 weeks

Project #: 5078

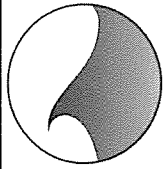
| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|------------------------------------------|------------|-------------|-------------|-----------------|-------------------|-----------|-----------|----------------|--------|------------------------|
| 20- 5 SWM02-04 <i>20-4</i> | 847-1 | 8/24/14 | 1413 | Samp/MS/ MSD | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 9 | | |
| 50- 5 SWM02-04 Dup | 847-1 | | 1413 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| 30- 5 SWM05-04 | 207-1 | | 1520 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| 10- 5 SWM07-04 | 484-1 | | 1627 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| 12- 5 SWM09-04 | 499-1 | | 1710 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| 15- 5 Trip Blank | N/A | N/A | N/A | TB | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| | | | | | | | | | | |
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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: | Transporter | Received By: | Date/Time: |
| <i>Mark Savoie</i> | <i>hms</i> | <i>Mark Savoie</i> | 8/24/14 1750 |
| Relinquished By: | Transporter | Received By: | Date/Time: |
| | | <i>Just Taylor</i> | 8/24/14 1750 |

1144034



Chain of Custody Record

To: SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 (907) 561-5301 Fax
 Contact: Forest Taylor

SGS Quote No. 9901
 Date Received:
 Lab #:

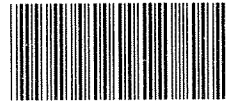
From: Kinneti
 704 West 2nd Avenue
 Anchorage, AK 99501
 (907) 276-6178
 (907) 278-6881 Fax
 Contact: Mark Savoie

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 |
|--------------------|------------|-------------|-------------|-------------|---------------------|-----------|--------|----------------|--------|------------------------|
| ② G-1 SWM02-04 | 847-1 | 8/24/14 | 1413 | Samp/MS/MSD | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 6 | | |
| ③ D-E ④ D-E | 847-1 | | 1413 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑤ G-1 SWM02-04 Dup | 207-1 | | 1520 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑥ G-1 SWM05-04 | 484-1 | | 1629 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑦ G-1 SWM07-04 | 499-1 | | 1710 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑧ G-1 SWM09-04 | | | | | | | | | | |
| | | | | | | | | | | |
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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.

| Sampled and Relinquished By: | Date/Time: | Transporter | Received By: | Date/Time: |
|------------------------------|--------------|-------------|---------------------------------|--------------|
| Maria Aron | 8/24/14 1750 | had | | |
| | | Transporter | Received By: <i>Justin Fugh</i> | 8/24/14 1730 |



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 | <input type="checkbox"/> Exemption permitted if sampler hand carries/delivers. |
| Temperature blank compliant* (i.e., 0-6°C after CF)? If >6°C, were samples collected <8 hours ago? If <0°C, were all sample containers ice free? Cooler ID: <u>1</u> @ <u>2.1</u> w/ Therm.ID: <u>71</u> Cooler ID: <u>2</u> @ <u>2.0</u> w/ Therm.ID: <u>71</u> Cooler ID: <u>3</u> @ <u>1.3</u> w/ Therm.ID: <u>71</u> Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ 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 " <u>ambient</u> " or "chilled." | <u>Yes</u> No Yes No N/A Yes No N/A | <input type="checkbox"/> Exemption permitted if chilled & collected <8 hrs ago. <i>Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.</i> |
| Delivery method (specify all that apply): <u>Client (hand carried)</u> USPS Lynden AK Air <u>Alert Courier</u> UPS FedEx RAVN C&D Delivery Carlisle Pen Air Warp Speed Other: _____ → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog? | Tracking/AB # or see attached or N/A Yes No N/A | |
| → For samples received with payment, note amount (\$) and whether cash / check / CC (circle one) was received. → For samples received in FBKS , ANCH staff will verify all criteria are reviewed. SRF initiated in FBKS by: | | |
| Were samples received within hold time? Do samples match COC* (i.e., sample IDs, dates/times collected)? Were analyses requested unambiguous? | <u>Yes</u> No N/A <u>Yes</u> No N/A <u>Yes</u> No N/A | <i>Note: Refer to form F-083 "Sample Guide" for hold times. Note: If times differ <1hr, record details and login per COC.</i> |
| 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 <u>Yes</u> No | |
| Were proper containers (type/mass/volume/preservative*) used? Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? 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 <u>Yes</u> No N/A <u>Yes</u> No N/A Yes No <u>N/A</u> | <input type="checkbox"/> Exemption permitted for metals (e.g., 200.8/6020A). |
| 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 special handling (e.g., "MI" soils, foreign soils, lab filter for dissolved..., lab extract for volatiles, Ref Lab, limited volume), were bottles/paperwork flagged (e.g., sticker)? | 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 | |
| For SITE-SPECIFIC QC , e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly? | Yes No <u>N/A</u> | |
| 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: PM notified: <u>N/A</u> |
| Was PEER REVIEW of <i>sample numbering/labeling completed</i> ? | Yes No N/A | Peer Reviewed by: <u>N/A</u> |
| Additional notes (if applicable): | | |

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



Sample Containers and Preservatives

| <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> | <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> |
|---------------------|-------------------------------------------------------------------|----------------------------|---------------------|-------------------------------------------------------------------|----------------------------|
| 1144034001-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1144034008-H | No Preservative Required | OK |
| 1144034001-B | No Preservative Required | OK | 1144034009-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1144034001-C | No Preservative Required | OK | 1144034009-B | No Preservative Required | OK |
| 1144034002-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1144034009-C | No Preservative Required | OK |
| 1144034002-B | No Preservative Required | OK | 1144034010-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1144034002-C | No Preservative Required | OK | 1144034010-B | No Preservative Required | OK |
| 1144034002-D | HCL to pH < 2 | OK | 1144034010-C | No Preservative Required | OK |
| 1144034002-E | HCL to pH < 2 | OK | 1144034010-D | HCL to pH < 2 | OK |
| 1144034002-F | HCL to pH < 2 | OK | 1144034010-E | HCL to pH < 2 | OK |
| 1144034002-G | No Preservative Required | OK | 1144034010-F | HCL to pH < 2 | OK |
| 1144034002-H | No Preservative Required | OK | 1144034010-G | No Preservative Required | OK |
| 1144034003-A | HCL to pH < 2 | OK | 1144034010-H | No Preservative Required | OK |
| 1144034003-B | HCL to pH < 2 | OK | 1144034011-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1144034003-C | HCL to pH < 2 | OK | 1144034011-B | No Preservative Required | OK |
| 1144034003-D | No Preservative Required | OK | 1144034011-C | No Preservative Required | OK |
| 1144034003-E | No Preservative Required | OK | 1144034012-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1144034004-A | HCL to pH < 2 | OK | 1144034012-B | No Preservative Required | OK |
| 1144034004-B | HCL to pH < 2 | OK | 1144034012-C | No Preservative Required | OK |
| 1144034004-C | HCL to pH < 2 | OK | 1144034013-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1144034004-D | No Preservative Required | OK | 1144034013-B | No Preservative Required | OK |
| 1144034004-E | No Preservative Required | OK | 1144034013-C | No Preservative Required | OK |
| 1144034005-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1144034013-D | HCL to pH < 2 | OK |
| 1144034005-B | No Preservative Required | OK | 1144034013-E | HCL to pH < 2 | OK |
| 1144034005-C | No Preservative Required | OK | 1144034013-F | HCL to pH < 2 | OK |
| 1144034005-D | HCL to pH < 2 | OK | 1144034013-G | No Preservative Required | OK |
| 1144034005-E | HCL to pH < 2 | OK | 1144034013-H | No Preservative Required | OK |
| 1144034005-F | HCL to pH < 2 | OK | 1144034014-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1144034005-G | No Preservative Required | OK | 1144034014-B | No Preservative Required | OK |
| 1144034005-H | No Preservative Required | OK | 1144034014-C | No Preservative Required | OK |
| 1144034006-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1144034015-A | HCL to pH < 2 | OK |
| 1144034006-B | No Preservative Required | OK | 1144034015-B | HCL to pH < 2 | OK |
| 1144034006-C | No Preservative Required | OK | 1144034015-C | HCL to pH < 2 | OK |
| 1144034007-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | | | |
| 1144034007-B | No Preservative Required | OK | | | |
| 1144034007-C | No Preservative Required | OK | | | |
| 1144034008-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | | | |
| 1144034008-B | No Preservative Required | OK | | | |
| 1144034008-C | No Preservative Required | OK | | | |
| 1144034008-D | HCL to pH < 2 | OK | | | |
| 1144034008-E | HCL to pH < 2 | OK | | | |
| 1144034008-F | HCL to pH < 2 | OK | | | |
| 1144034008-G | No Preservative Required | OK | | | |

Container Id

Preservative

Container Condition

Container Id

Preservative

Container Condition

Container Condition Glossary

OK - The container was received at an acceptable pH for the analysis requested.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

BU - The container was received with headspace greater than 6mm.

Appendix C
Field & Laboratory Data Validation

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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). These criteria were applied on a 24-hr storm basis rather than a calendar basis since often times the storm would come in late in the evening the day before sampling took place. In all cases sampling was completed within 24 hours from the start of a storm with the preceding 24 hours being less than 0.1 inches and the storm accumulation greater than 0.1 inches. Therefore, all four storms that were sampled in 2014 met the above criteria.

Rain gauges were deployed May 30, 2014. For the June 21, 2014 storm event, the storm began about 11 pm on 20 June 20 with the three rain gauges registered 0.72, 0.93, and 0.71 inches for the storm event. No precipitation was recorded in the 24 hours preceding the beginning of the storm. A similar result was seen for the second storm on July 10, 2014 where the storm began the evening prior to sampling with no accumulation during the preceding 24-hr period and recorded precipitation for the storm event of 0.40, 0.46, and 0.37 inches at the three rain gauges. The third storm event began during the morning of 4 August at around 9:00 and sampling was initiated at 14:30. Recorded rainfall for the event was 0.12, 0.17, and 0.07 inches at the three rain gauges. Although some rain was recorded on the preceding calendar day, with the exception of 0.01 inches at Bowman, no precipitation occurred at any of the three rain gauges during the preceding 24-hr period after the start of the storm. Total rainfall at Bowman was less than 0.1 inch criteria but rainfall did meet the criteria at the other two rain gauges and at the NWS station that was used to monitor the storm event. The fourth and last storm began around 04:00 on 20 August with recorded precipitation of 0.39, 0.41, and 0.42 inches for the event with no recorded precipitation during the preceding 24-hr period. Sampling was initiated within 10 hours of the start of the rain event after approximately 0.1 inches had accumulated at all three locations.

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 1.9% and 85.1% and are presented in Table 1. CVs above 10% reflect the highly

variable nature of flow during a storm. Rain was noted on log sheets for both the August 4th event and the August 24th event indicating that flow was increasing during sampling causing a high CV value.

Table 1. Coefficients of Variation for Volume/Time Flow Measurements

| Storm Event Date | Station SWM07 |
|------------------|------------------|
| June 21, 2014 | 1.9% |
| July 10, 2014 | Acoustic Doppler |
| August 4, 2014 | 85.1% |
| August 24, 2014 | 18.9% |

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 with the exception of three bottles in the first storm event. These bottles did not have the date and time filled out however, that information was on the chain of custody and so no problems occurred due to this issue. 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 | June 21, 2014 | | July 10, 2014 | | August 4, 2014 | | August 24, 2014 | |
|--------------|---------------|---------------|-------|---------------|-------|----------------|-------------|-----------------|------------|
| | | SWM02 | SWM08 | SWM02 | SWM08 | SWM02 | SWM08 | SWM02 | SWM08 |
| DO | ± 10% | 0.53 | 0.00 | 0.27 | * | 0.43 | 1.00 | 0.90 | 0.68 |
| pH | ± 0.2 units | 0.02 | 0.01 | 0 | * | 0.05 | 0.02 | 0.12 | 0.02 |
| Turbidity | ± 1NTU | 0.34 | 0.7 | 0.1 | * | 0.32 | 74.1 | 0.03 | 2.8 |
| Temperature | 0.4° C | 0.03 | 0.02 | 0.01 | * | 0.07 | 0.59 | 0.04 | 0.14 |
| Conductivity | ± 1 µS/cm | 2 | 1 | 14 | * | 4 | 45 | 1 | 25 |

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. Dissolved oxygen and pH met the precision during all sampling events. 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. 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 field replicate samples met the standards prescribed in the QAPP for most events (Table 3). TSS had an RPD of 29 in the June 21, 2014 storm which slightly exceeded the objective of 25. Elevated RPDs are believed to reflect the heterogeneity of stormwater quality, rather than the precision of the sampling, which can be quite variable in a constituent such as TSS. All other conventional parameters met QAPP quality objectives for this storm season.

In any future sampling 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 this study's 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 | | | |
|-----------|----------------------|------------------|------------------|-----------|----------|-----------|
| | | | 21-Jun-14 | 10-Jul-14 | 4-Aug-14 | 24-Aug-14 |
| TSS | 25% | SWM02 | 9% | 0% | 15% | 0% |
| | | SWM08 | 29% | 6% | 0% | 0% |
| BOD | NA | SWM02 | 2% | 0% | 0% | 0% |
| | | SWM08 | 0% | 19% | 7% | 7% |
| FC | 60% | SWM02 | 3% | 30% | 42% | 13% |
| | | SWM08 | 16% | 36% | 22% | 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.

No TAH constituents were detected in either the sample or the replicate for any storm event this season. No qualifications for field precision was necessary to any of the data. The field precision RPDs are presented in Table 4.

The field precision RPD between the sample and field replicates for the TAqH analyses were low, reflecting low field variability across all storm events with most constituents being non-detect in either the sample or the replicate (Table 4). Due to how RPD's are calculated, samples with low concentrations will have a higher probability of increased RPD as compared to samples with higher concentrations. Cases where one of values are ND cannot have an RPD calculated. There were three cases in the June 21, 2014 storm and one in the August 24, 2014 storm where the RPD could not be calculated due to one value being non-detect. In all four of the instances one sample was non-detect and the other was at or near the reporting limit indicating that the samples were closely correlated.

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. Laboratory duplicates were performed on TSS and all results were within control limits with the exception of one duplicate for the June 21, 2014 event. The RPD for this duplicate was 37 which exceeds the objective of

25 prescribed in the QAPP. Since all other parameters, including the laboratory control sample, were within range no qualifications were necessary.

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) were within the QAPP specifications. Similarly, the accuracy of TAH analyses were 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.

For the TAqH constituents, some parameters required qualification. The June 21, 2014 storm event had six TAqH constituents with MS/MSD recoveries that were below the QAPP specified percent limits. These recoveries were low for both the MS and the MSD for all six constituents. Results for the analytes were qualified as an estimate (J) indicating that they may be biased low.

All TAqH constituents were within the QAPP-specified precision and accuracy requirements for the July 10, 2014 storm event.

For the August 4, 2014 storm event, three MSD recoveries were below the specified limits. Two of the constituents, Acenaphthene (56%) and Acenaphthylene (56%), were only slightly below the specified limits of 57% and 58% respectively. No qualifications were made to these constituents based on these results. Naphthalene was recovered at 46% in the MSD which is below the project limits of 56%. These results were not qualified as all LCS results were within control limits as well as the MS.

For the final storm event on August 24, 2014, 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.

5. Conclusions

A careful review of the results confirmed that the field and laboratory samples met most QA/QC requirements. A total of 30 TAqH constituents required qualification due to low percent recoveries in the MS/MSD's during the second storm event. Despite these minor QC issues, overall evaluation of the analytical QA/QC data indicates that the chemical data, are for the most part, within established performance criteria and can be used for characterization of stormwater for this project.

Table 4. Field and Laboratory Precision and Accuracy for TAH and TAqH

| Parameter | QAPP Standard | | 21-Jun-14 | | | 10-Jul-14 | | | 4-Aug-14 | | | 24-Aug-14 | | |
|------------------------|---------------|------------|-----------------|---------------|----------------|-----------------|---------------|--------------|-----------------|---------------|----------------|-----------------|---------------|--------------|
| | 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 |
| TAH | | | | | | | | | | | | | | |
| Benzene | 20% | 80-120% | 0 | 1 | 99 / 98 | 0 | 1 | 104 / 103 | 0 | 4 | 104 / 109 | 0 | 3 | 96 / 99 |
| Chlorobenzene | 20% | 80-120% | 0 | 2 | 99 / 101 | 0 | 1 | 99 / 98 | 0 | 3 | 105 / 108 | 0 | 3 | 97 / 100 |
| 1,2-Dichlorobenzene | 20% | 80-120% | 0 | 1 | 98 / 99 | 0 | 2 | 100 / 99 | 0 | 5 | 105 / 110 | 0 | 0 | 93 / 93 |
| 1,3-Dichlorobenzene | 20% | 80-120% | 0 | 1 | 100 / 101 | 0 | 1 | 95 / 96 | 0 | 6 | 107 / 114 | 0 | 0 | 95 / 95 |
| 1,4-Dichlorobenzene | 20% | 80-120% | 0 | 0 | 100 / 100 | 0 | 2 | 99 / 101 | 0 | 5 | 109 / 115 | 0 | 0 | 98 / 98 |
| Ethylbenzene | 20% | 80-120% | 0 | 2 | 105 / 103 | 0 | 2 | 103 / 102 | 0 | 4 | 97 / 101 | 0 | 3 | 100 / 103 |
| Toluene | 20% | 77-120% | 0 | 3 | 100 / 97 | 0 | 3 | 104 / 100 | 0 | 2 | 105 / 107 | 0 | 1 | 95 / 96 |
| o-Xylene | 20% | 80-120% | 0 | 10 | 92 / 102 | 0 | 0 | 97 / 97 | 0 | 5 | 106 / 111 | 0 | 1 | 102 / 103 |
| p & m-Xylenes | 20% | 80-120% | 0 | 11 | 93 / 104 | 0 | 1 | 101 / 100 | 0 | 5 | 107 / 112 | 0 | 1 | 104 / 103 |
| TAqH | | | | | | | | | | | | | | |
| Acenaphthene | 30% | 57-110% | 0 | 9 | 69 / 78 | 0 | 16 | 62 / 71 | 0 | 11 | 64 / 56 | 0 | 3 | 72 / 74 |
| Acenaphthylene | 30% | 58-105% | 0 | 8 | 66 / 74 | 0 | 17 | 59 / 69 | 0 | 10 | 65 / 56 | 0 | 0 | 71 / 71 |
| Anthracene | 30% | 63-120% | 0 | 9 | 76 / 86 | 0 | 9 | 78 / 85 | 0 | 5 | 77 / 70 | 0 | 5 | 81 / 77 |
| Benzo (a) anthracene | 30% | 61-120% | 0 | 11 | 61 / 70 | 0 | 3 | 93 / 89 | 0 | 5 | 86 / 87 | 0 | 5 | 93 / 89 |
| Benzo(a)pyrene | 30% | 57-120% | 0 | 10 | 38 / 43 | 0 | 4 | 92 / 87 | 0 | 4 | 77 / 71 | 0 | 2 | 80 / 79 |
| Benzo(b)fluoranthene | 30% | 66-130% | N/C | 16 | 51 / 61 | 0 | 5 | 92 / 95 | 0 | 10 | 86 / 93 | 0 | 7 | 92 / 86 |
| Benzo(g,h,l,)perylene | 30% | 60-125% | 0 | 15 | 30 / 35 | 0 | 6 | 105 / 98 | 0 | 5 | 79 / 73 | 0 | 2 | 83 / 84 |
| Benzo(k)fluoranthene | 30% | 67-120% | 0 | 11 | 40 / 46 | 0 | 5 | 93 / 88 | 0 | 8 | 88 / 79 | 0 | 2 | 92 / 94 |
| Chrysene | 30% | 71-120% | N/C | 10 | 76 / 86 | 0 | 3 | 97 / 93 | 0 | 1 | 94 / 91 | 0 | 4 | 98 / 94 |
| Dibenz(a,h)anthracene | 30% | 56-125% | 0 | 16 | 24 / 29 | 0 | 6 | 103 / 96 | 0 | 5 | 81 / 75 | 0 | 1 | 78 / 77 |
| Fluoranthene | 30% | 63-125% | 18 | 15 | 74 / 93 | 0 | 2 | 88 / 89 | 0 | 6 | 92 / 94 | N/C | 0 | 94 / 94 |
| Fluorene | 30% | 59-120% | 0 | 13 | 71 / 83 | 0 | 16 | 63 / 73 | 0 | 7 | 68 / 61 | 0 | 0 | 80 / 80 |
| Indeno(1,2,3-cd)pyrene | 30% | 59-125% | 0 | 13 | 28 / 33 | 0 | 6 | 103 / 96 | 0 | 5 | 80 / 73 | 0 | 1 | 81 / 82 |
| Naphthalene | 30% | 56-108% | 0 | 13 | 62 / 72 | 0 | 14 | 61 / 69 | 0 | 18 | 58 / 46 | 0 | 1 | 69 / 70 |
| Phenanthrene | 30% | 60-115% | N/C | 11 | 84 / 97 | 0 | 11 | 85 / 93 | 0 | 2 | 78 / 74 | 0 | 4 | 79 / 82 |
| Pyrene | 30% | 62-130% | 17 | 12 | 72 / 85 | 0 | 2 | 84 / 85 | 0 | 7 | 85 / 88 | 0 | 1 | 93 / 91 |

Values in bold and red did not meet the precision criterion in the QAPP (MOA, 2012) N/C indicates that one of the replicates was a non-detect therefore the RPD cannot be calculated.

Appendix D

Field Logs

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>01</u> | | DATE: 06/21/14 | | SAMPLE START TIME: 0954 | |
|-----------------------------------------------------------------------------|--|-----------------------------------------|--|--------------------------------------|--|
| OUTFALL/NODE ID: 1040-3 | | PHYSICAL LOCATION: O'Malley + Lake Otis | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | |
| Flow Method (circle) | | Bucket | | Time: 0954 | |
| Flow Meter | | Flow Speed (ft/s): 0.12 | | Water Depth (in): 1 | |
| Pipe Diam (in): 18 | | Bucket Measurements | | Rate (gal/s) | |
| 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 | | 0954 | | 12.90 | |
| FIELD REPLICATE | | 101 | | 10.23 | |
| | | | | 7.15 | |
| | | | | 22.4 | |
| DISCRETE WATER QUALITY SAMPLES | | | | | |
| SAMPLE NUMBER | | TIME (ADT) | | SAMPLES COLLECTED (CHECK BOX) | |
| | | | | FECAL BOD TSS TAqH TAH | |
| SWM <u>01</u> -01 | | 0954 | | ✓ ✓ ✓ | |
| 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 | | light b nss | | | |
| COLOR | | light brown | | | |
| CLARITY | | clear | | | |
| FLOATABLES | | none | | | |
| DEPOSITS or STAINS | | none | | | |
| SHEEN | | slight sheen | | no rainbow | |
| SURFACE SCUM | | none | | | |
| DEBRIS | | small amount of trash | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS | | | | | |
| | | | | | |
| | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | |

Reviewed By: M. J. [Signature]

Date: 6/28/14

Page 1 of 10

**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM 02 DATE: 06/21/14 SAMPLE START TIME: 1025

OUTFALL/NODE ID: 847-1 PHYSICAL LOCATION: Home Depot - Abbot

OUTFALL FLOW MEASUREMENTS

| | | | | | | |
|----------------------|--------------------------------|----------------------------|---------------------------|------------|------------|--------------|
| Flow Method (circle) | Bucket | <u>Flow Meter</u> | Time: <u>1025</u> | | | |
| Flow Meter | Flow Speed (ft/s): <u>0.95</u> | Water Depth (in): <u>1</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>1025</u> | <u>10.41</u> | <u>130</u> | <u>11.24</u> <u>109%</u> | <u>7.04</u> | <u>7.16</u> |
| FIELD REPLICATE | <u>1025</u> | <u>10.38</u> | <u>132</u> | <u>11.20</u> <u>100.1</u> | <u>7.06</u> | <u>6.82</u> |

DISCRETE WATER QUALITY SAMPLES

| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
|----------------------------|-------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 02-01</u> | <u>1025</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <u>SWM 02-01 Dup</u> | <u>1025</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"/> | <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>some algae</u> | |
| DEBRIS | <u>garbage down stream</u> | |

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:

Photos: Yes No 2 photos

**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>03</u> | | DATE: <u>06/21/14</u> | SAMPLE START TIME: <u>1059</u> | | | |
|-----------------------------------------------------------------------------|--------------------------------|------------------------------------------------------|-------------------------------------|--------------------------------------|---------------------------|--------------|
| OUTFALL/NODE ID: <u>1224-1</u> | | PHYSICAL LOCATION: <u>0. Seward + Sylvan (north)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | <u>Flow Meter</u> | | Time: <u>1059</u> | |
| Flow Meter | Flow Speed (ft/s): <u>1.36</u> | | Water Depth (in): <u>4.3</u> | | Pipe Diam (in): <u>36</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>1059</u> | <u>11.80</u> | <u>151</u> | <u>9.14 (84.5%)</u> | <u>7.21</u> | <u>49.0</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM_03-01</u> | <u>1059</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 | <u>light brown / tan</u> | | | | | |
| CLARITY | <u>slightly turbid</u> | | | | | |
| FLOATABLES | <u>detrinitis</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>obstruction downstream. turbidity confidence level ~95% (detrinitis)</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Anne

Date: 6/28/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| | | |
|--------------------------------|------------------------------------------------------|--------------------------------|
| STATION ID: <u>SWM 04</u> | DATE: <u>06/21/14</u> | SAMPLE START TIME: <u>1110</u> |
| OUTFALL/NODE ID: <u>1224-2</u> | PHYSICAL LOCATION: <u>0. Seward + Sylvan (south)</u> | |

OUTFALL FLOW MEASUREMENTS

| | | | | | | |
|----------------------|--------------------------------|------------------------------|---------------------------|------------|------------|--------------|
| Flow Method (circle) | Bucket | <u>Flow Meter</u> | Time: <u>1110</u> | | | |
| Flow Meter | Flow Speed (ft/s): <u>0.16</u> | Water Depth (in): <u>1.9</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>11:10</u> | <u>12.03</u> | <u>226</u> | <u>9.64 (89.9%)</u> | <u>7.14</u> | <u>16.6</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>1110</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>n</u> | |
| COLOR | <u>light tan</u> | |
| CLARITY | <u>slightly turbid</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

light drizzle

Photos: Yes No

**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| | | |
|-------------------------------|-------------------------------------------------|--------------------------------|
| STATION ID: <u>SWM 05</u> | DATE: <u>06/21/14</u> | SAMPLE START TIME: <u>1135</u> |
| OUTFALL/NODE ID: <u>207-1</u> | PHYSICAL LOCATION: <u>E. 56th @ Save School</u> | |

OUTFALL FLOW MEASUREMENTS

| | | | |
|----------------------|--------------------------------|------------------------------|-------------------|
| Flow Method (circle) | Bucket | Flow Meter <u>Flow Meter</u> | Time: <u>1135</u> |
| Flow Meter | Flow Speed (ft/s): <u>0.96</u> | Water Depth (in): <u>2.0</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>1135</u> | <u>12.66</u> | <u>177</u> | <u>9.48</u> (<u>91.27</u>) | <u>7.26</u> | <u>31.5</u> |
| FIELD REPLICATE | | | <u>ms 9.65</u> | | | |

DISCRETE WATER QUALITY SAMPLES

| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
|----------------------------|-------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 05-01</u> | <u>1135</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>light tan</u> | |
| CLARITY | <u>slightly turbid</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>06</u> | | DATE: <u>06/21/14</u> | SAMPLE START TIME: <u>1206</u> | | | |
|-------------------------------------------------------------|--------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|---------------------|--------------|
| OUTFALL/NODE ID: <u>314-22</u> | | PHYSICAL LOCATION: <u>Maplewood</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | <u>Flow Meter</u> | | Time: <u>1206</u> | |
| Flow Meter | Flow Speed (ft/s): <u>0.20</u> | Water Depth (in): <u>0.5</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>1206</u> | <u>12.09</u> | <u>112</u> | <u>9.59 (89.1%)</u> | <u>7.05</u> | <u>15.7</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>06</u> -01 | <u>1206</u> | <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>light tan</u> | | | | | |
| CLARITY | <u>pretty clear</u> | | | | | |
| FLOATABLES | <u>none</u> | | | | | |
| DEPOSITS or STAINS | <u>none</u> | | | | | |
| SHEEN | <u>none</u> | | | | | |
| SURFACE SCUM | <u>none</u> | | | | | |
| DEBRIS | <u>some trash</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| | | | | | | |
| | | | | | | |
| Photos: Yes No | | | | | | |

**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>077</u> | | DATE: 06/21/14 | | SAMPLE START TIME: 1240 | | |
|-------------------------------------------------------------|-------------------------------|----------------------------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| OUTFALL/NODE ID: 86-T 484-1 | | PHYSICAL LOCATION: New Seward (42-in) north | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) <u>Bucket</u> Flow Meter | | | Time: 1230 1240 | | | |
| 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 | 19.09 | 18.24 | 18.70 | 18.87 | | |
| 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 | 1240 | 11.76 | 68 | 8.73 (80.5%) | 7.42 | |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>07</u> -01 | 1240 | <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 | none. | | | | | |
| COLOR | pretty clear/tan | | | | | |
| CLARITY | clear | | | | | |
| FLOATABLES | none | | | | | |
| DEPOSITS or STAINS | none | | | | | |
| SHEEN | none | | | | | |
| SURFACE SCUM | none | | | | | |
| DEBRIS | none | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| | | | | | | |
| | | | | | | |
| Photos: <u>Yes</u> No | | | | | | |

Reviewed By: M. [Signature]

Date: 6/28/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: <u>SWM 08</u> | | DATE: <u>06/21/14</u> | | SAMPLE START TIME: <u>1230</u> | | |
|-----------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|--------------------------------------|---------------------------|-----|
| OUTFALL/NODE ID: 484-186-1 | | PHYSICAL LOCATION: <u>New Seward (North) 42 in</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1230</u> | | |
| <u>Flow Meter</u> | Flow Speed (ft/s): <u>2.46</u> | | Water Depth (in): <u>2.4</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>1230</u> | <u>11.56</u> | <u>139 µS/cm</u> | <u>10.20 (93.67)</u> | <u>7.08</u> | |
| FIELD REPLICATE | <u>1230</u> | <u>11.54</u> | <u>140</u> | <u>10.20 (93.5)</u> | <u>7.07</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 08-01</u> | <u>1230</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| <u>SWM 08-01 Dup</u> | <u>1230</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>hydrocarbon odor</u> | <u>possibly from highway</u> | | | | |
| COLOR | <u>light</u> | | | | | |
| CLARITY | <u>clear</u> | | | | | |
| FLOATABLES | <u>none</u> | | | | | |
| DEPOSITS or STAINS | <u>rust buildup</u> | <u>in pipe</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. [Signature]

Date: 6/28/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>09</u> | | DATE: <u>06/21/14</u> | SAMPLE START TIME: <u>1315</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>1315</u> | |
| Flow Meter | Flow Speed (ft/s): <u>0.13</u> | | Water Depth (in): <u>0.8</u> | | Pipe Diam (in): <u>24 in</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>1315</u> | <u>11.97</u> | <u>250</u> | <u>8.97/83.0</u> | <u>6.97</u> | <u>10.7</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 09-01</u> | <u>1315</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>light</u> | | | | | |
| CLARITY | <u>clear</u> | | | | | |
| FLOATABLES | <u>no</u> | | | | | |
| DEPOSITS or STAINS | <u>no</u> | | | | | |
| SHEEN | <u>no</u> | | | | | |
| SURFACE SCUM | <u>no</u> | | | | | |
| DEBRIS | <u>no</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| | | | | | | |
| | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M Lane

Date: 6/28/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| | | | | | | |
|-----------------------------------------------------------------------------|--------------------------------|----------------------------------------------|-------------------------------------|--------------------------------------|---------------------------|--------------|
| STATION ID: SWM <u>10</u> | | DATE: <u>06/21/14</u> | SAMPLE START TIME: <u>1335</u> | | | |
| OUTFALL/NODE ID: <u>525-2</u> | | PHYSICAL LOCATION: <u>Boeke (south bank)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | <u>Flow Meter</u> | | Time: <u>1335</u> | |
| Flow Meter | Flow Speed (ft/s): <u>1.12</u> | | Water Depth (in): <u>1.4</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>1335</u> | <u>9.32</u> | <u>375</u> | <u>11.56 (100.82)</u> | <u>6.92</u> | <u>3.55</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 10-01</u> | <u>1335</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 | <u>light</u> | | | | | |
| CLARITY | <u>clear</u> | | | | | |
| FLOATABLES | <u>none</u> | | | | | |
| DEPOSITS or STAINS | <u>rusty pipe</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. [Signature]

Date: 6/28/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>01</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>0927</u> | | |
|-------------------------------------------------------------|-----------------------------------------|------------------------------------------------|-------------------------------------|--------------------------------------|---------------------|--------------|
| OUTFALL/NODE ID: <u>1040-3</u> | | PHYSICAL LOCATION: <u>Lake Otis + O'Malley</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Flow Meter | | |
| Time: <u>0927</u> | | | | | | |
| Flow Meter | Flow Speed (ft/s): <u>0.15</u> | Water Depth (in): <u>0.5 in</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) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) |
| MEASUREMENT | <u>0927</u> | <u>13.34</u> | <u>434</u> | <u>71.5%</u> | <u>7.50</u> | <u>11.7</u> |
| FIELD REPLICATE | | | | <u>7.49 mg/L</u> | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 01-02</u> | <u>0927</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| <u>SWM 01-02 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>pretty 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>not raining. confidence level of turbidity < 99%</u> | | | | | | |
| <u>Flow depth low ~ discharge read 0.08, 0.15, 0.28</u> | | | | | | |
| Photos: | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | | | | |

Reviewed By: M Am

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>02</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>0958</u> | | |
|-----------------------------------------------------------------------------|-------------------------------------|----------------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| OUTFALL/NODE ID: <u>847-1</u> | | PHYSICAL LOCATION: <u>Home Depot - Abbot</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1016</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>2.66</u> | | Water Depth (in): <u>0.70</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) | SpCond (µS/cm) | DO (mg/L) | pH | |
| MEASUREMENT | <u>0958</u> | <u>7.95</u> | <u>357</u> | <u>11.15</u> <u>109.9%</u> | <u>7.69</u> | |
| FIELD REPLICATE | <u>1006</u> | <u>7.94</u> | <u>371</u> | <u>11.12</u> <u>109.7%</u> | <u>7.69</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM_02-02</u> | <u>0958</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <u>SWM_02-02 Dup</u> | <u>1006</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <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 | <input checked="" type="checkbox"/> | <u>slight hydrocarbon 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 | <u>none</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>raining</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. [Signature]

Date: 7/15/14

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MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG

left

| STATION ID: SWM <u>03</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>1045</u> | |
|-----------------------------------------------------------------------|--|-------------------------------------------------------|--|--------------------------------------|--|
| OUTFALL/NODE ID: <u>1224-1</u> | | PHYSICAL LOCATION: <u>Old Seward + Sylvan (north)</u> | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1045</u> | |
| Flow Meter | | Flow Speed (ft/s): <u>0.12</u> | | Water Depth (in): <u>1 in</u> | |
| Pipe Diam (in): <u>36</u> | | 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) | | SpCond (µS/cm) | |
| DO (mg/L) | | pH | | TURB (ntu) | |
| MEASUREMENT | | <u>1045</u> | | <u>8.99</u> | |
| FIELD REPLICATE | | <u>372</u> | | <u>7.11 (6.59)</u> | |
| | | | | <u>7.63</u> | |
| | | | | <u>4.48</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | |
| SAMPLE NUMBER | | TIME (ADT) | | SAMPLES COLLECTED (CHECK BOX) | |
| | | | | FECAL | |
| | | | | BOD | |
| | | | | TSS | |
| | | | | TAqH | |
| | | | | TAH | |
| <u>SWM 03-02</u> | | <u>1045</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>very 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>not raining</u> | | | | | |
| Photos: <input checked="" type="radio"/> Yes <input type="radio"/> No | | | | | |

Reviewed By: M June

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>04</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>1051</u> | |
|-----------------------------------------------------------------------------|--|------------------------------------------------------|--|--------------------------------------|--|
| OUTFALL/NODE ID: <u>1224-2</u> | | PHYSICAL LOCATION: <u>0' Seward + sylvan (south)</u> | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1051</u> | |
| Flow Meter | | Flow Speed (ft/s): <u>0.15</u> | | Water Depth (in): <u>2 in</u> | |
| Bucket Measurements | | Time 1 (s) | | Time 2 (s) | |
| Bucket: 1-gal 5-gal | | Time 3 (s) | | 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) | |
| MEASUREMENT | | SpCond (µS/cm) | | DO (mg/L) | |
| FIELD REPLICATE | | pH | | TURB (ntu) | |
| | | <u>1051</u> | | <u>13.46</u> | |
| | | <u>557</u> | | <u>8.85/84.9%</u> | |
| | | <u>7.47</u> | | <u>6.21</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | |
| SAMPLE NUMBER | | TIME (ADT) | | SAMPLES COLLECTED (CHECK BOX) | |
| | | | | FECAL | |
| | | | | BOD | |
| | | | | TSS | |
| | | | | TAqH | |
| | | | | TAH | |
| <u>SWM 04-02</u> | | <u>1051</u> | | <input checked="" type="checkbox"/> | |
| <u>SWM ___-02 Dup</u> | | | | <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>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> | | <u>some detritus</u> | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | |
| <u>sprinkling. turbidity confidence level < 95%</u> | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | |

Reviewed By: M. [Signature]

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>05</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>1120</u> | | |
|-----------------------------------------------------------------------------|-----------------|----------------------------------------------------------|----------------|--------------------------------------|---------------------|-----|
| OUTFALL/NODE ID: <u>207-1</u> | | PHYSICAL LOCATION: <u>ESGth + Save School</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1120</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>0.12</u> | | Water Depth (in): <u>1 in</u> | | |
| Bucket Measurements | | Time 1 (s) | Time 2 (s) | Time 3 (s) | Time 4 (s) | |
| Bucket: 1-gal 5-gal | | | <u>0.65</u> | | | |
| IN SITU WATER QUALITY MEASUREMENTS | | | | | | |
| INSTRUMENT/SERIAL # | | YSI 556 MULTIPROBE: KLI #1939 | | HACH 2100P/Q TURBIDIMETER: KLI #0833 | | |
| | TIME (ADT) | TEMP (°C) | SpCond (µS/cm) | DO (mg/L) | pH | |
| MEASUREMENT | <u>12.6 MSD</u> | <u>12.6</u> | <u>281</u> | <u>994 (93.7%)</u> | <u>7.33</u> | |
| FIELD REPLICATE | <u>1120</u> | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>05</u> -02 | <u>1120</u> | X | X | 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 | <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: | | | | | | |
| <u>raining</u> | | | | | | |
| <u>Left outfall = 0.04 ft/s depth = 1.25"</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Luan

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>06</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>1200</u> | |
|-----------------------------------------------------------------------------|--|-------------------------------------|--|--------------------------------------|--|
| OUTFALL/NODE ID: <u>314-22</u> | | PHYSICAL LOCATION: <u>Maplewood</u> | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1200</u> | |
| Flow Meter | | Flow Speed (ft/s): <u>2.38</u> | | Water Depth (in): <u>3.25"</u> | |
| Pipe Diam (in): | | Time 1 (s) | | Time 2 (s) | |
| Bucket Measurements | | 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) | | SpCond (µS/cm) | |
| DO (mg/L) | | pH | | TURB (ntu) | |
| MEASUREMENT | | <u>1200</u> | | <u>12.64</u> | |
| FIELD REPLICATE | | <u>143</u> | | <u>98.5 µS/cm</u> | |
| | | <u>6.99</u> | | <u>290</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | |
| SAMPLE NUMBER | | TIME (ADT) | | SAMPLES COLLECTED (CHECK BOX) | |
| | | | | FECAL BOD TSS TAqH TAH | |
| SWM <u>06-02</u> | | <u>1200</u> | | X X X | |
| 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 | | <u>yes</u> | | <u>slight odor</u> | |
| COLOR | | <u>brown</u> | | | |
| CLARITY | | <u>turbid</u> | | | |
| FLOATABLES | | <u>none</u> | | | |
| DEPOSITS or STAINS | | <u>none</u> | | | |
| SHEEN | | <u>none</u> | | | |
| SURFACE SCUM | | <u>none</u> | | | |
| DEBRIS | | <u>none</u> | | <u>some detritus</u> | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | |
| <u>raining hard</u> | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | |

Reviewed By: M. Ann

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>07</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>1230</u> | |
|-------------------------------------------------------------|--|----------------------------------------------|--|--------------------------------------|--|
| OUTFALL/NODE ID: <u>484-1</u> | | PHYSICAL LOCATION: <u>New Seward (north)</u> | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1230</u> | |
| Flow Meter | | Flow Speed (ft/s): <u>2.63</u> | | Water Depth (in): <u>2 in</u> | |
| Pipe Diam (in): | | Bucket Measurements | | Rate (gal/s) | |
| 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) | | SpCond (µS/cm) | |
| DO (mg/L) | | pH | | TURB (ntu) | |
| MEASUREMENT | | <u>1230</u> | | <u>14.28</u> | |
| FIELD REPLICATE | | <u>63</u> | | <u>10.38</u> ^{101.40} | |
| | | | | <u>7.28</u> | |
| | | | | <u>369</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | |
| SAMPLE NUMBER | | TIME (ADT) | | SAMPLES COLLECTED (CHECK BOX) | |
| | | | | FECAL BOD TSS TAqH TAH | |
| <u>SWM07-02</u> | | <u>1230</u> | | X X X X X | |
| <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 | | <u>turbid</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>raining</u> | | <u>2 1/2 in depth in furrow</u> | | | |
| Photos: Yes No | | | | | |

Reviewed By: M. Ann

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>08</u> | | DATE: <u>7/10/14</u> | SAMPLE START TIME: <u>1241</u> | | | |
|-----------------------------------------------------------------------------|--------------------------------|----------------------------------------------|-------------------------------------|--------------------------------------|---------------------------|--------------|
| OUTFALL/NODE ID: <u>86-1</u> | | PHYSICAL LOCATION: <u>New Seward (42 in)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | Flow Meter | | Time: <u>1241</u> | |
| Flow Meter | Flow Speed (ft/s): <u>9.49</u> | | Water Depth (in): <u>9</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) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) |
| MEASUREMENT | <u>1241</u> | <u>13.9</u> | <u>60</u> | <u>11.09 (107)</u> | <u>7.04</u> | <u>243</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM08-02</u> | <u>1241</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| <u>SWM08-02 Dup</u> | <u>1241</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>yes</u> | <u>hydrocarbon</u> | | | | |
| COLOR | <u>brown</u> | <u>v</u> | | | | |
| CLARITY | <u>not clear</u> | | | | | |
| FLOATABLES | <u>no</u> | | | | | |
| DEPOSITS or STAINS | <u>no</u> | | | | | |
| SHEEN | <u>no</u> | | | | | |
| SURFACE SCUM | <u>no</u> | | | | | |
| DEBRIS | <u>no</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>raining</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M Anne

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>09</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>1310</u> | |
|-----------------------------------------------------------------------------|--|--------------------------------------------|--|--------------------------------------|--|
| OUTFALL/NODE ID: <u>499-1</u> | | PHYSICAL LOCATION: <u>Boeke North bank</u> | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1310</u> | |
| Flow Meter | | Flow Speed (ft/s): <u>0.45</u> | | Water Depth (in): <u>4.5 in</u> | |
| Pipe Diam (in): | | Time 1 (s) | | Time 2 (s) | |
| Bucket Measurements | | 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) | | SpCond (µS/cm) | |
| DO (mg/L) | | pH | | TURB (ntu) | |
| MEASUREMENT | | <u>1310</u> | | <u>14.49</u> | |
| FIELD REPLICATE | | <u>60</u> | | <u>10.01 (97.8)</u> | |
| | | | | <u>7.09</u> | |
| | | | | <u>76.4</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | |
| SAMPLE NUMBER | | TIME (ADT) | | SAMPLES COLLECTED (CHECK BOX) | |
| | | | | FECAL BOD TSS TAqH TAH | |
| <u>SWM 09-02</u> | | <u>1310</u> | | <u>X X X X 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>grey</u> | | | |
| CLARITY | | <u>turbid</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>raining</u> | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | |

Reviewed By: M. [Signature]

