

**ANNUAL  
MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)  
REPORT**

**NPDES STORMWATER PERMIT  
NUMBER ALS000002  
Chickasaw, Alabama  
Volkert Job Number 130110.10**

*Prepared for:*

**The City of Chickasaw  
Mayor Byron Pittman  
224 North Craft Highway  
Chickasaw, Alabama 36671**

**December 2011**

*Prepared by:*

**VOLKERT, INC.  
3809 Moffett Road  
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# TABLE OF CONTENTS

	<u>Page</u>
1.0	CERTIFICATION AND INTRODUCTION .....1
1.1	Certification .....1
1.2	List of Contacts .....2
1.3	General Introduction .....3
1.4	Overview and Summary .....4
2.0	PROGRAM EVALUATION.....5
2.1	Objective of the Program .....5
2.2	Major Findings.....6
2.3	Overall Program Strengths and Weaknesses .....7
2.4	Future Direction of the Program .....8
3.0	SUMMARY TABLE .....9
3.1	SWMP Element Status/Compliance .....9
4.0	NARRATIVE REPORT .....10
4.1	Educational Activities/Public Participation and Involvement .....10
4.2	Monitoring and Screening.....12
4.3	Illicit Inspection/Investigation/Enforcement .....13
4.4	Spills .....14
4.5	Development Planning Procedures .....15
4.6	Construction Planning Procedures .....16
4.7	Construction Inspections.....17
4.8	Pesticides, Herbicides, and Fertilizers .....18
4.9	Roadway Maintenance.....19
4.10	Structural Controls Maintenance .....20
4.11	Industrial Inspection.....21
4.12	Flood Management .....22
4.13	Municipal Facilities .....23
4.14	Oil and Household Hazardous Waste .....24
4.15	Sanitary Sewer Seepage .....25
5.0	SUMMARY OF PROPOSED MODIFICATIONS .....26
6.0	FISCAL ANALYSIS .....27
6.1	Past Fiscal Year.....27
6.2	Current Fiscal Year .....27
7.0	MONITORING RESULTS .....28
7.1	Monitoring Locations.....28
7.2	Wet Weather Data.....29
7.3	Dry Weather Data .....30
8.0	SUMMARY.....31

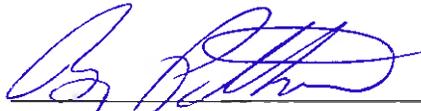
APPENDIX A - SAMPLING MAP  
 APPENDIX B – SAMPLING DATA

## 1.0 CERTIFICATION AND INTRODUCTION

### 1.1 Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The Honorable Byron Pittman  
Mayor, City of Chickasaw

  
\_\_\_\_\_  
Signature

Dec. 13, 2011  
\_\_\_\_\_  
Date

## 1.2 List of Contacts

The following individuals may be contacted to address questions or concerns regarding this report:

The Honorable Byron Pittman  
Mayor, City of Chickasaw  
224 North Craft Highway  
Chickasaw, Alabama 36671  
(251) 452-6450

Melissa O'Sullivan  
Volkert, Inc.  
3809 Moffett Road  
Mobile, Alabama 36618  
(251) 342-1070

### **1.3 General Introduction**

On November 16, 1990, the U.S. Environmental Protection Agency (EPA) promulgated regulations, under the Water Quality Act of 1987, setting forth application requirements for National Pollutant Discharge Elimination System (NPDES) storm water permits. The Alabama Department of Environmental Management (ADEM) administers the storm water program for the State of Alabama. Although the Federal regulations required municipalities with a population of 100,000 or more to participate in the Phase I permitting process, ADEM exercised the right to designate the City of Chickasaw as requiring a Phase I storm water discharge permit in lieu of the Phase II permit for smaller systems. The City of Chickasaw is submitting this report as part of a group permit annual requirement for the NPDES permit number ALS000002.

## 1.4 Overview and Summary

On November 16, 1990, the Environmental Protection Agency (EPA) ruled that municipalities and industry share the responsibility to improve the water quality of the "Waters of the United States". In accordance with this rule, the EPA created regulations for NPDES Storm Water Permits for municipalities and permits associated with industrial activity. These regulations are aimed at reducing the amount of non-point source pollution that is currently the leading cause of water pollution.