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>10</u> | | DATE: <u>7/10/14</u> | SAMPLE START TIME: <u>1321</u> | | | |
|-----------------------------------------------------------------------------|--------------------------------|----------------------------------------------|-------------------------------------|--------------------------------------|---------------------|--------------|
| OUTFALL/NODE ID: <u>S2S-2</u> | | PHYSICAL LOCATION: <u>Boeke (south bank)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | Flow Meter <u>2</u> | | Time: <u>1321</u> | |
| Flow Meter | Flow Speed (ft/s): <u>3.14</u> | | Water Depth (in): <u>2.75</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) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) |
| MEASUREMENT | <u>1321</u> | <u>13.16</u> | <u>170</u> | <u>11.16 (106.3)</u> | <u>6.97</u> | <u>85.4</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>10</u> -02 | <u>1321</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 | <u>rusty smell</u> | | | | | |
| COLOR | <u>light orange</u> | | | | | |
| CLARITY | <u>clearish</u> | | | | | |
| FLOATABLES | <u>none</u> | | | | | |
| DEPOSITS or STAINS | <u>rust</u> | | | | | |
| SHEEN | <u>none</u> | | | | | |
| SURFACE SCUM | <u>none</u> | | | | | |
| DEBRIS | <u>none</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>raining. oxidation around outfall</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Auer

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>01</u> | | DATE: <u>08/04/14</u> | | SAMPLE START TIME: <u>14:30</u> | | |
|-----------------------------------------------------------------------------|---------------------|------------------------------------------------|-------------------------------------|--------------------------------------|---------------------|-----|
| OUTFALL/NODE ID: <u>1040-3</u> | | PHYSICAL LOCATION: <u>Lake Otis + O'Malley</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1430</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>0.20</u> | | Water Depth (in): <u>0.25</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) | SpCond (µS/cm) | DO (mg/L) | pH | |
| MEASUREMENT | <u>1430</u> | <u>16.47</u> | <u>193</u> | <u>8.52 (87.1%)</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>SWM01-03</u> | <u>1430</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>light yellow</u> | | | | | |
| CLARITY | <u>pretty 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>not raining, some bubbles</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Brown

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>02</u> | | DATE: <u>8 / 14 / 14</u> | | SAMPLE START TIME: <u>14:57</u> | | |
|-----------------------------------------------------------------------------|-------------------------|-------------------------------------------------|-----|--------------------------------------|---------------------|-----|
| OUTFALL/NODE ID: <u>847-1</u> | | PHYSICAL LOCATION: <u>Home Depot - Abbot</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1503</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>1.96</u> | | Water Depth (in): <u>0.75</u> | | |
| Bucket Measurements | | Time 1 (s) | | Time 2 (s) | | |
| Bucket: 1-gal 5-gal | | Time 3 (s) | | 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) | | SpCond (µS/cm) | | |
| MEASUREMENT | | DO (mg/L) | | pH | | |
| FIELD REPLICATE | | TURB (ntu) | | | | |
| | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>02-03</u> | <u>1503</u> | X | X | X | X | X |
| SWM <u>02-03 Dup</u> | <u>1503</u> | X | X | X | X | X |
| MS/MSD SAMPLES | | | | | X | X |
| FIELD QC (Trip/Equip) | | | | | | X |
| Description of QC Samples: | | | | | Sampler's Initials: | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | <u>no slightly oily</u> | <u>may just be coming down from parking lot</u> | | | | |
| COLOR | <u>light yellow</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>no rain</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>8 / 4 / 14</u> | | SAMPLE START TIME: <u>1554</u> | |
|-----------------------------------------------------------------------|--------------------------|------------------------------------------------------|----------|--------------------------------------|---------------------|
| OUTFALL/NODE ID: <u>1224-1</u> | | PHYSICAL LOCATION: <u>6. Seward + Sylvan (north)</u> | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1554</u> | |
| Flow Meter | | Flow Speed (ft/s): <u>0.20</u> | | Water Depth (in): <u>2 in</u> | |
| Bucket Measurements | | Time 1 (s) | | Time 2 (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) | | DO (mg/L) | |
| MEASUREMENT | | SpCond (µS/cm) | | pH | |
| FIELD REPLICATE | | TURB (ntu) | | | |
| | | <u>1554</u> | | <u>11.37</u> | |
| | | <u>298</u> | | <u>7.46 (67.7)</u> | |
| | | | | <u>7.63</u> | |
| | | | | <u>7.84</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | |
| | | FECAL | BOD | TSS | TAqH |
| <u>SWM_03-03</u> | <u>1554</u> | <u>X</u> | <u>X</u> | <u>X</u> | |
| <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>light light 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> | <u>some trash - candy wrapper etc</u> | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | |
| | | | | | |
| | | | | | |
| Photos: <input checked="" type="radio"/> Yes <input type="radio"/> No | | | | | |

Reviewed By: M. Anwar

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>04</u> | | DATE: <u>8/4/14</u> | SAMPLE START TIME: <u>1601</u> | | | |
|-------------------------------------------------------------|---------------------------------------------------|------------------------------------------------------|-------------------------------------|--------------------------------------|---------------------|--------------|
| OUTFALL/NODE ID: <u>1224-2</u> | | PHYSICAL LOCATION: <u>O. Seward + Sylvan (south)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket <u>Flow Meter</u> | | | Time: <u>1601</u> | |
| Flow Meter | Flow Speed (ft/s): <u>0.04-Exp</u> <u>0.13</u> | | Water Depth (in): <u>1.75</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) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) |
| MEASUREMENT | <u>1601</u> | <u>15.56</u> | <u>497</u> | <u>8.53 (85.6%)</u> | <u>7.48</u> | <u>10.4</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 04-03</u> | <u>1601</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>light yellow</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: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>05</u> | | DATE: <u>8/14/14</u> | | SAMPLE START TIME: <u>1634</u> | | |
|-------------------------------------------------------------|--------------------------------|------------------------------------------------------------|-------------------------------|--------------------------------------|---------------------|-------------|
| OUTFALL/NODE ID: <u>207-1</u> | | PHYSICAL LOCATION: <u>E. 56th @ save school</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1634</u> | | |
| <u>Flow Meter</u> | Flow Speed (ft/s): <u>0.46</u> | | Water Depth (in): <u>0.75</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) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) |
| MEASUREMENT | <u>1634</u> | <u>15.06</u> | <u>245</u> | <u>9.561</u> | <u>7.34</u> | <u>43.2</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 05-03</u> | <u>1634</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>X</u> |
| <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>light yellow</u> | | | | | |
| CLARITY | <u>clear</u> | | | | | |
| FLOATABLES | <u>none</u> | | | | | |
| DEPOSITS or STAINS | <u>orange deposit on</u> | <u>bottom of pipe</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. Brown

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>06</u> | | DATE: <u>8/4/14</u> | | SAMPLE START TIME: <u>1710</u> | | |
|-----------------------------------------------------------------------------|--------------------------------|-------------------------------------|-------------------------------------|---------------------------------------------|---------------------|--------------|
| OUTFALL/NODE ID: <u>314-22</u> | | PHYSICAL LOCATION: <u>Maplewood</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Flow Meter <input checked="" type="radio"/> | | |
| Time: <u>1710</u> | | | | | | |
| Flow Meter | Flow Speed (ft/s): <u>0.39</u> | Water Depth (in): <u>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 | | | | | | |
| IN SITU WATER QUALITY MEASUREMENTS | | | | | | |
| INSTRUMENT/SERIAL # | YSI 556 MULTIPROBE: KLI #1939 | | | HACH 2100P/Q TURBIDIMETER: KLI #0833 | | |
| | TIME (ADT) | TEMP (°C) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) |
| MEASUREMENT | <u>1710</u> | <u>13.59</u> | <u>170</u> | <u>9.07</u> <u>(87.2%)</u> | <u>6.90</u> | <u>28.5</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 06-03</u> | <u>1710</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>no</u> | | | | | |
| COLOR | <u>light brown</u> | | | | | |
| CLARITY | <u>pretty clear</u> | | | | | |
| FLOATABLES | <u>no</u> | | | | | |
| DEPOSITS or STAINS | <u>rusted out pipe</u> | | | | | |
| SHEEN | <u>no</u> | | | | | |
| SURFACE SCUM | <u>no</u> | | | | | |
| DEBRIS | <u>trash</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>raining</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Avon

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>07</u> | | DATE: <u>8/4/14</u> | | SAMPLE START TIME: <u>1734</u> | | |
|-------------------------------------------------------------|--------------------------------|----------------------------------------------|----------------|--------------------------------------|---------------------|--------------|
| OUTFALL/NODE ID: <u>484-1</u> | | PHYSICAL LOCATION: <u>New Seward (north)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) <u>Bucket</u> | | Flow Meter <u>0.75 m/s</u> | | Time: <u>1734</u> | | |
| Flow Meter | Flow Speed (ft/s): | Water Depth (in): <u>2 in</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-gal</u> 5-gal | <u>23.55</u> | <u>8.17</u> | <u>5.52</u> | <u>4.50</u> | | |
| IN SITU WATER QUALITY MEASUREMENTS | | | | | | |
| INSTRUMENT/SERIAL # | YSI 556 MULTIPROBE: KLI #1939 | | | HACH 2100P/Q TURBIDIMETER: KLI #0833 | | |
| | TIME (ADT) | TEMP (°C) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) |
| MEASUREMENT | <u>1734</u> | <u>13.73</u> | <u>145</u> | <u>9.60</u> | <u>7.50</u> | <u>363</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM_07-03</u> | <u>1734</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>X</u> |
| <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>gas - hydrocarbon smell</u> | <u>in general vicinity - not water</u> | | | | |
| COLOR | <u>dark grey</u> | | | | | |
| CLARITY | <u>very turbid</u> | | | | | |
| FLOATABLES | <u>no</u> | | | | | |
| DEPOSITS or STAINS | <u>no</u> | | | | | |
| SHEEN | <u>no</u> | | | | | |
| SURFACE SCUM | <u>no</u> | | | | | |
| DEBRIS | <u>no</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>raining</u> | | | | | | |
| Photos: <u>Yes</u> No | | | | | | |

Reviewed By: M. Avon

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>08</u> | | DATE: <u>8 / 4 / 14</u> | | SAMPLE START TIME: <u>1751</u> | | | |
|-------------------------------------------------------------|------------------------------------------|----------------------------------------------|-------------------------------------|--------------------------------------|---------------------|-------------|--------------|
| OUTFALL/NODE ID: <u>86-1</u> | | PHYSICAL LOCATION: <u>New Seward (42 in)</u> | | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1751</u> | | | |
| <u>Flow Meter</u> | | <u>Flow Meter</u> | | | | | |
| Flow Speed (ft/s): <u>5.90</u> | | Water Depth (in): <u>3.1</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) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) | |
| MEASUREMENT | <u>1756</u> | <u>13.79</u> | <u>189</u> | <u>10.08 (97.2%)</u> | <u>7.10</u> | <u>129</u> | |
| FIELD REPLICATE | <u>1759</u> | <u>14.38</u> | <u>144</u> | <u>9.98 (97.5%)</u> | <u>7.08</u> | <u>54.9</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH | |
| <u>SWM 08-03</u> | <u>1751</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| <u>SWM 08-03 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>strong hydrocarbon</u> | <u>smell in pipe.</u> | | | | | |
| COLOR | <u>grey</u> | | | | | | |
| CLARITY | <u>turbid</u> | | | | | | |
| FLOATABLES | <u>none</u> | | | | | | |
| DEPOSITS or STAINS | <u>none orange deposit on some rocks</u> | | | | | | |
| SHEEN | <u>none</u> | | | | | | |
| SURFACE SCUM | <u>none</u> | | | | | | |
| DEBRIS | <u>none</u> | <u>some detritus</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | | |
| <u>not raining.</u> | | | | | | | |
| Photos: Yes No | | | | | | | |

Reviewed By: M. Brown

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>09</u> | | DATE: <u>8/4/14</u> | | SAMPLE START TIME: <u>1821</u> | | | |
|-----------------------------------------------------------------------------|---------------|----------------------------------------------|-------------------------------|--------------------------------------|---------------------|-------------|--------------|
| OUTFALL/NODE ID: <u>499-1</u> | | PHYSICAL LOCATION: <u>Boeke (north bank)</u> | | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1821</u> | | | |
| Flow Meter | | Flow Meter | | | | | |
| Flow Meter | | Flow Speed (ft/s): <u>0.09</u> | Water Depth (in): <u>3 in</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) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) |
| MEASUREMENT | | <u>1821</u> | <u>14.30</u> | <u>202</u> | <u>9.80 (95.7%)</u> | <u>7.86</u> | <u>75.7</u> |
| FIELD REPLICATE | | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH | |
| <u>SWM09-03</u> | <u>1821</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>X</u> | |
| <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>grey</u> | | | | | | |
| CLARITY | <u>turbid</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>NO rain - hard to get enough water - low flow - might</u> | | | | | | | |
| <u>have set disturbed bottom</u> | | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | | |

Reviewed By: M. Anon

Date: 8/26/14

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MOA Stormwater Management Program WATER QUALITY STORM SAMPLING FIELD LOG

| STATION ID: SWM 10 | | DATE: 8 / 4 / 14 | | SAMPLE START TIME: 1838 | | |
|-------------------------------------------------------------|-------------------------------|---------------------------------------|----------------------------|--------------------------------------|---------------------|--------------|
| OUTFALL/NODE ID: 525-2 | | PHYSICAL LOCATION: Boeke (south bank) | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Flow Meter | | |
| | | | | Time: 1838 | | |
| Flow Meter | Flow Speed (ft/s): 1.33 | | Water Depth (in): 1 3/4 in | | 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) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) |
| MEASUREMENT | 1838 | 12.33 | 368 | 11.87 | 7.23 | 13.8 |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM 10-03 | 1838 | X | X | X | | |
| 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 | no | | | | | |
| COLOR | very light orange | | | | | |
| CLARITY | clear | | | | | |
| FLOATABLES | no | | | | | |
| DEPOSITS or STAINS | orange deposit on | rock | | | | |
| SHEEN | no | | | | | |
| SURFACE SCUM | no | | | | | |
| DEBRIS | no | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| DO jumping | | | | | | |
| Photos: Yes No | | | | | | |

Reviewed By: M. Amun

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>01</u> | | DATE: <u>8/24/14</u> | | SAMPLE START TIME: <u>1330</u> | | |
|-----------------------------------------------------------------------------|---------------------|--------------------------------------------------|-------------------------------------|--------------------------------------|--------------------------------|-----|
| OUTFALL/NODE ID: <u>1040-3</u> | | PHYSICAL LOCATION: <u>Baker Mills + O'Malley</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1330</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>0.09</u> | | Water Depth (in): <u>0.25</u> | | |
| Pipe Diam (in): <u>18</u> | | Bucket Measurements | | Total Time | | |
| Bucket: 1-gal 5-gal | | Time 1 (s) | Time 2 (s) | Time 3 (s) | Time 4 (s) | |
| | | <u>1ft/14.5s</u> | <u>1ft/10s</u> | <u>1ft/12s</u> | <u>1ft/10.6s</u> | |
| IN SITU WATER QUALITY MEASUREMENTS | | | | | | |
| INSTRUMENT/SERIAL # | | YSI 556 MULTIPROBE: KLI #1939 | | HACH 2100P/Q TURBIDIMETER: KLI #0833 | | |
| MEASUREMENT | | TIME (ADT) | TEMP (°C) | COND (µS/cm) | DO (mg/L) | |
| FIELD REPLICATE | | | | | | |
| | | <u>1330</u> | <u>13.93</u> | <u>187</u> | <u>8.06/72%</u> | |
| | | | | | <u>7.77</u> | |
| | | | | | <u>8.35</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM01-04</u> | <u>1330</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: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | <u>none</u> | | | | | |
| COLOR | <u>slight color</u> | <u>light brown</u> | | | | |
| CLARITY | <u>good</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 v. light rain. Some bluegrass growing in outfall.</u> | | | | | | |
| <u>v. low flow. water mark at 1"</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M Aaron

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>02</u> | | DATE: <u>8/26/14</u> | | SAMPLE START TIME: <u>1413</u> | | |
|-----------------------------------------------------------------------------|-------------|-----------------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| OUTFALL/NODE ID: <u>8471</u> | | PHYSICAL LOCATION: <u>Home Depot - Abbott</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1413</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>1.49</u> | | Water Depth (in): <u>3/8</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>1413</u> | <u>11.57</u> | <u>254</u> | <u>11.19/102.8%</u> | <u>7.75</u> | |
| FIELD REPLICATE | <u>1414</u> | <u>11.53</u> | <u>255</u> | <u>11.09/102.0%</u> | <u>7.63</u> | |
| TURB (ntu) | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM02-04</u> | <u>1413</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <u>SWM02-04 Dup</u> | <u>1413</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"/> | <input checked="" type="checkbox"/> |
| Description of QC Samples: | | | | | Sampler's Initials: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | <u>none</u> | | | | | |
| COLOR | <u>none</u> | | | | | |
| CLARITY | <u>good</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, v. light rain.</u> | | | | | | |
| <u>good flow</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M Ann

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>03</u> | | DATE: <u>8/24/14</u> | | SAMPLE START TIME: <u>1445</u> | | |
|-----------------------------------------------------------------------------|-------------|-------------------------------------------------------|-------------------------------------|--------------------------------------|--------------------------------|-----|
| OUTFALL/NODE ID: <u>1224-1</u> | | PHYSICAL LOCATION: <u>Old Seward + Sylvan (North)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1445</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>0.29</u> | | Water Depth (in): <u>1.5</u> | | |
| Pipe Diam (in): <u>36</u> | | | | | | |
| Bucket Measurements | | Time 1 (s) | Time 2 (s) | Time 3 (s) | Time 4 (s) | |
| Total Time | | Rate (gals) | | | | |
| 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>1445</u> | <u>8.94</u> | <u>369</u> | <u>6.92/59.670</u> | <u>7.65</u> | |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM03-04</u> | <u>1445</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: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | - | | | | | |
| COLOR | - | | | | | |
| CLARITY | <u>good</u> | | | | | |
| FLOATABLES | - | | | | | |
| DEPOSITS or STAINS | - | | | | | |
| SHEEN | - | | | | | |
| SURFACE SCUM | - | | | | | |
| DEBRIS | - | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>overcast</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M Anon

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>04</u> | | DATE: <u>8/24/14</u> | | SAMPLE START TIME: <u>1453</u> | | |
|-------------------------------------------------------------|------------------------|-------------------------------------------------------|-------------------------------------|--------------------------------------|--------------------------------|-----|
| OUTFALL/NODE ID: <u>1224-2</u> | | PHYSICAL LOCATION: <u>old Seward + Sylvan (south)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1453</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>0.06</u> | | Water Depth (in): <u>.75</u> | | |
| Pipe Diam (in): <u>18</u> | | Bucket: <u>1-gal</u> 5-gal | | | | |
| Bucket Measurements | | Time 1 (s) | Time 2 (s) | Time 3 (s) | Time 4 (s) | |
| | | <u>147/5.6s</u> | <u>147/6.2s</u> | <u>147/5.4s</u> | <u>147/4.0s</u> | |
| IN SITU WATER QUALITY MEASUREMENTS | | | | | | |
| INSTRUMENT/SERIAL # | | YSI 556 MULTIPROBE: KLI #1939 | | HACH 2100P/Q TURBIDIMETER: KLI #0833 | | |
| MEASUREMENT | | TIME (ADT) | TEMP (°C) | COND (µS/cm) | DO (mg/L) | |
| FIELD REPLICATE | | | | | | |
| | | <u>1453</u> | <u>14.46</u> | <u>606</u> | <u>7.75/76.0%</u> | |
| | | | | | <u>7.64</u> | |
| | | | | | <u>47.8</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 04-04</u> | <u>1453</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: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | - | | | | | |
| COLOR | <u>light blue/grey</u> | | | | | |
| CLARITY | <u>good</u> | | | | | |
| FLOATABLES | - | | | | | |
| DEPOSITS or STAINS | - | | | | | |
| SHEEN | | <u>bubbles on surface of water</u> | | | | |
| SURFACE SCUM | - | | | | | |
| DEBRIS | - | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>overcast</u> | | | | | | |
| <u>low flow - two flow sample methods</u> | | | | | | |
| Photos: Yes No | | | | | | |

Reviewed By: M Awaw

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>05</u> | | DATE: <u>8/24/14</u> | SAMPLE START TIME: <u>1520</u> | | | |
|------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| OUTFALL/NODE ID: <u>207-1</u> | | PHYSICAL LOCATION: <u>E. 56th @ Sane School</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | <u>Flow Meter</u> | | Time: <u>1520</u> | |
| Flow Meter | Flow Speed (ft/s): <u>0.18</u> | | Water Depth (in): <u>0.75</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>1520</u> | <u>13.55</u> | <u>304</u> | <u>8.79/24.3%</u> | <u>7.33</u> | 7.4 <u>17.0</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 05-04</u> | <u>1520</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: <u>MAS</u> |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | - | | | | | |
| COLOR | <u>v. light brown/yellow</u> | <u>in sample bottle</u> | | | | |
| CLARITY | <u>good</u> | | | | | |
| FLOATABLES | - | | | | | |
| DEPOSITS or STAINS | - | | | | | |
| SHEEN | | <u>bubbles on surface of water below outfall</u> | | | | |
| SURFACE SCUM | - | | | | | |
| DEBRIS | - | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>overcast, v. light rain. Some tall blue joint reedgrass growing in outfall.</u> | | | | | | |
| <u>Sediment + algae in outfall</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Amos

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>06</u> | | DATE: <u>8/24/14</u> | | SAMPLE START TIME: <u>1601</u> | | |
|-----------------------------------------------------------------------------|------------------------|------------------------------------------|-------------------------------------|--------------------------------------|--------------------------------|-----|
| OUTFALL/NODE ID: <u>314-22</u> | | PHYSICAL LOCATION: <u>Maplewood</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1601</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>0.37</u> | | Water Depth (in): <u>0.4</u> | | |
| Pipe Diam (in): <u>24</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>1601</u> | <u>12.21</u> | <u>184</u> | <u>9.77/91.1%</u> | <u>7.25</u> | |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM06-04</u> | <u>1601</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: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | - | | | | | |
| COLOR | <u>v. light yellow</u> | | | | | |
| CLARITY | <u>good</u> | | | | | |
| FLOATABLES | - | | | | | |
| DEPOSITS or STAINS | - | | | | | |
| SHEEN | - | <u>some foam + suds on water surface</u> | | | | |
| SURFACE SCUM | - | | | | | |
| DEBRIS | - | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>light rain</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. [Signature]

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>07</u> | | DATE: <u>8/24/14</u> | | SAMPLE START TIME: <u>1627</u> | | |
|-----------------------------------------------------------------------------|--------------------------------|---------------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| OUTFALL/NODE ID: <u>484-1</u> | | PHYSICAL LOCATION: <u>New Sewer (north)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) <u>Bucket</u> <u>Flow Meter</u> | | | Time: <u>1627</u> | | | |
| Flow Meter | Flow Speed (ft/s): <u>2.19</u> | Water Depth (in): <u>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: <u>(1-gal)</u> 5-gal | <u>2.29</u> | <u>2.36</u> | <u>2.06</u> | <u>1.80</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>1627</u> | <u>13.34</u> | <u>101</u> | <u>9.72/93.1%</u> | <u>7.37</u> | <u>291</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>1627</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: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | - | | | | | |
| COLOR | <u>dark grey</u> | | | | | |
| CLARITY | <u>poor</u> | <u>very cloudy</u> | | | | |
| FLOATABLES | - | | | | | |
| DEPOSITS or STAINS | - | | | | | |
| SHEEN | - | <u>some bubbles on water surface</u> | | | | |
| SURFACE SCUM | - | | | | | |
| DEBRIS | - | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>light rain</u> | | | | | | |
| <u>flow increased during flow measurement</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M Swann

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>08</u> | | DATE: <u>8/24/14</u> | | SAMPLE START TIME: <u>1640</u> | | |
|-----------------------------------------------------------------------------|--------------------------------|----------------------------------------------|--------------------------------------|-------------------------------------|--------------------------------|-----|
| OUTFALL/NODE ID: <u>86-1</u> | | PHYSICAL LOCATION: <u>New Seward (42-in)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | Flow Meter | | Time: <u>1640</u> | |
| Flow Meter | Flow Speed (ft/s): <u>6.20</u> | | Water Depth (in): <u>2.75</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>1640</u> | <u>11.20</u> | <u>358</u> | <u>10.27/93.5%</u> | <u>7.17</u> | |
| FIELD REPLICATE | | <u>11.34</u> | <u>333</u> | <u>10.20/93.4%</u> | <u>7.15</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAQH | TAH |
| SWM <u>08-04</u> | <u>1640</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| SWM <u>08-04 Dup</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: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | <u>yes</u> | <u>fuel</u> | | | | |
| COLOR | <u>yellow/light brown</u> | | | | | |
| CLARITY | <u>moderate</u> | | | | | |
| FLOATABLES | <u>-</u> | | | | | |
| DEPOSITS or STAINS | | <u>rust/iron stain in pipe</u> | | | | |
| SHEEN | | <u>some bubbles on water surface</u> | | | | |
| SURFACE SCUM | <u>-</u> | | | | | |
| DEBRIS | <u>-</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>light rain</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Brown

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>09</u> | | DATE: <u>8/24/14</u> | | SAMPLE START TIME: <u>1710</u> | | |
|-----------------------------------------------------------------------------|-------------------|--------------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| OUTFALL/NODE ID: <u>499-1</u> | | PHYSICAL LOCATION: <u>Boeke Cruth bank</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | Flow Meter | | Time: | |
| Flow Meter | | Flow Speed (ft/s): <u>0.45</u> | Water Depth (in): <u>3.1</u> | | Pipe Diam (in): <u>24</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 | TURB (ntu) |
| MEASUREMENT | <u>1710</u> | <u>14.82</u> | <u>140</u> | <u>9.34/92.11</u> | <u>7.36</u> | <u>59.3</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>09</u> -04 | <u>1710</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: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | - | | | | | |
| COLOR | <u>light grey</u> | | | | | |
| CLARITY | <u>Poor</u> | <u>water cloudy in pipe</u> | | | | |
| FLOATABLES | - | | | | | |
| DEPOSITS or STAINS | - | | | | | |
| SHEEN | - | | | | | |
| SURFACE SCUM | - | | | | | |
| DEBRIS | - | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>Rain</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>8/26/14</u> | SAMPLE START TIME: <u>1725</u> | | | |
|-----------------------------------------------------------------------------|--------------------------------|----------------------------------------------|-------------------------------------|--------------------------------------|--------------------------------|--------------|
| OUTFALL/NODE ID: <u>525-2</u> | | PHYSICAL LOCATION: <u>Boeke (south bank)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | Flow Meter | | Time: <u>1725</u> | |
| Flow Meter | Flow Speed (ft/s): <u>2.73</u> | | Water Depth (in): <u>2.6</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>1725</u> | <u>14.07</u> | <u>168</u> | <u>10.64/108.4%</u> | <u>7.00</u> | <u>116</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM <u>L0</u> -04</u> | <u>1725</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: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | <u>light</u> | | | | | |
| COLOR | <u>brown</u> | | | | | |
| CLARITY | <u>moderate</u> | | | | | |
| FLOATABLES | <u>some</u> | <u>suspended particles visible in sample</u> | | | | |
| DEPOSITS or STAINS | <u>man standing</u> | <u>on cement below outfall, in pipe</u> | | | | |
| SHEEN | - | | | | | |
| SURFACE SCUM | - | | | | | |
| DEBRIS | - | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| | | | | | | |
| | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Avon

Date: 8/26/14

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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 56th 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.

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: **1142617**

Client Project: **5078 MOA Stormwater Managment**

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 Forest 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.

Forest Taylor
Project Manager
Forest.Taylor@sgs.com

Date

Print Date: 06/30/2014 12:39:55PM

Case Narrative

SGS Client: **Kinnetic Laboratories, Inc.**
SGS Project: **1142617**
Project Name/Site: **5078 MOA Stormwater Management**
Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

SWM02-01 MS (1142617003) BMS

8270D SIM - MS/MSD recovery for multiple analytes is outside of QC criteria (biased low) due to matrix interference.
Refer to LCS for accuracy.

SWM02-01 MSD (1142617004) BMSD

8270D SIM - MS/MSD recovery for multiple analytes is outside of QC criteria (biased low) due to matrix interference.
Refer to LCS for accuracy.

1142617001DUP (1216921) DUP

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. Refer to LCS/LCSD RPD for batch precision.

1142617005DUP (1216922) DUP

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. Refer to LCS/LCSD RPD for batch precision.

*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: 06/30/2014 12:39:56PM

Report of Manual Integrations

| <u>Laboratory ID</u> | <u>Client Sample ID</u> | <u>Analytical Batch</u> | <u>Analyte</u> | <u>Reason</u> |
|----------------------------|-------------------------|-------------------------|----------------------|---------------|
| EPA 625M SIMS (PAH) | | | | |
| 1142617002 | SWM02-01 | XMS8106 | Benzo[b]Fluoranthene | BLC |
| 1142617005 | SWM02-01 Dup | XMS8106 | Benzo[b]Fluoranthene | BLC |
| 1142617005 | SWM02-01 Dup | XMS8106 | 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>), 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., 1/2 of the LOQ) |
| 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> |
|-------------------------|----------------------|------------------|-----------------|-------------------------------|
| SWM01-01 | 1142617001 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM02-01 | 1142617002 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM02-01 MS | 1142617003 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM02-01 MSD | 1142617004 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM02-01 Dup | 1142617005 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM03-01 | 1142617006 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM04-01 | 1142617007 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM05-01 | 1142617008 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM06-01 | 1142617009 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM07-01 | 1142617010 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM08-01 | 1142617011 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM08-01 Dup | 1142617012 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM09-01 | 1142617013 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| SWM10-01 | 1142617014 | 06/21/2014 | 06/21/2014 | Water (Surface, Eff., Ground) |
| Trip Blank | 1142617015 | 06/21/2014 | 06/21/2014 | 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: **SWM01-01**

Lab Sample ID: 1142617001

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.92 | mg/L |
| Fecal Coliform | 15 | col/100mL |
| Total Suspended Solids | 16.0 | mg/L |

Client Sample ID: **SWM02-01**

Lab Sample ID: 1142617002

Microbiology Laboratory

Polynuclear Aromatics GC/MS

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.94 | mg/L |
| Fecal Coliform | 37 | col/100mL |
| Fluoranthene | 0.139 | ug/L |
| Pyrene | 0.0675 | ug/L |
| Total Suspended Solids | 4.00 | mg/L |

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

Lab Sample ID: 1142617005

Microbiology Laboratory

Polynuclear Aromatics GC/MS

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.88 | mg/L |
| Fecal Coliform | 38 | col/100mL |
| Benzo[b]Fluoranthene | 0.0602 | ug/L |
| Chrysene | 0.0653 | ug/L |
| Fluoranthene | 0.166 | ug/L |
| Phenanthrene | 0.0602 | ug/L |
| Pyrene | 0.0798 | ug/L |
| Total Suspended Solids | 3.67 | mg/L |

Client Sample ID: **SWM03-01**

Lab Sample ID: 1142617006

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.08 | mg/L |
| Fecal Coliform | 560 | col/100mL |
| Total Suspended Solids | 86.0 | mg/L |

Client Sample ID: **SWM04-01**

Lab Sample ID: 1142617007

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 3100 | col/100mL |
| Total Suspended Solids | 6.00 | mg/L |

Client Sample ID: **SWM05-01**

Lab Sample ID: 1142617008

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 4.32 | mg/L |
| Fecal Coliform | 250 | col/100mL |
| Total Suspended Solids | 10.7 | mg/L |

Client Sample ID: **SWM06-01**

Lab Sample ID: 1142617009

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.58 | mg/L |
| Fecal Coliform | 78 | col/100mL |
| Total Suspended Solids | 4.00 | mg/L |

Detectable Results Summary

Client Sample ID: **SWM07-01**

Lab Sample ID: 1142617010

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 3.88 | mg/L |
| Fecal Coliform | 2400 | col/100mL |
| Total Suspended Solids | 15.7 | mg/L |

Client Sample ID: **SWM08-01**

Lab Sample ID: 1142617011

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.85 | mg/L |
| Fecal Coliform | 340 | col/100mL |
| Total Suspended Solids | 8.00 | mg/L |

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

Lab Sample ID: 1142617012

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.85 | mg/L |
| Fecal Coliform | 400 | col/100mL |
| Total Suspended Solids | 10.7 | mg/L |

Client Sample ID: **SWM09-01**

Lab Sample ID: 1142617013

Microbiology Laboratory

Polynuclear Aromatics GC/MS

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.21 | mg/L |
| Fecal Coliform | 500 | col/100mL |
| Fluoranthene | 0.168 | ug/L |
| Phenanthrene | 0.0934 | ug/L |
| Pyrene | 0.0875 | ug/L |
| Total Suspended Solids | 9.00 | mg/L |

Client Sample ID: **SWM10-01**

Lab Sample ID: 1142617014

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 618 | col/100mL |
| Total Suspended Solids | 5.50 | mg/L |



Results of SWM01-01

Client Sample ID: **SWM01-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617001
Lab Project ID: 1142617

Collection Date: 06/21/14 09:54
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617001-A

| <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 | 15 | 1.67 | 1.67 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617001-A

Print Date: 06/30/2014 12:39:57PM



Results of **SWM01-01**

Client Sample ID: **SWM01-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617001
Lab Project ID: 1142617

Collection Date: 06/21/14 09:54
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 16.0 | 1.67 | 0.500 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617001-C

Print Date: 06/30/2014 12:39:57PM



Results of **SWM02-01**

Client Sample ID: **SWM02-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617002
Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.94 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617002-A

| <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 | 37 | 1.67 | 1.67 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617002-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM02-01

Client Sample ID: **SWM02-01**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1142617002
 Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
 Received Date: 06/21/14 14:01
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|--------------------------|-------------|--------|--------|-------|----|------------------|----------------|
| Acenaphthene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Acenaphthylene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Anthracene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Benzo(a)Anthracene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Benzo[a]pyrene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Benzo[b]Fluoranthene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Benzo[g,h,i]perylene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Benzo[k]fluoranthene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Chrysene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Dibenzo[a,h]anthracene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Fluoranthene | 0.139 | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Fluorene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Indeno[1,2,3-c,d] pyrene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Naphthalene | 0.102 U | 0.102 | 0.0316 | ug/L | 1 | | 06/23/14 14:44 |
| Phenanthrene | 0.0510 U | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Pyrene | 0.0675 | 0.0510 | 0.0153 | ug/L | 1 | | 06/23/14 14:44 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 84.1 | 50-110 | | % | 1 | | 06/23/14 14:44 |
| Terphenyl-d14 | 108 | 50-135 | | % | 1 | | 06/23/14 14:44 |

Batch Information

Analytical Batch: XMS8106
 Analytical Method: EPA 625M SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 06/23/14 14:44
 Container ID: 1142617002-G

Prep Batch: XXX31236
 Prep Method: SW3520C
 Prep Date/Time: 06/22/14 08:45
 Prep Initial Wt./Vol.: 980 mL
 Prep Extract Vol: 1 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM02-01

Client Sample ID: **SWM02-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617002
Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|-----------------------|-------------|--------|-------|-------|----|------------------|----------------|
| 1,2-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:10 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:10 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 01:10 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 06/24/14 01:10 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 01:10 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:10 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:10 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 06/24/14 01:10 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:10 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 113 | 70-120 | | % | 1 | | 06/24/14 01:10 |
| 4-Bromofluorobenzene | 86 | 75-120 | | % | 1 | | 06/24/14 01:10 |
| Toluene-d8 | 102 | 85-120 | | % | 1 | | 06/24/14 01:10 |

Batch Information

Analytical Batch: VMS14228
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 06/24/14 01:10
Container ID: 1142617002-D

Prep Batch: VXX26030
Prep Method: SW5030B
Prep Date/Time: 06/23/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM02-01

Client Sample ID: **SWM02-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617002
Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 4.00 | 1.25 | 0.375 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617002-C

Print Date: 06/30/2014 12:39:57PM



Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617005
Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.88 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617005-A

| <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 | 38 | 1.64 | 1.64 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617005-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1142617005
 Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
 Received Date: 06/21/14 14:01
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|--------------------------|-------------|--------|--------|-------|----|------------------|----------------|
| Acenaphthene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Acenaphthylene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Anthracene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Benzo(a)Anthracene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Benzo[a]pyrene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Benzo[b]Fluoranthene | 0.0602 | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Benzo[g,h,i]perylene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Benzo[k]fluoranthene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Chrysene | 0.0653 | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Dibenzo[a,h]anthracene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Fluoranthene | 0.166 | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Fluorene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Indeno[1,2,3-c,d] pyrene | 0.0515 U | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Naphthalene | 0.103 U | 0.103 | 0.0320 | ug/L | 1 | | 06/23/14 15:30 |
| Phenanthrene | 0.0602 | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Pyrene | 0.0798 | 0.0515 | 0.0155 | ug/L | 1 | | 06/23/14 15:30 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 96.5 | 50-110 | | % | 1 | | 06/23/14 15:30 |
| Terphenyl-d14 | 108 | 50-135 | | % | 1 | | 06/23/14 15:30 |

Batch Information

Analytical Batch: XMS8106
 Analytical Method: EPA 625M SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 06/23/14 15:30
 Container ID: 1142617005-G

Prep Batch: XXX31236
 Prep Method: SW3520C
 Prep Date/Time: 06/22/14 08:45
 Prep Initial Wt./Vol.: 970 mL
 Prep Extract Vol: 1 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1142617005
 Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
 Received Date: 06/21/14 14:01
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|-----------------------|-------------|--------|-------|-------|----|------------------|----------------|
| 1,2-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:27 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:27 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 01:27 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 06/24/14 01:27 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 01:27 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:27 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:27 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 06/24/14 01:27 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 01:27 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 113 | 70-120 | | % | 1 | | 06/24/14 01:27 |
| 4-Bromofluorobenzene | 93.2 | 75-120 | | % | 1 | | 06/24/14 01:27 |
| Toluene-d8 | 102 | 85-120 | | % | 1 | | 06/24/14 01:27 |

Batch Information

Analytical Batch: VMS14228
 Analytical Method: EPA 602/624
 Analyst: NRB
 Analytical Date/Time: 06/24/14 01:27
 Container ID: 1142617005-D

Prep Batch: VXX26030
 Prep Method: SW5030B
 Prep Date/Time: 06/23/14 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617005
Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.67 | 1.67 | 0.500 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617005-C

Print Date: 06/30/2014 12:39:57PM



Results of **SWM03-01**

Client Sample ID: **SWM03-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617006
Lab Project ID: 1142617

Collection Date: 06/21/14 10:59
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.08 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617006-A

| <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 | 560 | 10.0 | 10.0 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617006-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM03-01

Client Sample ID: **SWM03-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617006
Lab Project ID: 1142617

Collection Date: 06/21/14 10:59
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 86.0 | 2.50 | 0.750 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617006-C

Print Date: 06/30/2014 12:39:57PM



Results of **SWM04-01**

Client Sample ID: **SWM04-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617007
Lab Project ID: 1142617

Collection Date: 06/21/14 11:10
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617007-A

| <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 | 3100 | 100 | 100 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617007-A

Print Date: 06/30/2014 12:39:57PM



Results of **SWM04-01**

Client Sample ID: **SWM04-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617007
Lab Project ID: 1142617

Collection Date: 06/21/14 11:10
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 6.00 | 1.25 | 0.375 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617007-C

Print Date: 06/30/2014 12:39:57PM



Results of **SWM05-01**

Client Sample ID: **SWM05-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617008
Lab Project ID: 1142617

Collection Date: 06/21/14 11:35
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 4.32 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617008-A

| <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 | 250 | 10.0 | 10.0 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617008-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM05-01

Client Sample ID: **SWM05-01**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1142617008
 Lab Project ID: 1142617

Collection Date: 06/21/14 11:35
 Received Date: 06/21/14 14:01
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

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 | | 06/23/14 15:46 |
| Acenaphthylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Benzo(a)Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Benzo[a]pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Benzo[b]Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Benzo[g,h,i]perylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Benzo[k]fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Chrysene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Dibenzo[a,h]anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Fluorene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Indeno[1,2,3-c,d] pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Naphthalene | 0.100 U | 0.100 | 0.0310 | ug/L | 1 | | 06/23/14 15:46 |
| Phenanthrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 15:46 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 97.5 | 50-110 | | % | 1 | | 06/23/14 15:46 |
| Terphenyl-d14 | 117 | 50-135 | | % | 1 | | 06/23/14 15:46 |

Batch Information

Analytical Batch: XMS8106
 Analytical Method: EPA 625M SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 06/23/14 15:46
 Container ID: 1142617008-G

Prep Batch: XXX31236
 Prep Method: SW3520C
 Prep Date/Time: 06/22/14 08:45
 Prep Initial Wt./Vol.: 1000 mL
 Prep Extract Vol: 1 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM05-01

Client Sample ID: **SWM05-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617008
Lab Project ID: 1142617

Collection Date: 06/21/14 11:35
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|-----------------------|-------------|--------|-------|-------|----|------------------|----------------|
| 1,2-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:19 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:19 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 00:19 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 06/24/14 00:19 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 00:19 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:19 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:19 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 06/24/14 00:19 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:19 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 111 | 70-120 | | % | 1 | | 06/24/14 00:19 |
| 4-Bromofluorobenzene | 88.7 | 75-120 | | % | 1 | | 06/24/14 00:19 |
| Toluene-d8 | 112 | 85-120 | | % | 1 | | 06/24/14 00:19 |

Batch Information

Analytical Batch: VMS14228
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 06/24/14 00:19
Container ID: 1142617008-D

Prep Batch: VXX26030
Prep Method: SW5030B
Prep Date/Time: 06/23/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM05-01

Client Sample ID: **SWM05-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617008
Lab Project ID: 1142617

Collection Date: 06/21/14 11:35
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 10.7 | 1.67 | 0.500 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617008-C

Print Date: 06/30/2014 12:39:57PM



Results of SWM06-01

Client Sample ID: **SWM06-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617009
Lab Project ID: 1142617

Collection Date: 06/21/14 12:06
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.58 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617009-A

| <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 | 78 | 2.00 | 2.00 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617009-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM06-01

Client Sample ID: **SWM06-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617009
Lab Project ID: 1142617

Collection Date: 06/21/14 12:06
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 4.00 | 1.67 | 0.500 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617009-C

Print Date: 06/30/2014 12:39:57PM



Results of SWM07-01

Client Sample ID: **SWM07-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617010
Lab Project ID: 1142617

Collection Date: 06/21/14 12:40
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.88 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617010-A

| <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 | 2400 | 100 | 100 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617010-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM07-01

Client Sample ID: **SWM07-01**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1142617010
 Lab Project ID: 1142617

Collection Date: 06/21/14 12:40
 Received Date: 06/21/14 14:01
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

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 | | 06/23/14 16:02 |
| Acenaphthylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Benzo(a)Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Benzo[a]pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Benzo[b]Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Benzo[g,h,i]perylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Benzo[k]fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Chrysene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Dibenzo[a,h]anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Fluorene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Indeno[1,2,3-c,d] pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Naphthalene | 0.100 U | 0.100 | 0.0310 | ug/L | 1 | | 06/23/14 16:02 |
| Phenanthrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 06/23/14 16:02 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 89.6 | 50-110 | | % | 1 | | 06/23/14 16:02 |
| Terphenyl-d14 | 107 | 50-135 | | % | 1 | | 06/23/14 16:02 |

Batch Information

Analytical Batch: XMS8106
 Analytical Method: EPA 625M SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 06/23/14 16:02
 Container ID: 1142617010-G

Prep Batch: XXX31236
 Prep Method: SW3520C
 Prep Date/Time: 06/22/14 08:45
 Prep Initial Wt./Vol.: 1000 mL
 Prep Extract Vol: 1 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM07-01

Client Sample ID: **SWM07-01**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1142617010
 Lab Project ID: 1142617

Collection Date: 06/21/14 12:40
 Received Date: 06/21/14 14:01
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|-----------------------|-------------|--------|-------|-------|----|------------------|----------------|
| 1,2-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:36 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:36 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 00:36 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 06/24/14 00:36 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 00:36 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:36 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:36 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 06/24/14 00:36 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:36 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 113 | 70-120 | | % | 1 | | 06/24/14 00:36 |
| 4-Bromofluorobenzene | 79.1 | 75-120 | | % | 1 | | 06/24/14 00:36 |
| Toluene-d8 | 101 | 85-120 | | % | 1 | | 06/24/14 00:36 |

Batch Information

Analytical Batch: VMS14228
 Analytical Method: EPA 602/624
 Analyst: NRB
 Analytical Date/Time: 06/24/14 00:36
 Container ID: 1142617010-D

Prep Batch: VXX26030
 Prep Method: SW5030B
 Prep Date/Time: 06/23/14 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM07-01

Client Sample ID: **SWM07-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617010
Lab Project ID: 1142617

Collection Date: 06/21/14 12:40
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 15.7 | 1.67 | 0.500 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617010-C

Print Date: 06/30/2014 12:39:57PM



Results of SWM08-01

Client Sample ID: **SWM08-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617011
Lab Project ID: 1142617

Collection Date: 06/21/14 12:30
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.85 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617011-A

| <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 | 340 | 10.0 | 10.0 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617011-A

Print Date: 06/30/2014 12:39:57PM



Results of **SWM08-01**

Client Sample ID: **SWM08-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617011
Lab Project ID: 1142617

Collection Date: 06/21/14 12:30
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 8.00 | 1.67 | 0.500 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617011-C

Print Date: 06/30/2014 12:39:57PM



Results of SWM08-01 Dup

Client Sample ID: **SWM08-01 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617012
Lab Project ID: 1142617

Collection Date: 06/21/14 12:30
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.85 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617012-A

| <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 | 400 | 10.0 | 10.0 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617012-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM08-01 Dup

Client Sample ID: **SWM08-01 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617012
Lab Project ID: 1142617

Collection Date: 06/21/14 12:30
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 10.7 | 1.67 | 0.500 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617012-C

Print Date: 06/30/2014 12:39:57PM



Results of **SWM09-01**

Client Sample ID: **SWM09-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617013
Lab Project ID: 1142617

Collection Date: 06/21/14 13:15
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.21 | 2.00 | 2.00 | mg/L | 1 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617013-A

| <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 | 500 | 10.0 | 10.0 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617013-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM09-01

Client Sample ID: **SWM09-01**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1142617013
 Lab Project ID: 1142617

Collection Date: 06/21/14 13:15
 Received Date: 06/21/14 14:01
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|--------------------------|-------------|--------|--------|-------|----|------------------|----------------|
| Acenaphthene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Acenaphthylene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Anthracene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Benzo(a)Anthracene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Benzo[a]pyrene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Benzo[b]Fluoranthene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Benzo[g,h,i]perylene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Benzo[k]fluoranthene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Chrysene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Dibenzo[a,h]anthracene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Fluoranthene | 0.168 | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Fluorene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Indeno[1,2,3-c,d] pyrene | 0.0667 U | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Naphthalene | 0.133 U | 0.133 | 0.0413 | ug/L | 1 | | 06/23/14 16:17 |
| Phenanthrene | 0.0934 | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Pyrene | 0.0875 | 0.0667 | 0.0200 | ug/L | 1 | | 06/23/14 16:17 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 88.1 | 50-110 | | % | 1 | | 06/23/14 16:17 |
| Terphenyl-d14 | 106 | 50-135 | | % | 1 | | 06/23/14 16:17 |

Batch Information

Analytical Batch: XMS8106
 Analytical Method: EPA 625M SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 06/23/14 16:17
 Container ID: 1142617013-G

Prep Batch: XXX31236
 Prep Method: SW3520C
 Prep Date/Time: 06/22/14 08:45
 Prep Initial Wt./Vol.: 750 mL
 Prep Extract Vol: 1 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM09-01

Client Sample ID: **SWM09-01**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1142617013
 Lab Project ID: 1142617

Collection Date: 06/21/14 13:15
 Received Date: 06/21/14 14:01
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|-----------------------|-------------|--------|-------|-------|----|------------------|----------------|
| 1,2-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:53 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:53 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 00:53 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 06/24/14 00:53 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/24/14 00:53 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:53 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:53 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 06/24/14 00:53 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/24/14 00:53 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 112 | 70-120 | | % | 1 | | 06/24/14 00:53 |
| 4-Bromofluorobenzene | 82.9 | 75-120 | | % | 1 | | 06/24/14 00:53 |
| Toluene-d8 | 101 | 85-120 | | % | 1 | | 06/24/14 00:53 |

Batch Information

Analytical Batch: VMS14228
 Analytical Method: EPA 602/624
 Analyst: NRB
 Analytical Date/Time: 06/24/14 00:53
 Container ID: 1142617013-D

Prep Batch: VXX26030
 Prep Method: SW5030B
 Prep Date/Time: 06/23/14 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 06/30/2014 12:39:57PM



Results of SWM09-01

Client Sample ID: **SWM09-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617013
Lab Project ID: 1142617

Collection Date: 06/21/14 13:15
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 9.00 | 1.25 | 0.375 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617013-C

Print Date: 06/30/2014 12:39:57PM



Results of SWM10-01

Client Sample ID: **SWM10-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617014
Lab Project ID: 1142617

Collection Date: 06/21/14 13:15
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 06/23/14 09:20 |

Batch Information

Analytical Batch: BOD4962
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 06/23/14 09:20
Container ID: 1142617014-A

| <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 | 618 | 9.09 | 9.09 | col/100mL | 1 | | 06/21/14 16:15 |

Batch Information

Analytical Batch: BTF13574
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 06/21/14 16:15
Container ID: 1142617014-A

Print Date: 06/30/2014 12:39:57PM



Results of SWM10-01

Client Sample ID: **SWM10-01**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617014
Lab Project ID: 1142617

Collection Date: 06/21/14 13:15
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 5.50 | 2.50 | 0.750 | mg/L | 1 | | 06/26/14 13:20 |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 06/26/14 13:20
Container ID: 1142617014-C

Print Date: 06/30/2014 12:39:57PM



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1142617015
Lab Project ID: 1142617

Collection Date: 06/21/14 10:25
Received Date: 06/21/14 14:01
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 06/23/14 21:29 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/23/14 21:29 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/23/14 21:29 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 06/23/14 21:29 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 06/23/14 21:29 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/23/14 21:29 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/23/14 21:29 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 06/23/14 21:29 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 06/23/14 21:29 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 108 | 70-120 | | % | 1 | | 06/23/14 21:29 |
| 4-Bromofluorobenzene | 100 | 75-120 | | % | 1 | | 06/23/14 21:29 |
| Toluene-d8 | 104 | 85-120 | | % | 1 | | 06/23/14 21:29 |

Batch Information

Analytical Batch: VMS14228
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 06/23/14 21:29
Container ID: 1142617015-A

Prep Batch: VXX26030
Prep Method: SW5030B
Prep Date/Time: 06/23/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 06/30/2014 12:39:57PM



Method Blank

Blank ID: MB for HBN 1590663 [BOD/4962]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1217625

QC for Samples:

1142617001, 1142617002, 1142617005, 1142617006, 1142617007, 1142617008, 1142617009, 1142617010, 1142617011, 1142617012, 1142617013, 1142617014

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: BOD4962

Analytical Method: SM21 5210B

Instrument:

Analyst: SLC

Analytical Date/Time: 6/23/2014 9:20:00AM

Print Date: 06/30/2014 12:39:59PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1142617 [BOD4962]

Blank Spike Lab ID: 1217626

Date Analyzed: 06/23/2014 09:20

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1142617001, 1142617002, 1142617005, 1142617006, 1142617007, 1142617008, 1142617009, 1142617010, 1142617011, 1142617012, 1142617013, 1142617014

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: BOD4962

Analytical Method: SM21 5210B

Instrument:

Analyst: SLC

Prep Batch:

Prep Method:

Prep Date/Time:

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

Dup Init Wt./Vol.: Extract Vol:

Print Date: 06/30/2014 12:40:00PM



Method Blank

Blank ID: MB for HBN 1582763 [BTF/13574]
Blank Lab ID: 1216242

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1142617001, 1142617002, 1142617005, 1142617006, 1142617007, 1142617008, 1142617009, 1142617010, 1142617011, 1142617012, 1142617013, 1142617014

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: BTF13574
Analytical Method: SM21 9222D
Instrument:
Analyst: SLC
Analytical Date/Time: 6/21/2014 4:15:00PM

Print Date: 06/30/2014 12:40:01PM



Method Blank

Blank ID: MB for HBN 1585173 [STS/4422]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1216918

QC for Samples:

1142617001, 1142617002, 1142617005, 1142617006, 1142617007, 1142617008, 1142617009, 1142617010, 1142617011, 1142617012, 1142617013, 1142617014

Results by SM21 2540D

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|------------------------|----------------|---------------|-----------|--------------|
| Total Suspended Solids | 0.250U | 0.500 | 0.150 | mg/L |

Batch Information

Analytical Batch: STS4422

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Analytical Date/Time: 6/26/2014 1:20:59PM

Print Date: 06/30/2014 12:40:01PM



Duplicate Sample Summary

Original Sample ID: 1142617001

Duplicate Sample ID: 1216921

QC for Samples:

1142617001, 1142617002, 1142617005

Analysis Date: 06/26/2014 13:20

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 | 16.0 | 17.0 | 6.10* | 5.00 |

Batch Information

Analytical Batch: STS4422

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 06/30/2014 12:40:02PM



Duplicate Sample Summary

Original Sample ID: 1142617005

Duplicate Sample ID: 1216922

QC for Samples:

1142617002, 1142617005, 1142617006, 1142617007, 1142617008, 1142617009, 1142617010, 1142617011, 1142617012, 1142617013, 1142617014

Analysis Date: 06/26/2014 13:20

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 | 3.67 | 5.33 | 37.00* | 5.00 |

Batch Information

Analytical Batch: STS4422

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 06/30/2014 12:40:02PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1142617 [STS4422]
Blank Spike Lab ID: 1216919
Date Analyzed: 06/26/2014 13:20

Spike Duplicate ID: LCSD for HBN 1142617 [STS4422]
Spike Duplicate Lab ID: 1216920
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1142617001, 1142617002, 1142617005, 1142617006, 1142617007, 1142617008, 1142617009, 1142617010, 1142617011, 1142617012, 1142617013, 1142617014

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 | 45.9 | 92 | 50 | 46.0 | 92 | (75-125) | 0.22 | (< 5) |

Batch Information

Analytical Batch: STS4422
Analytical Method: SM21 2540D
Instrument:
Analyst: WLF

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

Print Date: 06/30/2014 12:40:02PM



Method Blank

Blank ID: MB for HBN 1583465 [VXX/26030]
Blank Lab ID: 1216425

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1142617002, 1142617005, 1142617008, 1142617010, 1142617013, 1142617015

Results by EPA 602/624

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|-----------------------|----------------|---------------|-----------|--------------|
| 1,2-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,3-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,4-Dichlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Benzene | 0.200U | 0.400 | 0.120 | ug/L |
| Chlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Ethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| o-Xylene | 0.500U | 1.00 | 0.310 | ug/L |
| P & M -Xylene | 1.00U | 2.00 | 0.620 | ug/L |
| Toluene | 0.500U | 1.00 | 0.310 | ug/L |
| Surrogates | | | | |
| 1,2-Dichloroethane-D4 | 116 | 70-120 | | % |
| 4-Bromofluorobenzene | 109 | 75-120 | | % |
| Toluene-d8 | 107 | 85-120 | | % |

Batch Information

Analytical Batch: VMS14228
Analytical Method: EPA 602/624
Instrument: VPA 780/5975 GC/MS
Analyst: NRB
Analytical Date/Time: 6/23/2014 5:06:00PM

Prep Batch: VXX26030
Prep Method: SW5030B
Prep Date/Time: 6/23/2014 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 06/30/2014 12:40:03PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1142617 [VXX26030]
 Blank Spike Lab ID: 1216426
 Date Analyzed: 06/23/2014 17:51

Spike Duplicate ID: LCSD for HBN 1142617
 [VXX26030]
 Spike Duplicate Lab ID: 1216427
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1142617002, 1142617005, 1142617008, 1142617010, 1142617013, 1142617015

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 | 30.4 | 101 | 30 | 29.3 | 98 | (70-120) | 3.70 | (< 20) |
| 1,3-Dichlorobenzene | 30 | 31.4 | 105 | 30 | 32.1 | 107 | (75-125) | 2.20 | (< 20) |
| 1,4-Dichlorobenzene | 30 | 31.3 | 104 | 30 | 32.1 | 107 | (75-125) | 2.30 | (< 20) |
| Benzene | 30 | 30.3 | 101 | 30 | 29.3 | 98 | (80-120) | 3.40 | (< 20) |
| Chlorobenzene | 30 | 33.0 | 110 | 30 | 30.2 | 101 | (80-120) | 8.80 | (< 20) |
| Ethylbenzene | 30 | 34.6 | 115 | 30 | 31.0 | 103 | (75-125) | 11.00 | (< 20) |
| o-Xylene | 30 | 34.4 | 115 | 30 | 30.6 | 102 | (80-120) | 11.50 | (< 20) |
| P & M -Xylene | 60 | 69.6 | 116 | 60 | 62.6 | 104 | (75-130) | 10.70 | (< 20) |
| Toluene | 30 | 32.3 | 108 | 30 | 29.0 | 97 | (75-120) | 10.90 | (< 20) |

Surrogates

| | | | | | | | | | |
|-----------------------|----|--|-----|----|--|-----|------------|------|--|
| 1,2-Dichloroethane-D4 | 30 | | 96 | 30 | | 96 | (70-120) | 0.45 | |
| 4-Bromofluorobenzene | 30 | | 104 | 30 | | 109 | (75-120) | 4.50 | |
| Toluene-d8 | 30 | | 111 | 30 | | 104 | (85-120) | 6.10 | |

Batch Information

Analytical Batch: **VMS14228**
 Analytical Method: **EPA 602/624**
 Instrument: **VPA 780/5975 GC/MS**
 Analyst: **NRB**

Prep Batch: **VXX26030**
 Prep Method: **SW5030B**
 Prep Date/Time: **06/23/2014 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dup Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 06/30/2014 12:40:03PM



Billable Matrix Spike Summary

Original Sample ID: 1142617002
MS Sample ID: 1142617003 BMS
MSD Sample ID: 1142617004 BMSD

Analysis Date: 06/24/2014 1:10
Analysis Date: 06/23/2014 21:45
Analysis Date: 06/23/2014 22:03
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 | 29.5 | 98 | 30.0 | 29.7 | 99 | 70-120 | 0.88 | (< 20) |
| 1,3-Dichlorobenzene | 1.00U | 30.0 | 30.1 | 100 | 30.0 | 30.3 | 101 | 75-125 | 0.56 | (< 20) |
| 1,4-Dichlorobenzene | 0.500U | 30.0 | 29.9 | 100 | 30.0 | 30.1 | 100 | 75-125 | 0.67 | (< 20) |
| Benzene | 0.400U | 30.0 | 29.6 | 99 | 30.0 | 29.4 | 98 | 80-120 | 0.81 | (< 20) |
| Chlorobenzene | 0.500U | 30.0 | 29.6 | 99 | 30.0 | 30.3 | 101 | 80-120 | 2.30 | (< 20) |
| Ethylbenzene | 1.00U | 30.0 | 31.5 | 105 | 30.0 | 30.8 | 103 | 75-125 | 2.30 | (< 20) |
| o-Xylene | 1.00U | 30.0 | 27.7 | 92 | 30.0 | 30.5 | 102 | 80-120 | 9.80 | (< 20) |
| P & M -Xylene | 2.00U | 60.0 | 55.9 | 93 | 60.0 | 62.1 | 104 | 75-130 | 10.60 | (< 20) |
| Toluene | 1.00U | 30.0 | 29.9 | 100 | 30.0 | 29.1 | 97 | 75-120 | 2.70 | (< 20) |
| Surrogates | | | | | | | | | | |
| 1,2-Dichloroethane-D4 | | 30.0 | 28.9 | 96 | 30.0 | 29.9 | 100 | 70-120 | 3.60 | |
| 4-Bromofluorobenzene | | 30.0 | 28.4 | 95 | 30.0 | 28.3 | 94 | 75-120 | 0.53 | |
| Toluene-d8 | | 30.0 | 31.8 | 106 | 30.0 | 32.1 | 107 | 85-120 | 0.85 | |

Batch Information

Analytical Batch: VMS14228
Analytical Method: EPA 602/624
Instrument: VPA 780/5975 GC/MS
Analyst: NRB
Analytical Date/Time: 6/23/2014 9:45:00PM

Prep Batch: VXX26030
Prep Method: Volatiles Extraction 8240/8260 FULL
Prep Date/Time: 6/23/2014 6:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 06/30/2014 12:40:04PM



Method Blank

Blank ID: MB for HBN 1582170 [XXX/31236]
Blank Lab ID: 1215906

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1142617002, 1142617005, 1142617008, 1142617010, 1142617013

Results by EPA 625M SIMS (PAH)

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|--------------------------|----------------|---------------|-----------|--------------|
| Acenaphthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Acenaphthylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo(a)Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[a]pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[b]Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[g,h,i]perylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[k]fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Chrysene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Dibenzo[a,h]anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluorene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Naphthalene | 0.0500U | 0.100 | 0.0310 | ug/L |
| Phenanthrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Surrogates | | | | |
| 2-Fluorobiphenyl | 84.4 | 50-110 | | % |
| Terphenyl-d14 | 108 | 50-135 | | % |

Batch Information

Analytical Batch: XMS8106
Analytical Method: EPA 625M SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 6/23/2014 1:26:00PM

Prep Batch: XXX31236
Prep Method: SW3520C
Prep Date/Time: 6/22/2014 8:45:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 06/30/2014 12:40:04PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1142617 [XXX31236]
 Blank Spike Lab ID: 1215907
 Date Analyzed: 06/23/2014 13:41

Spike Duplicate ID: LCSD for HBN 1142617
 [XXX31236]
 Spike Duplicate Lab ID: 1215908
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1142617002, 1142617005, 1142617008, 1142617010, 1142617013

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 | 0.378 | 76 | (45-110) | 4.30 | (< 30) |
| Acenaphthylene | 0.5 | 0.380 | 76 | 0.5 | 0.370 | 74 | (50-105) | 2.70 | (< 30) |
| Anthracene | 0.5 | 0.439 | 88 | 0.5 | 0.421 | 84 | (55-110) | 4.20 | (< 30) |
| Benzo(a)Anthracene | 0.5 | 0.421 | 84 | 0.5 | 0.401 | 80 | (55-110) | 4.80 | (< 30) |
| Benzo[a]pyrene | 0.5 | 0.418 | 84 | 0.5 | 0.396 | 79 | (55-110) | 5.50 | (< 30) |
| Benzo[b]Fluoranthene | 0.5 | 0.421 | 84 | 0.5 | 0.417 | 83 | (45-120) | 0.89 | (< 30) |
| Benzo[g,h,i]perylene | 0.5 | 0.442 | 88 | 0.5 | 0.409 | 82 | (40-125) | 7.70 | (< 30) |
| Benzo[k]fluoranthene | 0.5 | 0.485 | 97 | 0.5 | 0.446 | 89 | (45-125) | 8.50 | (< 30) |
| Chrysene | 0.5 | 0.468 | 94 | 0.5 | 0.471 | 94 | (55-110) | 0.72 | (< 30) |
| Dibenzo[a,h]anthracene | 0.5 | 0.414 | 83 | 0.5 | 0.390 | 78 | (40-125) | 5.90 | (< 30) |
| Fluoranthene | 0.5 | 0.436 | 87 | 0.5 | 0.428 | 86 | (55-115) | 2.00 | (< 30) |
| Fluorene | 0.5 | 0.415 | 83 | 0.5 | 0.404 | 81 | (50-110) | 2.70 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.5 | 0.437 | 87 | 0.5 | 0.403 | 81 | (45-125) | 7.90 | (< 30) |
| Naphthalene | 0.5 | 0.338 | 68 | 0.5 | 0.328 | 66 | (40-100) | 3.20 | (< 30) |
| Phenanthrene | 0.5 | 0.439 | 88 | 0.5 | 0.426 | 85 | (50-115) | 2.90 | (< 30) |
| Pyrene | 0.5 | 0.419 | 84 | 0.5 | 0.416 | 83 | (50-130) | 0.64 | (< 30) |
| Surrogates | | | | | | | | | |
| 2-Fluorobiphenyl | 0.5 | | 91 | 0.5 | | 86 | (50-110) | 6.00 | |
| Terphenyl-d14 | 0.5 | | 108 | 0.5 | | 102 | (50-135) | 5.50 | |

Batch Information

Analytical Batch: XMS8106
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS

Prep Batch: XXX31236
 Prep Method: SW3520C
 Prep Date/Time: 06/22/2014 08:45
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL
 Dup Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Print Date: 06/30/2014 12:40:05PM



Billable Matrix Spike Summary

Original Sample ID: 1142617002
 MS Sample ID: 1142617003 BMS
 MSD Sample ID: 1142617004 BMSD

Analysis Date: 06/23/2014 14:44
 Analysis Date: 06/23/2014 14:59
 Analysis Date: 06/23/2014 15:15
 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 | 0.0510U | 0.515 | .355 | 69 | 0.500 | 0.388 | 78 | 45-110 | 9.00 | (< 30) |
| Acenaphthylene | 0.0510U | 0.515 | .341 | 66 | 0.500 | 0.370 | 74 | 50-105 | 8.20 | (< 30) |
| Anthracene | 0.0510U | 0.515 | .391 | 76 | 0.500 | 0.427 | 86 | 55-110 | 8.90 | (< 30) |
| Benzo(a)Anthracene | 0.0510U | 0.515 | .313 | 61 | 0.500 | 0.348 | 70 | 55-110 | 10.60 | (< 30) |
| Benzo[a]pyrene | 0.0510U | 0.515 | .194 | 38 * | 0.500 | 0.215 | 43 * | 55-110 | 10.30 | (< 30) |
| Benzo[b]Fluoranthene | 0.0510U | 0.515 | .261 | 51 | 0.500 | 0.306 | 61 | 45-120 | 15.80 | (< 30) |
| Benzo[g,h,i]perylene | 0.0510U | 0.515 | .152 | 30 * | 0.500 | 0.176 | 35 * | 40-125 | 14.60 | (< 30) |
| Benzo[k]fluoranthene | 0.0510U | 0.515 | .208 | 40 * | 0.500 | 0.231 | 46 | 45-125 | 10.40 | (< 30) |
| Chrysene | 0.0510U | 0.515 | .389 | 76 | 0.500 | 0.431 | 86 | 55-110 | 10.00 | (< 30) |
| Dibenzo[a,h]anthracene | 0.0510U | 0.515 | .121 | 24 * | 0.500 | 0.142 | 29 * | 40-125 | 16.00 | (< 30) |
| Fluoranthene | 0.139 | 0.515 | .519 | 74 | 0.500 | 0.603 | 93 | 55-115 | 15.10 | (< 30) |
| Fluorene | 0.0510U | 0.515 | .368 | 71 | 0.500 | 0.417 | 83 | 50-110 | 12.50 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.0510U | 0.515 | .144 | 28 * | 0.500 | 0.164 | 33 * | 45-125 | 13.00 | (< 30) |
| Naphthalene | 0.102U | 0.515 | .317 | 62 | 0.500 | 0.360 | 72 | 40-100 | 12.70 | (< 30) |
| Phenanthrene | 0.0510U | 0.515 | .433 | 84 | 0.500 | 0.484 | 97 | 50-115 | 11.20 | (< 30) |
| Pyrene | 0.0675 | 0.515 | .438 | 72 | 0.500 | 0.493 | 85 | 50-130 | 11.90 | (< 30) |
| Surrogates | | | | | | | | | | |
| 2-Fluorobiphenyl | | 0.515 | .465 | 90 | 0.500 | 0.470 | 94 | 50-110 | 1.00 | |
| Terphenyl-d14 | | 0.515 | .555 | 108 | 0.500 | 0.581 | 116 | 50-135 | 4.60 | |

Batch Information

Analytical Batch: XMS8106
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS
 Analytical Date/Time: 6/23/2014 2:59:00PM

Prep Batch: XXX31236
 Prep Method: Liquid/Liquid Extraction for 625 SIMS
 Prep Date/Time: 6/22/2014 8:45:44AM
 Prep Initial Wt./Vol.: 970.00mL
 Prep Extract Vol: 1.00mL

Print Date: 06/30/2014 12:40:05PM

Chain of Custody Record

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | From: Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |
| SGS Quote No. 9901 Date Received: 1142617 Lab # | Project #: 5078 Matrix: Water in sodium thiosulfate for dechlorination |

| | |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Project: MOA Stormwater Management Complete by: 2 weeks | Project #: 5078 Matrix: Water in 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 |
|------------------|------------|-------------|-------------|-------------|------------------|----------------|--------|----------------|--------|------------------------|
| ① A SWM01-01 | 1040-3 | 6/21/14 | 0954 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ② A SWM02-01 | 847-1 | | 1025 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ③ A SWM02-01 Dup | 847-1 | | 1025 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ④ A SWM03-01 | 1224-1 | | 1059 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑤ A SWM04-01 | 1224-2 | | 1110 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑥ A SWM05-01 | 207-1 | | 1135 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑦ A SWM06-01 | 314-22 | | 1206 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑧ A SWM07-01 | 484-1 | | 1210 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑨ A SWM08-01 | 86-1 | | 1230 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑩ A SWM08-01 Dup | 86-1 | | 1230 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑪ A SWM09-01 | 499-1 | | 1315 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑫ A SWM10-01 | 525-2 | | 1315 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |


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: <i>Man Avon</i> | Date/Time: 6/21/14 | Received By: <i>[Signature]</i> |
| Relinquished By: <i>[Signature]</i> | Date/Time: | Received By: <i>[Signature]</i> |
| Date/Time: | Date/Time: | Date/Time: 6/21/14 1430 |

Chain of Custody Record

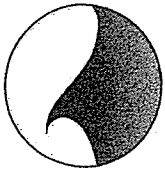
To: SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 (907) 561-5301 Fax
 Contact: Forest Taylor

From: Kinnetic Laboratories, Inc
 1102 West 7th Avenue
 Anchorage, AK 99501
 (907) 276-6178
 (907) 278-6881 Fax
 Contact: Mark Savoie

SGS Quote No. 9901
 Date Received: **1142617**
 Lab # 

Project: MOA Stormwater Management
 Complete by: 2 weeks

Matrix: Water
 Project #: 5078



| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|----------------|------------|-------------|-------------|-------------|----------------|-----------|--------|----------------|--------|------------------------|
| ① SWM01-01 | 1040-3 | 6/21/14 | 0954 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ② SWM02-01 | 847-1 | | 1025 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ③ SWM02-01 Dup | 847-1 | | 1025 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ④ SWM03-01 | 1224-1 | | 1059 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑤ SWM04-01 | 1224-2 | | 1110 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑥ SWM05-01 | 207-1 | | 1135 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑦ SWM06-01 | 314-22 | | 1204 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑧ SWM07-01 | 484-1 | | 1240 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑨ SWM08-01 | 86-1 | | 1230 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑩ SWM08-01 Dup | 86-1 | | 1230 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑪ SWM09-01 | 499-1 | | 1315 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑫ SWM10-01 | 525-2 | | 1335 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |

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>Manahan</i> | 6/21/14 | hand | | |
| | | | <i>Teri Duogor</i> | 6/21/14 14:01 |

Chain of Custody Record

To: SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 (907) 561-5301 Fax
 Contact: Forest Taylor

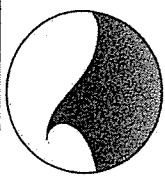
From: Kinnetic Laboratories, Inc
 1102 West 7th Avenue
 Anchorage, AK 99501
 (907) 276-6178
 (907) 278-6881 Fax
 Contact: Mark Savoie

SGS Quote No. 9901
Date Received:
Lal 1142617



Project: MOA Stormwater Management
Complete by: 2 weeks

Matrix: Water **Project #:** 5078



| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|------------------|------------|-------------|-------------|-------------|----------------|-----------|--------|----------------|--------|------------------------|
| ① C SWM01-01 | 1040-3 | 6/21/14 | 0954 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ② C SWM02-01 | 847-1 | | 1025 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑤ C SWM02-01 Dup | 847-1 | | 1025 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑥ C SWM03-01 | 1224-1 | | 1059 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑦ C SWM04-01 | 1224-2 | | 1110 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑧ C SWM05-01 | 207-1 | | 1135 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑨ C SWM06-01 | 314-22 | | 1206 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑩ C SWM07-01 | 484-1 | | 1240 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑪ C SWM08-01 | 86-1 | | 1230 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑫ C SWM08-01 Dup | 86-1 | | 1230 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑬ C SWM09-01 | 499-1 | | 1315 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑭ C SWM10-01 | 525-2 | | 1335 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |

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>Maria Juan</i> | 6/21/14 | <i>hand</i> | <i>[Signature]</i> | |
| <i>[Signature]</i> | | | <i>[Signature]</i> | 6/21/14 14:01 |

Chain of Custody Record

To: SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 (907) 561-5301 Fax
 Contact: Forest Taylor

From: Kinnetic Laboratories, Inc.
 1102 West 7th Avenue
 Anchorage, AK 99501
 (907) 276-6178
 (907) 278-6881 Fax
 Contact: Mark Savoie

SGS Quote No. 9901

Date Received:

1 1142617



Project: MOA Stormwater Management
Complete by: 2 weeks
Matrix: Water
Project #: 5078

| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|----------------------------|------------|-------------|-------------|-------------|-------------------|-----------|-----------|----------------|--------|------------------------|
| ② DF SWM02-01 ③ AC ④ AC | 847-1 | 6/21/14 | 1025 | Samp/MS/MSD | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 9 | | |
| ⑤ DF SWM02-01 Dup | 847-1 | | 1025 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑧ DF SWM05-01 | 207-1 | | 1135 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑩ DF SWM07-01 | 484-1 | | 1240 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑬ DF SWM09-01 | 499-1 | | 1315 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑮ AC Trip Blank | N/A | N/A | N/A | TB | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |

Special Instructions/Comments:


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.

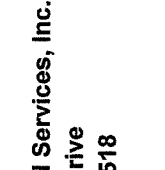
| Sampled and Relinquished By: | Date/Time: | Transporter: | Received By: | Date/Time: |
|------------------------------|------------|--------------|--------------------|---------------|
| <i>Mark Taylor</i> | 6/21/14 | <i>hms</i> | | |
| <i>Mark Taylor</i> | | | <i>Mark Savoie</i> | 6/21/14 14:01 |

Chain of Custody Record

To:
 SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 Contact: Forest Taylor

From:
 Kinnetic Laboratories, Inc
 1102 West 7th Avenue
 Anchorage, AK 99501
 (907) 276-6178
 (907) 278-6881 Fax
 Contact: Mark Savoie

SGS Quote No. 9901

1142617



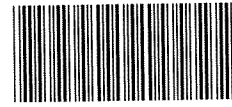
Project: MOA Stormwater Management **Matrix:** Water **Project #:** 5078
Complete by: 2 weeks

| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|-------------------------------|------------|-------------|-------------|-------------|---------------------|-----------|--------|----------------|--------|------------------------|
| ② G-H SWM02-01 ③ D-E ④ D-E | 847-1 | 6/21/14 | 1025 | Samp/MS/MSD | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 6 | | |
| ⑤ G-H SWM02-01 Dup | 847-1 | ✓ | 1025 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑥ G-H SWM05-01 | 207-1 | ✓ | 1135 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑦ G-H SWM07-01 | 484-1 | ✓ | 1240 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑧ G-H SWM09-01 | 499-1 | ✓ | 1315 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
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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>Mark Savoie</i> | 6/21/14 | <i>hand</i> | <i>Terri Duweyer</i> | 6/21/14 14:01 |
| | | | | |



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</u> @ <u>2.4</u> w/ Therm.ID: <u>241</u> Cooler ID: <u>2</u> @ <u>3.6</u> w/ Therm.ID: <u>246</u> Cooler ID: <u>3</u> @ <u>2.6</u> w/ Therm.ID: <u>241</u> Cooler ID: <u>4</u> @ <u>4.0</u> w/ Therm.ID: <u>241</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? | <u>Yes</u> No N/A Yes No <u>N/A</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 <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: → For samples received in FBKS , ANCH staff will verify all criteria are reviewed. | | <u>N/A</u> SRF Initiated by: <u>TLD</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 <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 | <u>CRD 6/21/14</u> <u>A-C had no sample times or date collected, COC dated and times were used.</u> <u>(14) A-C as well</u> |
| 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 | |
| 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 <u>Yes</u> 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 Yes <u>No</u> N/A | <u>*</u> |
| For special handling (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)? | <u>Yes</u> No <u>N/A</u> <u>TLD</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? | Yes No N/A | <u>BOD, fecal</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 N/A | SRF Completed by: <u>TLD</u> PM = <u>N/A</u> |
| Was PEER REVIEW of sample numbering/labeling completed? | Yes No N/A | Peer Reviewed by: <u>N/A</u> |

Additional notes (if applicable):
* Container 2D-F, 8-D-F, 10 & D-F, 13D-F were not in cooler with the trip Blank.

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



Sample Containers and Preservatives

| <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> | <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> |
|---------------------|-------------------------------------------------------------------|----------------------------|---------------------|-------------------------------------------------------------------|----------------------------|
| 1142617001-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1142617008-H | No Preservative Required | OK |
| 1142617001-B | No Preservative Required | OK | 1142617009-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1142617001-C | No Preservative Required | OK | 1142617009-B | No Preservative Required | OK |
| 1142617002-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1142617009-C | No Preservative Required | OK |
| 1142617002-B | No Preservative Required | OK | 1142617010-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1142617002-C | No Preservative Required | OK | 1142617010-B | No Preservative Required | OK |
| 1142617002-D | HCL to pH < 2 | OK | 1142617010-C | No Preservative Required | OK |
| 1142617002-E | HCL to pH < 2 | OK | 1142617010-D | HCL to pH < 2 | OK |
| 1142617002-F | HCL to pH < 2 | OK | 1142617010-E | HCL to pH < 2 | OK |
| 1142617002-G | No Preservative Required | OK | 1142617010-F | HCL to pH < 2 | OK |
| 1142617002-H | No Preservative Required | OK | 1142617010-G | No Preservative Required | OK |
| 1142617003-A | HCL to pH < 2 | OK | 1142617010-H | No Preservative Required | OK |
| 1142617003-B | HCL to pH < 2 | OK | 1142617011-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1142617003-C | HCL to pH < 2 | OK | 1142617011-B | No Preservative Required | OK |
| 1142617003-D | No Preservative Required | OK | 1142617011-C | No Preservative Required | OK |
| 1142617003-E | No Preservative Required | OK | 1142617012-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1142617004-A | HCL to pH < 2 | OK | 1142617012-B | No Preservative Required | OK |
| 1142617004-B | HCL to pH < 2 | OK | 1142617012-C | No Preservative Required | OK |
| 1142617004-C | HCL to pH < 2 | OK | 1142617013-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1142617004-D | No Preservative Required | OK | 1142617013-B | No Preservative Required | OK |
| 1142617004-E | No Preservative Required | OK | 1142617013-C | No Preservative Required | OK |
| 1142617005-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1142617013-D | HCL to pH < 2 | OK |
| 1142617005-B | No Preservative Required | OK | 1142617013-E | HCL to pH < 2 | OK |
| 1142617005-C | No Preservative Required | OK | 1142617013-F | HCL to pH < 2 | OK |
| 1142617005-D | HCL to pH < 2 | OK | 1142617013-G | No Preservative Required | OK |
| 1142617005-E | HCL to pH < 2 | OK | 1142617013-H | No Preservative Required | OK |
| 1142617005-F | HCL to pH < 2 | OK | 1142617014-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1142617005-G | No Preservative Required | OK | 1142617014-B | No Preservative Required | OK |
| 1142617005-H | No Preservative Required | OK | 1142617014-C | No Preservative Required | OK |
| 1142617006-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1142617015-A | HCL to pH < 2 | OK |
| 1142617006-B | No Preservative Required | OK | 1142617015-B | HCL to pH < 2 | OK |
| 1142617006-C | No Preservative Required | OK | 1142617015-C | HCL to pH < 2 | OK |
| 1142617007-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | | | |
| 1142617007-B | No Preservative Required | OK | | | |
| 1142617007-C | No Preservative Required | OK | | | |
| 1142617008-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | | | |
| 1142617008-B | No Preservative Required | OK | | | |
| 1142617008-C | No Preservative Required | OK | | | |
| 1142617008-D | HCL to pH < 2 | OK | | | |
| 1142617008-E | HCL to pH < 2 | OK | | | |
| 1142617008-F | HCL to pH < 2 | OK | | | |
| 1142617008-G | No Preservative Required | OK | | | |

Appendix B2

Laboratory Data Package Storm Event #2



Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.
704 W 2nd Avenue
Anchorage, AK 99501
(907)276-6178

Report Number: **1143039**

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 Forest 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.

Forest Taylor
Project Manager
Forest.Taylor@sgs.com

Date

Print Date: 07/17/2014 1:35:05PM

Case Narrative

SGS Client: **Kinnetic Laboratories, Inc.**
SGS Project: **1143039**
Project Name/Site: **5078 MOA Stormwater Management**
Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

SWM07-02 (1143039010) PS

8270D SIM - Benzo[k]fluoranthene integrated as benzo[b]fluoranthene due to colution with benzo[b]fluoranthene peak.

SWM09-02 (1143039013) PS

8270D SIM - Benzo[k]fluoranthene integrated as benzo[b]fluoranthene due to colution with benzo[b]fluoranthene peak.

1143046005DUP (1219830) DUP

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. Refer to LCS/LCSD RPD for batch precision.

*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: 07/17/2014 1:35:07PM

Report of Manual Integrations

| <u>Laboratory ID</u> | <u>Client Sample ID</u> | <u>Analytical Batch</u> | <u>Analyte</u> | <u>Reason</u> |
|----------------------------|-------------------------|-------------------------|----------------------|---------------|
| EPA 625M SIMS (PAH) | | | | |
| 1143039010 | SWM07-02 | XMS8153 | Benzo[b]Fluoranthene | IT |
| 1143039013 | SWM09-02 | XMS8153 | 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.

Print Date: 07/17/2014 1:35:08PM

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>), 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., 1/2 of the LOQ) |
| 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 | 1143039001 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM02-02 | 1143039002 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM02-02 MS | 1143039003 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM02-02 MSD | 1143039004 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM02-02 DUP | 1143039005 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM03-02 | 1143039006 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM04-02 | 1143039007 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM05-02 | 1143039008 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM06-02 | 1143039009 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM07-02 | 1143039010 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM08-02 | 1143039011 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM08-02 DUP | 1143039012 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM09-02 | 1143039013 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| SWM10-02 | 1143039014 | 07/10/2014 | 07/10/2014 | Water (Surface, Eff., Ground) |
| Trip Blank | 1143039015 | 07/10/2014 | 07/10/2014 | 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: 1143039001 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| Waters Department | Fecal Coliform | 8.0 | col/100mL |
| | Total Suspended Solids | 7.67 | mg/L |
| Client Sample ID: SWM02-02 | | | |
| Lab Sample ID: 1143039002 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| | Fecal Coliform | 27 | col/100mL |
| Client Sample ID: SWM02-02 DUP | | | |
| Lab Sample ID: 1143039005 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| | Fecal Coliform | 20 | col/100mL |
| Client Sample ID: SWM03-02 | | | |
| Lab Sample ID: 1143039006 | | | |
| Waters Department | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| | Total Suspended Solids | 1.67 | mg/L |
| Client Sample ID: SWM04-02 | | | |
| Lab Sample ID: 1143039007 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| Waters Department | Fecal Coliform | 81 | col/100mL |
| | Total Suspended Solids | 2.67 | mg/L |
| Client Sample ID: SWM05-02 | | | |
| Lab Sample ID: 1143039008 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| Waters Department | Biochemical Oxygen Demand | 2.87 | mg/L |
| | Total Suspended Solids | 4.00 | mg/L |
| Client Sample ID: SWM06-02 | | | |
| Lab Sample ID: 1143039009 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| | Biochemical Oxygen Demand | 10.7 | mg/L |
| | Fecal Coliform | 220 | col/100mL |
| Waters Department | Total Suspended Solids | 300 | mg/L |
| Client Sample ID: SWM07-02 | | | |
| Lab Sample ID: 1143039010 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| | Biochemical Oxygen Demand | 10.1 | mg/L |
| | Fecal Coliform | 3500 | col/100mL |
| Polynuclear Aromatics GC/MS | Benzo[b]Fluoranthene | 0.157 | ug/L |
| | Benzo[g,h,i]perylene | 0.117 | ug/L |
| | Chrysene | 0.177 | ug/L |
| | Fluoranthene | 0.173 | ug/L |
| | Phenanthrene | 0.116 | ug/L |
| | Pyrene | 0.193 | ug/L |
| Waters Department | Total Suspended Solids | 278 | mg/L |
| Client Sample ID: SWM08-02 | | | |
| Lab Sample ID: 1143039011 | | | |
| Microbiology Laboratory | <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
| | Biochemical Oxygen Demand | 11.8 | mg/L |
| | Fecal Coliform | 9000 | col/100mL |
| Waters Department | Total Suspended Solids | 227 | mg/L |

Print Date: 07/17/2014 1:35:11PM

Detectable Results Summary

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

Lab Sample ID: 1143039012

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 9.72 | mg/L |
| Fecal Coliform | 13000 | col/100mL |
| Total Suspended Solids | 242 | mg/L |

Client Sample ID: **SWM09-02**

Lab Sample ID: 1143039013

Microbiology Laboratory

Polynuclear Aromatics GC/MS

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 7.32 | mg/L |
| Fecal Coliform | 2900 | col/100mL |
| Benzo(a)Anthracene | 0.101 | ug/L |
| Benzo[a]pyrene | 0.114 | ug/L |
| Benzo[b]Fluoranthene | 0.354 | ug/L |
| Benzo[g,h,i]perylene | 0.140 | ug/L |
| Chrysene | 0.247 | ug/L |
| Fluoranthene | 0.470 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.109 | ug/L |
| Phenanthrene | 0.170 | ug/L |
| Pyrene | 0.309 | ug/L |
| Total Suspended Solids | 63.5 | mg/L |

Waters Department

Client Sample ID: **SWM10-02**

Lab Sample ID: 1143039014

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.35 | mg/L |
| Fecal Coliform | 1600 | col/100mL |
| Total Suspended Solids | 50.0 | mg/L |



Results of **SWM01-02**

Client Sample ID: **SWM01-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039001
Lab Project ID: 1143039

Collection Date: 07/10/14 09:27
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039001-B

| <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 | | 07/10/14 17:23 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 17:23
Container ID: 1143039001-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM01-02

Client Sample ID: **SWM01-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039001
Lab Project ID: 1143039

Collection Date: 07/10/14 09:27
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 7.67 | 1.67 | 0.500 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039001-C

Print Date: 07/17/2014 1:35:12PM



Results of **SWM02-02**

Client Sample ID: **SWM02-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039002
Lab Project ID: 1143039

Collection Date: 07/10/14 09:58
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039002-B

| <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 | 27 | 1.00 | 1.00 | col/100mL | 1 | | 07/10/14 17:23 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 17:23
Container ID: 1143039002-A

Print Date: 07/17/2014 1:35:12PM



Results of **SWM02-02**

Client Sample ID: **SWM02-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039002
Lab Project ID: 1143039

Collection Date: 07/10/14 09:58
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Acenaphthylene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Anthracene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Benzo(a)Anthracene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Benzo[a]pyrene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Benzo[b]Fluoranthene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Benzo[g,h,i]perylene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Benzo[k]fluoranthene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Chrysene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Dibenzo[a,h]anthracene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Fluoranthene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Fluorene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Indeno[1,2,3-c,d] pyrene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Naphthalene | 0.119 U | 0.119 | 0.0369 | ug/L | 1 | | 07/15/14 15:00 |
| Phenanthrene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Pyrene | 0.0595 U | 0.0595 | 0.0179 | ug/L | 1 | | 07/15/14 15:00 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 80.2 | 50-110 | | % | 1 | | 07/15/14 15:00 |
| Terphenyl-d14 | 94.4 | 50-135 | | % | 1 | | 07/15/14 15:00 |

Batch Information

Analytical Batch: XMS8153
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 07/15/14 15:00
Container ID: 1143039002-D

Prep Batch: XXX31391
Prep Method: SW3520C
Prep Date/Time: 07/12/14 10:45
Prep Initial Wt./Vol.: 840 mL
Prep Extract Vol: 1 mL

Print Date: 07/17/2014 1:35:12PM



Results of **SWM02-02**

Client Sample ID: **SWM02-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039002
Lab Project ID: 1143039