The Water Quality Act involves a two-phased municipal permitting program that requires municipalities of certain populations to establish discharge controls to the Maximum Extent Practicable (MEP), to effectively prohibit non-storm water discharges to the municipal separate storm sewer systems, and where necessary, to contain applicable water quality based controls. Compliance with the maximum extent practicable requirement can be attained by developing a storm water management plan that addresses the six minimum control measures described in the storm water regulations and detailed in fact sheets developed and provided by EPA.

Although the Phase I permitting program is designed for municipalities with populations of 100,000 or greater, municipalities of smaller populations can be designated as co-permittees by the local authority administering the program. The City of Chickasaw (City), with a 2010 population estimate of 6,106, according to the U.S. Census Bureau, is an example of such a municipality.

The City utilizes current personnel to assist with the storm water program elements. Additional assistance is provided by local engineering firms and Mobile County, as needed during crises or emergencies such as floods, spills, or hazardous waste incidents.

Storm water is managed by several City departments and by community activities which involve volunteer work. The City does not have the financial resources to dedicate personnel solely to storm water quality, however these responsibilities are shared by employees and considered part of the effort to protect our streams and waterways from degradation.

## **2.0 PROGRAM EVALUATION**

### **2.1 Objective of the Program**

The City of Chickasaw, in conjunction with other municipalities in the Mobile and Baldwin Counties, were placed under a National Pollutant Discharge Elimination System (NPDES) Permit for storm water discharges. The permit was effective on June 14, 1996 and assigned the permit number ALS000002. The permit was renewed for a second five-year period on September 24, 2001 and is currently under an administrative extension by ADEM while the permit is being modified. The intent of the NPDES permit is to reduce and eliminate pollutants in storm water that are discharged from municipal separate storm sewer systems (MS4s). In accordance with the issued NPDES, the reporting period for items contained in this report is October 2010 through September 2011.

Currently ADEM is working with permittees and EPA to modify the program requirements. The permit is divided into Phase I and Phase II permittees. The City of Chickasaw is included in a Phase I permit. ADEM issued the Phase II permit in February, 2011. Refer to Section 5.0 SUMMARY OF PROPOSED PROGRAM MODIFICATIONS for the City's future direction of this program.

The City of Chickasaw is dedicated to achieving the conditions of this permit, which will ultimately improve water quality by reducing pollutants in receiving waters. The City's goals are to educate the municipal employees and the general public on the storm water management program and focus on a unified approach to the identification and correction of problem areas. Additionally, the City has established the legal authority to manage and enforce the requirements of the program.

## **2.2 Major Findings**

Dry weather screening was performed for the one major outfall and ten field screening locations. These sites are listed in Section 7.1 and detailed on maps included in Appendix A. The objective of dry weather screening was to identify illicit discharges. No illicit discharges were noted for any of the sites. In addition a wet weather screening was performed on the major outfall in accordance with the permit. Inspection results are presented in Section 7.2 and 7.3 along with representative outfall data in Appendix B.

### **2.3 Overall Program Strengths and Weaknesses**

The City has developed and implemented many programs to help minimize storm water related pollutant loads. City Ordinance 1540, passed in 1998, establishes procedures to control discharges from commercial and industrial facilities and construction sites. A Drainage Master Plan was established in 1999 that identified problem areas and prioritized construction projects to address these areas. The Director of Public Works responsibilities include maintaining the prioritized list of projects. The projects are evaluated to ensure the areas with the highest needs are moved to the top of the list. The City is progressively addressing these projects as funds become available.

The City's Director of Public Works and Code Inspector are responsible for the majority of the various program elements. Employees in all City departments have received instruction on the program objectives and are provided with opportunities to attend educational programs.

The prediction of the long-range financial requirements needed to support the storm water program is difficult especially since forthcoming modifications to the program are unknown. Funding for expanding the storm water management program is currently unavailable. The City officials address the financial needs and make budget allocations on a year-to-year basis that are prioritized based on the needs of the entire City operations.

## **2.4 Future Direction of the Program**

The City will continue to implement and enforce the current ordinances and other programs regarding storm water issues to the maximum extent practicable. The City will continue to monitor designated outfall points and field inspection sites. The City will encourage community activity through education and outreach programs.

The City of Chickasaw along with other smaller cities in Mobile and Baldwin County were included in a Phase I permit with the City of Mobile. On behalf of the City, Volkert representatives have had several conversations regarding the proposed amendments to the MS4 program. Based on several factors including populations/land use, water quality, and existing programs/ordinances, the City of Chickasaw is requesting to be removed from the MS4 Stormwater Permit under a separate letter not included in this report.