Collection Date: 07/10/14 09:58
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/15/14 11:31 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 11:31 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 11:31 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 07/15/14 11:31 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 11:31 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 11:31 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 11:31 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 07/15/14 11:31 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 11:31 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 100 | 70-120 | | % | 1 | | 07/15/14 11:31 |
| 4-Bromofluorobenzene | 103 | 75-120 | | % | 1 | | 07/15/14 11:31 |
| Toluene-d8 | 99.1 | 85-120 | | % | 1 | | 07/15/14 11:31 |

Batch Information

Analytical Batch: VMS14277
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 07/15/14 11:31
Container ID: 1143039002-F

Prep Batch: VXX26115
Prep Method: SW5030B
Prep Date/Time: 07/15/14 05:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM02-02

Client Sample ID: **SWM02-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039002
Lab Project ID: 1143039

Collection Date: 07/10/14 09:58
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039002-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM02-02 DUP

Client Sample ID: **SWM02-02 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039005
Lab Project ID: 1143039

Collection Date: 07/10/14 10:06
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039005-B

| <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 | 20 | 1.00 | 1.00 | col/100mL | 1 | | 07/10/14 17:23 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 17:23
Container ID: 1143039005-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM02-02 DUP

Client Sample ID: SWM02-02 DUP
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1143039005
Lab Project ID: 1143039

Collection Date: 07/10/14 10:06
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS8153
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 07/15/14 15:46
Container ID: 1143039005-D

Prep Batch: XXX31391
Prep Method: SW3520C
Prep Date/Time: 07/12/14 10:45
Prep Initial Wt./Vol.: 965 mL
Prep Extract Vol: 1 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM02-02 DUP

Client Sample ID: **SWM02-02 DUP**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1143039005
 Lab Project ID: 1143039

Collection Date: 07/10/14 10:06
 Received Date: 07/10/14 13:56
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

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 | | 07/15/14 13:43 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 13:43 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 13:43 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 07/15/14 13:43 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 13:43 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 13:43 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 13:43 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 07/15/14 13:43 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 13:43 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 102 | 70-120 | | % | 1 | | 07/15/14 13:43 |
| 4-Bromofluorobenzene | 104 | 75-120 | | % | 1 | | 07/15/14 13:43 |
| Toluene-d8 | 98.9 | 85-120 | | % | 1 | | 07/15/14 13:43 |

Batch Information

Analytical Batch: VMS14277
 Analytical Method: EPA 602/624
 Analyst: NRB
 Analytical Date/Time: 07/15/14 13:43
 Container ID: 1143039005-F

Prep Batch: VXX26115
 Prep Method: SW5030B
 Prep Date/Time: 07/15/14 05:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM02-02 DUP

Client Sample ID: **SWM02-02 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039005
Lab Project ID: 1143039

Collection Date: 07/10/14 10:06
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039005-C

Print Date: 07/17/2014 1:35:12PM



Results of **SWM03-02**

Client Sample ID: **SWM03-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039006
Lab Project ID: 1143039

Collection Date: 07/10/14 10:45
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039006-B

| <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 | 1.64 U | 1.64 | 1.64 | col/100mL | 1 | | 07/10/14 17:23 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 17:23
Container ID: 1143039006-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM03-02

Client Sample ID: **SWM03-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039006
Lab Project ID: 1143039

Collection Date: 07/10/14 10:45
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 1.67 | 1.67 | 0.500 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039006-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM04-02

Client Sample ID: **SWM04-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039007
Lab Project ID: 1143039

Collection Date: 07/10/14 10:51
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039007-B

| <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 | 81 | 9.01 | 9.01 | col/100mL | 1 | | 07/10/14 18:50 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 18:50
Container ID: 1143039007-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM04-02

Client Sample ID: **SWM04-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039007
Lab Project ID: 1143039

Collection Date: 07/10/14 10:51
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.67 | 1.67 | 0.500 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039007-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM05-02

Client Sample ID: **SWM05-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039008
Lab Project ID: 1143039

Collection Date: 07/10/14 11:20
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.87 | 2.00 | 2.00 | mg/L | 1 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039008-B

| <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 | 1.64 U | 1.64 | 1.64 | col/100mL | 1 | | 07/10/14 18:50 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 18:50
Container ID: 1143039008-A

Print Date: 07/17/2014 1:35:12PM



Results of **SWM05-02**

Client Sample ID: **SWM05-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039008
Lab Project ID: 1143039

Collection Date: 07/10/14 11:20
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Acenaphthylene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Anthracene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Benzo(a)Anthracene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Benzo[a]pyrene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Benzo[b]Fluoranthene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Benzo[g,h,i]perylene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Benzo[k]fluoranthene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Chrysene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Dibenzo[a,h]anthracene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Fluoranthene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Fluorene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Indeno[1,2,3-c,d] pyrene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Naphthalene | 0.109 U | 0.109 | 0.0337 | ug/L | 1 | | 07/15/14 16:02 |
| Phenanthrene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Pyrene | 0.0543 U | 0.0543 | 0.0163 | ug/L | 1 | | 07/15/14 16:02 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 58.3 | 50-110 | | % | 1 | | 07/15/14 16:02 |
| Terphenyl-d14 | 104 | 50-135 | | % | 1 | | 07/15/14 16:02 |

Batch Information

Analytical Batch: XMS8153
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 07/15/14 16:02
Container ID: 1143039008-D

Prep Batch: XXX31391
Prep Method: SW3520C
Prep Date/Time: 07/12/14 10:45
Prep Initial Wt./Vol.: 920 mL
Prep Extract Vol: 1 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM05-02

Client Sample ID: **SWM05-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039008
Lab Project ID: 1143039

Collection Date: 07/10/14 11:20
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/15/14 14:00 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:00 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 14:00 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 07/15/14 14:00 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 14:00 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:00 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:00 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 07/15/14 14:00 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:00 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 96 | 70-120 | | % | 1 | | 07/15/14 14:00 |
| 4-Bromofluorobenzene | 98.8 | 75-120 | | % | 1 | | 07/15/14 14:00 |
| Toluene-d8 | 97.4 | 85-120 | | % | 1 | | 07/15/14 14:00 |

Batch Information

Analytical Batch: VMS14277
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 07/15/14 14:00
Container ID: 1143039008-F

Prep Batch: VXX26115
Prep Method: SW5030B
Prep Date/Time: 07/15/14 05:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM05-02

Client Sample ID: **SWM05-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039008
Lab Project ID: 1143039

Collection Date: 07/10/14 11:20
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 4.00 | 2.50 | 0.750 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039008-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM06-02

Client Sample ID: **SWM06-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039009
Lab Project ID: 1143039

Collection Date: 07/10/14 12:00
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 10.7 | 2.00 | 2.00 | mg/L | 1 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039009-B

| <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 | 220 | 10.0 | 10.0 | col/100mL | 1 | | 07/10/14 18:50 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 18:50
Container ID: 1143039009-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM06-02

Client Sample ID: **SWM06-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039009
Lab Project ID: 1143039

Collection Date: 07/10/14 12:00
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 300 | 10.0 | 3.00 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039009-C

Print Date: 07/17/2014 1:35:12PM



Results of **SWM07-02**

Client Sample ID: **SWM07-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039010
Lab Project ID: 1143039

Collection Date: 07/10/14 12:30
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 10.1 | 2.00 | 2.00 | mg/L | 1 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039010-B

| <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 | 3500 | 100 | 100 | col/100mL | 1 | | 07/10/14 19:08 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 19:08
Container ID: 1143039010-A

Print Date: 07/17/2014 1:35:12PM



Results of **SWM07-02**

Client Sample ID: **SWM07-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039010
Lab Project ID: 1143039

Collection Date: 07/10/14 12:30
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Acenaphthylene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Anthracene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Benzo(a)Anthracene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Benzo[a]pyrene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Benzo[b]Fluoranthene | 0.157 | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Benzo[g,h,i]perylene | 0.117 | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Benzo[k]fluoranthene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Chrysene | 0.177 | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Dibenzo[a,h]anthracene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Fluoranthene | 0.173 | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Fluorene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Indeno[1,2,3-c,d] pyrene | 0.0521 U | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Naphthalene | 0.104 U | 0.104 | 0.0323 | ug/L | 1 | | 07/15/14 16:17 |
| Phenanthrene | 0.116 | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Pyrene | 0.193 | 0.0521 | 0.0156 | ug/L | 1 | | 07/15/14 16:17 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 58.3 | 50-110 | | % | 1 | | 07/15/14 16:17 |
| Terphenyl-d14 | 91.4 | 50-135 | | % | 1 | | 07/15/14 16:17 |

Batch Information

Analytical Batch: XMS8153
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 07/15/14 16:17
Container ID: 1143039010-D

Prep Batch: XXX31391
Prep Method: SW3520C
Prep Date/Time: 07/12/14 10:45
Prep Initial Wt./Vol.: 960 mL
Prep Extract Vol: 1 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM07-02

Client Sample ID: **SWM07-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039010
Lab Project ID: 1143039

Collection Date: 07/10/14 12:30
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/16/14 08:51 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 08:51 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/16/14 08:51 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 07/16/14 08:51 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/16/14 08:51 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 08:51 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 08:51 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 07/16/14 08:51 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 08:51 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 101 | 70-120 | | % | 1 | | 07/16/14 08:51 |
| 4-Bromofluorobenzene | 103 | 75-120 | | % | 1 | | 07/16/14 08:51 |
| Toluene-d8 | 101 | 85-120 | | % | 1 | | 07/16/14 08:51 |

Batch Information

Analytical Batch: VMS14280
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 07/16/14 08:51
Container ID: 1143039010-F

Prep Batch: VXX26119
Prep Method: SW5030B
Prep Date/Time: 07/16/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM07-02

Client Sample ID: **SWM07-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039010
Lab Project ID: 1143039

Collection Date: 07/10/14 12:30
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 278 | 10.0 | 3.00 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039010-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM08-02

Client Sample ID: **SWM08-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039011
Lab Project ID: 1143039

Collection Date: 07/10/14 12:41
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 11.8 | 2.00 | 2.00 | mg/L | 1 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039011-B

| <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 | 9000 | 100 | 100 | col/100mL | 1 | | 07/10/14 19:08 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 19:08
Container ID: 1143039011-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM08-02

Client Sample ID: **SWM08-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039011
Lab Project ID: 1143039

Collection Date: 07/10/14 12:41
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 227 | 5.00 | 1.50 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039011-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM08-02 DUP

Client Sample ID: **SWM08-02 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039012
Lab Project ID: 1143039

Collection Date: 07/10/14 12:41
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 9.72 | 2.00 | 2.00 | mg/L | 1 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039012-B

| <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 | 13000 | 100 | 100 | col/100mL | 1 | | 07/10/14 19:08 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 19:08
Container ID: 1143039012-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM08-02 DUP

Client Sample ID: **SWM08-02 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039012
Lab Project ID: 1143039

Collection Date: 07/10/14 12:41
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 242 | 5.00 | 1.50 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039012-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM09-02

Client Sample ID: **SWM09-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039013
Lab Project ID: 1143039

Collection Date: 07/10/14 13:10
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 7.32 | 2.00 | 2.00 | mg/L | 1 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039013-B

| <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 | 2900 | 100 | 100 | col/100mL | 1 | | 07/10/14 19:08 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 19:08
Container ID: 1143039013-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM09-02

Client Sample ID: SWM09-02
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1143039013
Lab Project ID: 1143039

Collection Date: 07/10/14 13:10
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS8153
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 07/15/14 16:33
Container ID: 1143039013-D

Prep Batch: XXX31391
Prep Method: SW3520C
Prep Date/Time: 07/12/14 10:45
Prep Initial Wt./Vol.: 905 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: 1143039013
Lab Project ID: 1143039

Collection Date: 07/10/14 13:10
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/16/14 09:07 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 09:07 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/16/14 09:07 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 07/16/14 09:07 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/16/14 09:07 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 09:07 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 09:07 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 07/16/14 09:07 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/16/14 09:07 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 100 | 70-120 | | % | 1 | | 07/16/14 09:07 |
| 4-Bromofluorobenzene | 98.5 | 75-120 | | % | 1 | | 07/16/14 09:07 |
| Toluene-d8 | 98.1 | 85-120 | | % | 1 | | 07/16/14 09:07 |

Batch Information

Analytical Batch: VMS14280
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 07/16/14 09:07
Container ID: 1143039013-F

Prep Batch: VXX26119
Prep Method: SW5030B
Prep Date/Time: 07/16/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:12PM



Results of SWM09-02

Client Sample ID: **SWM09-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039013
Lab Project ID: 1143039

Collection Date: 07/10/14 13:10
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 63.5 | 2.50 | 0.750 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039013-C

Print Date: 07/17/2014 1:35:12PM



Results of SWM10-02

Client Sample ID: **SWM10-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039014
Lab Project ID: 1143039

Collection Date: 07/10/14 13:21
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.35 | 2.00 | 2.00 | mg/L | 1 | | 07/11/14 15:45 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Analyst: SLC
Analytical Date/Time: 07/11/14 15:45
Container ID: 1143039014-B

| <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 | 1600 | 100 | 100 | col/100mL | 1 | | 07/10/14 19:08 |

Batch Information

Analytical Batch: BTF13619
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 07/10/14 19:08
Container ID: 1143039014-A

Print Date: 07/17/2014 1:35:12PM



Results of SWM10-02

Client Sample ID: **SWM10-02**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039014
Lab Project ID: 1143039

Collection Date: 07/10/14 13:21
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 50.0 | 2.50 | 0.750 | mg/L | 1 | | 07/11/14 15:10 |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 07/11/14 15:10
Container ID: 1143039014-C

Print Date: 07/17/2014 1:35:12PM



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143039015
Lab Project ID: 1143039

Collection Date: 07/10/14 09:27
Received Date: 07/10/14 13:56
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 07/15/14 14:16 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:16 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 14:16 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 07/15/14 14:16 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 07/15/14 14:16 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:16 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:16 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 07/15/14 14:16 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 07/15/14 14:16 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 98 | 70-120 | | % | 1 | | 07/15/14 14:16 |
| 4-Bromofluorobenzene | 96.5 | 75-120 | | % | 1 | | 07/15/14 14:16 |
| Toluene-d8 | 94.9 | 85-120 | | % | 1 | | 07/15/14 14:16 |

Batch Information

Analytical Batch: VMS14277
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 07/15/14 14:16
Container ID: 1143039015-A

Prep Batch: VXX26115
Prep Method: SW5030B
Prep Date/Time: 07/15/14 05:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:12PM



Method Blank

Blank ID: MB for HBN 1624165 [BOD/4979]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1220704

QC for Samples:

1143039001, 1143039002, 1143039005, 1143039006, 1143039007, 1143039008, 1143039009, 1143039010, 1143039011, 1143039012, 1143039013, 1143039014

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: BOD4979

Analytical Method: SM21 5210B

Instrument:

Analyst: SLC

Analytical Date/Time: 7/11/2014 3:45:00PM

Print Date: 07/17/2014 1:35:15PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143039 [BOD4979]

Blank Spike Lab ID: 1220705

Date Analyzed: 07/11/2014 15:45

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143039001, 1143039002, 1143039005, 1143039006, 1143039007, 1143039008, 1143039009, 1143039010, 1143039011, 1143039012, 1143039013, 1143039014

Results by SM21 5210B

| Parameter | Blank Spike (mg/L) | | | CL |
|---------------------------|--------------------|--------|---------|--------------|
| | Spike | Result | Rec (%) | |
| Biochemical Oxygen Demand | 198 | 222 | 112 | (84.6-115.4 |

Batch Information

Analytical Batch: BOD4979
Analytical Method: SM21 5210B
Instrument:
Analyst: SLC

Prep Batch:
Prep Method:
Prep Date/Time:
Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL
Dup Init Wt./Vol.: Extract Vol:

Print Date: 07/17/2014 1:35:16PM



Method Blank

Blank ID: MB for HBN 1623778 [BTF/13619]
Blank Lab ID: 1220123

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1143039001, 1143039002, 1143039005, 1143039006, 1143039007, 1143039008, 1143039009, 1143039010, 1143039011, 1143039012, 1143039013, 1143039014

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: BTF13619
Analytical Method: SM21 9222D
Instrument:
Analyst: MEV
Analytical Date/Time: 7/10/2014 4:51:00PM

Print Date: 07/17/2014 1:35:18PM



Method Blank

Blank ID: MB for HBN 1621361 [STS/4451]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1219826

QC for Samples:

1143039001, 1143039002, 1143039005, 1143039006, 1143039007, 1143039008, 1143039009, 1143039010, 1143039011, 1143039012, 1143039013, 1143039014

Results by SM21 2540D

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|------------------------|----------------|---------------|-----------|--------------|
| Total Suspended Solids | 0.250U | 0.500 | 0.150 | mg/L |

Batch Information

Analytical Batch: STS4451

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Analytical Date/Time: 7/11/2014 3:10:44PM

Print Date: 07/17/2014 1:35:20PM

Duplicate Sample Summary

Original Sample ID: 1143039011

Duplicate Sample ID: 1219829

Analysis Date: 07/11/2014 15:10

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1143039001, 1143039002, 1143039005, 1143039006, 1143039007, 1143039008, 1143039009, 1143039010, 1143039011, 1143039012, 1143039013, 1143039014

Results by SM21 2540D

| <u>NAME</u> | <u>Original ()</u> | <u>Duplicate ()</u> | <u>RPD (%)</u> | <u>RPD CL</u> |
|------------------------|---------------------|----------------------|----------------|---------------|
| Total Suspended Solids | 227 | 234 | 3.00 | 5.00 |

Batch Information

Analytical Batch: STS4451

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 07/17/2014 1:35:21PM



Duplicate Sample Summary

Original Sample ID: 1143046005

Duplicate Sample ID: 1219830

QC for Samples:

1143039012, 1143039013, 1143039014

Analysis Date: 07/11/2014 15:10

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 | 12.7 | 13.3 | 5.10* | 5.00 |

Batch Information

Analytical Batch: STS4451

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 07/17/2014 1:35:21PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143039 [STS4451]
Blank Spike Lab ID: 1219827
Date Analyzed: 07/11/2014 15:10

Spike Duplicate ID: LCSD for HBN 1143039 [STS4451]
Spike Duplicate Lab ID: 1219828
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143039001, 1143039002, 1143039005, 1143039006, 1143039007, 1143039008, 1143039009, 1143039010, 1143039011, 1143039012, 1143039013, 1143039014

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 | 45.8 | 92 | 50 | 46.1 | 92 | (75-125) | 0.65 | (< 5) |

Batch Information

Analytical Batch: STS4451
Analytical Method: SM21 2540D
Instrument:
Analyst: WLF

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

Print Date: 07/17/2014 1:35:22PM



Method Blank

Blank ID: MB for HBN 1624097 [VXX/26115]
Blank Lab ID: 1220377

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1143039002, 1143039005, 1143039008, 1143039015

Results by EPA 602/624

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|-----------------------|----------------|---------------|-----------|--------------|
| 1,2-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,3-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,4-Dichlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Benzene | 0.200U | 0.400 | 0.120 | ug/L |
| Chlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Ethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| o-Xylene | 0.500U | 1.00 | 0.310 | ug/L |
| P & M -Xylene | 1.00U | 2.00 | 0.620 | ug/L |
| Toluene | 0.500U | 1.00 | 0.310 | ug/L |
| Surrogates | | | | |
| 1,2-Dichloroethane-D4 | 96.9 | 70-120 | | % |
| 4-Bromofluorobenzene | 102 | 75-120 | | % |
| Toluene-d8 | 99.4 | 85-120 | | % |

Batch Information

Analytical Batch: VMS14277
Analytical Method: EPA 602/624
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 7/15/2014 5:40:00AM

Prep Batch: VXX26115
Prep Method: SW5030B
Prep Date/Time: 7/15/2014 5:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:24PM



Leaching Blank

Blank ID: LB for HBN 1623581 [TCLP/7411]
Blank Lab ID: 1220031

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1143039002, 1143039005, 1143039008, 1143039015

Results by EPA 602/624

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|-----------------------|----------------|---------------|-----------|--------------|
| 1,4-Dichlorobenzene | 12.5U | 25.0 | 7.50 | ug/L |
| Benzene | 10.0U | 20.0 | 6.00 | ug/L |
| Chlorobenzene | 12.5U | 25.0 | 7.50 | ug/L |
| Surrogates | | | | |
| 1,2-Dichloroethane-D4 | 101 | 70-120 | | % |
| 4-Bromofluorobenzene | 104 | 75-120 | | % |
| Toluene-d8 | 98.3 | 85-120 | | % |

Batch Information

Analytical Batch: VMS14277
Analytical Method: EPA 602/624
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 7/15/2014 8:30:00AM

Prep Batch: VXX26115
Prep Method: SW5030B
Prep Date/Time: 7/15/2014 5:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:24PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143039 [VXX26115]
 Blank Spike Lab ID: 1220378
 Date Analyzed: 07/15/2014 06:05

Spike Duplicate ID: LCSD for HBN 1143039
 [VXX26115]
 Spike Duplicate Lab ID: 1220379
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143039002, 1143039005, 1143039008, 1143039015

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 | 27.9 | 93 | 30 | 29.8 | 99 | (70-120) | 6.60 | (< 20) |
| 1,3-Dichlorobenzene | 30 | 26.0 | 87 | 30 | 27.9 | 93 | (75-125) | 7.20 | (< 20) |
| 1,4-Dichlorobenzene | 30 | 27.9 | 93 | 30 | 29.7 | 99 | (75-125) | 6.50 | (< 20) |
| Benzene | 30 | 29.5 | 98 | 30 | 31.0 | 103 | (80-120) | 5.00 | (< 20) |
| Chlorobenzene | 30 | 27.1 | 91 | 30 | 29.0 | 97 | (80-120) | 6.60 | (< 20) |
| Ethylbenzene | 30 | 29.3 | 98 | 30 | 30.5 | 102 | (75-125) | 4.10 | (< 20) |
| o-Xylene | 30 | 27.2 | 91 | 30 | 29.7 | 99 | (80-120) | 8.70 | (< 20) |
| P & M -Xylene | 60 | 55.5 | 93 | 60 | 59.1 | 99 | (75-130) | 6.40 | (< 20) |
| Toluene | 30 | 28.3 | 94 | 30 | 29.5 | 98 | (75-120) | 4.00 | (< 20) |

Surrogates

| | | | | | | | | | |
|-----------------------|----|--|----|----|--|----|------------|------|--|
| 1,2-Dichloroethane-D4 | 30 | | 95 | 30 | | 96 | (70-120) | 1.00 | |
| 4-Bromofluorobenzene | 30 | | 98 | 30 | | 96 | (75-120) | 1.30 | |
| Toluene-d8 | 30 | | 98 | 30 | | 97 | (85-120) | 0.72 | |

Batch Information

Analytical Batch: **VMS14277**
 Analytical Method: **EPA 602/624**
 Instrument: **HP 5890 Series II MS3 VNA**
 Analyst: **NRB**

Prep Batch: **VXX26115**
 Prep Method: **SW5030B**
 Prep Date/Time: **07/15/2014 05:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dup Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:25PM



Billable Matrix Spike Summary

Original Sample ID: 1143039002
MS Sample ID: 1143039003 BMS
MSD Sample ID: 1143039004 BMSD

Analysis Date: 07/15/2014 11:31
Analysis Date: 07/15/2014 7:08
Analysis Date: 07/15/2014 7:24
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 | 30.1 | 100 | 30.0 | 29.6 | 99 | 70-120 | 1.70 | (< 20) |
| 1,3-Dichlorobenzene | 1.00U | 30.0 | 28.6 | 95 | 30.0 | 28.7 | 96 | 75-125 | 0.42 | (< 20) |
| 1,4-Dichlorobenzene | 0.500U | 30.0 | 29.8 | 99 | 30.0 | 30.4 | 101 | 75-125 | 2.00 | (< 20) |
| Benzene | 0.400U | 30.0 | 31.2 | 104 | 30.0 | 30.9 | 103 | 80-120 | 0.84 | (< 20) |
| Chlorobenzene | 0.500U | 30.0 | 29.8 | 99 | 30.0 | 29.4 | 98 | 80-120 | 1.20 | (< 20) |
| Ethylbenzene | 1.00U | 30.0 | 30.9 | 103 | 30.0 | 30.5 | 102 | 75-125 | 1.50 | (< 20) |
| o-Xylene | 1.00U | 30.0 | 29.2 | 97 | 30.0 | 29.2 | 97 | 80-120 | 0.07 | (< 20) |
| P & M -Xylene | 2.00U | 60.0 | 60.5 | 101 | 60.0 | 60.3 | 100 | 75-130 | 0.45 | (< 20) |
| Toluene | 1.00U | 30.0 | 31.1 | 104 | 30.0 | 30.1 | 100 | 75-120 | 3.40 | (< 20) |
| Surrogates | | | | | | | | | | |
| 1,2-Dichloroethane-D4 | | 30.0 | 29.8 | 100 | 30.0 | 30.7 | 102 | 70-120 | 2.80 | |
| 4-Bromofluorobenzene | | 30.0 | 31 | 103 | 30.0 | 30.5 | 102 | 75-120 | 1.60 | |
| Toluene-d8 | | 30.0 | 31.5 | 105 | 30.0 | 31.2 | 104 | 85-120 | 1.00 | |

Batch Information

Analytical Batch: VMS14277
Analytical Method: EPA 602/624
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 7/15/2014 7:08:00AM

Prep Batch: VXX26115
Prep Method: Volatiles Extraction 8240/8260 FULL
Prep Date/Time: 7/15/2014 5:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 07/17/2014 1:35:27PM



Method Blank

Blank ID: MB for HBN 1624145 [VXX/26119]

Blank Lab ID: 1220617

QC for Samples:

1143039010, 1143039013

Matrix: Water (Surface, Eff., Ground)

Results by EPA 602/624

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|-----------------------|----------------|---------------|-----------|--------------|
| 1,2-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,3-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,4-Dichlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Benzene | 0.200U | 0.400 | 0.120 | ug/L |
| Chlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Ethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| o-Xylene | 0.500U | 1.00 | 0.310 | ug/L |
| P & M -Xylene | 1.00U | 2.00 | 0.620 | ug/L |
| Toluene | 0.500U | 1.00 | 0.310 | ug/L |
| Surrogates | | | | |
| 1,2-Dichloroethane-D4 | 95.7 | 70-120 | | % |
| 4-Bromofluorobenzene | 99.6 | 75-120 | | % |
| Toluene-d8 | 97.5 | 85-120 | | % |

Batch Information

Analytical Batch: VMS14280
Analytical Method: EPA 602/624
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 7/16/2014 6:31:00AM

Prep Batch: VXX26119
Prep Method: SW5030B
Prep Date/Time: 7/16/2014 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/17/2014 1:35:28PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1143039 [VXX26119]
 Blank Spike Lab ID: 1220618
 Date Analyzed: 07/16/2014 07:12

Spike Duplicate ID: LCSD for HBN 1143039 [VXX26119]
 Spike Duplicate Lab ID: 1220619
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143039010, 1143039013

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 | 29.4 | 98 | 30 | 29.9 | 100 | (70-120) | 1.80 | (< 20) |
| 1,3-Dichlorobenzene | 30 | 27.3 | 91 | 30 | 28.2 | 94 | (75-125) | 3.10 | (< 20) |
| 1,4-Dichlorobenzene | 30 | 29.0 | 97 | 30 | 29.4 | 98 | (75-125) | 1.40 | (< 20) |
| Benzene | 30 | 31.2 | 104 | 30 | 31.9 | 106 | (80-120) | 2.50 | (< 20) |
| Chlorobenzene | 30 | 28.7 | 96 | 30 | 29.8 | 99 | (80-120) | 3.60 | (< 20) |
| Ethylbenzene | 30 | 30.1 | 100 | 30 | 31.5 | 105 | (75-125) | 4.50 | (< 20) |
| o-Xylene | 30 | 28.9 | 97 | 30 | 29.3 | 98 | (80-120) | 1.20 | (< 20) |
| P & M -Xylene | 60 | 59.1 | 99 | 60 | 62.5 | 104 | (75-130) | 5.70 | (< 20) |
| Toluene | 30 | 29.4 | 98 | 30 | 29.8 | 100 | (75-120) | 1.60 | (< 20) |

Surrogates

| | | | | | | | | | |
|-----------------------|----|--|-----|----|--|-----|------------|------|--|
| 1,2-Dichloroethane-D4 | 30 | | 99 | 30 | | 98 | (70-120) | 0.92 | |
| 4-Bromofluorobenzene | 30 | | 96 | 30 | | 98 | (75-120) | 2.00 | |
| Toluene-d8 | 30 | | 102 | 30 | | 102 | (85-120) | 0.07 | |

Batch Information

Analytical Batch: **VMS14280**
 Analytical Method: **EPA 602/624**
 Instrument: **HP 5890 Series II MS3 VNA**
 Analyst: **NRB**

Prep Batch: **VXX26119**
 Prep Method: **SW5030B**
 Prep Date/Time: **07/16/2014 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dup Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1622963 [XXX/31391]
Blank Lab ID: 1219928

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1143039002, 1143039005, 1143039008, 1143039010, 1143039013

Results by EPA 625M SIMS (PAH)

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|--------------------------|----------------|---------------|-----------|--------------|
| Acenaphthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Acenaphthylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo(a)Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[a]pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[b]Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[g,h,i]perylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[k]fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Chrysene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Dibenzo[a,h]anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluorene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Naphthalene | 0.0500U | 0.100 | 0.0310 | ug/L |
| Phenanthrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Surrogates | | | | |
| 2-Fluorobiphenyl | 67.3 | 50-110 | | % |
| Terphenyl-d14 | 105 | 50-135 | | % |

Batch Information

Analytical Batch: XMS8152
Analytical Method: EPA 625M SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 7/14/2014 11:21:00PM

Prep Batch: XXX31391
Prep Method: SW3520C
Prep Date/Time: 7/12/2014 10:45:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 07/17/2014 1:35:31PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143039 [XXX31391]
 Blank Spike Lab ID: 1219929
 Date Analyzed: 07/14/2014 23:36

Spike Duplicate ID: LCSD for HBN 1143039
 [XXX31391]
 Spike Duplicate Lab ID: 1219930
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143039002, 1143039005, 1143039008, 1143039010, 1143039013

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 | 0.353 | 71 | 0.5 | 0.374 | 75 | (45-110) | 5.70 | (< 30) |
| Acenaphthylene | 0.5 | 0.349 | 70 | 0.5 | 0.367 | 73 | (50-105) | 5.10 | (< 30) |
| Anthracene | 0.5 | 0.372 | 74 | 0.5 | 0.385 | 77 | (55-110) | 3.30 | (< 30) |
| Benzo(a)Anthracene | 0.5 | 0.485 | 97 | 0.5 | 0.489 | 98 | (55-110) | 0.85 | (< 30) |
| Benzo[a]pyrene | 0.5 | 0.413 | 83 | 0.5 | 0.436 | 87 | (55-110) | 5.40 | (< 30) |
| Benzo[b]Fluoranthene | 0.5 | 0.495 | 99 | 0.5 | 0.505 | 101 | (45-120) | 2.00 | (< 30) |
| Benzo[g,h,i]perylene | 0.5 | 0.377 | 76 | 0.5 | 0.435 | 87 | (40-125) | 14.20 | (< 30) |
| Benzo[k]fluoranthene | 0.5 | 0.433 | 87 | 0.5 | 0.447 | 89 | (45-125) | 3.10 | (< 30) |
| Chrysene | 0.5 | 0.527 | 105 | 0.5 | 0.522 | 104 | (55-110) | 1.00 | (< 30) |
| Dibenzo[a,h]anthracene | 0.5 | 0.383 | 77 | 0.5 | 0.425 | 85 | (40-125) | 10.50 | (< 30) |
| Fluoranthene | 0.5 | 0.494 | 99 | 0.5 | 0.498 | 100 | (55-115) | 0.74 | (< 30) |
| Fluorene | 0.5 | 0.350 | 70 | 0.5 | 0.378 | 76 | (50-110) | 7.50 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.5 | 0.386 | 77 | 0.5 | 0.430 | 86 | (45-125) | 10.70 | (< 30) |
| Naphthalene | 0.5 | 0.354 | 71 | 0.5 | 0.395 | 79 | (40-100) | 10.80 | (< 30) |
| Phenanthrene | 0.5 | 0.389 | 78 | 0.5 | 0.408 | 82 | (50-115) | 4.80 | (< 30) |
| Pyrene | 0.5 | 0.468 | 94 | 0.5 | 0.475 | 95 | (50-130) | 1.50 | (< 30) |

Surrogates

| | | | | | | | | | |
|------------------|-----|--|-----|-----|--|-----|------------|------|--|
| 2-Fluorobiphenyl | 0.5 | | 74 | 0.5 | | 79 | (50-110) | 6.70 | |
| Terphenyl-d14 | 0.5 | | 113 | 0.5 | | 111 | (50-135) | 1.90 | |

Batch Information

Analytical Batch: XMS8152
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS

Prep Batch: XXX31391
 Prep Method: SW3520C
 Prep Date/Time: 07/12/2014 10:45
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL
 Dup Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Print Date: 07/17/2014 1:35:32PM



Billable Matrix Spike Summary

Original Sample ID: 1143039002
 MS Sample ID: 1143039003 BMS
 MSD Sample ID: 1143039004 BMSD

Analysis Date: 07/15/2014 15:00
 Analysis Date: 07/15/2014 15:15
 Analysis Date: 07/15/2014 15:31
 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 | 0.0595U | 0.575 | .353 | 62 | 0.581 | 0.415 | 71 | 45-110 | 16.10 | (< 30) |
| Acenaphthylene | 0.0595U | 0.575 | .336 | 59 | 0.581 | 0.400 | 69 | 50-105 | 17.40 | (< 30) |
| Anthracene | 0.0595U | 0.575 | .449 | 78 | 0.581 | 0.491 | 85 | 55-110 | 9.00 | (< 30) |
| Benzo(a)Anthracene | 0.0595U | 0.575 | .533 | 93 | 0.581 | 0.516 | 89 | 55-110 | 3.10 | (< 30) |
| Benzo[a]pyrene | 0.0595U | 0.575 | .527 | 92 | 0.581 | 0.508 | 87 | 55-110 | 3.70 | (< 30) |
| Benzo[b]Fluoranthene | 0.0595U | 0.575 | .53 | 92 | 0.581 | 0.555 | 95 | 45-120 | 4.60 | (< 30) |
| Benzo[g,h,i]perylene | 0.0595U | 0.575 | .605 | 105 | 0.581 | 0.571 | 98 | 40-125 | 5.80 | (< 30) |
| Benzo[k]fluoranthene | 0.0595U | 0.575 | .535 | 93 | 0.581 | 0.510 | 88 | 45-125 | 4.80 | (< 30) |
| Chrysene | 0.0595U | 0.575 | .558 | 97 | 0.581 | 0.543 | 93 | 55-110 | 2.70 | (< 30) |
| Dibenzo[a,h]anthracene | 0.0595U | 0.575 | .59 | 103 | 0.581 | 0.558 | 96 | 40-125 | 5.60 | (< 30) |
| Fluoranthene | 0.0595U | 0.575 | .506 | 88 | 0.581 | 0.517 | 89 | 55-115 | 2.20 | (< 30) |
| Fluorene | 0.0595U | 0.575 | .363 | 63 | 0.581 | 0.424 | 73 | 50-110 | 15.60 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.0595U | 0.575 | .594 | 103 | 0.581 | 0.559 | 96 | 45-125 | 6.20 | (< 30) |
| Naphthalene | 0.119U | 0.575 | .348 | 61 | 0.581 | 0.399 | 69 | 40-100 | 13.60 | (< 30) |
| Phenanthrene | 0.0595U | 0.575 | .487 | 85 | 0.581 | 0.541 | 93 | 50-115 | 10.40 | (< 30) |
| Pyrene | 0.0595U | 0.575 | .481 | 84 | 0.581 | 0.491 | 85 | 50-130 | 2.20 | (< 30) |
| Surrogates | | | | | | | | | | |
| 2-Fluorobiphenyl | | 0.575 | .359 | 62 | 0.581 | 0.413 | 71 | 50-110 | 14.10 | |
| Terphenyl-d14 | | 0.575 | .577 | 100 | 0.581 | 0.568 | 98 | 50-135 | 1.50 | |


Batch Information

Analytical Batch: XMS8153
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS
 Analytical Date/Time: 7/15/2014 3:15:00PM

Prep Batch: XXX31391
 Prep Method: Liquid/Liquid Extraction for 625 SIMS
 Prep Date/Time: 7/12/2014 10:45:44AM
 Prep Initial Wt./Vol.: 870.00mL
 Prep Extract Vol: 1.00mL

Print Date: 07/17/2014 1:35:33PM

Chain of Custody Record

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | From: Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |
| SGS Quote No. 9901 Date Received: Lab #: | 1143039  |

Project: MOA Stormwater Management **Project #:** 5078
Matrix: Water

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 |
|------------------|------------|-------------|-------------|-------------|------------------|----------------|--------|----------------|--------|------------------------|
| ① A SWM01-02 | 1040-3 | 7/10/14 | 0927 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ② A SWM02-02 | 847-1 | | 0958 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ③ A SWM02-02 Dup | 847-1 | | 1006 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ④ A SWM03-02 | 1224-1 | | 1045 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑤ A SWM04-02 | 1224-2 | | 1051 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑥ A SWM05-02 | 207-1 | | 1120 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑦ A SWM06-02 | 314-22 | | 1200 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑧ A SWM07-02 | 484-1 | | 1230 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑨ A SWM08-02 | 86-1 | | 1241 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑩ A SWM08-02 Dup | 86-1 | | 1241 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑪ A SWM09-02 | 499-1 | | 1310 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑫ A SWM10-02 | 525-2 | | 1321 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |

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>Manish J Savoie</i> | 7/10 13:56 | by hand | <i>[Signature]</i> | |
| | | | <i>[Signature]</i> | 7/10/14 13:56 |

1143039



Chain of Custody Record

| | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor</p> | <p>From: Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie</p> |
| <p>SGS Quote No. 9901</p> | |
| <p>Date Received:</p> | |
| <p>Lab #:</p> | |

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 |
|-----------------|------------|-------------|-------------|-------------|----------------|-----------|--------|----------------|--------|------------------------|
| 1 SWM01-02 | 1040-3 | 7/10/14 | 0927 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 2 SWM02-02 | 847-1 | | 0958 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 3 SWM02-02 Dup | 847-1 | | 1006 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 4 SWM03-02 | 1224-1 | | 1045 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 5 SWM04-02 | 1224-2 | | 1051 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 6 SWM05-02 | 207-1 | | 1120 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 7 SWM06-02 | 314-22 | | 1200 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 8 SWM07-02 | 484-1 | | 1230 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 9 SWM08-02 | 86-1 | | 1241 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 10 SWM08-02 Dup | 86-1 | | 1241 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 11 SWM09-02 | 499-1 | | 1310 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| 12 SWM10-02 | 525-2 | | 1321 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |

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.

| Sampled and Relinquished By: | Date/Time: | Transporter | Received By: | Date/Time: |
|------------------------------|---------------|-------------|--------------|---------------|
| Markoif Savoie | 7/10/14 13:56 | MJS | | |
| | | | Jenni Daalga | 7/10/14 13:50 |

5.9 °C #240 4.9 °C
8.1 °C #240

Chain of Custody Record

| | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | SGS Quote No. 9901 Date Received: Lab #: | From: Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|

1143039



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 |
|----------------|------------|-------------|-------------|-------------|----------------|-----------|--------|----------------|--------|------------------------|
| ① SWM01-02 | 1040-3 | 7/10/14 | 0927 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ② SWM02-02 | 847-1 | | 0958 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑤ SWM02-02 Dup | 847-1 | | 1006 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑥ SWM03-02 | 1224-1 | | 1045 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑦ SWM04-02 | 1224-2 | | 1051 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑧ SWM05-02 | 207-1 | | 1120 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑨ SWM06-02 | 314-22 | | 1200 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑩ SWM07-02 | 484-1 | | 1230 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑪ SWM08-02 | 86-1 | | 1241 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑫ SWM08-02 Dup | 86-1 | | 1241 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑬ SWM09-02 | 499-1 | | 1310 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑭ SWM10-02 | 525-2 | | 1321 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |

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:

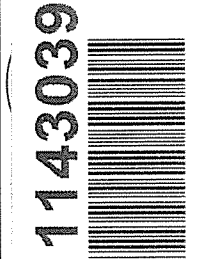
| | | | |
|---------------------------------------------------------------|--------------------------------|--------------------------------------------|------------------------------------|
| Sampled and Relinquished By: <i>Mariah J Savoie</i> | Date/Time: 7/0 13:56 | Received By: <i>Lori Draeger</i> | Date/Time: 7/10/14 13:56 |
| Relinquished By: | Date/Time: | Received By: | Date/Time: |

Chain of Custody Record

To: SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 Contact: Forest Taylor

SGS Quote No. 9901
 Date Received:
 Lab #:

From: Kinnetic Laboratories, Inc
 704 West 2nd 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 |
|--------------------------|------------|-------------|-------------|-------------|---------------------|-----------|--------|----------------|--------|------------------------|
| ② SWM02-02 (3A-B) (4A-B) | 847-1 | 7/10/14 | 0958 | Samp/MS/MSD | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 6 | | |
| ⑤ SWM02-02 Dup | 847-1 | () | 1006 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑧ SWM05-02 | 207-1 | () | 1020 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑩ SWM07-02 | 484-1 | () | 1230 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑬ SWM09-02 | 499-1 | ↓ | 1310 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
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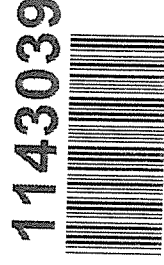
Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

| | | | | |
|------------------------------|------------|-------------|----------------------|---------------|
| Sampled and Relinquished By: | Date/Time: | Transporter | Received By: | Date/Time: |
| <i>Manish J Saor</i> | 7/10 13:56 | | | |
| Relinquished By: | Date/Time: | Transporter | Received By: | Date/Time: |
| | | | <i>Jenni Dragoon</i> | 7/10/14 13:56 |

Chain of Custody Record

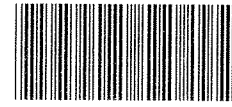
| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | From: Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |
| SGS Quote No. 9901 Date Received: Lab #: | Project #: 5078 Matrix: Water |



| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|------------------------------------------------|------------|-------------|-------------|-------------|-------------------|-----------|-----------|----------------|--------|------------------------|
| ② F-SWM02-02 (3) 2014-07-10 7/10/14 | 847-1 | 7/10/14 | 0958 | Samp/MS/MSD | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 9 | | |
| ⑤ F-SWM02-02 Dup | 847-1 | | 1006 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑧ F-SWM05-02 | 207-1 | | 1120 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑩ F-SWM07-02 | 484-1 | | 1230 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑬ F-SWM09-02 | 499-1 | | 1310 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| ⑮ A-Trip Blank | N/A | N/A | N/A | TB | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
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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.

| Sampled and Relinquished By: | Date/Time: | Transporter | Received By: | Date/Time: |
|------------------------------|------------|-------------|----------------|---------------|
| Marish J Savoie | 7/10 13:56 | by hand | | |
| Relinquished By: | | Transporter | Received By: | |
| | | | Leri D. Saeger | 7/10/14 13:56 |



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> Yes 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</u> @ <u>5.9</u> w/ Therm.ID: <u>240</u> Cooler ID: <u>2</u> @ <u>8.1</u> w/ Therm.ID: <u>240</u> Cooler ID: <u>3</u> @ <u>4.9</u> w/ Therm.ID: <u>240</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 <u>No</u> N/A Yes No <u>N/A</u> | <u>Less than 8 hrs. ago collected</u> |
| 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 <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: → For samples received in FBKS , ANCH staff will verify all criteria are reviewed. | | SRF Initiated by: <u>KMN</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 <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 Yes No N/A | |
| Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other: | <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? | Yes No <u>N/A</u> 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> | |
| 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>BOD, FC</u> |
| For SITE-SPECIFIC QC , e.g. <u>BMS/BMSD/BDUP</u> , 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>KMN</u> PM = _____ N/A |
| Was PEER REVIEW of <u>sample numbering/labeling</u> completed? | <u>Yes</u> No N/A | Peer Reviewed by: <u>JAN</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.



Sample Containers and Preservatives

| <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> | <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> |
|---------------------|-------------------------------------------------------------------|----------------------------|---------------------|--------------------------|----------------------------|
| 1143039001-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1143039008-H | HCL to pH < 2 | OK |
| 1143039001-B | No Preservative Required | OK | 1143039009-A | No Preservative Required | OK |
| 1143039001-C | No Preservative Required | OK | 1143039009-B | No Preservative Required | OK |
| 1143039002-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1143039009-C | No Preservative Required | OK |
| 1143039002-B | No Preservative Required | OK | 1143039010-A | No Preservative Required | OK |
| 1143039002-C | No Preservative Required | OK | 1143039010-B | No Preservative Required | OK |
| 1143039002-D | No Preservative Required | OK | 1143039010-C | No Preservative Required | OK |
| 1143039002-E | No Preservative Required | OK | 1143039010-D | No Preservative Required | OK |
| 1143039002-F | HCL to pH < 2 | OK | 1143039010-E | No Preservative Required | OK |
| 1143039002-G | HCL to pH < 2 | OK | 1143039010-F | HCL to pH < 2 | OK |
| 1143039002-H | HCL to pH < 2 | OK | 1143039010-G | HCL to pH < 2 | OK |
| 1143039003-A | No Preservative Required | OK | 1143039011-A | No Preservative Required | OK |
| 1143039003-B | No Preservative Required | OK | 1143039011-B | No Preservative Required | OK |
| 1143039003-C | HCL to pH < 2 | OK | 1143039011-C | No Preservative Required | OK |
| 1143039003-D | HCL to pH < 2 | OK | 1143039012-A | No Preservative Required | OK |
| 1143039003-E | HCL to pH < 2 | OK | 1143039012-B | No Preservative Required | OK |
| 1143039004-A | No Preservative Required | OK | 1143039012-C | No Preservative Required | OK |
| 1143039004-B | No Preservative Required | OK | 1143039013-A | No Preservative Required | OK |
| 1143039004-C | HCL to pH < 2 | OK | 1143039013-B | No Preservative Required | OK |
| 1143039004-D | HCL to pH < 2 | OK | 1143039013-C | No Preservative Required | OK |
| 1143039004-E | HCL to pH < 2 | OK | 1143039013-D | No Preservative Required | OK |
| 1143039005-A | No Preservative Required | OK | 1143039013-E | No Preservative Required | OK |
| 1143039005-B | No Preservative Required | OK | 1143039013-F | HCL to pH < 2 | OK |
| 1143039005-C | No Preservative Required | OK | 1143039013-G | HCL to pH < 2 | OK |
| 1143039005-D | No Preservative Required | OK | 1143039013-H | HCL to pH < 2 | OK |
| 1143039005-E | No Preservative Required | OK | 1143039014-A | No Preservative Required | OK |
| 1143039005-F | HCL to pH < 2 | OK | 1143039014-B | No Preservative Required | OK |
| 1143039005-G | HCL to pH < 2 | OK | 1143039014-C | No Preservative Required | OK |
| 1143039005-H | HCL to pH < 2 | OK | 1143039015-A | HCL to pH < 2 | OK |
| 1143039006-A | No Preservative Required | OK | 1143039015-B | HCL to pH < 2 | OK |
| 1143039006-B | No Preservative Required | OK | 1143039015-C | HCL to pH < 2 | OK |
| 1143039006-C | No Preservative Required | OK | | | |
| 1143039007-A | No Preservative Required | OK | | | |
| 1143039007-B | No Preservative Required | OK | | | |
| 1143039007-C | No Preservative Required | OK | | | |
| 1143039008-A | No Preservative Required | OK | | | |
| 1143039008-B | No Preservative Required | OK | | | |
| 1143039008-C | No Preservative Required | OK | | | |
| 1143039008-D | No Preservative Required | OK | | | |
| 1143039008-E | No Preservative Required | OK | | | |
| 1143039008-F | HCL to pH < 2 | OK | | | |
| 1143039008-G | HCL to pH < 2 | OK | | | |

Container Id

Preservative

Container Condition

Container Id

Preservative

Container Condition

Container Condition Glossary

OK - The container was received at an acceptable pH for the analysis requested.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

BU - The container was received with headspace greater than 6mm.

Appendix B3

Laboratory Data Package Storm Event #3



Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.
704 W 2nd Avenue
Anchorage, AK 99501
(907)276-6178

Report Number: **1143552**

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 Forest 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.

Forest Taylor
Project Manager
Forest.Taylor@sgs.com

Date

Print Date: 08/12/2014 2:27:27PM

Case Narrative

SGS Client: **Kinnetic Laboratories, Inc.**
SGS Project: **1143552**
Project Name/Site: **5078 MOA Stormwater Management**
Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

*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: 08/12/2014 2:27:28PM

Report of Manual Integrations

| <u>Laboratory ID</u> | <u>Client Sample ID</u> | <u>Analytical Batch</u> | <u>Analyte</u> | <u>Reason</u> |
|----------------------------|-------------------------|-------------------------|----------------------|---------------|
| EPA 625M SIMS (PAH) | | | | |
| 1143552013 | SWM09-03 | XMS8218 | Benzo[b]Fluoranthene | BLC |
| 1143552013 | SWM09-03 | XMS8218 | 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.

Print Date: 08/12/2014 2:27:29PM

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>), 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., 1/2 of the LOQ) |
| 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 | 1143552001 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM02-03 | 1143552002 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM02-03 MS | 1143552003 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM02-03 MSD | 1143552004 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM02-03 Dup | 1143552005 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM03-03 | 1143552006 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM04-03 | 1143552007 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM05-03 | 1143552008 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM06-03 | 1143552009 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM07-03 | 1143552010 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM08-03 | 1143552011 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM08-03 Dup | 1143552012 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM09-03 | 1143552013 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| SWM10-03 | 1143552014 | 08/04/2014 | 08/04/2014 | Water (Surface, Eff., Ground) |
| Trip Blank | 1143552015 | 08/04/2014 | 08/04/2014 | 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: **SWM01-03**

Lab Sample ID: 1143552001

Microbiology Laboratory
Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 3.93 | mg/L |
| Total Suspended Solids | 8.50 | mg/L |

Client Sample ID: **SWM02-03**

Lab Sample ID: 1143552002

Microbiology Laboratory
Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 72 | col/100mL |
| Total Suspended Solids | 2.33 | mg/L |

Client Sample ID: **SWM02-03 Dup**

Lab Sample ID: 1143552005

Microbiology Laboratory
Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 47 | col/100mL |
| Total Suspended Solids | 2.00 | mg/L |

Client Sample ID: **SWM03-03**

Lab Sample ID: 1143552006

Microbiology Laboratory
Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.37 | mg/L |
| Fecal Coliform | 44 | col/100mL |
| Total Suspended Solids | 3.33 | mg/L |

Client Sample ID: **SWM04-03**

Lab Sample ID: 1143552007

Microbiology Laboratory
Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 210 | col/100mL |
| Total Suspended Solids | 3.67 | mg/L |

Client Sample ID: **SWM05-03**

Lab Sample ID: 1143552008

Microbiology Laboratory
Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 5.43 | mg/L |
| Fecal Coliform | 41 | col/100mL |
| Total Suspended Solids | 8.50 | mg/L |

Client Sample ID: **SWM06-03**

Lab Sample ID: 1143552009

Microbiology Laboratory
Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 4.83 | mg/L |
| Fecal Coliform | 5400 | col/100mL |
| Total Suspended Solids | 8.00 | mg/L |

Client Sample ID: **SWM07-03**

Lab Sample ID: 1143552010

Microbiology Laboratory

Polynuclear Aromatics GC/MS

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 19.2 | mg/L |
| Fecal Coliform | 1360 | col/100mL |
| Chrysene | 0.0701 | ug/L |
| Fluoranthene | 0.0820 | ug/L |
| Phenanthrene | 0.0539 | ug/L |
| Pyrene | 0.149 | ug/L |
| Total Suspended Solids | 232 | mg/L |

Waters Department

Print Date: 08/12/2014 2:27:32PM

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

Detectable Results Summary

Client Sample ID: **SWM08-03**

Lab Sample ID: 1143552011

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 6.06 | mg/L |
| Fecal Coliform | 2000 | col/100mL |
| Total Suspended Solids | 25.3 | mg/L |

Client Sample ID: **SWM08-03 Dup**

Lab Sample ID: 1143552012

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 6.50 | mg/L |
| Fecal Coliform | 2500 | col/100mL |
| Total Suspended Solids | 25.3 | mg/L |

Client Sample ID: **SWM09-03**

Lab Sample ID: 1143552013

Microbiology Laboratory

Polynuclear Aromatics GC/MS

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 5.36 | mg/L |
| Fecal Coliform | 1500 | col/100mL |
| Benzo(a)Anthracene | 0.136 | ug/L |
| Benzo[a]pyrene | 0.134 | ug/L |
| Benzo[b]Fluoranthene | 0.329 | ug/L |
| Benzo[g,h,i]perylene | 0.148 | ug/L |
| Benzo[k]fluoranthene | 0.0838 | ug/L |
| Chrysene | 0.353 | ug/L |
| Fluoranthene | 0.602 | ug/L |
| Phenanthrene | 0.158 | ug/L |
| Pyrene | 0.404 | ug/L |
| Total Suspended Solids | 45.0 | mg/L |

Waters Department

Client Sample ID: **SWM10-03**

Lab Sample ID: 1143552014

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 1400 | col/100mL |
| Total Suspended Solids | 13.0 | mg/L |



Results of SWM01-03

Client Sample ID: **SWM01-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552001
Lab Project ID: 1143552

Collection Date: 08/04/14 14:30
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.93 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552001-C

| <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 | 1.00 U | 1.00 | 1.00 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552001-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM01-03

Client Sample ID: **SWM01-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552001
Lab Project ID: 1143552

Collection Date: 08/04/14 14:30
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 8.50 | 2.50 | 0.750 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552001-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03

Client Sample ID: **SWM02-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552002
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552002-C

| <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 | 1.00 | 1.00 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552002-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03

Client Sample ID: SWM02-03
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1143552002
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS8218
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/11/14 18:15
Container ID: 1143552002-E

Prep Batch: XXX31654
Prep Method: SW3520C
Prep Date/Time: 08/10/14 11:10
Prep Initial Wt./Vol.: 900 mL
Prep Extract Vol: 1 mL



Results of SWM02-03

Client Sample ID: **SWM02-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552002
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/06/14 21:13 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:13 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 21:13 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/06/14 21:13 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 21:13 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:13 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:13 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/06/14 21:13 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:13 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 119 | 70-120 | | % | 1 | | 08/06/14 21:13 |
| 4-Bromofluorobenzene | 96.5 | 75-120 | | % | 1 | | 08/06/14 21:13 |
| Toluene-d8 | 94.9 | 85-120 | | % | 1 | | 08/06/14 21:13 |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Analyst: KCT
Analytical Date/Time: 08/06/14 21:13
Container ID: 1143552002-F

Prep Batch: VXX26236
Prep Method: SW5030B
Prep Date/Time: 08/06/14 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03

Client Sample ID: **SWM02-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552002
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.33 | 1.67 | 0.500 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552002-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03 Dup

Client Sample ID: **SWM02-03 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552005
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552005-C

| <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 | 47 | 1.00 | 1.00 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552005-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03 Dup

Client Sample ID: SWM02-03 Dup
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1143552005
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS8218
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/11/14 19:00
Container ID: 1143552005-E

Prep Batch: XXX31654
Prep Method: SW3520C
Prep Date/Time: 08/10/14 11:10
Prep Initial Wt./Vol.: 885 mL
Prep Extract Vol: 1 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03 Dup

Client Sample ID: SWM02-03 Dup
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1143552005
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Benzene, Chlorobenzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, and Surrogates (1,2-Dichloroethane-D4, 4-Bromofluorobenzene, Toluene-d8).

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Analyst: KCT
Analytical Date/Time: 08/06/14 21:30
Container ID: 1143552005-F

Prep Batch: VXX26236
Prep Method: SW5030B
Prep Date/Time: 08/06/14 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM02-03 Dup

Client Sample ID: **SWM02-03 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552005
Lab Project ID: 1143552

Collection Date: 08/04/14 15:03
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 1.67 | 0.500 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552005-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM03-03

Client Sample ID: **SWM03-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552006
Lab Project ID: 1143552

Collection Date: 08/04/14 15:54
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.37 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552006-C

| <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 | 44 | 1.00 | 1.00 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552006-A

Print Date: 08/12/2014 2:27:33PM



Results of **SWM03-03**

Client Sample ID: **SWM03-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552006
Lab Project ID: 1143552

Collection Date: 08/04/14 15:54
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.33 | 1.67 | 0.500 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552006-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM04-03

Client Sample ID: **SWM04-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552007
Lab Project ID: 1143552

Collection Date: 08/04/14 16:01
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552007-C

| <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 | 210 | 10.0 | 10.0 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552007-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM04-03

Client Sample ID: **SWM04-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552007
Lab Project ID: 1143552

Collection Date: 08/04/14 16:01
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.67 | 1.67 | 0.500 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552007-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM05-03

Client Sample ID: **SWM05-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552008
Lab Project ID: 1143552

Collection Date: 08/04/14 16:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 5.43 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552008-C

| <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 | 1.00 | 1.00 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552008-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM05-03

Client Sample ID: SWM05-03
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1143552008
Lab Project ID: 1143552

Collection Date: 08/04/14 16:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS8218
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/11/14 22:44
Container ID: 1143552008-E

Prep Batch: XXX31654
Prep Method: SW3520C
Prep Date/Time: 08/10/14 11:10
Prep Initial Wt./Vol.: 955 mL
Prep Extract Vol: 1 mL



Results of **SWM05-03**

Client Sample ID: **SWM05-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552008
Lab Project ID: 1143552

Collection Date: 08/04/14 16:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/06/14 21:46 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:46 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 21:46 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/06/14 21:46 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 21:46 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:46 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:46 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/06/14 21:46 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 21:46 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 115 | 70-120 | | % | 1 | | 08/06/14 21:46 |
| 4-Bromofluorobenzene | 99.9 | 75-120 | | % | 1 | | 08/06/14 21:46 |
| Toluene-d8 | 94.3 | 85-120 | | % | 1 | | 08/06/14 21:46 |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Analyst: KCT
Analytical Date/Time: 08/06/14 21:46
Container ID: 1143552008-F

Prep Batch: VXX26236
Prep Method: SW5030B
Prep Date/Time: 08/06/14 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM05-03

Client Sample ID: **SWM05-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552008
Lab Project ID: 1143552

Collection Date: 08/04/14 16:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 8.50 | 2.50 | 0.750 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552008-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM06-03

Client Sample ID: **SWM06-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552009
Lab Project ID: 1143552

Collection Date: 08/04/14 17:10
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 4.83 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552009-C

| <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 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552009-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM06-03

Client Sample ID: **SWM06-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552009
Lab Project ID: 1143552

Collection Date: 08/04/14 17:10
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 8.00 | 1.67 | 0.500 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552009-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM07-03

Client Sample ID: **SWM07-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552010
Lab Project ID: 1143552

Collection Date: 08/04/14 17:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 19.2 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552010-C

| <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 | 1360 | 90.9 | 90.9 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552010-A

Print Date: 08/12/2014 2:27:33PM



Results of **SWM07-03**

Client Sample ID: **SWM07-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552010
Lab Project ID: 1143552

Collection Date: 08/04/14 17:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/11/14 22:59 |
| Acenaphthylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Benzo(a)Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Benzo[a]pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Benzo[b]Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Benzo[g,h,i]perylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Benzo[k]fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Chrysene | 0.0701 | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Dibenzo[a,h]anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Fluoranthene | 0.0820 | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Fluorene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Indeno[1,2,3-c,d] pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Naphthalene | 0.100 U | 0.100 | 0.0310 | ug/L | 1 | | 08/11/14 22:59 |
| Phenanthrene | 0.0539 | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Pyrene | 0.149 | 0.0500 | 0.0150 | ug/L | 1 | | 08/11/14 22:59 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 59.9 | 50-110 | | % | 1 | | 08/11/14 22:59 |
| Terphenyl-d14 | 90.7 | 50-135 | | % | 1 | | 08/11/14 22:59 |

Batch Information

Analytical Batch: XMS8218
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/11/14 22:59
Container ID: 1143552010-E

Prep Batch: XXX31654
Prep Method: SW3520C
Prep Date/Time: 08/10/14 11:10
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM07-03

Client Sample ID: **SWM07-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552010
Lab Project ID: 1143552

Collection Date: 08/04/14 17:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/06/14 22:03 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:03 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 22:03 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/06/14 22:03 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 22:03 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:03 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:03 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/06/14 22:03 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:03 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 112 | 70-120 | | % | 1 | | 08/06/14 22:03 |
| 4-Bromofluorobenzene | 99.9 | 75-120 | | % | 1 | | 08/06/14 22:03 |
| Toluene-d8 | 95.2 | 85-120 | | % | 1 | | 08/06/14 22:03 |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Analyst: KCT
Analytical Date/Time: 08/06/14 22:03
Container ID: 1143552010-F

Prep Batch: VXX26236
Prep Method: SW5030B
Prep Date/Time: 08/06/14 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM07-03

Client Sample ID: **SWM07-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552010
Lab Project ID: 1143552

Collection Date: 08/04/14 17:34
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 232 | 10.0 | 3.00 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552010-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM08-03

Client Sample ID: **SWM08-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552011
Lab Project ID: 1143552

Collection Date: 08/04/14 17:56
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 6.06 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552011-C

| <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 | 2000 | 9.01 | 9.01 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552011-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM08-03

Client Sample ID: **SWM08-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552011
Lab Project ID: 1143552

Collection Date: 08/04/14 17:56
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 25.3 | 3.33 | 1.00 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552011-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM08-03 Dup

Client Sample ID: **SWM08-03 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552012
Lab Project ID: 1143552

Collection Date: 08/04/14 17:59
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 6.50 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552012-C

| <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 | 2500 | 100 | 100 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552012-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM08-03 Dup

Client Sample ID: **SWM08-03 Dup**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552012
Lab Project ID: 1143552

Collection Date: 08/04/14 17:59
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 25.3 | 3.33 | 1.00 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552012-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM09-03

Client Sample ID: **SWM09-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552013
Lab Project ID: 1143552

Collection Date: 08/04/14 18:21
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 5.36 | 2.00 | 2.00 | mg/L | 1 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552013-C

| <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 | 1500 | 9.01 | 9.01 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552013-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM09-03

Client Sample ID: **SWM09-03**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1143552013
 Lab Project ID: 1143552

Collection Date: 08/04/14 18:21
 Received Date: 08/04/14 19:03
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

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 | 0.0735 U | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Acenaphthylene | 0.0735 U | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Anthracene | 0.0735 U | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Benzo(a)Anthracene | 0.136 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Benzo[a]pyrene | 0.134 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Benzo[b]Fluoranthene | 0.329 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Benzo[g,h,i]perylene | 0.148 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Benzo[k]fluoranthene | 0.0838 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Chrysene | 0.353 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Dibenzo[a,h]anthracene | 0.0735 U | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Fluoranthene | 0.602 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Fluorene | 0.0735 U | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Indeno[1,2,3-c,d] pyrene | 0.0735 U | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Naphthalene | 0.147 U | 0.147 | 0.0456 | ug/L | 1 | | 08/11/14 23:14 |
| Phenanthrene | 0.158 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Pyrene | 0.404 | 0.0735 | 0.0221 | ug/L | 1 | | 08/11/14 23:14 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 72.6 | 50-110 | | % | 1 | | 08/11/14 23:14 |
| Terphenyl-d14 | 105 | 50-135 | | % | 1 | | 08/11/14 23:14 |

Batch Information

Analytical Batch: XMS8218
 Analytical Method: EPA 625M SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 08/11/14 23:14
 Container ID: 1143552013-E

Prep Batch: XXX31654
 Prep Method: SW3520C
 Prep Date/Time: 08/10/14 11:10
 Prep Initial Wt./Vol.: 680 mL
 Prep Extract Vol: 1 mL

Print Date: 08/12/2014 2:27:33PM



Results of **SWM09-03**

Client Sample ID: **SWM09-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552013
Lab Project ID: 1143552

Collection Date: 08/04/14 18:21
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/06/14 22:19 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:19 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 22:19 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/06/14 22:19 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 22:19 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:19 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:19 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/06/14 22:19 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 22:19 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 114 | 70-120 | | % | 1 | | 08/06/14 22:19 |
| 4-Bromofluorobenzene | 98.5 | 75-120 | | % | 1 | | 08/06/14 22:19 |
| Toluene-d8 | 87.1 | 85-120 | | % | 1 | | 08/06/14 22:19 |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Analyst: KCT
Analytical Date/Time: 08/06/14 22:19
Container ID: 1143552013-F

Prep Batch: VXX26236
Prep Method: SW5030B
Prep Date/Time: 08/06/14 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:33PM



Results of SWM09-03

Client Sample ID: **SWM09-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552013
Lab Project ID: 1143552

Collection Date: 08/04/14 18:21
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 45.0 | 5.00 | 1.50 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552013-B

Print Date: 08/12/2014 2:27:33PM



Results of SWM10-03

Client Sample ID: **SWM10-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552014
Lab Project ID: 1143552

Collection Date: 08/04/14 18:38
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/05/14 15:00 |

Batch Information

Analytical Batch: BOD4999
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/05/14 15:00
Container ID: 1143552014-C

| <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 | 1400 | 9.01 | 9.01 | col/100mL | 1 | | 08/04/14 21:16 |

Batch Information

Analytical Batch: BTF13661
Analytical Method: SM21 9222D
Analyst: MEV
Analytical Date/Time: 08/04/14 21:16
Container ID: 1143552014-A

Print Date: 08/12/2014 2:27:33PM



Results of SWM10-03

Client Sample ID: **SWM10-03**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552014
Lab Project ID: 1143552

Collection Date: 08/04/14 18:38
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 13.0 | 5.00 | 1.50 | mg/L | 1 | | 08/05/14 16:23 |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/05/14 16:23
Container ID: 1143552014-B

Print Date: 08/12/2014 2:27:33PM



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1143552015
Lab Project ID: 1143552

Collection Date: 08/04/14 14:30
Received Date: 08/04/14 19:03
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/06/14 20:40 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 20:40 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 20:40 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/06/14 20:40 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/06/14 20:40 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 20:40 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 20:40 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/06/14 20:40 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/06/14 20:40 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 120 | 70-120 | | % | 1 | | 08/06/14 20:40 |
| 4-Bromofluorobenzene | 98.4 | 75-120 | | % | 1 | | 08/06/14 20:40 |
| Toluene-d8 | 92.8 | 85-120 | | % | 1 | | 08/06/14 20:40 |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Analyst: KCT
Analytical Date/Time: 08/06/14 20:40
Container ID: 1143552015-A

Prep Batch: VXX26236
Prep Method: SW5030B
Prep Date/Time: 08/06/14 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:33PM



Method Blank

Blank ID: MB for HBN 1625159 [BOD/4999]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1225022

QC for Samples:

1143552001, 1143552002, 1143552005, 1143552006, 1143552007, 1143552008, 1143552009, 1143552010, 1143552011, 1143552012, 1143552013, 1143552014

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: BOD4999

Analytical Method: SM21 5210B

Instrument:

Analyst: WLF

Analytical Date/Time: 8/5/2014 3:00:00PM

Print Date: 08/12/2014 2:27:37PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143552 [BOD4999]

Blank Spike Lab ID: 1225023

Date Analyzed: 08/05/2014 15:00

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143552001, 1143552002, 1143552005, 1143552006, 1143552007, 1143552008, 1143552009, 1143552010, 1143552011, 1143552012, 1143552013, 1143552014

Results by SM21 5210B

| Parameter | Blank Spike (mg/L) | | | CL |
|---------------------------|--------------------|--------|---------|--------------|
| | Spike | Result | Rec (%) | |
| Biochemical Oxygen Demand | 198 | 198 | 100 | (84.6-115.4 |

Batch Information

Analytical Batch: **BOD4999**
Analytical Method: **SM21 5210B**
Instrument:
Analyst: **WLF**

Prep Batch:
Prep Method:
Prep Date/Time:
Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL
Dup Init Wt./Vol.: Extract Vol:

Print Date: 08/12/2014 2:27:38PM



Method Blank

Blank ID: MB for HBN 1625116 [BTF/13661]
Blank Lab ID: 1224884

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1143552001, 1143552002, 1143552005, 1143552006, 1143552007, 1143552008, 1143552009, 1143552010, 1143552011, 1143552012, 1143552013, 1143552014

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: BTF13661
Analytical Method: SM21 9222D
Instrument:
Analyst: MEV
Analytical Date/Time: 8/4/2014 9:16:00PM

Print Date: 08/12/2014 2:27:40PM



Method Blank

Blank ID: MB for HBN 1625132 [STS/4486]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1224933

QC for Samples:

1143552001, 1143552002, 1143552005, 1143552006, 1143552007, 1143552008, 1143552009, 1143552010, 1143552011, 1143552012, 1143552013, 1143552014

Results by SM21 2540D

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|------------------------|----------------|---------------|-----------|--------------|
| Total Suspended Solids | 0.250U | 0.500 | 0.150 | mg/L |

Batch Information

Analytical Batch: STS4486

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Analytical Date/Time: 8/5/2014 4:23:44PM

Print Date: 08/12/2014 2:27:42PM



Duplicate Sample Summary

Original Sample ID: 1143516004

Duplicate Sample ID: 1224936

QC for Samples:

1143552001, 1143552002, 1143552005, 1143552006, 1143552007, 1143552008

Analysis Date: 08/05/2014 16:23

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 | 1520 | 1540 | 1.30 | 5.00 |

Batch Information

Analytical Batch: STS4486

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 08/12/2014 2:27:43PM



Duplicate Sample Summary

Original Sample ID: 1143552008

Duplicate Sample ID: 1224937

Analysis Date: 08/05/2014 16:23

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1143552001, 1143552002, 1143552005, 1143552006, 1143552007, 1143552008, 1143552009, 1143552010, 1143552011, 1143552012, 1143552013, 1143552014

Results by SM21 2540D

| <u>NAME</u> | <u>Original ()</u> | <u>Duplicate ()</u> | <u>RPD (%)</u> | <u>RPD CL</u> |
|------------------------|---------------------|----------------------|----------------|---------------|
| Total Suspended Solids | 8.50 | 8.50 | 0.00 | 5.00 |

Batch Information

Analytical Batch: STS4486

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 08/12/2014 2:27:43PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143552 [STS4486]
Blank Spike Lab ID: 1224934
Date Analyzed: 08/05/2014 16:23

Spike Duplicate ID: LCSD for HBN 1143552 [STS4486]
Spike Duplicate Lab ID: 1224935
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143552001, 1143552002, 1143552005, 1143552006, 1143552007, 1143552008, 1143552009, 1143552010, 1143552011, 1143552012, 1143552013, 1143552014

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 | 45.5 | 91 | 50 | 46.0 | 92 | (75-125) | 1.10 | (< 5) |

Batch Information

Analytical Batch: STS4486
Analytical Method: SM21 2540D
Instrument:
Analyst: WLF

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

Print Date: 08/12/2014 2:27:45PM



Method Blank

Blank ID: MB for HBN 1625317 [VXX/26236]
Blank Lab ID: 1225708

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1143552002, 1143552005, 1143552008, 1143552010, 1143552013, 1143552015

Results by EPA 602/624

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|-----------------------|----------------|---------------|-----------|--------------|
| 1,2-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,3-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,4-Dichlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Benzene | 0.200U | 0.400 | 0.120 | ug/L |
| Chlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Ethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| o-Xylene | 0.500U | 1.00 | 0.310 | ug/L |
| P & M -Xylene | 1.00U | 2.00 | 0.620 | ug/L |
| Toluene | 0.500U | 1.00 | 0.310 | ug/L |
| Surrogates | | | | |
| 1,2-Dichloroethane-D4 | 110 | 70-120 | | % |
| 4-Bromofluorobenzene | 101 | 75-120 | | % |
| Toluene-d8 | 97.6 | 85-120 | | % |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Instrument: VPA 780/5975 GC/MS
Analyst: KCT
Analytical Date/Time: 8/6/2014 4:50:00PM

Prep Batch: VXX26236
Prep Method: SW5030B
Prep Date/Time: 8/6/2014 12:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:46PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143552 [VXX26236]
 Blank Spike Lab ID: 1225709
 Date Analyzed: 08/06/2014 17:14

Spike Duplicate ID: LCSD for HBN 1143552 [VXX26236]
 Spike Duplicate Lab ID: 1225710
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143552002, 1143552005, 1143552008, 1143552010, 1143552013, 1143552015

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 | 32.0 | 107 | 30 | 32.6 | 109 | (70-120) | 1.90 | (< 20) |
| 1,3-Dichlorobenzene | 30 | 33.6 | 112 | 30 | 32.4 | 108 | (75-125) | 3.80 | (< 20) |
| 1,4-Dichlorobenzene | 30 | 34.1 | 114 | 30 | 33.8 | 113 | (75-125) | 0.85 | (< 20) |
| Benzene | 30 | 31.3 | 104 | 30 | 32.2 | 107 | (80-120) | 2.60 | (< 20) |
| Chlorobenzene | 30 | 32.2 | 107 | 30 | 30.2 | 101 | (80-120) | 6.40 | (< 20) |
| Ethylbenzene | 30 | 29.8 | 100 | 30 | 29.9 | 100 | (75-125) | 0.27 | (< 20) |
| o-Xylene | 30 | 33.2 | 111 | 30 | 32.8 | 109 | (80-120) | 1.30 | (< 20) |
| P & M -Xylene | 60 | 66.6 | 111 | 60 | 67.3 | 112 | (75-130) | 1.00 | (< 20) |
| Toluene | 30 | 32.1 | 107 | 30 | 35.3 | 118 | (75-120) | 9.60 | (< 20) |

Surrogates

| | | | | | | | | | |
|-----------------------|----|--|-----|----|--|-----|------------|------|--|
| 1,2-Dichloroethane-D4 | 30 | | 103 | 30 | | 100 | (70-120) | 3.60 | |
| 4-Bromofluorobenzene | 30 | | 103 | 30 | | 98 | (75-120) | 4.30 | |
| Toluene-d8 | 30 | | 99 | 30 | | 108 | (85-120) | 8.40 | |

Batch Information

Analytical Batch: **VMS14346**
 Analytical Method: **EPA 602/624**
 Instrument: **VPA 780/5975 GC/MS**
 Analyst: **KCT**

Prep Batch: **VXX26236**
 Prep Method: **SW5030B**
 Prep Date/Time: **08/06/2014 00:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dup Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 08/12/2014 2:27:47PM



Billable Matrix Spike Summary

Original Sample ID: 1143552002
MS Sample ID: 1143552003 BMS
MSD Sample ID: 1143552004 BMSD

Analysis Date: 08/06/2014 21:13
Analysis Date: 08/06/2014 18:11
Analysis Date: 08/06/2014 18:28
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 | 31.5 | 105 | 30.0 | 33.0 | 110 | 70-120 | 4.60 | (< 20) |
| 1,3-Dichlorobenzene | 1.00U | 30.0 | 32.1 | 107 | 30.0 | 34.1 | 114 | 75-125 | 6.00 | (< 20) |
| 1,4-Dichlorobenzene | 0.500U | 30.0 | 32.7 | 109 | 30.0 | 34.4 | 115 | 75-125 | 5.10 | (< 20) |
| Benzene | 0.400U | 30.0 | 31.3 | 104 | 30.0 | 32.6 | 109 | 80-120 | 3.90 | (< 20) |
| Chlorobenzene | 0.500U | 30.0 | 31.5 | 105 | 30.0 | 32.4 | 108 | 80-120 | 3.00 | (< 20) |
| Ethylbenzene | 1.00U | 30.0 | 29.1 | 97 | 30.0 | 30.3 | 101 | 75-125 | 4.10 | (< 20) |
| o-Xylene | 1.00U | 30.0 | 31.7 | 106 | 30.0 | 33.2 | 111 | 80-120 | 4.60 | (< 20) |
| P & M -Xylene | 2.00U | 60.0 | 64.2 | 107 | 60.0 | 67.5 | 112 | 75-130 | 5.00 | (< 20) |
| Toluene | 1.00U | 30.0 | 31.4 | 105 | 30.0 | 32.2 | 107 | 75-120 | 2.40 | (< 20) |
| Surrogates | | | | | | | | | | |
| 1,2-Dichloroethane-D4 | | 30.0 | 32.1 | 107 | 30.0 | 29.5 | 98 | 70-120 | 8.50 | |
| 4-Bromofluorobenzene | | 30.0 | 29.9 | 100 | 30.0 | 29.7 | 99 | 75-120 | 0.70 | |
| Toluene-d8 | | 30.0 | 29 | 97 | 30.0 | 29.5 | 98 | 85-120 | 1.60 | |

Batch Information

Analytical Batch: VMS14346
Analytical Method: EPA 602/624
Instrument: VPA 780/5975 GC/MS
Analyst: KCT
Analytical Date/Time: 8/6/2014 6:11:00PM

Prep Batch: VXX26236
Prep Method: Volatiles Extraction 8240/8260 FULL
Prep Date/Time: 8/6/2014 12:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 08/12/2014 2:27:49PM



Method Blank

Blank ID: MB for HBN 1625361 [XXX/31654]
Blank Lab ID: 1225850

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1143552002, 1143552005, 1143552008, 1143552010, 1143552013

Results by EPA 625M SIMS (PAH)

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|--------------------------|----------------|---------------|-----------|--------------|
| Acenaphthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Acenaphthylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo(a)Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[a]pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[b]Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[g,h,i]perylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[k]fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Chrysene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Dibenzo[a,h]anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluorene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Naphthalene | 0.0500U | 0.100 | 0.0310 | ug/L |
| Phenanthrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Surrogates | | | | |
| 2-Fluorobiphenyl | 76.1 | 50-110 | | % |
| Terphenyl-d14 | 96 | 50-135 | | % |

Batch Information

Analytical Batch: XMS8218
Analytical Method: EPA 625M SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 8/11/2014 5:30:00PM

Prep Batch: XXX31654
Prep Method: SW3520C
Prep Date/Time: 8/10/2014 11:10:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 08/12/2014 2:27:49PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1143552 [XXX31654]
 Blank Spike Lab ID: 1225851
 Date Analyzed: 08/11/2014 17:45

Spike Duplicate ID: LCSD for HBN 1143552
 [XXX31654]
 Spike Duplicate Lab ID: 1225852
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1143552002, 1143552005, 1143552008, 1143552010, 1143552013

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 | 0.323 | 65 | 0.5 | 0.335 | 67 | (45-110) | 3.70 | (< 30) |
| Acenaphthylene | 0.5 | 0.321 | 64 | 0.5 | 0.338 | 68 | (50-105) | 5.30 | (< 30) |
| Anthracene | 0.5 | 0.372 | 74 | 0.5 | 0.388 | 78 | (55-110) | 4.40 | (< 30) |
| Benzo(a)Anthracene | 0.5 | 0.436 | 87 | 0.5 | 0.441 | 88 | (55-110) | 0.96 | (< 30) |
| Benzo[a]pyrene | 0.5 | 0.426 | 85 | 0.5 | 0.439 | 88 | (55-110) | 3.10 | (< 30) |
| Benzo[b]Fluoranthene | 0.5 | 0.460 | 92 | 0.5 | 0.485 | 97 | (45-120) | 5.30 | (< 30) |
| Benzo[g,h,i]perylene | 0.5 | 0.467 | 93 | 0.5 | 0.463 | 93 | (40-125) | 0.73 | (< 30) |
| Benzo[k]fluoranthene | 0.5 | 0.482 | 96 | 0.5 | 0.442 | 89 | (45-125) | 8.60 | (< 30) |
| Chrysene | 0.5 | 0.455 | 91 | 0.5 | 0.454 | 91 | (55-110) | 0.21 | (< 30) |
| Dibenzo[a,h]anthracene | 0.5 | 0.479 | 96 | 0.5 | 0.472 | 94 | (40-125) | 1.50 | (< 30) |
| Fluoranthene | 0.5 | 0.397 | 79 | 0.5 | 0.395 | 79 | (55-115) | 0.64 | (< 30) |
| Fluorene | 0.5 | 0.336 | 67 | 0.5 | 0.347 | 69 | (50-110) | 3.20 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.5 | 0.476 | 95 | 0.5 | 0.467 | 93 | (45-125) | 2.00 | (< 30) |
| Naphthalene | 0.5 | 0.301 | 60 | 0.5 | 0.313 | 63 | (40-100) | 3.60 | (< 30) |
| Phenanthrene | 0.5 | 0.366 | 73 | 0.5 | 0.390 | 78 | (50-115) | 6.50 | (< 30) |
| Pyrene | 0.5 | 0.386 | 77 | 0.5 | 0.389 | 78 | (50-130) | 0.81 | (< 30) |
| Surrogates | | | | | | | | | |
| 2-Fluorobiphenyl | 0.5 | | 71 | 0.5 | | 71 | (50-110) | 0.70 | |
| Terphenyl-d14 | 0.5 | | 94 | 0.5 | | 91 | (50-135) | 3.10 | |

Batch Information

Analytical Batch: XMS8218
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS

Prep Batch: XXX31654
 Prep Method: SW3520C
 Prep Date/Time: 08/10/2014 11:10
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL
 Dup Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Print Date: 08/12/2014 2:27:51PM



Billable Matrix Spike Summary

Original Sample ID: 1143552002
 MS Sample ID: 1143552003 BMS
 MSD Sample ID: 1143552004 BMSD

Analysis Date: 08/11/2014 18:15
 Analysis Date: 08/11/2014 18:30
 Analysis Date: 08/11/2014 18:45
 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 | 0.556 | .357 | 64 | 0.575 | 0.319 | 56 | 45-110 | 11.40 | (< 30) |
| Acenaphthylene | 0.0556U | 0.556 | .358 | 65 | 0.575 | 0.324 | 56 | 50-105 | 10.20 | (< 30) |
| Anthracene | 0.0556U | 0.556 | .426 | 77 | 0.575 | 0.404 | 70 | 55-110 | 5.10 | (< 30) |
| Benzo(a)Anthracene | 0.0556U | 0.556 | .477 | 86 | 0.575 | 0.500 | 87 | 55-110 | 4.80 | (< 30) |
| Benzo[a]pyrene | 0.0556U | 0.556 | .427 | 77 | 0.575 | 0.410 | 71 | 55-110 | 4.00 | (< 30) |
| Benzo[b]Fluoranthene | 0.0556U | 0.556 | .479 | 86 | 0.575 | 0.532 | 93 | 45-120 | 10.40 | (< 30) |
| Benzo[g,h,i]perylene | 0.0556U | 0.556 | .437 | 79 | 0.575 | 0.418 | 73 | 40-125 | 4.50 | (< 30) |
| Benzo[k]fluoranthene | 0.0556U | 0.556 | .49 | 88 | 0.575 | 0.453 | 79 | 45-125 | 8.00 | (< 30) |
| Chrysene | 0.0556U | 0.556 | .519 | 94 | 0.575 | 0.520 | 91 | 55-110 | 0.10 | (< 30) |
| Dibenzo[a,h]anthracene | 0.0556U | 0.556 | .452 | 81 | 0.575 | 0.432 | 75 | 40-125 | 4.60 | (< 30) |
| Fluoranthene | 0.0556U | 0.556 | .51 | 92 | 0.575 | 0.540 | 94 | 55-115 | 5.70 | (< 30) |
| Fluorene | 0.0556U | 0.556 | .377 | 68 | 0.575 | 0.351 | 61 | 50-110 | 7.20 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.0556U | 0.556 | .442 | 80 | 0.575 | 0.419 | 73 | 45-125 | 5.20 | (< 30) |
| Naphthalene | 0.111U | 0.556 | .32 | 58 | 0.575 | 0.266 | 46 | 40-100 | 18.40 | (< 30) |
| Phenanthrene | 0.0556U | 0.556 | .436 | 78 | 0.575 | 0.426 | 74 | 50-115 | 2.20 | (< 30) |
| Pyrene | 0.0556U | 0.556 | .474 | 85 | 0.575 | 0.507 | 88 | 50-130 | 6.70 | (< 30) |
| Surrogates | | | | | | | | | | |
| 2-Fluorobiphenyl | | 0.556 | .389 | 70 | 0.575 | 0.357 | 62 | 50-110 | 8.40 | |
| Terphenyl-d14 | | 0.556 | .526 | 95 | 0.575 | 0.585 | 102 | 50-135 | 10.70 | |

Batch Information

Analytical Batch: XMS8218
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS
 Analytical Date/Time: 8/11/2014 6:30:00PM

Prep Batch: XXX31654
 Prep Method: Liquid/Liquid Extraction for 625 SIMS
 Prep Date/Time: 8/10/2014 11:10:44AM
 Prep Initial Wt./Vol.: 900.00mL
 Prep Extract Vol: 1.00mL

Print Date: 08/12/2014 2:27:52PM

Chain of Custody Record

1143552



| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | From: Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |
| SGS Quote No. 9901 Date Received: Lab #: | Project #: 5078 |

Project: MOA Stormwater Management **Matrix:** Water **Note:** Samples contain sodium thiosulfate for dechlorination
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 | 8/4/14 | 1430 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ① A | |
| SWM02-03 | 847-1 | } | 1503 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ② A | |
| SWM02-03 Dup | 847-1 | | 1503 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ③ A | |
| SWM03-03 | 1224-1 | | 1554 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ④ A | |
| SWM04-03 | 1224-2 | } | 1601 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑤ A | |
| SWM05-03 | 207-1 | | 1634 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑥ A | |
| SWM06-03 | 314-22 | } | 1710 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑦ A | |
| SWM07-03 | 484-1 | | 1734 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑧ A | |
| SWM08-03 | 86-1 | | 1754 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑨ A | |
| SWM08-03 Dup | 86-1 | } | 1759 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑩ A | |
| SWM09-03 | 499-1 | | 1821 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑪ A | |
| SWM10-03 | 525-2 | ↙ | 1838 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | ⑫ 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: <i>Mark J Savoie</i> | Date/Time: 8/4/14 1856 | Transporter: by hand | Received By: <i>[Signature]</i> | Date/Time: |
| Relinquished By: | Date/Time: | Transporter: | Received By: <i>[Signature]</i> | Date/Time: 8/4/14 1903 |

Chain of Custody Record

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | From: Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |
| SGS Quote No. 9901 Date Received: Lab #: | Project #: 5078 Matrix: Water Project: MOA Stormwater Management Complete by: 2 weeks |

1143552



| 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 | 8/2/14 | 1430 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ① B | |
| SWM02-03 | 847-1 | | 1503 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ② B | |
| SWM02-03 Dup | 847-1 | | 1503 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ③ B | |
| SWM03-03 | 1224-1 | | 1554 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ④ B | |
| SWM04-03 | 1224-2 | | 1601 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑤ B | |
| SWM05-03 | 207-1 | | 1634 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑥ B | |
| SWM06-03 | 314-22 | | 1716 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑦ B | |
| SWM07-03 | 484-1 | | 1734 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑧ B | |
| SWM08-03 | 86-1 | | 1756 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑩ B | |
| SWM08-03 Dup | 86-1 | | 1759 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑪ B | |
| SWM09-03 | 499-1 | | 1821 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑫ B | |
| SWM10-03 | 525-2 | | 1838 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | ⑬ 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: <i>Maniah J Savoie</i> | Transporter: <i>by hand</i> | Received By: <i>[Signature]</i> |
| Relinquished By: <i>[Signature]</i> | Date/Time: <i>8/4/14 1856</i> | Date/Time: <i>8/4/14 19:03</i> |

6.5 #206
5.9 #238
3.4 #71

Chain of Custody Record

| | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To: SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor | SGS Quote No. 9901 Date Received: Lab #: | From: Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|

1143552



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 | 8/4/14 | 1430 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ① C | |
| SWM02-03 | 847-1 | | 1503 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ② C | |
| SWM02-03 Dup | 847-1 | | 1503 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ③ C | |
| SWM03-03 | 1224-1 | | 1534 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ④ C | |
| SWM04-03 | 1224-2 | | 1601 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑤ C | |
| SWM05-03 | 207-1 | | 1634 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑥ C | |
| SWM06-03 | 314-22 | | 1710 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑦ C | |
| SWM07-03 | 484-1 | | 1734 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑧ C | |
| SWM08-03 | 86-1 | | 1756 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑨ C | |
| SWM08-03 Dup | 86-1 | | 1759 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑩ C | |
| SWM09-03 | 499-1 | | 1821 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | ⑪ C | |
| SWM10-03 | 525-2 | 1838 | Samp | BOD (SM 5210B) | 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:

| | | |
|-------------------------------------------------------------|---------------------------------------|---------------------------------------------|
| Sampled and Relinquished By: <i>Mark J Savoie</i> | Transporter: <i>by hand</i> | Received By: |
| Date/Time: 8/4/14 1856 | Date/Time: | Date/Time: 8/4/14 19:03 |
| Relinquished By: | Transporter: | Received By: <i>Mark J Savoie</i> |
| Date/Time: | Date/Time: | Date/Time: |

Chain of Custody Record

To:
 SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 (907) 561-5301 Fax
 Contact: Forest Taylor