### 3.0 SUMMARY TABLE

#### 3.1 Storm Water Management Plan Element Status/Compliance CITY OF CHICKASAW

Program Element	Requirement	Activity Schedule			Comments
		Activities Required by SWMP	Complied With	Activities Accomplished During Calendar Year	
Structural Controls	Major Channels Inspections	7 Channels, once/month	Yes	7 Channels, once/month	Additionally, Before/After Heavy Rains
	Major Channels Maintenance	7 Channels, as needed	Yes	7 Channels, as needed	
	Storm Inlets Inspected	Approx. 1400 inlets, once/3 mths	Yes	Approx. 1400 inlets, once/3 mths	Additionally, Before/After Heavy Rains
	Detention Ponds Maintained	3 Ponds, once/year	Yes	3 Ponds, once/year	Or, more often as needed.
Monitoring	Representative	1 site, once/year	Yes	1 site, once/year	Summary, Section 7.0
	Wet Weather Screening	10 sites, once/year	N/A	10 sites, once/year	Not required this permit year
	Dry Weather Screening	10 sites, once/year	Yes	10 sites, once/year	Summary, Section 7.0
Illicits	SSO's	Record/report occurrences	Yes	3 violations	Reported to ADEM, and on MWPP.
	Investigations	Investigate reports/complaints	Yes	None Reported	None reported
Construction	Site Inspections	Frequently during construction	Yes	4 res., 0 comm.	No citations issued
Industrial	Inspections	As Needed	N/A	As Needed	No permitting RCRA facilities
Education	Litter Campaign	Maintain Program	Yes	Keep Mobile Beautiful and Coastal Clean up	
	Public Information	Maintain Program	Yes	Maintained City's Website	

## **4.0 NARRATIVE REPORT**

### **4.1 Educational Activities/ Public Participation and Involvement**

As part of their public service education program, the City maintains their website which includes information on storm water pollution, its causes and how citizens can help prevent storm water pollution. The City also produces a newsletter every two months to announce upcoming City events which includes any stormwater related events. The newsletter is included as a flier with the newspaper and the ads.

To assist with controlling litter the City participates in the Keep Mobile Beautiful Program and the Coastal Clean Up Program. The City conducts an annual non-hazardous waste/garbage collection day called "Clean Sweep" for city residents at no extra charge. Once every year the City notifies their residents of a specific day that they will provide two drop off locations for paints, batteries, tires, and household chemicals at no cost to the citizens to prevent these items from being disposed of in household garbage. The City properly disposes of these items at a permitted landfill. The City notifies their residents of the "Clean Sweep" event by the aforementioned newsletter. This year's event was held in April and the City collected 126 tires and approximately 500 lbs of trash. Coastal Clean-up encourages volunteers to bring their boat, canoe, kayak etc. and help clean up the waterways. The City provides the necessary supplies at registration. The Coastal Clean-up was held in September and encouraged attendance by providing t-shirts to the first 100 registrants.

The City also provides educational opportunities to its employees. The City Code Inspector attends the monthly meetings of the Code Officials of Lower Alabama Association, annual meeting of the Code Officials of Alabama, and annual meeting of the Alabama Association of Plumbing, Gas, and Mechanical Inspectors. The Maintenance Superintendent has attended Emergency Management Agency-sponsored seminars on flood hazards and disaster mitigation. Public Safety officers have been trained in hazardous materials handling. The Utilities Supervisor attends various seminars related to water and wastewater management at events such as Alabama Water Environmental Association Conference. In addition, during this reporting period first responders for the City, which included police, firemen, code inspector and maintenance workers attended the National Incident Management System (NIMS) training through the Emergency Management Institute.

The City has encouraged a volunteer citizen group called the Chickasaw Community Patrol. The volunteers apply for membership through the City Council. The volunteers monitor the streets of Chickasaw day and night looking for any issues that the City needs to address. These issues include break-ins, burglars, flooded streets, street repairs, littered streets, overgrown vegetation etc. The volunteers report any items to the City docket and it is determined then if the police department should be involved immediately or a work order initiated.

## 4.2 Monitoring and Screening

Field screening locations and monitoring stations were selected based upon their proximity to major stream systems, drainage basins, and urban development. Field screening stations were examined during dry conditions to verify that flow exists only during rainfall events. Monitoring stations were located along water bodies that would receive runoff from overland flow and storm water outfalls. These stations were selected as representative of the regional drainage conditions within the City's boundaries. The major outfall and the ten field screening locations were reviewed for evidence of illicit discharges during the permit period. No illicit discharges were noted. Results of the 2010 Monitoring are included in Section 7 of this report.