SGS Quote No. 9901
 Date Received:
 Lab #:

From:
 Kinnetic Laboratories, Inc
 704 West 2nd Avenue
 Anchorage, AK 99501
 (907) 276-6178
 (907) 278-6881 Fax
 Contact: Mark Savoie

1143552



Project: MOA Stormwater Management
Matrix: Water
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 |
|--------------|------------|-------------|-------------|-------------|---------------------|-----------|--------|----------------|---------------------|------------------------|
| SWM02-03 | 847-1 | 8/4/14 | 1503 | Samp/MS/MSD | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 6 | 234 234-E 314 | 314 A-B |
| SWM02-03 Dup | 847-1 | | 1503 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | 5 P-E | |
| SWM05-03 | 207-1 | | 1634 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | 6 D-E | |
| SWM07-03 | 484-1 | | 1734 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | 10 D-E | |
| SWM09-03 | 499-1 | | 1821 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | 13 D-E 28/14/14 | |
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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: <i>Mariah J Savoie</i> | Transporter <i>by hand</i> | Received By: <i>[Signature]</i> |
| Relinquished By: | Date/Time: 8/4/14 1856 | Date/Time: |
| | | Date/Time: 8/4/14 19203 |

Chain of Custody Record

1143552



From:
Kinnetic Laboratories, Inc
704 West 2nd Avenue
Anchorage, AK 99501
(907) 276-6178
(907) 278-6881 Fax
Contact: Mark Savoie

SGS Quote No. 9901
Date Received:
Lab #:

To:
SGS Environmental Services, Inc.
2100 West Potter Drive
Anchorage, AK 99518
(907) 562-2343
(907) 561-5301 Fax
Contact: Forest Taylor

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 |
|--------------|------------|-------------|-------------|-------------|-------------------|-----------|-----------|----------------|----------|------------------------|
| SWM02-03 | 847-1 | 8/4/14 | 1503 | Samp/MS/MSD | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 9 | (2) F-H | (2) F-H 8/4/14 |
| SWM02-03 Dup | 847-1 | | 1503 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | (3) F-H | (3) F-H C-E |
| SWM05-03 | 207-1 | | 1634 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | (8) F-H | |
| SWM07-03 | 484-1 | | 1734 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | (10) F-H | |
| SWM09-03 | 499-1 | | 1821 | 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 | |
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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>Manish J Saver</i> | 8/4/14 1856 | by hand | | |
| Relinquished By: | | Transporter | Received By: | Date/Time: |
| | | | <i>David Finnegan</i> | 8/4/14 1903 |



1143552



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 | <input checked="" type="checkbox"/> Exemption permitted if sampler hand carries/delivers. |
| Temperature blank compliant* (i.e., 0-6°C after CF)? If >6°C, were samples collected <8 hours ago? If <0°C, were all sample containers ice free? Cooler ID: <u>1</u> @ <u>6.5</u> w/ Therm.ID: <u>200</u> Cooler ID: <u>2</u> @ <u>5.9</u> w/ Therm.ID: <u># 238</u> Cooler ID: <u>3</u> @ <u>3.4</u> w/ Therm.ID: <u># 71</u> Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ 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." | Yes <u>No</u> N/A <u>Yes</u> No N/A <u>Yes</u> No N/A | <input type="checkbox"/> Exemption permitted if chilled & collected <8 hrs ago. <i>Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.</i> |
| Delivery method (specify all that apply): <u>Client (hand carried)</u> USPS Lynden AK Air Alert Courier UPS FedEx RAVN C&D Delivery Carlisle Pen Air Warp Speed Other: _____ → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog? | Tracking/AB # or see attached or <u>N/A</u> Yes No <u>N/A</u> | |
| → For samples received with payment, note amount (\$) and whether cash / check / CC (circle one) was received. → For samples received in FBKS , ANCH staff will verify all criteria are reviewed. SRF initiated in FBKS by: | | |
| Were samples received within hold time? | <u>Yes</u> No N/A | <i>Note: Refer to form F-083 "Sample Guide" for hold times. Note: If times differ <1hr, record details and login per COC.</i> |
| Do samples match COC* (i.e., sample IDs, dates/times collected)? | <u>Yes</u> No N/A | |
| Were analyses requested unambiguous? | <u>Yes</u> No N/A | |
| Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other: | <u>Yes</u> No | |
| Were proper containers (type/mass/volume/preservative*) used? Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? 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 <u>Yes</u> No N/A <u>Yes</u> No N/A Yes No <u>N/A</u> | <input type="checkbox"/> Exemption permitted for metals (e.g., 200.8/6020A). |
| 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 special handling (e.g., "MI" soils, foreign soils, lab filter for dissolved..., lab extract for volatiles, Ref Lab, limited volume), were bottles/paperwork flagged (e.g., sticker)? | 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 <u>N/A</u> | <u>2/28/14</u> Fecal, TSS, BOD |
| For SITE-SPECIFIC QC , e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly? | <u>Yes</u> No N/A | MS, MSD |
| 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: TL PM notified: N/A |
| Was PEER REVIEW of <i>sample numbering/labeling completed</i> ? | Yes No <u>N/A</u> | Peer Reviewed by: N/A |

Additional notes (if applicable):

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



Sample Containers and Preservatives

| <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> | <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> |
|---------------------|-------------------------------------------------------------------|----------------------------|---------------------|-------------------------------------------------------------------|----------------------------|
| 1143552001-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1143552008-H | HCL to pH < 2 | OK |
| 1143552001-B | No Preservative Required | OK | 1143552009-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1143552001-C | No Preservative Required | OK | 1143552009-B | No Preservative Required | OK |
| 1143552002-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1143552009-C | No Preservative Required | OK |
| 1143552002-B | No Preservative Required | OK | 1143552010-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1143552002-C | No Preservative Required | OK | 1143552010-B | No Preservative Required | OK |
| 1143552002-D | No Preservative Required | OK | 1143552010-C | No Preservative Required | OK |
| 1143552002-E | No Preservative Required | OK | 1143552010-D | No Preservative Required | OK |
| 1143552002-F | HCL to pH < 2 | OK | 1143552010-E | No Preservative Required | OK |
| 1143552002-G | HCL to pH < 2 | OK | 1143552010-F | HCL to pH < 2 | OK |
| 1143552002-H | HCL to pH < 2 | OK | 1143552010-G | HCL to pH < 2 | OK |
| 1143552003-A | No Preservative Required | OK | 1143552010-H | HCL to pH < 2 | OK |
| 1143552003-B | No Preservative Required | OK | 1143552011-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1143552003-C | HCL to pH < 2 | OK | 1143552011-B | No Preservative Required | OK |
| 1143552003-D | HCL to pH < 2 | OK | 1143552011-C | No Preservative Required | OK |
| 1143552003-E | HCL to pH < 2 | OK | 1143552012-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1143552004-A | No Preservative Required | OK | 1143552012-B | No Preservative Required | OK |
| 1143552004-B | No Preservative Required | OK | 1143552012-C | No Preservative Required | OK |
| 1143552004-C | HCL to pH < 2 | OK | 1143552013-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1143552004-D | HCL to pH < 2 | OK | 1143552013-B | No Preservative Required | OK |
| 1143552004-E | HCL to pH < 2 | OK | 1143552013-C | No Preservative Required | OK |
| 1143552005-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1143552013-D | No Preservative Required | OK |
| 1143552005-B | No Preservative Required | OK | 1143552013-E | No Preservative Required | OK |
| 1143552005-C | No Preservative Required | OK | 1143552013-F | HCL to pH < 2 | OK |
| 1143552005-D | No Preservative Required | OK | 1143552013-G | HCL to pH < 2 | OK |
| 1143552005-E | No Preservative Required | OK | 1143552013-H | HCL to pH < 2 | OK |
| 1143552005-F | HCL to pH < 2 | OK | 1143552014-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1143552005-G | HCL to pH < 2 | OK | 1143552014-B | No Preservative Required | OK |
| 1143552005-H | HCL to pH < 2 | OK | 1143552014-C | No Preservative Required | OK |
| 1143552006-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1143552015-A | HCL to pH < 2 | OK |
| 1143552006-B | No Preservative Required | OK | 1143552015-B | HCL to pH < 2 | OK |
| 1143552006-C | No Preservative Required | OK | 1143552015-C | HCL to pH < 2 | OK |
| 1143552007-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | | | |
| 1143552007-B | No Preservative Required | OK | | | |
| 1143552007-C | No Preservative Required | OK | | | |
| 1143552008-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | | | |
| 1143552008-B | No Preservative Required | OK | | | |
| 1143552008-C | No Preservative Required | OK | | | |
| 1143552008-D | No Preservative Required | OK | | | |
| 1143552008-E | No Preservative Required | OK | | | |
| 1143552008-F | HCL to pH < 2 | OK | | | |
| 1143552008-G | HCL to pH < 2 | OK | | | |

Appendix B4

Laboratory Data Package Storm Event #4



Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.
704 W 2nd Avenue
Anchorage, AK 99501
(907)276-6178

Report Number: **1144034**

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 Forest 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.

Forest Taylor
Project Manager
Forest.Taylor@sgs.com

Date

Print Date: 09/04/2014 12:16:02PM

Case Narrative

SGS Client: **Kinnetic Laboratories, Inc.**
SGS Project: **1144034**
Project Name/Site: **5078 MOA Stormwater Management**
Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

*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: 09/04/2014 12:16:02PM

Report of Manual Integrations

| <u>Laboratory ID</u> | <u>Client Sample ID</u> | <u>Analytical Batch</u> | <u>Analyte</u> | <u>Reason</u> |
|----------------------------|--------------------------------|-------------------------|----------------------|---------------|
| EPA 625M SIMS (PAH) | | | | |
| 1144034010 | SWM07-04 | XMS8258 | Chrysene | BLC |
| 1144034010 | SWM07-04 | XMS8258 | Pyrene | RP |
| 1144034013 | SWM09-04 | XMS8258 | Benzo[b]Fluoranthene | BLC |
| 1229808 | LCS for HBN 1626268 [XXX/31831 | XMS8258 | Benzo[b]Fluoranthene | PNF |
| 1229808 | LCS for HBN 1626268 [XXX/31831 | XMS8258 | Benzo[k]fluoranthene | RP |
| 1229808 | LCS for HBN 1626268 [XXX/31831 | XMS8258 | Chrysene | RP |
| 1229809 | LCSD for HBN 1626268 [XXX/3183 | XMS8258 | Benzo[b]Fluoranthene | PNF |
| 1229809 | LCSD for HBN 1626268 [XXX/3183 | XMS8258 | Benzo[k]fluoranthene | RP |
| 1229809 | LCSD for HBN 1626268 [XXX/3183 | XMS8258 | Chrysene | 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.

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>), 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., 1/2 of the LOQ) |
| 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 | 1144034001 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM02-04 | 1144034002 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM02-04 MS | 1144034003 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM02-04 MSD | 1144034004 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM02-04 DUP | 1144034005 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM03-04 | 1144034006 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM04-04 | 1144034007 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM05-04 | 1144034008 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM06-04 | 1144034009 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM07-04 | 1144034010 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM08-04 | 1144034011 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM08-04 DUP | 1144034012 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM09-04 | 1144034013 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| SWM10-04 | 1144034014 | 08/24/2014 | 08/24/2014 | Water (Surface, Eff., Ground) |
| Trip Blank | 1144034015 | 08/24/2014 | 08/24/2014 | 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: **SWM01-04**

Lab Sample ID: 1144034001

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.45 | mg/L |
| Fecal Coliform | 580 | col/100mL |
| Total Suspended Solids | 6.67 | mg/L |

Client Sample ID: **SWM02-04**

Lab Sample ID: 1144034002

Microbiology Laboratory

Polynuclear Aromatics GC/MS

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 51 | col/100mL |
| Fluoranthene | 0.0574 | ug/L |
| Total Suspended Solids | 2.50 | mg/L |

Client Sample ID: **SWM02-04 DUP**

Lab Sample ID: 1144034005

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 45 | col/100mL |
| Total Suspended Solids | 2.50 | mg/L |

Client Sample ID: **SWM03-04**

Lab Sample ID: 1144034006

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|------------------------|---------------|--------------|
| Fecal Coliform | 20 | col/100mL |
| Total Suspended Solids | 4.00 | mg/L |

Client Sample ID: **SWM04-04**

Lab Sample ID: 1144034007

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 2.60 | mg/L |
| Fecal Coliform | 2800 | col/100mL |
| Total Suspended Solids | 9.67 | mg/L |

Client Sample ID: **SWM05-04**

Lab Sample ID: 1144034008

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 4.20 | mg/L |
| Fecal Coliform | 350 | col/100mL |
| Total Suspended Solids | 6.00 | mg/L |

Client Sample ID: **SWM06-04**

Lab Sample ID: 1144034009

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 3.07 | mg/L |
| Fecal Coliform | 330 | col/100mL |
| Total Suspended Solids | 6.67 | mg/L |

Client Sample ID: **SWM07-04**

Lab Sample ID: 1144034010

Microbiology Laboratory

Polynuclear Aromatics GC/MS

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 12.1 | mg/L |
| Fecal Coliform | 2100 | col/100mL |
| Benzo[g,h,i]perylene | 0.0875 | ug/L |
| Chrysene | 0.150 | ug/L |
| Fluoranthene | 0.183 | ug/L |
| Phenanthrene | 0.116 | ug/L |
| Pyrene | 0.257 | ug/L |
| Total Suspended Solids | 98.3 | mg/L |

Print Date: 09/04/2014 12:16:05PM

Detectable Results Summary

Client Sample ID: **SWM08-04**

Lab Sample ID: 1144034011

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 3.74 | mg/L |
| Fecal Coliform | 764 | col/100mL |
| Total Suspended Solids | 28.5 | mg/L |

Client Sample ID: **SWM08-04 DUP**

Lab Sample ID: 1144034012

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 3.47 | mg/L |
| Fecal Coliform | 580 | col/100mL |
| Total Suspended Solids | 28.5 | mg/L |

Client Sample ID: **SWM09-04**

Lab Sample ID: 1144034013

Microbiology Laboratory

Polynuclear Aromatics GC/MS

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 6.46 | mg/L |
| Fecal Coliform | 919 | col/100mL |
| Benzo(a)Anthracene | 0.0966 | ug/L |
| Benzo[a]pyrene | 0.0906 | ug/L |
| Benzo[b]Fluoranthene | 0.341 | ug/L |
| Benzo[g,h,i]perylene | 0.119 | ug/L |
| Chrysene | 0.249 | ug/L |
| Fluoranthene | 0.489 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.0880 | ug/L |
| Phenanthrene | 0.129 | ug/L |
| Pyrene | 0.328 | ug/L |
| Total Suspended Solids | 39.0 | mg/L |

Waters Department

Client Sample ID: **SWM10-04**

Lab Sample ID: 1144034014

Microbiology Laboratory

Waters Department

| <u>Parameter</u> | <u>Result</u> | <u>Units</u> |
|---------------------------|---------------|--------------|
| Biochemical Oxygen Demand | 3.17 | mg/L |
| Fecal Coliform | 11800 | col/100mL |
| Total Suspended Solids | 87.3 | mg/L |



Results of **SWM01-04**

Client Sample ID: **SWM01-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034001
Lab Project ID: 1144034

Collection Date: 08/24/14 13:30
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.45 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034001-B

| <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 | 580 | 10.0 | 10.0 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034001-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM01-04

Client Sample ID: **SWM01-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034001
Lab Project ID: 1144034

Collection Date: 08/24/14 13:30
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 1.67 | 0.500 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034001-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM02-04**

Client Sample ID: **SWM02-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034002
Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034002-B

| <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 | 51 | 1.00 | 1.00 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034002-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM02-04

Client Sample ID: **SWM02-04**
 Client Project ID: **5078 MOA Stormwater Management**
 Lab Sample ID: 1144034002
 Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
 Received Date: 08/24/14 17:52
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

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 | | 08/28/14 15:22 |
| Acenaphthylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 15:22 |
| Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 15:22 |
| Benzo(a)Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Benzo[a]pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Benzo[b]Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Benzo[g,h,i]perylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Benzo[k]fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Chrysene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Dibenzo[a,h]anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Fluoranthene | 0.0574 | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Fluorene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 15:22 |
| Indeno[1,2,3-c,d] pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Naphthalene | 0.100 U | 0.100 | 0.0310 | ug/L | 1 | | 08/28/14 15:22 |
| Phenanthrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 15:22 |
| Pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/29/14 15:27 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 63.8 | 50-110 | | % | 1 | | 08/28/14 15:22 |
| Terphenyl-d14 | 91.4 | 50-135 | | % | 1 | | 08/29/14 15:27 |

Batch Information

Analytical Batch: XMS8258
 Analytical Method: EPA 625M SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 08/28/14 15:22
 Container ID: 1144034002-G

Prep Batch: XXX31831
 Prep Method: SW3520C
 Prep Date/Time: 08/27/14 08:55
 Prep Initial Wt./Vol.: 1000 mL
 Prep Extract Vol: 1 mL

Analytical Batch: XMS8262
 Analytical Method: EPA 625M SIMS (PAH)
 Analyst: RTS
 Analytical Date/Time: 08/29/14 15:27
 Container ID: 1144034002-G

Prep Batch: XXX31831
 Prep Method: SW3520C
 Prep Date/Time: 08/27/14 08:55
 Prep Initial Wt./Vol.: 1000 mL
 Prep Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:06PM



Results of SWM02-04

Client Sample ID: **SWM02-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034002
Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 22:08 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:08 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:08 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/25/14 22:08 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:08 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:08 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:08 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/25/14 22:08 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:08 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 101 | 70-120 | | % | 1 | | 08/25/14 22:08 |
| 4-Bromofluorobenzene | 104 | 75-120 | | % | 1 | | 08/25/14 22:08 |
| Toluene-d8 | 98 | 85-120 | | % | 1 | | 08/25/14 22:08 |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 08/25/14 22:08
Container ID: 1144034002-E

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 08/25/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:06PM



Results of SWM02-04

Client Sample ID: **SWM02-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034002
Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.50 | 1.25 | 0.375 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034002-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM02-04 DUP**

Client Sample ID: **SWM02-04 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034005
Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034005-B

| <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 | 45 | 1.00 | 1.00 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034005-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM02-04 DUP

Client Sample ID: SWM02-04 DUP
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1144034005
Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS8258
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/28/14 16:06
Container ID: 1144034005-G

Prep Batch: XXX31831
Prep Method: SW3520C
Prep Date/Time: 08/27/14 08:55
Prep Initial Wt./Vol.: 830 mL
Prep Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:06PM



Results of SWM02-04 DUP

Client Sample ID: **SWM02-04 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034005
Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 22:24 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:24 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:24 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/25/14 22:24 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:24 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:24 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:24 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/25/14 22:24 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:24 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 99.8 | 70-120 | | % | 1 | | 08/25/14 22:24 |
| 4-Bromofluorobenzene | 106 | 75-120 | | % | 1 | | 08/25/14 22:24 |
| Toluene-d8 | 96.3 | 85-120 | | % | 1 | | 08/25/14 22:24 |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 08/25/14 22:24
Container ID: 1144034005-E

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 08/25/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:06PM



Results of SWM02-04 DUP

Client Sample ID: **SWM02-04 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034005
Lab Project ID: 1144034

Collection Date: 08/24/14 14:13
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.50 | 1.25 | 0.375 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034005-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM03-04**

Client Sample ID: **SWM03-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034006
Lab Project ID: 1144034

Collection Date: 08/24/14 14:45
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034006-B

| <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 | 20 | 1.00 | 1.00 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034006-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM03-04

Client Sample ID: **SWM03-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034006
Lab Project ID: 1144034

Collection Date: 08/24/14 14:45
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 4.00 | 1.67 | 0.500 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034006-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM04-04**

Client Sample ID: **SWM04-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034007
Lab Project ID: 1144034

Collection Date: 08/24/14 14:53
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 2.60 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034007-B

| <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 | 2800 | 100 | 100 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034007-A

Print Date: 09/04/2014 12:16:06PM



Results of **SWM04-04**

Client Sample ID: **SWM04-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034007
Lab Project ID: 1144034

Collection Date: 08/24/14 14:53
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 9.67 | 1.67 | 0.500 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034007-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM05-04**

Client Sample ID: **SWM05-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034008
Lab Project ID: 1144034

Collection Date: 08/24/14 15:20
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 4.20 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034008-B

| <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 | 350 | 10.0 | 10.0 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034008-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM05-04

Client Sample ID: SWM05-04
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1144034008
Lab Project ID: 1144034

Collection Date: 08/24/14 15:20
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with their respective concentrations and quality indicators.

Batch Information

Analytical Batch: XMS8264
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 09/02/14 16:51
Container ID: 1144034008-H

Prep Batch: XXX31868
Prep Method: SW3520C
Prep Date/Time: 08/30/14 09:20
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:06PM



Results of **SWM05-04**

Client Sample ID: **SWM05-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034008
Lab Project ID: 1144034

Collection Date: 08/24/14 15:20
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 22:41 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:41 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:41 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/25/14 22:41 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:41 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:41 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:41 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/25/14 22:41 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:41 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 104 | 70-120 | | % | 1 | | 08/25/14 22:41 |
| 4-Bromofluorobenzene | 108 | 75-120 | | % | 1 | | 08/25/14 22:41 |
| Toluene-d8 | 98.4 | 85-120 | | % | 1 | | 08/25/14 22:41 |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 08/25/14 22:41
Container ID: 1144034008-E

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 08/25/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:06PM



Results of SWM05-04

Client Sample ID: **SWM05-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034008
Lab Project ID: 1144034

Collection Date: 08/24/14 15:20
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 6.00 | 1.67 | 0.500 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034008-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM06-04**

Client Sample ID: **SWM06-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034009
Lab Project ID: 1144034

Collection Date: 08/24/14 16:01
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.07 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034009-B

| <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 | 330 | 10.0 | 10.0 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034009-A

Print Date: 09/04/2014 12:16:06PM



Results of **SWM06-04**

Client Sample ID: **SWM06-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034009
Lab Project ID: 1144034

Collection Date: 08/24/14 16:01
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 1.67 | 0.500 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034009-C

Print Date: 09/04/2014 12:16:06PM



Results of SWM07-04

Client Sample ID: **SWM07-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034010
Lab Project ID: 1144034

Collection Date: 08/24/14 16:27
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 12.1 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034010-B

| <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 | 2100 | 100 | 100 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034010-A

Print Date: 09/04/2014 12:16:06PM



Results of **SWM07-04**

Client Sample ID: **SWM07-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034010
Lab Project ID: 1144034

Collection Date: 08/24/14 16:27
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/28/14 16:50 |
| Acenaphthylene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 16:50 |
| Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 16:50 |
| Benzo(a)Anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 16:50 |
| Benzo[a]pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 16:50 |
| Benzo[b]Fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 16:50 |
| Benzo[g,h,i]perylene | 0.0875 | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 16:50 |
| Benzo[k]fluoranthene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 16:50 |
| Chrysene | 0.150 | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 16:50 |
| Dibenzo[a,h]anthracene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 16:50 |
| Fluoranthene | 0.183 | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 16:50 |
| Fluorene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 16:50 |
| Indeno[1,2,3-c,d] pyrene | 0.0500 U | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 16:50 |
| Naphthalene | 0.100 U | 0.100 | 0.0310 | ug/L | 1 | | 08/28/14 16:50 |
| Phenanthrene | 0.116 | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 16:50 |
| Pyrene | 0.257 | 0.0500 | 0.0150 | ug/L | 1 | | 08/28/14 16:50 |
| Surrogates | | | | | | | |
| 2-Fluorobiphenyl | 54.6 | 50-110 | | % | 1 | | 08/28/14 16:50 |
| Terphenyl-d14 | 79.2 | 50-135 | | % | 1 | | 08/28/14 16:50 |

Batch Information

Analytical Batch: XMS8258
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/28/14 16:50
Container ID: 1144034010-G

Prep Batch: XXX31831
Prep Method: SW3520C
Prep Date/Time: 08/27/14 08:55
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:06PM



Results of **SWM07-04**

Client Sample ID: **SWM07-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034010
Lab Project ID: 1144034

Collection Date: 08/24/14 16:27
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 22:57 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:57 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:57 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/25/14 22:57 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 22:57 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:57 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:57 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/25/14 22:57 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 22:57 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 103 | 70-120 | | % | 1 | | 08/25/14 22:57 |
| 4-Bromofluorobenzene | 106 | 75-120 | | % | 1 | | 08/25/14 22:57 |
| Toluene-d8 | 101 | 85-120 | | % | 1 | | 08/25/14 22:57 |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 08/25/14 22:57
Container ID: 1144034010-E

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 08/25/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:06PM



Results of SWM07-04

Client Sample ID: **SWM07-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034010
Lab Project ID: 1144034

Collection Date: 08/24/14 16:27
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 98.3 | 4.17 | 1.25 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034010-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM08-04**

Client Sample ID: **SWM08-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034011
Lab Project ID: 1144034

Collection Date: 08/24/14 16:40
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.74 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034011-B

| <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 | 764 | 9.09 | 9.09 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034011-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM08-04

Client Sample ID: **SWM08-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034011
Lab Project ID: 1144034

Collection Date: 08/24/14 16:40
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 28.5 | 2.50 | 0.750 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034011-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM08-04 DUP**

Client Sample ID: **SWM08-04 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034012
Lab Project ID: 1144034

Collection Date: 08/24/14 16:40
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.47 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034012-B

| <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 | 580 | 10.0 | 10.0 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034012-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM08-04 DUP

Client Sample ID: **SWM08-04 DUP**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034012
Lab Project ID: 1144034

Collection Date: 08/24/14 16:40
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 28.5 | 2.50 | 0.750 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034012-C

Print Date: 09/04/2014 12:16:06PM



Results of **SWM09-04**

Client Sample ID: **SWM09-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034013
Lab Project ID: 1144034

Collection Date: 08/24/14 17:10
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 6.46 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034013-B

| <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 | 919 | 9.01 | 9.01 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034013-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM09-04

Client Sample ID: SWM09-04
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1144034013
Lab Project ID: 1144034

Collection Date: 08/24/14 17:10
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS8258
Analytical Method: EPA 625M SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/28/14 16:35
Container ID: 1144034013-G

Prep Batch: XXX31831
Prep Method: SW3520C
Prep Date/Time: 08/27/14 08:55
Prep Initial Wt./Vol.: 940 mL
Prep Extract Vol: 1 mL



Results of **SWM09-04**

Client Sample ID: **SWM09-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034013
Lab Project ID: 1144034

Collection Date: 08/24/14 17:10
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 23:13 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 23:13 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 23:13 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/25/14 23:13 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 23:13 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 23:13 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 23:13 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/25/14 23:13 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 23:13 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 102 | 70-120 | | % | 1 | | 08/25/14 23:13 |
| 4-Bromofluorobenzene | 103 | 75-120 | | % | 1 | | 08/25/14 23:13 |
| Toluene-d8 | 99.8 | 85-120 | | % | 1 | | 08/25/14 23:13 |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 08/25/14 23:13
Container ID: 1144034013-E

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 08/25/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:06PM



Results of **SWM09-04**

Client Sample ID: **SWM09-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034013
Lab Project ID: 1144034

Collection Date: 08/24/14 17:10
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 39.0 | 2.50 | 0.750 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034013-C

Print Date: 09/04/2014 12:16:06PM



Results of SWM10-04

Client Sample ID: **SWM10-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034014
Lab Project ID: 1144034

Collection Date: 08/24/14 17:25
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 3.17 | 2.00 | 2.00 | mg/L | 1 | | 08/25/14 09:58 |

Batch Information

Analytical Batch: BOD5016
Analytical Method: SM21 5210B
Analyst: WLF
Analytical Date/Time: 08/25/14 09:58
Container ID: 1144034014-B

| <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 | 11800 | 90.9 | 90.9 | col/100mL | 1 | | 08/24/14 19:55 |

Batch Information

Analytical Batch: BTF13705
Analytical Method: SM21 9222D
Analyst: SLC
Analytical Date/Time: 08/24/14 19:55
Container ID: 1144034014-A

Print Date: 09/04/2014 12:16:06PM



Results of SWM10-04

Client Sample ID: **SWM10-04**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034014
Lab Project ID: 1144034

Collection Date: 08/24/14 17:25
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | 87.3 | 3.33 | 1.00 | mg/L | 1 | | 08/26/14 09:16 |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Analyst: WLF
Analytical Date/Time: 08/26/14 09:16
Container ID: 1144034014-C

Print Date: 09/04/2014 12:16:06PM



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **5078 MOA Stormwater Management**
Lab Sample ID: 1144034015
Lab Project ID: 1144034

Collection Date: 08/24/14 13:30
Received Date: 08/24/14 17:52
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

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 | | 08/25/14 21:35 |
| 1,3-Dichlorobenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 21:35 |
| 1,4-Dichlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 21:35 |
| Benzene | 0.400 U | 0.400 | 0.120 | ug/L | 1 | | 08/25/14 21:35 |
| Chlorobenzene | 0.500 U | 0.500 | 0.150 | ug/L | 1 | | 08/25/14 21:35 |
| Ethylbenzene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 21:35 |
| o-Xylene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 21:35 |
| P & M -Xylene | 2.00 U | 2.00 | 0.620 | ug/L | 1 | | 08/25/14 21:35 |
| Toluene | 1.00 U | 1.00 | 0.310 | ug/L | 1 | | 08/25/14 21:35 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 | 97.6 | 70-120 | | % | 1 | | 08/25/14 21:35 |
| 4-Bromofluorobenzene | 106 | 75-120 | | % | 1 | | 08/25/14 21:35 |
| Toluene-d8 | 104 | 85-120 | | % | 1 | | 08/25/14 21:35 |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Analyst: NRB
Analytical Date/Time: 08/25/14 21:35
Container ID: 1144034015-B

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 08/25/14 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:06PM



Method Blank

Blank ID: MB for HBN 1626155 [BOD/5016]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1229295

QC for Samples:

1144034001, 1144034002, 1144034005, 1144034006, 1144034007, 1144034008, 1144034009, 1144034010, 1144034011, 1144034012, 1144034013, 1144034014

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: BOD5016

Analytical Method: SM21 5210B

Instrument:

Analyst: WLF

Analytical Date/Time: 8/25/2014 9:58:00AM

Print Date: 09/04/2014 12:16:10PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144034 [BOD5016]

Blank Spike Lab ID: 1229296

Date Analyzed: 08/25/2014 09:58

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144034001, 1144034002, 1144034005, 1144034006, 1144034007, 1144034008, 1144034009, 1144034010, 1144034011, 1144034012, 1144034013, 1144034014

Results by SM21 5210B

| Parameter | Blank Spike (mg/L) | | | CL |
|---------------------------|--------------------|--------|---------|--------------|
| | Spike | Result | Rec (%) | |
| Biochemical Oxygen Demand | 198 | 194 | 98 | (84.6-115.4 |

Batch Information

Analytical Batch: **BOD5016**
Analytical Method: **SM21 5210B**
Instrument:
Analyst: **WLF**

Prep Batch:
Prep Method:
Prep Date/Time:
Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL
Dup Init Wt./Vol.: Extract Vol:

Print Date: 09/04/2014 12:16:11PM



Method Blank

Blank ID: MB for HBN 1626157 [BTF/13705]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1229315

QC for Samples:

1144034001, 1144034002, 1144034005, 1144034006, 1144034007, 1144034008, 1144034009, 1144034010, 1144034011, 1144034012, 1144034013, 1144034014

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: BTF13705

Analytical Method: SM21 9222D

Instrument:

Analyst: SLC

Analytical Date/Time: 8/24/2014 7:55:00PM

Print Date: 09/04/2014 12:16:14PM



Method Blank

Blank ID: MB for HBN 1626174 [STS/4514]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1229388

QC for Samples:

1144034001, 1144034002, 1144034005, 1144034006, 1144034007, 1144034008, 1144034009, 1144034010, 1144034011, 1144034012, 1144034013, 1144034014

Results by SM21 2540D

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|------------------------|----------------|---------------|-----------|--------------|
| Total Suspended Solids | 0.250U | 0.500 | 0.150 | mg/L |

Batch Information

Analytical Batch: STS4514

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Analytical Date/Time: 8/26/2014 9:16:44AM

Print Date: 09/04/2014 12:16:15PM

Duplicate Sample Summary

Original Sample ID: 1144034001

Duplicate Sample ID: 1229391

QC for Samples:

1144034001, 1144034002, 1144034005, 1144034006

Analysis Date: 08/26/2014 09:16

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 | 6.67 | 6.67 | 0.00 | 5.00 |

Batch Information

Analytical Batch: STS4514

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF



Duplicate Sample Summary

Original Sample ID: 1144034006

Duplicate Sample ID: 1229392

Analysis Date: 08/26/2014 09:16

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1144034002, 1144034005, 1144034006, 1144034007, 1144034008, 1144034009, 1144034010, 1144034011, 1144034012, 1144034013, 1144034014

Results by SM21 2540D

| <u>NAME</u> | <u>Original ()</u> | <u>Duplicate ()</u> | <u>RPD (%)</u> | <u>RPD CL</u> |
|------------------------|--------------------|---------------------|----------------|---------------|
| Total Suspended Solids | 4.00 | 4.00 | 0.00 | 5.00 |

Batch Information

Analytical Batch: STS4514

Analytical Method: SM21 2540D

Instrument:

Analyst: WLF

Print Date: 09/04/2014 12:16:16PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144034 [STS4514]
Blank Spike Lab ID: 1229389
Date Analyzed: 08/26/2014 09:16

Spike Duplicate ID: LCSD for HBN 1144034 [STS4514]
Spike Duplicate Lab ID: 1229390
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144034001, 1144034002, 1144034005, 1144034006, 1144034007, 1144034008, 1144034009, 1144034010, 1144034011, 1144034012, 1144034013, 1144034014

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 | 48.5 | 97 | 50 | 49.0 | 98 | (75-125) | 1.00 | (< 5) |

Batch Information

Analytical Batch: STS4514
Analytical Method: SM21 2540D
Instrument:
Analyst: WLF

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

Print Date: 09/04/2014 12:16:17PM



Method Blank

Blank ID: MB for HBN 1626182 [VXX/26335]
Blank Lab ID: 1229424

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1144034002, 1144034005, 1144034008, 1144034010, 1144034013, 1144034015

Results by EPA 602/624

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|-----------------------|----------------|---------------|-----------|--------------|
| 1,2-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,3-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,4-Dichlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Benzene | 0.200U | 0.400 | 0.120 | ug/L |
| Chlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Ethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| o-Xylene | 0.500U | 1.00 | 0.310 | ug/L |
| P & M -Xylene | 1.00U | 2.00 | 0.620 | ug/L |
| Toluene | 0.500U | 1.00 | 0.310 | ug/L |
| Surrogates | | | | |
| 1,2-Dichloroethane-D4 | 101 | 70-120 | | % |
| 4-Bromofluorobenzene | 104 | 75-120 | | % |
| Toluene-d8 | 102 | 85-120 | | % |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 8/25/2014 7:10:00PM

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 8/25/2014 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:18PM



Leaching Blank

Blank ID: LB for HBN 1626181 [TCLP/7483]
Blank Lab ID: 1229412

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1144034002, 1144034005, 1144034008, 1144034010, 1144034013, 1144034015

Results by EPA 602/624

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|-----------------------|----------------|---------------|-----------|--------------|
| 1,4-Dichlorobenzene | 12.5U | 25.0 | 7.50 | ug/L |
| Benzene | 10.0U | 20.0 | 6.00 | ug/L |
| Chlorobenzene | 12.5U | 25.0 | 7.50 | ug/L |
| Surrogates | | | | |
| 1,2-Dichloroethane-D4 | 100 | 70-120 | | % |
| 4-Bromofluorobenzene | 107 | 75-120 | | % |
| Toluene-d8 | 99.7 | 85-120 | | % |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 8/25/2014 9:51:00PM

Prep Batch: VXX26335
Prep Method: SW5030B
Prep Date/Time: 8/25/2014 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:18PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144034 [VXX26335]
 Blank Spike Lab ID: 1229425
 Date Analyzed: 08/25/2014 19:31

Spike Duplicate ID: LCSD for HBN 1144034 [VXX26335]
 Spike Duplicate Lab ID: 1229426
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144034002, 1144034005, 1144034008, 1144034010, 1144034013, 1144034015

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 | 26.0 | 87 | 30 | 27.3 | 91 | (70-120) | 4.80 | (< 20) |
| 1,3-Dichlorobenzene | 30 | 27.6 | 92 | 30 | 28.2 | 94 | (75-125) | 2.10 | (< 20) |
| 1,4-Dichlorobenzene | 30 | 27.8 | 93 | 30 | 28.8 | 96 | (75-125) | 3.40 | (< 20) |
| Benzene | 30 | 27.8 | 93 | 30 | 28.7 | 96 | (80-120) | 3.20 | (< 20) |
| Chlorobenzene | 30 | 26.9 | 90 | 30 | 27.9 | 93 | (80-120) | 3.80 | (< 20) |
| Ethylbenzene | 30 | 28.0 | 94 | 30 | 28.1 | 94 | (75-125) | 0.14 | (< 20) |
| o-Xylene | 30 | 28.3 | 94 | 30 | 29.2 | 97 | (80-120) | 2.90 | (< 20) |
| P & M -Xylene | 60 | 56.6 | 94 | 60 | 57.9 | 97 | (75-130) | 2.30 | (< 20) |
| Toluene | 30 | 26.5 | 88 | 30 | 26.6 | 89 | (75-120) | 0.49 | (< 20) |

Surrogates

| | | | | | | | | | |
|-----------------------|----|--|----|----|--|-----|------------|------|--|
| 1,2-Dichloroethane-D4 | 30 | | 98 | 30 | | 100 | (70-120) | 2.60 | |
| 4-Bromofluorobenzene | 30 | | 94 | 30 | | 96 | (75-120) | 2.80 | |
| Toluene-d8 | 30 | | 98 | 30 | | 100 | (85-120) | 1.60 | |

Batch Information

Analytical Batch: **VMS14404**
 Analytical Method: **EPA 602/624**
 Instrument: **HP 5890 Series II MS3 VNA**
 Analyst: **NRB**

Prep Batch: **VXX26335**
 Prep Method: **SW5030B**
 Prep Date/Time: **08/25/2014 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dup Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 09/04/2014 12:16:19PM



Billable Matrix Spike Summary

Original Sample ID: 1144034002
MS Sample ID: 1144034003 BMS
MSD Sample ID: 1144034004 BMSD

Analysis Date: 08/25/2014 22:08
Analysis Date: 08/25/2014 20:12
Analysis Date: 08/25/2014 20:29
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 | 27.8 | 93 | 30.0 | 28.0 | 93 | 70-120 | 0.64 | (< 20) |
| 1,3-Dichlorobenzene | 1.00U | 30.0 | 28.4 | 95 | 30.0 | 28.4 | 95 | 75-125 | 0.32 | (< 20) |
| 1,4-Dichlorobenzene | 0.500U | 30.0 | 29.3 | 98 | 30.0 | 29.4 | 98 | 75-125 | 0.44 | (< 20) |
| Benzene | 0.400U | 30.0 | 28.7 | 96 | 30.0 | 29.6 | 99 | 80-120 | 2.90 | (< 20) |
| Chlorobenzene | 0.500U | 30.0 | 29.1 | 97 | 30.0 | 29.9 | 100 | 80-120 | 2.60 | (< 20) |
| Ethylbenzene | 1.00U | 30.0 | 29.9 | 100 | 30.0 | 30.8 | 103 | 75-125 | 3.00 | (< 20) |
| o-Xylene | 1.00U | 30.0 | 30.6 | 102 | 30.0 | 30.8 | 103 | 80-120 | 0.62 | (< 20) |
| P & M -Xylene | 2.00U | 60.0 | 62.4 | 104 | 60.0 | 61.8 | 103 | 75-130 | 0.98 | (< 20) |
| Toluene | 1.00U | 30.0 | 28.5 | 95 | 30.0 | 28.8 | 96 | 75-120 | 1.10 | (< 20) |
| Surrogates | | | | | | | | | | |
| 1,2-Dichloroethane-D4 | | 30.0 | 30.2 | 101 | 30.0 | 29.5 | 98 | 70-120 | 2.30 | |
| 4-Bromofluorobenzene | | 30.0 | 28.6 | 95 | 30.0 | 28.3 | 94 | 75-120 | 1.20 | |
| Toluene-d8 | | 30.0 | 30.6 | 102 | 30.0 | 31.0 | 103 | 85-120 | 1.30 | |

Batch Information

Analytical Batch: VMS14404
Analytical Method: EPA 602/624
Instrument: HP 5890 Series II MS3 VNA
Analyst: NRB
Analytical Date/Time: 8/25/2014 8:12:00PM

Prep Batch: VXX26335
Prep Method: Volatiles Extraction 8240/8260 FULL
Prep Date/Time: 8/25/2014 6:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 09/04/2014 12:16:20PM



Method Blank

Blank ID: MB for HBN 1626268 [XXX/31831]
Blank Lab ID: 1229807

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1144034002, 1144034005, 1144034010, 1144034013

Results by EPA 625M SIMS (PAH)

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|--------------------------|----------------|---------------|-----------|--------------|
| Acenaphthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Acenaphthylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo(a)Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[a]pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[b]Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[g,h,i]perylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[k]fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Chrysene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Dibenzo[a,h]anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluorene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Naphthalene | 0.0500U | 0.100 | 0.0310 | ug/L |
| Phenanthrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Surrogates | | | | |
| 2-Fluorobiphenyl | 80.1 | 50-110 | | % |
| Terphenyl-d14 | 109 | 50-135 | | % |

Batch Information

Analytical Batch: XMS8258
Analytical Method: EPA 625M SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 8/28/2014 2:25:00PM

Prep Batch: XXX31831
Prep Method: SW3520C
Prep Date/Time: 8/27/2014 8:55:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:20PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144034 [XXX31831]
 Blank Spike Lab ID: 1229808
 Date Analyzed: 08/28/2014 14:39

Spike Duplicate ID: LCSD for HBN 1144034
 [XXX31831]
 Spike Duplicate Lab ID: 1229809
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144034002, 1144034005, 1144034010, 1144034013

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 | 0.387 | 77 | 0.5 | 0.339 | 68 | (45-110) | 13.10 | (< 30) |
| Acenaphthylene | 0.5 | 0.378 | 76 | 0.5 | 0.335 | 67 | (50-105) | 11.80 | (< 30) |
| Anthracene | 0.5 | 0.390 | 78 | 0.5 | 0.357 | 71 | (55-110) | 8.80 | (< 30) |
| Benzo(a)Anthracene | 0.5 | 0.437 | 87 | 0.5 | 0.405 | 81 | (55-110) | 7.50 | (< 30) |
| Benzo[a]pyrene | 0.5 | 0.373 | 75 | 0.5 | 0.342 | 68 | (55-110) | 8.70 | (< 30) |
| Benzo[b]Fluoranthene | 0.5 | 0.416 | 83 | 0.5 | 0.418 | 84 | (45-120) | 0.55 | (< 30) |
| Benzo[g,h,i]perylene | 0.5 | 0.363 | 73 | 0.5 | 0.331 | 66 | (40-125) | 9.50 | (< 30) |
| Benzo[k]fluoranthene | 0.5 | 0.520 | 104 | 0.5 | 0.430 | 86 | (45-125) | 19.10 | (< 30) |
| Chrysene | 0.5 | 0.510 | 102 | 0.5 | 0.475 | 95 | (55-110) | 7.10 | (< 30) |
| Dibenzo[a,h]anthracene | 0.5 | 0.391 | 78 | 0.5 | 0.336 | 67 | (40-125) | 15.20 | (< 30) |
| Fluoranthene | 0.5 | 0.499 | 100 | 0.5 | 0.488 | 98 | (55-115) | 2.30 | (< 30) |
| Fluorene | 0.5 | 0.375 | 75 | 0.5 | 0.338 | 68 | (50-110) | 10.50 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.5 | 0.391 | 78 | 0.5 | 0.335 | 67 | (45-125) | 15.30 | (< 30) |
| Naphthalene | 0.5 | 0.350 | 70 | 0.5 | 0.334 | 67 | (40-100) | 5.00 | (< 30) |
| Phenanthrene | 0.5 | 0.383 | 77 | 0.5 | 0.351 | 70 | (50-115) | 8.90 | (< 30) |
| Pyrene | 0.5 | 0.477 | 96 | 0.5 | 0.444 | 89 | (50-130) | 7.20 | (< 30) |
| Surrogates | | | | | | | | | |
| 2-Fluorobiphenyl | 0.5 | | 80 | 0.5 | | 71 | (50-110) | 11.60 | |
| Terphenyl-d14 | 0.5 | | 102 | 0.5 | | 99 | (50-135) | 3.60 | |

Batch Information

Analytical Batch: XMS8258
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS

Prep Batch: XXX31831
 Prep Method: SW3520C
 Prep Date/Time: 08/27/2014 08:55
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL
 Dup Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:21PM



Billable Matrix Spike Summary

Original Sample ID: 1144034002
 MS Sample ID: 1144034003 BMS
 MSD Sample ID: 1144034004 BMSD

Analysis Date: 08/28/2014 15:22
 Analysis Date: 08/28/2014 15:37
 Analysis Date: 08/28/2014 15:51
 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 | 0.500 | .385 | 77 | 0.549 | 0.395 | 72 | 45-110 | 2.70 | (< 30) |
| Acenaphthylene | 0.0500U | 0.500 | .386 | 77 | 0.549 | 0.418 | 76 | 50-105 | 8.00 | (< 30) |
| Anthracene | 0.0500U | 0.500 | .436 | 87 | 0.549 | 0.450 | 82 | 55-110 | 3.20 | (< 30) |
| Fluorene | 0.0500U | 0.500 | .412 | 82 | 0.549 | 0.414 | 75 | 50-110 | 0.57 | (< 30) |
| Naphthalene | 0.100U | 0.500 | .371 | 74 | 0.549 | 0.392 | 71 | 40-100 | 5.40 | (< 30) |
| Phenanthrene | 0.0500U | 0.500 | .441 | 88 | 0.549 | 0.442 | 80 | 50-115 | 0.01 | (< 30) |
| Benzo(a)Anthracene | 0.0500U | 0.500 | .482 | 96 | 0.549 | 0.503 | 92 | 55-110 | 4.20 | (< 30) |
| Benzo[a]pyrene | 0.0500U | 0.500 | .433 | 87 | 0.549 | 0.460 | 84 | 55-110 | 6.00 | (< 30) |
| Benzo[b]Fluoranthene | 0.0500U | 0.500 | .558 | 112 | 0.549 | 0.555 | 101 | 45-120 | 0.66 | (< 30) |
| Benzo[g,h,i]perylene | 0.0500U | 0.500 | .502 | 100 | 0.549 | 0.517 | 94 | 40-125 | 3.10 | (< 30) |
| Benzo[k]fluoranthene | 0.0500U | 0.500 | .463 | 93 | 0.549 | 0.502 | 91 | 45-125 | 8.10 | (< 30) |
| Chrysene | 0.0500U | 0.500 | .533 | 107 | 0.549 | 0.553 | 101 | 55-110 | 3.70 | (< 30) |
| Dibenzo[a,h]anthracene | 0.0500U | 0.500 | .476 | 95 | 0.549 | 0.498 | 91 | 40-125 | 4.50 | (< 30) |
| Fluoranthene | 0.0574 | 0.500 | .554 | 99 | 0.549 | 0.549 | 89 | 55-115 | 0.99 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.0500U | 0.500 | .493 | 99 | 0.549 | 0.508 | 93 | 45-125 | 3.10 | (< 30) |
| Pyrene | 0.0500U | 0.500 | .513 | 103 | 0.549 | 0.524 | 96 | 50-130 | 2.30 | (< 30) |
| Surrogates | | | | | | | | | | |
| 2-Fluorobiphenyl | | 0.500 | .385 | 77 | 0.549 | 0.400 | 73 | 50-110 | 3.80 | |
| Terphenyl-d14 | | 0.500 | .521 | 104 | 0.549 | 0.557 | 101 | 50-135 | 6.70 | |

Batch Information

Analytical Batch: XMS8258
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS
 Analytical Date/Time: 8/28/2014 3:37:00PM

Prep Batch: XXX31831
 Prep Method: Liquid/Liquid Extraction for 625 SIMS
 Prep Date/Time: 8/27/2014 8:55:44AM
 Prep Initial Wt./Vol.: 1,000.00mL
 Prep Extract Vol: 1.00mL

Print Date: 09/04/2014 12:16:22PM



Method Blank

Blank ID: MB for HBN 1629262 [XXX/31868]
Blank Lab ID: 1230669

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1144034008

Results by EPA 625M SIMS (PAH)

| <u>Parameter</u> | <u>Results</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> |
|--------------------------|----------------|---------------|-----------|--------------|
| Acenaphthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Acenaphthylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo(a)Anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[a]pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[b]Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[g,h,i]perylene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Benzo[k]fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Chrysene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Dibenzo[a,h]anthracene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluoranthene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Fluorene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Indeno[1,2,3-c,d] pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Naphthalene | 0.0500U | 0.100 | 0.0310 | ug/L |
| Phenanthrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Pyrene | 0.0250U | 0.0500 | 0.0150 | ug/L |
| Surrogates | | | | |
| 2-Fluorobiphenyl | 70.3 | 50-110 | | % |
| Terphenyl-d14 | 93.3 | 50-135 | | % |

Batch Information

Analytical Batch: XMS8264
Analytical Method: EPA 625M SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: RTS
Analytical Date/Time: 9/2/2014 4:08:00PM

Prep Batch: XXX31868
Prep Method: SW3520C
Prep Date/Time: 8/30/2014 9:20:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:22PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1144034 [XXX31868]
 Blank Spike Lab ID: 1230670
 Date Analyzed: 09/02/2014 16:23

Spike Duplicate ID: LCSD for HBN 1144034
 [XXX31868]
 Spike Duplicate Lab ID: 1230671
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1144034008

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 | 0.359 | 72 | 0.5 | 0.369 | 74 | (45-110) | 2.70 | (< 30) |
| Acenaphthylene | 0.5 | 0.355 | 71 | 0.5 | 0.354 | 71 | (50-105) | 0.26 | (< 30) |
| Anthracene | 0.5 | 0.405 | 81 | 0.5 | 0.384 | 77 | (55-110) | 5.30 | (< 30) |
| Benzo(a)Anthracene | 0.5 | 0.465 | 93 | 0.5 | 0.444 | 89 | (55-110) | 4.60 | (< 30) |
| Benzo[a]pyrene | 0.5 | 0.399 | 80 | 0.5 | 0.394 | 79 | (55-110) | 1.50 | (< 30) |
| Benzo[b]Fluoranthene | 0.5 | 0.459 | 92 | 0.5 | 0.428 | 86 | (45-120) | 7.00 | (< 30) |
| Benzo[g,h,i]perylene | 0.5 | 0.415 | 83 | 0.5 | 0.421 | 84 | (40-125) | 1.50 | (< 30) |
| Benzo[k]fluoranthene | 0.5 | 0.462 | 92 | 0.5 | 0.469 | 94 | (45-125) | 1.60 | (< 30) |
| Chrysene | 0.5 | 0.492 | 98 | 0.5 | 0.471 | 94 | (55-110) | 4.40 | (< 30) |
| Dibenzo[a,h]anthracene | 0.5 | 0.389 | 78 | 0.5 | 0.383 | 77 | (40-125) | 1.40 | (< 30) |
| Fluoranthene | 0.5 | 0.469 | 94 | 0.5 | 0.467 | 94 | (55-115) | 0.45 | (< 30) |
| Fluorene | 0.5 | 0.398 | 80 | 0.5 | 0.399 | 80 | (50-110) | 0.21 | (< 30) |
| Indeno[1,2,3-c,d] pyrene | 0.5 | 0.406 | 81 | 0.5 | 0.411 | 82 | (45-125) | 1.20 | (< 30) |
| Naphthalene | 0.5 | 0.345 | 69 | 0.5 | 0.348 | 70 | (40-100) | 0.99 | (< 30) |
| Phenanthrene | 0.5 | 0.395 | 79 | 0.5 | 0.410 | 82 | (50-115) | 3.70 | (< 30) |
| Pyrene | 0.5 | 0.462 | 93 | 0.5 | 0.456 | 91 | (50-130) | 1.40 | (< 30) |
| Surrogates | | | | | | | | | |
| 2-Fluorobiphenyl | 0.5 | | 72 | 0.5 | | 77 | (50-110) | 7.60 | |
| Terphenyl-d14 | 0.5 | | 92 | 0.5 | | 90 | (50-135) | 1.70 | |

Batch Information

Analytical Batch: XMS8264
 Analytical Method: EPA 625M SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS

Prep Batch: XXX31868
 Prep Method: SW3520C
 Prep Date/Time: 08/30/2014 09:20
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL
 Dup Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Print Date: 09/04/2014 12:16:23PM

1144034



Chain of Custody Record

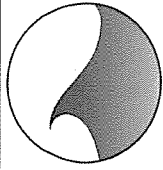
To: SGS Environmental Services, Inc.
2100 West Potter Drive
Anchorage, AK 99518
(907) 562-2343
(907) 561-5301 Fax
Contact: Forest Taylor

From: Kinnetic Labor
704 West 2nd Avenue
Anchorage, AK 99501
(907) 276-6178
(907) 278-6881 Fax
Contact: Mark Savoie

SGS Quote No. 9901

Date Received:

Lab #: _____



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 |
|-----------------|------------|-------------|-------------|-------------|--------------------|----------------|--------|----------------|--------|------------------------|
| ①A SWM01-04 | 1040-3 | 8/24/14 | 1330 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ②A SWM02-04 | 847-1 | | 1413 | Samp | Fecal (SM 9222D) ✓ | 125-ml sterile | <10 °C | 1 | | |
| ③A SWM02-04 Dup | 847-1 | | 1413 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ④A SWM03-04 | 1224-1 | | 1445 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑤A SWM04-04 | 1224-2 | | 1453 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑥A SWM05-04 | 207-1 | | 1520 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑦A SWM06-04 | 314-22 | | 1601 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑧A SWM07-04 | 484-1 | | 1627 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑨A SWM08-04 | 86-1 | | 1646 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑩A SWM08-04 Dup | 86-1 | | 1640 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑪A SWM09-04 | 499-1 | | 1710 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |
| ⑫A SWM10-04 | 525-2 | ✓ | 1725 | Samp | Fecal (SM 9222D) | 125-ml sterile | <10 °C | 1 | | |

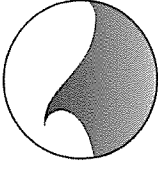
Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet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

Special Instructions/Comments:

TR: 2.1 ✓
#2: 2.0 ✓
#3: 1.3 ✓

| Sampled and Relinquished By: | Date/Time: | Transporter | Received By: | Date/Time: |
|------------------------------|--------------|-------------|--------------|--------------|
| Maria Ann | 8/24/14 1750 | hend | Jay Taylor | 8/24/14 1750 |
| Relinquished By: | Date/Time: | Transporter | Received By: | Date/Time: |

1144034



Chain of Custody Record

To: SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 (907) 561-5301 Fax
 Contact: Forest Taylor

From: Kinnetic Lab
 704 West 2nd Avenue
 Anchorage, AK 99501
 (907) 276-6178
 (907) 278-6881 Fax
 Contact: Mark Savoie

SGS Quote No. 9901
 Date Received:
 Lab #:

Project: MOA Stormwater Management Matrix: Water
 Complete by: 2 weeks Project #: 5078

| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|-----------------|------------|-------------|-------------|-------------|----------------|-----------|--------|----------------|--------|------------------------|
| ①B SWM01-04 | 1040-3 | 8/24/14 | 1330 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ②B SWM02-04 | 847-1 | | 1413 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ③B SWM02-04 Dup | 847-1 | | 1413 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ④B SWM03-04 | 1224-1 | | 1445 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑤B SWM04-04 | 1224-2 | | 1453 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑥B SWM05-04 | 207-1 | | 1520 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑦B SWM06-04 | 314-22 | | 1601 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑧B SWM07-04 | 484-1 | | 1627 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑨B SWM08-04 | 86-1 | | 1640 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑩B SWM08-04 Dup | 86-1 | | 1640 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑪B SWM09-04 | 499-1 | | 1710 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑫B SWM10-04 | 525-2 | | 1725 | Samp | BOD (SM 5210B) | 1-L HDPE | ≤ 6 °C | 1 | | |

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: |
|------------------------------|--------------|-------------|--------------|--------------|
| Mark A. An | 8/24/14 1750 | Mark | Mark Savoie | 8/24/14 1750 |
| Relinquished By: | Date/Time: | Transporter | Received By: | Date/Time: |
| | | | Mark Savoie | 8/24/14 1750 |

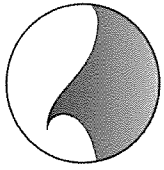
1144034



Chain of Custody Record

To: SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 (907) 561-5301 Fax
 Contact: Forest Taylor

From: Kinnetic Laboratories
 704 West 2nd 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

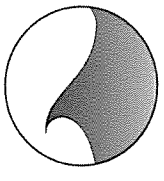
| Sample ID | Outfall ID | Sample Date | Sample Time | Sample Type | Analysis | Container | Pres | No. of Bottles | Lab ID | Condition Upon Receipt |
|-----------------|------------|-------------|-------------|-------------|----------------|-----------|--------|----------------|--------|------------------------|
| ①C SWM01-04 | 1040-3 | 8/24/14 | 1330 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ②C SWM02-04 | 847-1 | | 1413 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ③C SWM02-04 Dup | 847-1 | | 1413 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ④C SWM03-04 | 1224-1 | | 1445 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑤C SWM04-04 | 1224-2 | | 1453 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑥C SWM05-04 | 207-1 | | 1520 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑦C SWM06-04 | 314-22 | | 1601 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑧C SWM07-04 | 484-1 | | 1627 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑨C SWM08-04 | 86-1 | | 1640 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑩C SWM08-04 Dup | 86-1 | | 1640 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑪C SWM09-04 | 499-1 | | 1710 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |
| ⑫C SWM10-04 | 525-2 | | 1725 | Samp | TSS (SM 2540D) | 1-L HDPE | ≤ 6 °C | 1 | | |

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>Mark Am...</i> | 8/24/14 1750 | <i>herg</i> | <i>Mark Am...</i> | |
| | | | <i>Just Jack</i> | 8/24/14 1750 |

1144034



Chain of Custody Record

To: SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 (907) 561-5301 Fax
 Contact: Forest Taylor

SGS Quote No. 9901

Date Received:

Lab #:

From: Kinnetic Laboratories, Inc.
 704 West 2nd 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 |
|-----------------|------------|-------------|-------------|-------------|-------------------|-----------|-----------|----------------|--------|------------------------|
| 20 SWM02-04 | 847-1 | 8/24/14 | 1413 | Samp/MS/MSD | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 9 | | |
| 50 SWM02-04 Dup | 847-1 | | 1413 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| 30 SWM05-04 | 207-1 | | 1520 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| 10 SWM07-04 | 484-1 | | 1627 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| 12 SWM09-04 | 499-1 | | 1710 | Samp | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| 15 Drip Blank | N/A | N/A | N/A | TB | TAH (EPA 602/624) | 40-ml VOA | HCl, ≤6°C | 3 | | |
| | | | | | | | | | | |
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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.

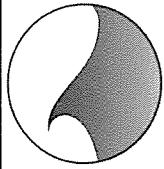
Special Instructions/Comments:

Sampled and Relinquished By: [Signature] Date/Time: 8/24/14 1750

Relinquished By: [Signature] Date/Time: 8/24/14 1750

Transporter: [Signature] Received By: [Signature] Date/Time: 8/24/14 1750

1144034



Chain of Custody Record

To: SGS Environmental Services, Inc.
 2100 West Potter Drive
 Anchorage, AK 99518
 (907) 562-2343
 (907) 561-5301 Fax
 Contact: Forest Taylor

SGS Quote No. 9901
 Date Received:
 Lab #:

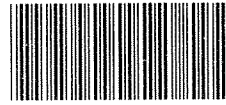
From: Kinneti
 704 West 2nd Avenue
 Anchorage, AK 99501
 (907) 276-6178
 (907) 278-6881 Fax
 Contact: Mark Savoie

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 |
|--------------------|------------|-------------|-------------|-------------|---------------------|-----------|--------|----------------|--------|------------------------|
| ② G-1 SWM02-04 | 847-1 | 8/24/14 | 1413 | Samp/MS/MSD | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 6 | | |
| ③ D-E ④ D-E | 847-1 | | 1413 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑤ G-1 SWM02-04 Dup | 207-1 | | 1520 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑥ G-1 SWM05-04 | 484-1 | | 1629 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑦ G-1 SWM07-04 | 499-1 | | 1710 | Samp | TAqH (EPA 625M SIM) | 1-L AG | ≤ 6 °C | 2 | | |
| ⑧ G-1 SWM09-04 | | | | | | | | | | |
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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.

| Sampled and Relinquished By: | Date/Time: | Transporter | Received By: | Date/Time: |
|------------------------------|--------------|-------------|---------------------------------|-------------------------|
| Maria Aron | 8/24/14 1750 | had | | |
| | | Transporter | Received By: <i>Justin Fugh</i> | Date/Time: 8/24/14 1730 |



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 | <input type="checkbox"/> Exemption permitted if sampler hand carries/delivers. |
| Temperature blank compliant* (i.e., 0-6°C after CF)? If >6°C, were samples collected <8 hours ago? If <0°C, were all sample containers ice free? Cooler ID: <u>1</u> @ <u>2.1</u> w/ Therm.ID: <u>71</u> Cooler ID: <u>2</u> @ <u>2.0</u> w/ Therm.ID: <u>71</u> Cooler ID: <u>3</u> @ <u>1.3</u> w/ Therm.ID: <u>71</u> Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ 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 " <u>ambient</u> " or "chilled." | <u>(Yes)</u> No Yes No <u>(N/A)</u> Yes No <u>(N/A)</u> | <input type="checkbox"/> Exemption permitted if chilled & collected <8 hrs ago. <i>Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.</i> |
| Delivery method (specify all that apply): <u>(Client hand carried)</u> USPS Lynden AK Air <u>(Alert Courier)</u> UPS FedEx RAVN C&D Delivery Carlisle Pen Air Warp Speed Other: _____ → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog? | Tracking/AB # or see attached or N/A Yes No <u>(N/A)</u> | |
| → For samples received with payment, note amount (\$) and whether cash / check / CC (circle one) was received. → For samples received in FBKS , ANCH staff will verify all criteria are reviewed. SRF initiated in FBKS by: | | |
| Were samples received within hold time? Do samples match COC* (i.e., sample IDs, dates/times collected)? Were analyses requested unambiguous? | <u>(Yes)</u> No <u>(N/A)</u> <u>(Yes)</u> No <u>(N/A)</u> <u>(Yes)</u> No <u>(N/A)</u> | <i>Note: Refer to form F-083 "Sample Guide" for hold times. Note: If times differ <1hr, record details and login per COC.</i> |
| 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 <u>(Yes)</u> No | |
| Were proper containers (type/mass/volume/preservative*) used? Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? 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 <u>(N/A)</u> <u>(Yes)</u> No <u>(N/A)</u> <u>(Yes)</u> No <u>(N/A)</u> Yes No <u>(N/A)</u> | <input type="checkbox"/> Exemption permitted for metals (e.g., 200.8/6020A). |
| 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 special handling (e.g., "MI" soils, foreign soils, lab filter for dissolved..., lab extract for volatiles, Ref Lab, limited volume), were bottles/paperwork flagged (e.g., sticker)? | 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 <u>(N/A)</u> | |
| For SITE-SPECIFIC QC , e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly? | Yes No <u>(N/A)</u> | |
| 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: PM notified: <u>(N/A)</u> |
| Was PEER REVIEW of <i>sample numbering/labeling completed</i> ? | Yes No <u>(N/A)</u> | Peer Reviewed by: <u>(N/A)</u> |
| Additional notes (if applicable): | | |

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



Sample Containers and Preservatives

| <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> | <u>Container Id</u> | <u>Preservative</u> | <u>Container Condition</u> |
|---------------------|-------------------------------------------------------------------|----------------------------|---------------------|-------------------------------------------------------------------|----------------------------|
| 1144034001-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1144034008-H | No Preservative Required | OK |
| 1144034001-B | No Preservative Required | OK | 1144034009-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1144034001-C | No Preservative Required | OK | 1144034009-B | No Preservative Required | OK |
| 1144034002-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1144034009-C | No Preservative Required | OK |
| 1144034002-B | No Preservative Required | OK | 1144034010-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1144034002-C | No Preservative Required | OK | 1144034010-B | No Preservative Required | OK |
| 1144034002-D | HCL to pH < 2 | OK | 1144034010-C | No Preservative Required | OK |
| 1144034002-E | HCL to pH < 2 | OK | 1144034010-D | HCL to pH < 2 | OK |
| 1144034002-F | HCL to pH < 2 | OK | 1144034010-E | HCL to pH < 2 | OK |
| 1144034002-G | No Preservative Required | OK | 1144034010-F | HCL to pH < 2 | OK |
| 1144034002-H | No Preservative Required | OK | 1144034010-G | No Preservative Required | OK |
| 1144034003-A | HCL to pH < 2 | OK | 1144034010-H | No Preservative Required | OK |
| 1144034003-B | HCL to pH < 2 | OK | 1144034011-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1144034003-C | HCL to pH < 2 | OK | 1144034011-B | No Preservative Required | OK |
| 1144034003-D | No Preservative Required | OK | 1144034011-C | No Preservative Required | OK |
| 1144034003-E | No Preservative Required | OK | 1144034012-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1144034004-A | HCL to pH < 2 | OK | 1144034012-B | No Preservative Required | OK |
| 1144034004-B | HCL to pH < 2 | OK | 1144034012-C | No Preservative Required | OK |
| 1144034004-C | HCL to pH < 2 | OK | 1144034013-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1144034004-D | No Preservative Required | OK | 1144034013-B | No Preservative Required | OK |
| 1144034004-E | No Preservative Required | OK | 1144034013-C | No Preservative Required | OK |
| 1144034005-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1144034013-D | HCL to pH < 2 | OK |
| 1144034005-B | No Preservative Required | OK | 1144034013-E | HCL to pH < 2 | OK |
| 1144034005-C | No Preservative Required | OK | 1144034013-F | HCL to pH < 2 | OK |
| 1144034005-D | HCL to pH < 2 | OK | 1144034013-G | No Preservative Required | OK |
| 1144034005-E | HCL to pH < 2 | OK | 1144034013-H | No Preservative Required | OK |
| 1144034005-F | HCL to pH < 2 | OK | 1144034014-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK |
| 1144034005-G | No Preservative Required | OK | 1144034014-B | No Preservative Required | OK |
| 1144034005-H | No Preservative Required | OK | 1144034014-C | No Preservative Required | OK |
| 1144034006-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | 1144034015-A | HCL to pH < 2 | OK |
| 1144034006-B | No Preservative Required | OK | 1144034015-B | HCL to pH < 2 | OK |
| 1144034006-C | No Preservative Required | OK | 1144034015-C | HCL to pH < 2 | OK |
| 1144034007-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | | | |
| 1144034007-B | No Preservative Required | OK | | | |
| 1144034007-C | No Preservative Required | OK | | | |
| 1144034008-A | Na ₂ S ₂ O ₃ for Chlorine Reduct | OK | | | |
| 1144034008-B | No Preservative Required | OK | | | |
| 1144034008-C | No Preservative Required | OK | | | |
| 1144034008-D | HCL to pH < 2 | OK | | | |
| 1144034008-E | HCL to pH < 2 | OK | | | |
| 1144034008-F | HCL to pH < 2 | OK | | | |
| 1144034008-G | No Preservative Required | OK | | | |

Container Id

Preservative

Container Condition

Container Id

Preservative

Container Condition

Container Condition Glossary

OK - The container was received at an acceptable pH for the analysis requested.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

BU - The container was received with headspace greater than 6mm.

Appendix C
Field & Laboratory Data Validation

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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). These criteria were applied on a 24-hr storm basis rather than a calendar basis since often times the storm would come in late in the evening the day before sampling took place. In all cases sampling was completed within 24 hours from the start of a storm with the preceding 24 hours being less than 0.1 inches and the storm accumulation greater than 0.1 inches. Therefore, all four storms that were sampled in 2014 met the above criteria.

Rain gauges were deployed May 30, 2014. For the June 21, 2014 storm event, the storm began about 11 pm on 20 June 20 with the three rain gauges registered 0.72, 0.93, and 0.71 inches for the storm event. No precipitation was recorded in the 24 hours preceding the beginning of the storm. A similar result was seen for the second storm on July 10, 2014 where the storm began the evening prior to sampling with no accumulation during the preceding 24-hr period and recorded precipitation for the storm event of 0.40, 0.46, and 0.37 inches at the three rain gauges. The third storm event began during the morning of 4 August at around 9:00 and sampling was initiated at 14:30. Recorded rainfall for the event was 0.12, 0.17, and 0.07 inches at the three rain gauges. Although some rain was recorded on the preceding calendar day, with the exception of 0.01 inches at Bowman, no precipitation occurred at any of the three rain gauges during the preceding 24-hr period after the start of the storm. Total rainfall at Bowman was less than 0.1 inch criteria but rainfall did meet the criteria at the other two rain gauges and at the NWS station that was used to monitor the storm event. The fourth and last storm began around 04:00 on 20 August with recorded precipitation of 0.39, 0.41, and 0.42 inches for the event with no recorded precipitation during the preceding 24-hr period. Sampling was initiated within 10 hours of the start of the rain event after approximately 0.1 inches had accumulated at all three locations.

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 1.9% and 85.1% and are presented in Table 1. CVs above 10% reflect the highly

variable nature of flow during a storm. Rain was noted on log sheets for both the August 4th event and the August 24th event indicating that flow was increasing during sampling causing a high CV value.

Table 1. Coefficients of Variation for Volume/Time Flow Measurements

| Storm Event Date | Station SWM07 |
|------------------|------------------|
| June 21, 2014 | 1.9% |
| July 10, 2014 | Acoustic Doppler |
| August 4, 2014 | 85.1% |
| August 24, 2014 | 18.9% |

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 with the exception of three bottles in the first storm event. These bottles did not have the date and time filled out however, that information was on the chain of custody and so no problems occurred due to this issue. 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 | June 21, 2014 | | July 10, 2014 | | August 4, 2014 | | August 24, 2014 | |
|--------------|---------------|---------------|-------|---------------|-------|----------------|-------------|-----------------|------------|
| | | SWM02 | SWM08 | SWM02 | SWM08 | SWM02 | SWM08 | SWM02 | SWM08 |
| DO | ± 10% | 0.53 | 0.00 | 0.27 | * | 0.43 | 1.00 | 0.90 | 0.68 |
| pH | ± 0.2 units | 0.02 | 0.01 | 0 | * | 0.05 | 0.02 | 0.12 | 0.02 |
| Turbidity | ± 1NTU | 0.34 | 0.7 | 0.1 | * | 0.32 | 74.1 | 0.03 | 2.8 |
| Temperature | 0.4° C | 0.03 | 0.02 | 0.01 | * | 0.07 | 0.59 | 0.04 | 0.14 |
| Conductivity | ± 1 µS/cm | 2 | 1 | 14 | * | 4 | 45 | 1 | 25 |

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. Dissolved oxygen and pH met the precision during all sampling events. 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. 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 field replicate samples met the standards prescribed in the QAPP for most events (Table 3). TSS had an RPD of 29 in the June 21, 2014 storm which slightly exceeded the objective of 25. Elevated RPDs are believed to reflect the heterogeneity of stormwater quality, rather than the precision of the sampling, which can be quite variable in a constituent such as TSS. All other conventional parameters met QAPP quality objectives for this storm season.

In any future sampling 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 this study’s 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 | | | |
|-----------|----------------------|------------------|------------------|-----------|----------|-----------|
| | | | 21-Jun-14 | 10-Jul-14 | 4-Aug-14 | 24-Aug-14 |
| TSS | 25% | SWM02 | 9% | 0% | 15% | 0% |
| | | SWM08 | 29% | 6% | 0% | 0% |
| BOD | NA | SWM02 | 2% | 0% | 0% | 0% |
| | | SWM08 | 0% | 19% | 7% | 7% |
| FC | 60% | SWM02 | 3% | 30% | 42% | 13% |
| | | SWM08 | 16% | 36% | 22% | 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.

No TAH constituents were detected in either the sample or the replicate for any storm event this season. No qualifications for field precision was necessary to any of the data. The field precision RPDs are presented in Table 4.

The field precision RPD between the sample and field replicates for the TAqH analyses were low, reflecting low field variability across all storm events with most constituents being non-detect in either the sample or the replicate (Table 4). Due to how RPD's are calculated, samples with low concentrations will have a higher probability of increased RPD as compared to samples with higher concentrations. Cases where one of values are ND cannot have an RPD calculated. There were three cases in the June 21, 2014 storm and one in the August 24, 2014 storm where the RPD could not be calculated due to one value being non-detect. In all four of the instances one sample was non-detect and the other was at or near the reporting limit indicating that the samples were closely correlated.

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. Laboratory duplicates were performed on TSS and all results were within control limits with the exception of one duplicate for the June 21, 2014 event. The RPD for this duplicate was 37 which exceeds the objective of

25 prescribed in the QAPP. Since all other parameters, including the laboratory control sample, were within range no qualifications were necessary.

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) were within the QAPP specifications. Similarly, the accuracy of TAH analyses were 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.

For the TAqH constituents, some parameters required qualification. The June 21, 2014 storm event had six TAqH constituents with MS/MSD recoveries that were below the QAPP specified percent limits. These recoveries were low for both the MS and the MSD for all six constituents. Results for the analytes were qualified as an estimate (J) indicating that they may be biased low.

All TAqH constituents were within the QAPP-specified precision and accuracy requirements for the July 10, 2014 storm event.

For the August 4, 2014 storm event, three MSD recoveries were below the specified limits. Two of the constituents, Acenaphthene (56%) and Acenaphthylene (56%), were only slightly below the specified limits of 57% and 58% respectively. No qualifications were made to these constituents based on these results. Naphthalene was recovered at 46% in the MSD which is below the project limits of 56%. These results were not qualified as all LCS results were within control limits as well as the MS.

For the final storm event on August 24, 2014, 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.

5. Conclusions

A careful review of the results confirmed that the field and laboratory samples met most QA/QC requirements. A total of 30 TAqH constituents required qualification due to low percent recoveries in the MS/MSD's during the second storm event. Despite these minor QC issues, overall evaluation of the analytical QA/QC data indicates that the chemical data, are for the most part, within established performance criteria and can be used for characterization of stormwater for this project.

Table 4. Field and Laboratory Precision and Accuracy for TAH and TAqH

| Parameter | QAPP Standard | | 21-Jun-14 | | | 10-Jul-14 | | | 4-Aug-14 | | | 24-Aug-14 | | |
|------------------------|---------------|------------|-----------------|---------------|----------------|-----------------|---------------|--------------|-----------------|---------------|----------------|-----------------|---------------|--------------|
| | 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 |
| TAH | | | | | | | | | | | | | | |
| Benzene | 20% | 80-120% | 0 | 1 | 99 / 98 | 0 | 1 | 104 / 103 | 0 | 4 | 104 / 109 | 0 | 3 | 96 / 99 |
| Chlorobenzene | 20% | 80-120% | 0 | 2 | 99 / 101 | 0 | 1 | 99 / 98 | 0 | 3 | 105 / 108 | 0 | 3 | 97 / 100 |
| 1,2-Dichlorobenzene | 20% | 80-120% | 0 | 1 | 98 / 99 | 0 | 2 | 100 / 99 | 0 | 5 | 105 / 110 | 0 | 0 | 93 / 93 |
| 1,3-Dichlorobenzene | 20% | 80-120% | 0 | 1 | 100 / 101 | 0 | 1 | 95 / 96 | 0 | 6 | 107 / 114 | 0 | 0 | 95 / 95 |
| 1,4-Dichlorobenzene | 20% | 80-120% | 0 | 0 | 100 / 100 | 0 | 2 | 99 / 101 | 0 | 5 | 109 / 115 | 0 | 0 | 98 / 98 |
| Ethylbenzene | 20% | 80-120% | 0 | 2 | 105 / 103 | 0 | 2 | 103 / 102 | 0 | 4 | 97 / 101 | 0 | 3 | 100 / 103 |
| Toluene | 20% | 77-120% | 0 | 3 | 100 / 97 | 0 | 3 | 104 / 100 | 0 | 2 | 105 / 107 | 0 | 1 | 95 / 96 |
| o-Xylene | 20% | 80-120% | 0 | 10 | 92 / 102 | 0 | 0 | 97 / 97 | 0 | 5 | 106 / 111 | 0 | 1 | 102 / 103 |
| p & m-Xylenes | 20% | 80-120% | 0 | 11 | 93 / 104 | 0 | 1 | 101 / 100 | 0 | 5 | 107 / 112 | 0 | 1 | 104 / 103 |
| TAqH | | | | | | | | | | | | | | |
| Acenaphthene | 30% | 57-110% | 0 | 9 | 69 / 78 | 0 | 16 | 62 / 71 | 0 | 11 | 64 / 56 | 0 | 3 | 72 / 74 |
| Acenaphthylene | 30% | 58-105% | 0 | 8 | 66 / 74 | 0 | 17 | 59 / 69 | 0 | 10 | 65 / 56 | 0 | 0 | 71 / 71 |
| Anthracene | 30% | 63-120% | 0 | 9 | 76 / 86 | 0 | 9 | 78 / 85 | 0 | 5 | 77 / 70 | 0 | 5 | 81 / 77 |
| Benzo (a) anthracene | 30% | 61-120% | 0 | 11 | 61 / 70 | 0 | 3 | 93 / 89 | 0 | 5 | 86 / 87 | 0 | 5 | 93 / 89 |
| Benzo(a)pyrene | 30% | 57-120% | 0 | 10 | 38 / 43 | 0 | 4 | 92 / 87 | 0 | 4 | 77 / 71 | 0 | 2 | 80 / 79 |
| Benzo(b)fluoranthene | 30% | 66-130% | N/C | 16 | 51 / 61 | 0 | 5 | 92 / 95 | 0 | 10 | 86 / 93 | 0 | 7 | 92 / 86 |
| Benzo(g,h,l,)perylene | 30% | 60-125% | 0 | 15 | 30 / 35 | 0 | 6 | 105 / 98 | 0 | 5 | 79 / 73 | 0 | 2 | 83 / 84 |
| Benzo(k)fluoranthene | 30% | 67-120% | 0 | 11 | 40 / 46 | 0 | 5 | 93 / 88 | 0 | 8 | 88 / 79 | 0 | 2 | 92 / 94 |
| Chrysene | 30% | 71-120% | N/C | 10 | 76 / 86 | 0 | 3 | 97 / 93 | 0 | 1 | 94 / 91 | 0 | 4 | 98 / 94 |
| Dibenz(a,h)anthracene | 30% | 56-125% | 0 | 16 | 24 / 29 | 0 | 6 | 103 / 96 | 0 | 5 | 81 / 75 | 0 | 1 | 78 / 77 |
| Fluoranthene | 30% | 63-125% | 18 | 15 | 74 / 93 | 0 | 2 | 88 / 89 | 0 | 6 | 92 / 94 | N/C | 0 | 94 / 94 |
| Fluorene | 30% | 59-120% | 0 | 13 | 71 / 83 | 0 | 16 | 63 / 73 | 0 | 7 | 68 / 61 | 0 | 0 | 80 / 80 |
| Indeno(1,2,3-cd)pyrene | 30% | 59-125% | 0 | 13 | 28 / 33 | 0 | 6 | 103 / 96 | 0 | 5 | 80 / 73 | 0 | 1 | 81 / 82 |
| Naphthalene | 30% | 56-108% | 0 | 13 | 62 / 72 | 0 | 14 | 61 / 69 | 0 | 18 | 58 / 46 | 0 | 1 | 69 / 70 |
| Phenanthrene | 30% | 60-115% | N/C | 11 | 84 / 97 | 0 | 11 | 85 / 93 | 0 | 2 | 78 / 74 | 0 | 4 | 79 / 82 |
| Pyrene | 30% | 62-130% | 17 | 12 | 72 / 85 | 0 | 2 | 84 / 85 | 0 | 7 | 85 / 88 | 0 | 1 | 93 / 91 |

Values in bold and red did not meet the precision criterion in the QAPP (MOA, 2012) N/C indicates that one of the replicates was a non-detect therefore the RPD cannot be calculated.

Appendix D

Field Logs

**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>01</u> | | DATE: 06/21/14 | | SAMPLE START TIME: 0954 | | |
|-----------------------------------------------------------------------------|-----------------------|-----------------------------------------|--------------|--------------------------------------|---------------------|-----|
| OUTFALL/NODE ID: 1040-3 | | PHYSICAL LOCATION: O'Malley + Lake Otis | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: 0954 | | |
| Flow Meter | | Flow Speed (ft/s): 0.12 | | Water Depth (in): 1 | | |
| Pipe Diam (in): 18 | | | | | | |
| 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 | | 0954 | 12.90 | 101 | 10.23 | |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>01</u> -01 | 0954 | ✓ | ✓ | ✓ | | |
| 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 | light b-ness | | | | | |
| COLOR | light brown | | | | | |
| CLARITY | clear | | | | | |
| FLOATABLES | none | | | | | |
| DEPOSITS or STAINS | none | | | | | |
| SHEEN | slight sheen | no rainbow | | | | |
| SURFACE SCUM | none | | | | | |
| DEBRIS | small amount of trash | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS | | | | | | |
| | | | | | | |
| | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. J. [Signature]

Date: 6/28/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| | | |
|-------------------------------|----------------------------------------------|--------------------------------|
| STATION ID: SWM <u>02</u> | DATE: <u>06/21/14</u> | SAMPLE START TIME: <u>1025</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>1025</u> |
| Flow Meter | Flow Speed (ft/s): <u>0.95</u> | Water Depth (in): <u>1</u> | Pipe Diam (in): <u>18</u> |
| Bucket Measurements | Time 1 (s) | Time 2 (s) | Time 3 (s) |
| Bucket: <u>1-gal 5-gal</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>1025</u> | <u>10.41</u> | <u>130</u> | <u>11.24 109%</u> | <u>7.04</u> | <u>7.16</u> |
| FIELD REPLICATE | <u>1025</u> | <u>10.38</u> | <u>132</u> | <u>11.20 100.1</u> | <u>7.06</u> | <u>6.82</u> |

DISCRETE WATER QUALITY SAMPLES

| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
|----------------------------|-------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 02-01</u> | <u>1025</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <u>SWM 02-01 Dup</u> | <u>1025</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"/> | <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>some algae</u> | |
| DEBRIS | <u>garbage down stream</u> | |

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:

Photos: Yes No 2 photos

**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>03</u> | | DATE: <u>06/21/14</u> | | SAMPLE START TIME: <u>1059</u> | | |
|-----------------------------------------------------------------------------|--------------------------|------------------------------------------------------|-------------------------------------|--------------------------------------|---------------------|-----|
| OUTFALL/NODE ID: <u>1224-1</u> | | PHYSICAL LOCATION: <u>0. Seward + Sylvan (north)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1059</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>1.36</u> | | Water Depth (in): <u>4.3</u> | | |
| Bucket Measurements | | Time 1 (s) | | Time 2 (s) | | |
| Bucket: 1-gal 5-gal | | Time 3 (s) | | 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 | | |
| MEASUREMENT | | TIME (ADT) | | TEMP (°C) | | |
| FIELD REPLICATE | | COND (µS/cm) | | DO (mg/L) | | |
| | | pH | | TURB (ntu) | | |
| | | <u>1059</u> | | <u>11.80</u> | | |
| | | <u>151</u> | | <u>9.14 (84.5%)</u> | | |
| | | <u>7.21</u> | | <u>49.0</u> | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM_03-01</u> | <u>1059</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 | <u>light brown / tan</u> | | | | | |
| CLARITY | <u>slightly turbid</u> | | | | | |
| FLOATABLES | <u>detrinitis</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>obstruction downstream. turbidity confidence level ~95% (detrinitis)</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Anne

Date: 6/28/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| | | |
|--------------------------------|------------------------------------------------------|--------------------------------|
| STATION ID: <u>SWM 04</u> | DATE: <u>06/21/14</u> | SAMPLE START TIME: <u>1110</u> |
| OUTFALL/NODE ID: <u>1224-2</u> | PHYSICAL LOCATION: <u>0. Seward + Sylvan (south)</u> | |

OUTFALL FLOW MEASUREMENTS

| | | | | | | |
|----------------------|--------------------------------|------------------------------|---------------------------|------------|------------|--------------|
| Flow Method (circle) | Bucket | <u>Flow Meter</u> | Time: <u>1110</u> | | | |
| Flow Meter | Flow Speed (ft/s): <u>0.16</u> | Water Depth (in): <u>1.9</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>11:10</u> | <u>12.03</u> | <u>226</u> | <u>9.64 (89.9%)</u> | <u>7.14</u> | <u>16.6</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>1110</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>n</u> | |
| COLOR | <u>light tan</u> | |
| CLARITY | <u>slightly turbid</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

light drizzle

Photos: Yes No

**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| | | |
|-------------------------------|-------------------------------------------------|--------------------------------|
| STATION ID: <u>SWM 05</u> | DATE: <u>06/21/14</u> | SAMPLE START TIME: <u>1135</u> |
| OUTFALL/NODE ID: <u>207-1</u> | PHYSICAL LOCATION: <u>E. 56th @ Save School</u> | |

OUTFALL FLOW MEASUREMENTS

| | | | |
|----------------------|--------------------------------|------------------------------|-------------------|
| Flow Method (circle) | Bucket | Flow Meter <u>Flow Meter</u> | Time: <u>1135</u> |
| Flow Meter | Flow Speed (ft/s): <u>0.96</u> | Water Depth (in): <u>2.0</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>1135</u> | <u>12.66</u> | <u>177</u> | <u>9.48</u> (<u>91.27</u>) | <u>7.26</u> | <u>31.5</u> |
| FIELD REPLICATE | | | <u>ms 9.65</u> | | | |

DISCRETE WATER QUALITY SAMPLES

| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
|----------------------------|-------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 05-01</u> | <u>1135</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>light tan</u> | |
| CLARITY | <u>slightly turbid</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>06</u> | | DATE: <u>06/21/14</u> | SAMPLE START TIME: <u>1206</u> | | | |
|-------------------------------------------------------------|--------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|---------------------|--------------|
| OUTFALL/NODE ID: <u>314-22</u> | | PHYSICAL LOCATION: <u>Maplewood</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | <u>Flow Meter</u> | | Time: <u>1206</u> | |
| Flow Meter | Flow Speed (ft/s): <u>0.20</u> | Water Depth (in): <u>0.5</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>1206</u> | <u>12.09</u> | <u>112</u> | <u>9.59 (89.1%)</u> | <u>7.05</u> | <u>15.7</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>06</u> -01 | <u>1206</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: | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | <u>none</u> | | | | | |
| COLOR | <u>light tan</u> | | | | | |
| CLARITY | <u>pretty clear</u> | | | | | |
| FLOATABLES | <u>none</u> | | | | | |
| DEPOSITS or STAINS | <u>none</u> | | | | | |
| SHEEN | <u>none</u> | | | | | |
| SURFACE SCUM | <u>none</u> | | | | | |
| DEBRIS | <u>some trash</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| | | | | | | |
| | | | | | | |
| Photos: Yes No | | | | | | |

**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>077</u> | | DATE: 06/21/14 | | SAMPLE START TIME: 1240 | | |
|-------------------------------------------------------------|-------------------------------|-----------------------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| OUTFALL/NODE ID: <u>86-T 484-1</u> | | PHYSICAL LOCATION: <u>New Seward (-42-in) north</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) <u>Bucket</u> Flow Meter | | | Time: 1230 1240 | | | |
| 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 | 19.09 | 18.24 | 18.70 | 18.87 | | |
| 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 | 1240 | 11.76 | 68 | 8.73 (80.5%) | 7.42 | |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>07</u> -01 | 1240 | <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 | none. | | | | | |
| COLOR | pretty clear/tan | | | | | |
| CLARITY | clear | | | | | |
| FLOATABLES | none | | | | | |
| DEPOSITS or STAINS | none | | | | | |
| SHEEN | none | | | | | |
| SURFACE SCUM | none | | | | | |
| DEBRIS | none | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| | | | | | | |
| | | | | | | |
| Photos: <u>Yes</u> No | | | | | | |

Reviewed By: M. [Signature]

Date: 6/28/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: <u>SWM 08</u> | | DATE: <u>06/21/14</u> | SAMPLE START TIME: <u>1230</u> | | | |
|-----------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|--------------------------------------|---------------------------|-------------|
| OUTFALL/NODE ID: 484-186-1 | | PHYSICAL LOCATION: <u>New Seward (North) 42 in</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1230</u> | | |
| <u>Flow Meter</u> | Flow Speed (ft/s): <u>2.46</u> | | Water Depth (in): <u>2.4</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 | TURB (ntu) |
| MEASUREMENT | <u>1230</u> | <u>11.56</u> | <u>139 µS/cm</u> | <u>10.20 (93.67)</u> | <u>7.08</u> | <u>23.3</u> |
| FIELD REPLICATE | <u>1230</u> | <u>11.54</u> | <u>140</u> | <u>10.20 (93.5)</u> | <u>7.07</u> | <u>22.6</u> |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 08-01</u> | <u>1230</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| <u>SWM 08-01 Dup</u> | <u>1230</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>hydrocarbon odor</u> | <u>possibly from highway</u> | | | | |
| COLOR | <u>light</u> | | | | | |
| CLARITY | <u>clear</u> | | | | | |
| FLOATABLES | <u>none</u> | | | | | |
| DEPOSITS or STAINS | <u>rust buildup</u> | <u>in pipe</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 | | | | | | |

**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>09</u> | | DATE: <u>06/21/14</u> | SAMPLE START TIME: <u>1315</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>1315</u> | |
| Flow Meter | Flow Speed (ft/s): <u>0.13</u> | | Water Depth (in): <u>0.8</u> | | Pipe Diam (in): <u>24 in</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>1315</u> | <u>11.97</u> | <u>250</u> | <u>8.97/83.0</u> | <u>6.97</u> | <u>10.7</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 09-01</u> | <u>1315</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>light</u> | | | | | |
| CLARITY | <u>clear</u> | | | | | |
| FLOATABLES | <u>no</u> | | | | | |
| DEPOSITS or STAINS | <u>no</u> | | | | | |
| SHEEN | <u>no</u> | | | | | |
| SURFACE SCUM | <u>no</u> | | | | | |
| DEBRIS | <u>no</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| | | | | | | |
| | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Lane

Date: 6/28/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>10</u> | | DATE: <u>06/21/14</u> | SAMPLE START TIME: <u>1335</u> | | | |
|-----------------------------------------------------------------------------|--------------------------------|----------------------------------------------|-------------------------------------|--------------------------------------|---------------------------|--------------|
| OUTFALL/NODE ID: <u>525-2</u> | | PHYSICAL LOCATION: <u>Boeke (south bank)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | <u>Flow Meter</u> | | Time: <u>1335</u> | |
| Flow Meter | Flow Speed (ft/s): <u>1.12</u> | | Water Depth (in): <u>1.4</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>1335</u> | <u>9.32</u> | <u>375</u> | <u>11.56 (100.82)</u> | <u>6.92</u> | <u>3.55</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 10-01</u> | <u>1335</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 | <u>light</u> | | | | | |
| CLARITY | <u>clear</u> | | | | | |
| FLOATABLES | <u>none</u> | | | | | |
| DEPOSITS or STAINS | <u>rusty pipe</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. [Signature]

Date: 6/28/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>01</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>0927</u> | | |
|-----------------------------------------------------------------------------|--------------------------------|------------------------------------------------|-------------------------------------|--------------------------------------|---------------------|--------------|
| OUTFALL/NODE ID: <u>1040-3</u> | | PHYSICAL LOCATION: <u>Lake Otis + O'Malley</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Flow Meter | | |
| Time: <u>0927</u> | | | | | | |
| Flow Meter | Flow Speed (ft/s): <u>0.15</u> | Water Depth (in): <u>0.5 in</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) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) |
| MEASUREMENT | <u>0927</u> | <u>13.34</u> | <u>434</u> | <u>71.5%</u> | <u>7.50</u> | <u>11.7</u> |
| FIELD REPLICATE | | | | <u>7.49 mg/L</u> | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 01-02</u> | <u>0927</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| <u>SWM 01-02 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>pretty 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>not raining. confidence level of turbidity < 99%</u> | | | | | | |
| <u>Flow depth low ~ discharge read 0.08, 0.15, 0.28</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M Am

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>02</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>0958</u> | | |
|-----------------------------------------------------------------------------|-------------------------------------|----------------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| OUTFALL/NODE ID: <u>847-1</u> | | PHYSICAL LOCATION: <u>Home Depot - Abbot</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1016</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>2.66</u> | | Water Depth (in): <u>0.70</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) | SpCond (µS/cm) | DO (mg/L) | pH | |
| MEASUREMENT | <u>0958</u> | <u>7.95</u> | <u>357</u> | <u>11.15</u> <u>109.9%</u> | <u>7.69</u> | |
| FIELD REPLICATE | <u>1006</u> | <u>7.94</u> | <u>371</u> | <u>11.12</u> <u>109.7%</u> | <u>7.69</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM_02-02</u> | <u>0958</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <u>SWM_02-02 Dup</u> | <u>1006</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <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 | <input checked="" type="checkbox"/> | <u>slight hydrocarbon 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 | <u>none</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>raining</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. [Signature]

Date: 7/15/14

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MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG

left

| STATION ID: SWM <u>03</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>1045</u> | |
|-----------------------------------------------------------------------|--|-------------------------------------------------------|--|--------------------------------------|--|
| OUTFALL/NODE ID: <u>1224-1</u> | | PHYSICAL LOCATION: <u>Old Seward + Sylvan (north)</u> | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1045</u> | |
| Flow Meter | | Flow Speed (ft/s): <u>0.12</u> | | Water Depth (in): <u>1 in</u> | |
| Pipe Diam (in): <u>36</u> | | 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) | | SpCond (µS/cm) | |
| DO (mg/L) | | pH | | TURB (ntu) | |
| MEASUREMENT | | <u>1045</u> | | <u>8.99</u> | |
| FIELD REPLICATE | | <u>372</u> | | <u>7.11 (6.59)</u> | |
| | | | | <u>7.63</u> | |
| | | | | <u>4.48</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | |
| SAMPLE NUMBER | | TIME (ADT) | | SAMPLES COLLECTED (CHECK BOX) | |
| | | | | FECAL | |
| | | | | BOD | |
| | | | | TSS | |
| | | | | TAqH | |
| | | | | TAH | |
| SWM <u>03</u> -02 | | <u>1045</u> | | <input checked="" type="checkbox"/> | |
| SWM <u> </u> -02 Dup | | | | <input checked="" type="checkbox"/> | |
| MS/MSD SAMPLES | | | | <input 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>none</u> | | | |
| CLARITY | | <u>very 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>not raining</u> | | | | | |
| Photos: <input checked="" type="radio"/> Yes <input type="radio"/> No | | | | | |

Reviewed By: M June

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>04</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>1051</u> | | |
|-----------------------------------------------------------------------------|--------------|------------------------------------------------------|-------------------------------------|--------------------------------------|---------------------|-------------|
| OUTFALL/NODE ID: <u>1224-2</u> | | PHYSICAL LOCATION: <u>0' Seward + sylvan (south)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1051</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>0.15</u> | | Water Depth (in): <u>2 in</u> | | |
| Bucket Measurements | | Time 1 (s) | | Time 2 (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) | SpCond (µS/cm) | DO (mg/L) | pH |
| MEASUREMENT | | <u>1051</u> | <u>13.46</u> | <u>557</u> | <u>8.85/84.9%</u> | <u>7.47</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>04</u> -02 | <u>1051</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 | <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> | <u>some detritus</u> | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>sprinkling. turbidity confidence level < 95%</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. [Signature]

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>05</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>1120</u> | | |
|-----------------------------------------------------------------------------|-------------|----------------------------------------------------------|----------|--------------------------------------|---------------------|----------|
| OUTFALL/NODE ID: <u>207-1</u> | | PHYSICAL LOCATION: <u>ESGth + Save School</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1120</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>0.12</u> | | Water Depth (in): <u>1 in</u> | | |
| Bucket Measurements | | Time 1 (s) | | Time 2 (s) | | |
| Bucket: 1-gal 5-gal | | | | <u>0.65</u> | | |
| IN SITU WATER QUALITY MEASUREMENTS | | | | | | |
| INSTRUMENT/SERIAL # | | YSI 556 MULTIPROBE: KLI #1939 | | HACH 2100P/Q TURBIDIMETER: KLI #0833 | | |
| TIME (ADT) | | TEMP (°C) | | SpCond (µS/cm) | | |
| MEASUREMENT | | <u>12.6</u> | | <u>281</u> | | |
| FIELD REPLICATE | | <u>1120</u> | | <u>994 (93.7%)</u> | | |
| | | <u>7.33</u> | | <u>19.6</u> | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM₀₅-02</u> | <u>1120</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>X</u> |
| <u>SWM ___-02 Dup</u> | | | | | | |
| <u>MS/MSD SAMPLES</u> | | | | | | |
| <u>FIELD QC (Trip/Equip)</u> | | | | | | |
| Description of QC Samples: | | | | | Sampler's Initials: | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| <u>ODOR</u> | <u>none</u> | | | | | |
| <u>COLOR</u> | <u>none</u> | | | | | |
| <u>CLARITY</u> | <u>none</u> | | | | | |
| <u>FLOATABLES</u> | <u>none</u> | | | | | |
| <u>DEPOSITS or STAINS</u> | <u>none</u> | | | | | |
| <u>SHEEN</u> | <u>none</u> | | | | | |
| <u>SURFACE SCUM</u> | <u>none</u> | | | | | |
| <u>DEBRIS</u> | <u>none</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>raining</u> | | | | | | |
| <u>Left outfall = 0.04 ft/s depth = 1.25"</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Luan

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>06</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>1200</u> | |
|-----------------------------------------------------------------------------|--|-------------------------------------|--|--------------------------------------|--|
| OUTFALL/NODE ID: <u>314-22</u> | | PHYSICAL LOCATION: <u>Maplewood</u> | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1200</u> | |
| Flow Meter | | Flow Speed (ft/s): <u>2.38</u> | | Water Depth (in): <u>3.25"</u> | |
| Pipe Diam (in): | | Time 1 (s) | | Time 2 (s) | |
| Bucket Measurements | | 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) | | SpCond (µS/cm) | |
| DO (mg/L) | | pH | | TURB (ntu) | |
| MEASUREMENT | | <u>1200</u> | | <u>12.64</u> | |
| FIELD REPLICATE | | <u>143</u> | | <u>98.5 µS/cm</u> | |
| | | <u>6.99</u> | | <u>290</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | |
| SAMPLE NUMBER | | TIME (ADT) | | SAMPLES COLLECTED (CHECK BOX) | |
| | | | | FECAL BOD TSS TAqH TAH | |
| SWM <u>06-02</u> | | <u>1200</u> | | X X X | |
| 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 | | <u>yes</u> | | <u>slight odor</u> | |
| COLOR | | <u>brown</u> | | | |
| CLARITY | | <u>turbid</u> | | | |
| FLOATABLES | | <u>none</u> | | | |
| DEPOSITS or STAINS | | <u>none</u> | | | |
| SHEEN | | <u>none</u> | | | |
| SURFACE SCUM | | <u>none</u> | | | |
| DEBRIS | | <u>none</u> | | <u>some detritus</u> | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | |
| <u>raining hard</u> | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | |

Reviewed By: M. Ann

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>07</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>1230</u> | |
|-------------------------------------------------------------|--|----------------------------------------------|--|--------------------------------------|--|
| OUTFALL/NODE ID: <u>484-1</u> | | PHYSICAL LOCATION: <u>New Seward (north)</u> | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1230</u> | |
| Flow Meter | | Flow Speed (ft/s): <u>2.63</u> | | Water Depth (in): <u>2 in</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 (gal/s) | |
| IN-SITU WATER QUALITY MEASUREMENTS | | | | | |
| INSTRUMENT/SERIAL # | | YSI 556 MULTIPROBE: KLI #1939 | | HACH 2100P/Q TURBIDIMETER: KLI #0833 | |
| TIME (ADT) | | TEMP (°C) | | SpCond (µS/cm) | |
| DO (mg/L) | | pH | | TURB (ntu) | |
| MEASUREMENT | | <u>1230</u> | | <u>14.28</u> | |
| FIELD REPLICATE | | <u>63</u> | | <u>10.38</u> ^{101.40} | |
| | | | | <u>7.28</u> | |
| | | | | <u>369</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | |
| SAMPLE NUMBER | | TIME (ADT) | | SAMPLES COLLECTED (CHECK BOX) | |
| | | | | FECAL BOD TSS TAqH TAH | |
| <u>SWM07-02</u> | | <u>1230</u> | | X X X X X | |
| <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 | | <u>turbid</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>raining</u> | | <u>2 1/2 in depth in furrow</u> | | | |
| Photos: Yes No | | | | | |

Reviewed By: M. Ann

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>08</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>1241</u> | | |
|-----------------------------------------------------------------------------|--------------------------------|----------------------------------------------|-------------------------------------|---------------------------------------------|---------------------|--------------|
| OUTFALL/NODE ID: <u>86-1</u> | | PHYSICAL LOCATION: <u>New Seward (42 in)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Flow Meter <input checked="" type="radio"/> | | |
| Time: <u>1241</u> | | | | | | |
| Flow Meter | Flow Speed (ft/s): <u>9.49</u> | Water Depth (in): <u>9</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) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) |
| MEASUREMENT | <u>1241</u> | <u>13.9</u> | <u>60</u> | <u>11.09 (107)</u> | <u>7.04</u> | <u>243</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>08</u> -02 | <u>1241</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| SWM <u>08</u> -02 Dup | <u>1241</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>yes</u> | <u>hydrocarbon</u> | | | | |
| COLOR | <u>brown</u> | | | | | |
| CLARITY | <u>not clear</u> | | | | | |
| FLOATABLES | <u>no</u> | | | | | |
| DEPOSITS or STAINS | <u>no</u> | | | | | |
| SHEEN | <u>no</u> | | | | | |
| SURFACE SCUM | <u>no</u> | | | | | |
| DEBRIS | <u>no</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>raining</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Anne

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>09</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>1310</u> | |
|-----------------------------------------------------------------------------|--|--------------------------------------------|--|--------------------------------------|--|
| OUTFALL/NODE ID: <u>499-1</u> | | PHYSICAL LOCATION: <u>Boeke North bank</u> | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1310</u> | |
| Flow Meter | | Flow Speed (ft/s): <u>0.45</u> | | Water Depth (in): <u>4.5 in</u> | |
| Pipe Diam (in): | | Time 1 (s) | | Time 2 (s) | |
| Bucket Measurements | | 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) | | SpCond (µS/cm) | |
| DO (mg/L) | | pH | | TURB (ntu) | |
| MEASUREMENT | | <u>1310</u> | | <u>14.49</u> | |
| FIELD REPLICATE | | <u>60</u> | | <u>10.01 (99.8)</u> | |
| | | | | <u>7.09</u> | |
| | | | | <u>76.4</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | |
| SAMPLE NUMBER | | TIME (ADT) | | SAMPLES COLLECTED (CHECK BOX) | |
| | | | | FECAL BOD TSS TAqH TAH | |
| <u>SWM 09-02</u> | | <u>1310</u> | | <u>X X X X 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>grey</u> | | | |
| CLARITY | | <u>turbid</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>raining</u> | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | |

Reviewed By: M. [Signature]

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>10</u> | | DATE: <u>7/10/14</u> | | SAMPLE START TIME: <u>1321</u> | | | |
|-----------------------------------------------------------------------------|---------------------|----------------------------------------------|----------------|--------------------------------------|---------------------|-------------|--------------|
| OUTFALL/NODE ID: <u>S2S-2</u> | | PHYSICAL LOCATION: <u>Boeke (south bank)</u> | | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1321</u> | | | |
| Flow Meter | | Flow Speed (ft/s): <u>3.14</u> | | Water Depth (in): <u>2.75</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) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) | |
| MEASUREMENT | <u>1321</u> | <u>13.16</u> | <u>170</u> | <u>11.16 (106.3)</u> | <u>6.97</u> | <u>85.4</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>1321</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>rusty smell</u> | | | | | | |
| COLOR | <u>light orange</u> | | | | | | |
| CLARITY | <u>clearish</u> | | | | | | |
| FLOATABLES | <u>none</u> | | | | | | |
| DEPOSITS or STAINS | <u>rust</u> | | | | | | |
| SHEEN | <u>none</u> | | | | | | |
| SURFACE SCUM | <u>none</u> | | | | | | |
| DEBRIS | <u>none</u> | | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | | |
| <u>raining. oxidation around outfall</u> | | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | | |

Reviewed By: M. Auer

Date: 7/15/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>01</u> | | DATE: <u>08/04/14</u> | | SAMPLE START TIME: <u>14:30</u> | | |
|-----------------------------------------------------------------------|---------------------|------------------------------------------------|----------------|--------------------------------------|---------------------|-----|
| OUTFALL/NODE ID: <u>1040-3</u> | | PHYSICAL LOCATION: <u>Lake Otis + O'Malley</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1430</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>0.20</u> | | Water Depth (in): <u>0.25</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) | SpCond (µS/cm) | DO (mg/L) | pH | |
| MEASUREMENT | <u>1430</u> | <u>16.47</u> | <u>193</u> | <u>8.52 (87.1%)</u> | <u>7.47</u> | |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>01</u> -03 | <u>1430</u> | X | X | X | | |
| 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>light yellow</u> | | | | | |
| CLARITY | <u>pretty 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>not raining, some bubbles</u> | | | | | | |
| Photos: <input checked="" type="radio"/> Yes <input type="radio"/> No | | | | | | |

Reviewed By: M. Brown

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>02</u> | | DATE: <u>8 / 14 / 14</u> | | SAMPLE START TIME: <u>14:57</u> | | |
|-----------------------------------------------------------------------------|-------------------------|-------------------------------------------------|-----|--------------------------------------|---------------------|-----|
| OUTFALL/NODE ID: <u>847-1</u> | | PHYSICAL LOCATION: <u>Home Depot - Abbot</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1503</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>1.96</u> | | Water Depth (in): <u>0.75</u> | | |
| Bucket Measurements | | Time 1 (s) | | Time 2 (s) | | |
| Bucket: 1-gal 5-gal | | Time 3 (s) | | 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) | | SpCond (µS/cm) | | |
| MEASUREMENT | | DO (mg/L) | | pH | | |
| FIELD REPLICATE | | TURB (ntu) | | | | |
| | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>02-03</u> | <u>1503</u> | X | X | X | X | X |
| SWM <u>02-03 Dup</u> | <u>1503</u> | X | X | X | X | X |
| MS/MSD SAMPLES | | | | | X | X |
| FIELD QC (Trip/Equip) | | | | | | X |
| Description of QC Samples: | | | | | Sampler's Initials: | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | <u>no slightly oily</u> | <u>may just be coming down from parking lot</u> | | | | |
| COLOR | <u>light yellow</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>no rain</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>8 / 4 / 14</u> | | SAMPLE START TIME: <u>1554</u> | |
|-----------------------------------------------------------------------|--|------------------------------------------------------|--|---------------------------------------|--|
| OUTFALL/NODE ID: <u>1224-1</u> | | PHYSICAL LOCATION: <u>6. Seward + Sylvan (north)</u> | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1554</u> | |
| Flow Meter | | Flow Speed (ft/s): <u>0.20</u> | | Water Depth (in): <u>2 in</u> | |
| Bucket Measurements | | Time 1 (s) | | Time 2 (s) | |
| Bucket: 1-gal 5-gal | | Time 3 (s) | | 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) | | SpCond (µS/cm) | |
| MEASUREMENT | | DO (mg/L) | | pH | |
| FIELD REPLICATE | | TURB (ntu) | | | |
| | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | |
| SAMPLE NUMBER | | TIME (ADT) | | SAMPLES COLLECTED (CHECK BOX) | |
| | | | | FECAL | |
| | | | | BOD | |
| | | | | TSS | |
| | | | | TAqH | |
| | | | | TAH | |
| SWM <u>03-03</u> | | <u>1554</u> | | X | |
| 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>light light 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> | | <u>some trash - candy wrapper etc</u> | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | |
| | | | | | |
| | | | | | |
| Photos: <input checked="" type="radio"/> Yes <input type="radio"/> No | | | | | |

Reviewed By: M. Anwar

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>04</u> | | DATE: <u>8/4/14</u> | SAMPLE START TIME: <u>1601</u> | | | |
|-------------------------------------------------------------|---------------------------------------------------|------------------------------------------------------|--------------------------------|--------------------------------------|---------------------|--------------|
| OUTFALL/NODE ID: <u>1224-2</u> | | PHYSICAL LOCATION: <u>O. Seward + Sylvan (south)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket <u>Flow Meter</u> | | | Time: <u>1601</u> | |
| Flow Meter | Flow Speed (ft/s): <u>0.04-Exp</u> <u>0.13</u> | Water Depth (in): <u>1.75</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) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) |
| MEASUREMENT | <u>1601</u> | <u>15.56</u> | <u>497</u> | <u>8.53 (85.6%)</u> | <u>7.48</u> | <u>10.4</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 04-03</u> | <u>1601</u> | <u>X</u> | <u>X</u> | <u>X</u> | | |
| <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>light yellow</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: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>05</u> | | DATE: <u>8/4/14</u> | | SAMPLE START TIME: <u>1634</u> | | |
|-------------------------------------------------------------|--------------------------------|------------------------------------------------------------|-------------------------------|--------------------------------------|---------------------|----------|
| OUTFALL/NODE ID: <u>207-1</u> | | PHYSICAL LOCATION: <u>E. 56th @ save school</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1634</u> | | |
| <u>Flow Meter</u> | Flow Speed (ft/s): <u>0.46</u> | | Water Depth (in): <u>0.75</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) | SpCond (µS/cm) | DO (mg/L) | pH | |
| MEASUREMENT | <u>1634</u> | <u>15.06</u> | <u>245</u> | <u>9.561</u> | <u>7.34</u> | |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 05-03</u> | <u>1634</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>X</u> |
| <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>light yellow</u> | | | | | |
| CLARITY | <u>clear</u> | | | | | |
| FLOATABLES | <u>none</u> | | | | | |
| DEPOSITS or STAINS | <u>orange deposit on</u> | <u>bottom of pipe</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. Brown

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>06</u> | | DATE: <u>8/4/14</u> | | SAMPLE START TIME: <u>1710</u> | | |
|-----------------------------------------------------------------------------|--------------------------------|-------------------------------------|-------------------------------------|---------------------------------------------|---------------------|--------------|
| OUTFALL/NODE ID: <u>314-22</u> | | PHYSICAL LOCATION: <u>Maplewood</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Flow Meter <input checked="" type="radio"/> | | |
| Time: <u>1710</u> | | | | | | |
| Flow Meter | Flow Speed (ft/s): <u>0.39</u> | Water Depth (in): <u>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 | | | | | | |
| IN SITU WATER QUALITY MEASUREMENTS | | | | | | |
| INSTRUMENT/SERIAL # | YSI 556 MULTIPROBE: KLI #1939 | | | HACH 2100P/Q TURBIDIMETER: KLI #0833 | | |
| | TIME (ADT) | TEMP (°C) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) |
| MEASUREMENT | <u>1710</u> | <u>13.59</u> | <u>170</u> | <u>9.07</u> <u>(87.2%)</u> | <u>6.90</u> | <u>28.5</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 06-03</u> | <u>1710</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>no</u> | | | | | |
| COLOR | <u>light brown</u> | | | | | |
| CLARITY | <u>pretty clear</u> | | | | | |
| FLOATABLES | <u>no</u> | | | | | |
| DEPOSITS or STAINS | <u>rusted out pipe</u> | | | | | |
| SHEEN | <u>no</u> | | | | | |
| SURFACE SCUM | <u>no</u> | | | | | |
| DEBRIS | <u>trash</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>raining</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Avon

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>07</u> | | DATE: <u>8/4/14</u> | | SAMPLE START TIME: <u>1734</u> | | |
|-------------------------------------------------------------|--------------------------------|----------------------------------------------|----------------|--------------------------------------|---------------------|--------------|
| OUTFALL/NODE ID: <u>484-1</u> | | PHYSICAL LOCATION: <u>New Seward (north)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) <u>Bucket</u> | | Flow Meter <u>0.75 m/s</u> | | Time: <u>1734</u> | | |
| Flow Meter | Flow Speed (ft/s): | Water Depth (in): <u>2 in</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-gal</u> 5-gal | <u>23.55</u> | <u>8.17</u> | <u>5.52</u> | <u>4.50</u> | | |
| IN SITU WATER QUALITY MEASUREMENTS | | | | | | |
| INSTRUMENT/SERIAL # | YSI 556 MULTIPROBE: KLI #1939 | | | HACH 2100P/Q TURBIDIMETER: KLI #0833 | | |
| | TIME (ADT) | TEMP (°C) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) |
| MEASUREMENT | <u>1734</u> | <u>13.73</u> | <u>145</u> | <u>9.60</u> | <u>7.50</u> | <u>363</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM_07-03</u> | <u>1734</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>X</u> |
| <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>yes - hydrocarbon smell</u> | <u>in general vicinity - not water</u> | | | | |
| COLOR | <u>dark grey</u> | | | | | |
| CLARITY | <u>very turbid</u> | | | | | |
| FLOATABLES | <u>no</u> | | | | | |
| DEPOSITS or STAINS | <u>no</u> | | | | | |
| SHEEN | <u>no</u> | | | | | |
| SURFACE SCUM | <u>no</u> | | | | | |
| DEBRIS | <u>no</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>raining</u> | | | | | | |
| Photos: <u>Yes</u> No | | | | | | |

Reviewed By: M. Avon

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>08</u> | | DATE: <u>8 / 4 / 14</u> | | SAMPLE START TIME: <u>1751</u> | | | |
|-------------------------------------------------------------|------------------------------------------|----------------------------------------------|-------------------------------------|--------------------------------------|---------------------|-------------|--------------|
| OUTFALL/NODE ID: <u>86-1</u> | | PHYSICAL LOCATION: <u>New Seward (42 in)</u> | | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1751</u> | | | |
| <u>Flow Meter</u> | | <u>Flow Meter</u> | | | | | |
| Flow Speed (ft/s): <u>5.90</u> | | Water Depth (in): <u>3.1</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) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) | |
| MEASUREMENT | <u>1756</u> | <u>13.79</u> | <u>189</u> | <u>10.08 (97.2%)</u> | <u>7.10</u> | <u>129</u> | |
| FIELD REPLICATE | <u>1759</u> | <u>14.38</u> | <u>144</u> | <u>9.98 (97.5%)</u> | <u>7.08</u> | <u>54.9</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH | |
| <u>SWM 08-03</u> | <u>1751</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| <u>SWM 08-03 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>strong hydrocarbon</u> | <u>smell in pipe.</u> | | | | | |
| COLOR | <u>grey</u> | | | | | | |
| CLARITY | <u>turbid</u> | | | | | | |
| FLOATABLES | <u>none</u> | | | | | | |
| DEPOSITS or STAINS | <u>none orange deposit on some rocks</u> | | | | | | |
| SHEEN | <u>none</u> | | | | | | |
| SURFACE SCUM | <u>none</u> | | | | | | |
| DEBRIS | <u>none</u> | <u>some detritus</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | | |
| <u>not raining.</u> | | | | | | | |
| Photos: Yes No | | | | | | | |

Reviewed By: M. Brown

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>09</u> | | DATE: <u>8/4/14</u> | | SAMPLE START TIME: <u>1821</u> | | | |
|-----------------------------------------------------------------------------|---------------|----------------------------------------------|----------------|--------------------------------------|---------------------|-------------|--------------|
| OUTFALL/NODE ID: <u>499-1</u> | | PHYSICAL LOCATION: <u>Boeke (north bank)</u> | | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1821</u> | | | |
| Flow Meter | | Flow Meter | | | | | |
| Flow Speed (ft/s): <u>0.09</u> | | Water Depth (in): <u>3 in</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) | SpCond (µS/cm) | DO (mg/L) | pH | TURB (ntu) | |
| MEASUREMENT | <u>1821</u> | <u>14.30</u> | <u>202</u> | <u>9.80 (95.7%)</u> | <u>7.86</u> | <u>75.7</u> | |
| FIELD REPLICATE | | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH | |
| <u>SWM09-03</u> | <u>1821</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>X</u> | |
| <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>grey</u> | | | | | | |
| CLARITY | <u>turbid</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>NO rain - hard to get enough water - low flow - might</u> | | | | | | | |
| <u>have set disturbed bottom</u> | | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | | |

Reviewed By: M. Avon

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM 10 | | DATE: 8/14/14 | | SAMPLE START TIME: 1838 | | |
|-------------------------------------------------------------|-------------------------------|---------------------------------------|----------------------------|--------------------------------------|---------------------|-----|
| OUTFALL/NODE ID: 525-2 | | PHYSICAL LOCATION: Boeke (south bank) | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Flow Meter | | |
| | | | | Time: 1838 | | |
| Flow Meter | Flow Speed (ft/s): 1.33 | | Water Depth (in): 1 3/4 in | | Pipe Diam (in): | |
| Bucket Measurements | Time 1 (s) | Time 2 (s) | Time 3 (s) | Time 4 (s) | Total Time | |
| Bucket: 1-gal 5-gal | | | | | 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) | SpCond (µS/cm) | DO (mg/L) | pH | |
| MEASUREMENT | 1838 | 12.33 | 368 | 11.87 | 7.23 | |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM 10-03 | 1838 | X | X | X | | |
| 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 | no | | | | | |
| COLOR | very light orange | | | | | |
| CLARITY | clear | | | | | |
| FLOATABLES | no | | | | | |
| DEPOSITS or STAINS | orange deposit on | rock | | | | |
| SHEEN | no | | | | | |
| SURFACE SCUM | no | | | | | |
| DEBRIS | no | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| DO jumping | | | | | | |
| Photos: Yes No | | | | | | |

Reviewed By: M. Ann

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>01</u> | | DATE: <u>8/24/14</u> | | SAMPLE START TIME: <u>1330</u> | | |
|-----------------------------------------------------------------------------|---------------------|--------------------------------------------------|-------------------------------------|--------------------------------------|--------------------------------|-----|
| OUTFALL/NODE ID: <u>1040-3</u> | | PHYSICAL LOCATION: <u>Baker Mills + O'Malley</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1330</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>0.09</u> | | Water Depth (in): <u>0.25</u> | | |
| Pipe Diam (in): <u>18</u> | | Bucket Measurements | | Total Time | | |
| Bucket: 1-gal 5-gal | | Time 1 (s) | Time 2 (s) | Time 3 (s) | Time 4 (s) | |
| | | <u>1ft/14.5s</u> | <u>1ft/10s</u> | <u>1ft/12s</u> | <u>1ft/10.6s</u> | |
| IN SITU WATER QUALITY MEASUREMENTS | | | | | | |
| INSTRUMENT/SERIAL # | | YSI 556 MULTIPROBE: KLI #1939 | | HACH 2100P/Q TURBIDIMETER: KLI #0833 | | |
| MEASUREMENT | | TIME (ADT) | TEMP (°C) | COND (µS/cm) | DO (mg/L) | |
| FIELD REPLICATE | | | | | | |
| | | <u>1330</u> | <u>13.93</u> | <u>187</u> | <u>8.06/72%</u> | |
| | | | | | <u>7.77</u> | |
| | | | | | <u>8.35</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM01-04</u> | <u>1330</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: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | | EXTENT - COMMENTS | | | |
| ODOR | <u>none</u> | | | | | |
| COLOR | <u>slight color</u> | | <u>light brown</u> | | | |
| CLARITY | <u>good</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 v. light rain. Some bluegrass growing in outfall.</u> | | | | | | |
| <u>v. low flow. water mark at 1"</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Aaron

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>02</u> | | DATE: <u>8/26/14</u> | | SAMPLE START TIME: <u>1413</u> | | |
|-----------------------------------------------------------------------------|-------------|-----------------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| OUTFALL/NODE ID: <u>8471</u> | | PHYSICAL LOCATION: <u>Home Depot - Abbott</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1413</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>1.49</u> | | Water Depth (in): <u>3/8</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>1413</u> | <u>11.57</u> | <u>254</u> | <u>11.19/102.8%</u> | <u>7.75</u> | |
| FIELD REPLICATE | <u>1414</u> | <u>11.53</u> | <u>255</u> | <u>11.09/102.0%</u> | <u>7.63</u> | |
| TURB (ntu) | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM02-04</u> | <u>1413</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <u>SWM02-04 Dup</u> | <u>1413</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"/> | <input checked="" type="checkbox"/> |
| Description of QC Samples: | | | | | Sampler's Initials: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | <u>none</u> | | | | | |
| COLOR | <u>none</u> | | | | | |
| CLARITY | <u>good</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, v. light rain.</u> | | | | | | |
| <u>good flow</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M Ann

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| | | | | | | |
|-----------------------------------------------------------------------------|-------------|-------------------------------------------------------|--------------|--------------------------------------|-------------------------------------|-------------------------------------|
| STATION ID: SWM <u>03</u> | | DATE: <u>8/24/14</u> | | SAMPLE START TIME: <u>1445</u> | | |
| OUTFALL/NODE ID: <u>1224-1</u> | | PHYSICAL LOCATION: <u>Old Seward + Sylvan (North)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1445</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>0.29</u> | | Water Depth (in): <u>1.5</u> | | |
| Pipe Diam (in): <u>36</u> | | | | | | |
| Bucket Measurements | | Time 1 (s) | Time 2 (s) | Time 3 (s) | Time 4 (s) | |
| Total Time | | Rate (gals) | | | | |
| 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>8.94</u> | <u>369</u> | <u>6.92/59.670</u> | |
| pH | | <u>7.65</u> | | | | |
| TURB (ntu) | | <u>3.13</u> | | | | |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | | TIME (ADT) | | SAMPLES COLLECTED (CHECK BOX) | | |
| | | | | FECAL | BOD | TSS |
| SWM <u>03</u> -04 | | <u>1445</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: <u>MAS</u> |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | - | | | | | |
| COLOR | - | | | | | |
| CLARITY | <u>good</u> | | | | | |
| FLOATABLES | - | | | | | |
| DEPOSITS or STAINS | - | | | | | |
| SHEEN | - | | | | | |
| SURFACE SCUM | - | | | | | |
| DEBRIS | - | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>overcast</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Moore

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| | | | | | | |
|--------------------------------------------------------------------|-------------------------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|------|--------------------------------|
| STATION ID: SWM <u>04</u> | DATE: <u>8/24/14</u> | SAMPLE START TIME: <u>1453</u> | | | | |
| OUTFALL/NODE ID: <u>1224-2</u> | PHYSICAL LOCATION: <u>old Seward + Sylvan (south)</u> | | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | Bucket | <u>Flow Meter</u> | | | | |
| | | Time: <u>1453</u> | | | | |
| Flow Meter | Flow Speed (ft/s): <u>0.06</u> | Water Depth (in): <u>.75</u> | | | | |
| | | Pipe Diam (in): <u>18</u> | | | | |
| Bucket Measurements | Time 1 (s) | Time 2 (s) | | | | |
| | Time 3 (s) | Time 4 (s) | | | | |
| Bucket: <u>1-gal</u> 5-gal | <u>147/5.6s</u> | <u>147/6.2s</u> | | | | |
| | <u>147/5.4s</u> | <u>147/4.0s</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>1453</u> | <u>14.46</u> | | | | |
| | <u>606</u> | <u>7.75/76.0%</u> | | | | |
| | <u>7.64</u> | <u>47.8</u> | | | | |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM 04-04</u> | <u>1453</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: <u>MRS</u> |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | - | | | | | |
| COLOR | <u>light blue/grey</u> | | | | | |
| CLARITY | <u>good</u> | | | | | |
| FLOATABLES | - | | | | | |
| DEPOSITS or STAINS | - | | | | | |
| SHEEN | | <u>bubbles on surface of water</u> | | | | |
| SURFACE SCUM | - | | | | | |
| DEBRIS | - | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>overcast</u> | | | | | | |
| <u>low flow - two flow sample methods</u> | | | | | | |
| Photos: Yes No | | | | | | |

Reviewed By: M. Awan

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| | | | | | | |
|------------------------------------------------------------------------------------|--|-------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| STATION ID: SWM <u>05</u> | | DATE: <u>8/24/14</u> | | SAMPLE START TIME: <u>1520</u> | | |
| OUTFALL/NODE ID: <u>207-1</u> | | PHYSICAL LOCATION: <u>E. 56th @ Sane School</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Time: <u>1520</u> | | |
| Flow Meter | | Flow Speed (ft/s): <u>0.18</u> | | Water Depth (in): <u>0.75</u> | | |
| Pipe Diam (in): <u>24</u> | | Bucket Measurements | | Rate (gal/s) | | |
| 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>1520</u> | | <u>13.55</u> | | |
| | | <u>304</u> | | <u>8.79/24.3%</u> | | |
| FIELD REPLICATE | | | | <u>7.33</u> | | |
| | | | | 7.9 <u>17.0</u> | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | | TIME (ADT) | | SAMPLES COLLECTED (CHECK BOX) | | |
| | | | | FECAL BOD TSS TAqH TAH | | |
| <u>SWM 05-04</u> | | <u>1520</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: <u>MAS</u> | | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | | TYPE/SOURCE | | EXTENT - COMMENTS | | |
| ODOR | | - | | | | |
| COLOR | | <u>v. light brown/yellow</u> | | <u>in sample bottle</u> | | |
| CLARITY | | <u>good</u> | | | | |
| FLOATABLES | | - | | | | |
| DEPOSITS or STAINS | | - | | | | |
| SHEEN | | | | <u>bubbles on surface of water below outfall</u> | | |
| SURFACE SCUM | | - | | | | |
| DEBRIS | | - | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>overcast, v. light rain. Some tall blue joint reedgrass growing in outfall.</u> | | | | | | |
| <u>Sediment + algae in outfall</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>06</u> | | DATE: <u>8/24/14</u> | | SAMPLE START TIME: <u>1601</u> | | |
|-----------------------------------------------------------------------------|------------------------|------------------------------------------|-------------------------------------|--------------------------------------|--------------------------------|-----|
| OUTFALL/NODE ID: <u>314-22</u> | | PHYSICAL LOCATION: <u>Maplewood</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | | Flow Meter | | |
| Flow Meter | | Flow Speed (ft/s): <u>0.37</u> | | Water Depth (in): <u>0.4</u> | | |
| Pipe Diam (in): <u>24</u> | | Time: <u>1601</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>1601</u> | <u>12.21</u> | <u>184</u> | <u>9.77/91.1%</u> | <u>7.25</u> | |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM06-04</u> | <u>1601</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: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | - | | | | | |
| COLOR | <u>v. light yellow</u> | | | | | |
| CLARITY | <u>good</u> | | | | | |
| FLOATABLES | - | | | | | |
| DEPOSITS or STAINS | - | | | | | |
| SHEEN | - | <u>some foam + suds on water surface</u> | | | | |
| SURFACE SCUM | - | | | | | |
| DEBRIS | - | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>light rain</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. [Signature]

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>07</u> | | DATE: <u>8/24/14</u> | | SAMPLE START TIME: <u>1627</u> | | |
|-----------------------------------------------------------------------------|--------------------------------|---------------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| OUTFALL/NODE ID: <u>484-1</u> | | PHYSICAL LOCATION: <u>New Sewer (north)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) <u>Bucket</u> <u>Flow Meter</u> | | | Time: <u>1627</u> | | | |
| Flow Meter | Flow Speed (ft/s): <u>2.19</u> | Water Depth (in): <u>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: <u>1-gal</u> 5-gal | <u>2.29</u> | <u>2.36</u> | <u>2.06</u> | <u>1.80</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>1627</u> | <u>13.34</u> | <u>101</u> | <u>9.72/93.1%</u> | <u>7.37</u> | <u>291</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>1627</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: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | - | | | | | |
| COLOR | <u>dark grey</u> | | | | | |
| CLARITY | <u>poor</u> | <u>very cloudy</u> | | | | |
| FLOATABLES | - | | | | | |
| DEPOSITS or STAINS | - | | | | | |
| SHEEN | - | <u>some bubbles on water surface</u> | | | | |
| SURFACE SCUM | - | | | | | |
| DEBRIS | - | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>light rain</u> | | | | | | |
| <u>flow increased during flow measurement</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M Swann

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| STATION ID: SWM <u>08</u> | | DATE: <u>8/24/14</u> | | SAMPLE START TIME: <u>1640</u> | | |
|-----------------------------------------------------------------------------|--------------------------------|----------------------------------------------|--------------------------------------|-------------------------------------|--------------------------------|-----|
| OUTFALL/NODE ID: <u>86-1</u> | | PHYSICAL LOCATION: <u>New Seward (42-in)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | Flow Meter | | Time: <u>1640</u> | |
| Flow Meter | Flow Speed (ft/s): <u>6.20</u> | | Water Depth (in): <u>2.75</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>1640</u> | <u>11.20</u> | <u>358</u> | <u>10.27/93.5%</u> | <u>7.17</u> | |
| FIELD REPLICATE | | <u>11.34</u> | <u>333</u> | <u>10.20/93.4%</u> | <u>7.15</u> | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>08-04</u> | <u>1640</u> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| SWM <u>08-04 Dup</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: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | <u>yes</u> | <u>fuel</u> | | | | |
| COLOR | <u>yellow/light brown</u> | | | | | |
| CLARITY | <u>moderate</u> | | | | | |
| FLOATABLES | <u>-</u> | | | | | |
| DEPOSITS or STAINS | | <u>rust/iron stain in pipe</u> | | | | |
| SHEEN | | <u>some bubbles on water surface</u> | | | | |
| SURFACE SCUM | <u>-</u> | | | | | |
| DEBRIS | <u>-</u> | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>light rain</u> | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Brown

Date: 8/26/14

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**MOA Stormwater Management Program
WATER QUALITY STORM SAMPLING FIELD LOG**

| | | | | | | |
|-----------------------------------------------------------------------------|-------------------------------|--------------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| STATION ID: SWM <u>09</u> | | DATE: <u>8/24/14</u> | | SAMPLE START TIME: <u>1710</u> | | |
| OUTFALL/NODE ID: <u>499-1</u> | | PHYSICAL LOCATION: <u>Boeke Cruth bank</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | Flow Meter | | Time: | |
| Flow Meter | | Flow Speed (ft/s): <u>0.45</u> | | Water Depth (in): <u>3.1</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>1710</u> | <u>14.82</u> | <u>140</u> | <u>9.34 / 92.11</u> | <u>7.36</u> | <u>59.3</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| SWM <u>09</u> -04 | <u>1710</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: <u>MAS</u> |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | - | | | | | |
| COLOR | <u>light grey</u> | | | | | |
| CLARITY | <u>Poor</u> | <u>water cloudy in pipe</u> | | | | |
| FLOATABLES | - | | | | | |
| DEPOSITS or STAINS | - | | | | | |
| SHEEN | - | | | | | |
| SURFACE SCUM | - | | | | | |
| DEBRIS | - | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| <u>Rain</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>8/26/14</u> | | SAMPLE START TIME: <u>1725</u> | | |
|-----------------------------------------------------------------------------|--------------------------------|----------------------------------------------|-------------------------------------|--------------------------------------|--------------------------------|--------------|
| OUTFALL/NODE ID: <u>525-2</u> | | PHYSICAL LOCATION: <u>Boeke (south bank)</u> | | | | |
| OUTFALL FLOW MEASUREMENTS | | | | | | |
| Flow Method (circle) | | Bucket | Flow Meter | | Time: <u>1725</u> | |
| Flow Meter | Flow Speed (ft/s): <u>2.73</u> | | Water Depth (in): <u>2.6</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>1725</u> | <u>14.07</u> | <u>168</u> | <u>10.64/108.4%</u> | <u>7.80</u> | <u>116</u> |
| FIELD REPLICATE | | | | | | |
| DISCRETE WATER QUALITY SAMPLES | | | | | | |
| SAMPLE NUMBER | TIME (ADT) | SAMPLES COLLECTED (CHECK BOX) | | | | |
| | | FECAL | BOD | TSS | TAqH | TAH |
| <u>SWM <u>L0</u> -04</u> | <u>1725</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: <u>MAS</u> | |
| STANDARD OBSERVATIONS | | | | | | |
| PARAMETER | TYPE/SOURCE | EXTENT - COMMENTS | | | | |
| ODOR | <u>light</u> | | | | | |
| COLOR | <u>brown</u> | | | | | |
| CLARITY | <u>moderate</u> | | | | | |
| FLOATABLES | <u>some</u> | <u>suspended particles visible in sample</u> | | | | |
| DEPOSITS or STAINS | <u>man standing</u> | <u>on cement below outfall, in pipe</u> | | | | |
| SHEEN | - | | | | | |
| SURFACE SCUM | - | | | | | |
| DEBRIS | - | | | | | |
| WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS: | | | | | | |
| | | | | | | |
| | | | | | | |
| Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |

Reviewed By: M. Avon

Date: 8/26/14

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