### **4.3 Illicit Inspection/Investigation/Enforcement**

The City of Chickasaw responds to illicit discharges and continues to inspect, investigate, and enforce violations. No problems were reported during the permit year.

Routine dry weather screening is handled by the City's Drainage Department. Suspected illicit discharges are investigated and handled immediately. There were no citations issued this year for illicit discharges.

#### **4.4 Spills**

The Chickasaw Police Department has developed and implemented a Procedural General Order (PGO) for the reporting and handling of hazardous and/or toxic materials spills and incidents. Public Service Officers are first responders trained in hazardous materials and their containment. The City has mutual aid agreements with the City of Mobile and the City of Saraland Fire Departments which includes their HazMat units. There were no spills reported during the permit period.

The Public Safety Department (PSD) of the City has made a concerted effort to insure that the PSD is ready to respond to manmade or natural disasters. The PSD strives to maintain a strong working relationship with Federal and State agency, local EMA, and surrounding municipalities.

#### **4.5 Development Planning Procedures**

Ordinance 1540 requires contractors with projects that include land-disturbing activities of two or more acres to submit a construction site storm water management plan to the City Building Inspector for review and approval. For those land-disturbing activities that involve two acres or less, a simplified storm water management plan must be developed and followed during construction. These plans require the approval of the City Building Inspector but not a professional certification. The City Building Inspector inspects for compliance with the storm water management plan during site visits. The City's Planning Board and Board of Adjustments advise the City on the acceptability of current and future development. See section 4.6 for additional information on this item.

#### **4.6 Construction Planning Procedures**

The City's ordinances require submission of all potential developments within the City jurisdiction for review with building code compliance. Included in the review is compliance with storm water management. In addition, for construction projects over one acre, the City will request a copy of the applicant's ADEM National Pollutant Discharge Elimination System (NPDES) permit before City approval is granted to the site's storm water management plan or before a construction permit is granted. Construction sites must follow the guidelines established in the storm water management plan in order to proceed.

During the permit reporting period, the City issued four permits for new residential construction and zero permits for commercial construction. No storm water violations were noted at these sites.

#### **4.7 Construction Inspections**

The City Code Inspector is responsible for construction inspections to ensure that all City codes are followed. These codes include building, electrical, plumbing, mechanical, gas, fire standard, storm water management and other miscellaneous codes. The Code Administration also approves land disturbance permits for construction. Once a permit is obtained, the builder must request inspections during different stages of construction. Inspectors generally visit each site several times during the construction process. These multiple inspections allow a city inspector to ensure compliance with the city codes which includes storm water management. The City requires Best Management Practices (BMP's) for all construction projects per ADEM regulations.

During the permit reporting period, the City issued four permits for new residential construction each requiring a minimum of five inspections. The City issued zero permits for commercial construction which would require a minimum of seven inspections. The City Code Inspector keeps a file for each permitted site in a file cabinet.

During the last year, inspectors issued no citations to construction sites for to inadequate erosion control measures or flow control measures.

#### **4.8 Pesticides, Herbicides, and Fertilizers**

The City has an Ordinance for regulation of unsightly growth on residential and commercial properties. This assists with maintaining proper storm water drainage throughout the City within natural lined ditches by reducing the excessive vegetation growth that impedes the flow of storm water through the ditches.

The City sprays rights-of-way and ditch shoulders on an as-needed basis utilizing an ADEM approved herbicide. The herbicide is sprayed by qualified Maintenance Personnel with training on acceptable types of approved chemicals and their applications and quantities. Typically the growing season is from Spring to Fall and the herbicides are sprayed about every six (6) to eight (8) weeks during this time.

#### **4.9 Roadway Maintenance**

To the fullest extent possible, the construction of public streets, roads and highways under the jurisdiction and control of the City are designed to follow natural ridgelines. By using this design, disruption of existing grades and natural drainage areas are minimized. Natural drainage ways are maintained, preserved, and utilized in road design. In order to minimize the possibility of potential pollutant releases, road repairs are performed to the extent practicable during the dry season.

The Chickasaw Public Works Department performs smaller roadway maintenance projects, while larger projects are designed by local engineering firms or accomplished through Mobile County "Pay As You Go" programs. There are two of these projects planned for the next permitting period.

During the permit reporting period, the City widened Mike Box Bridge on Viaduct Rd which leads into the port of Chickasaw. The construction cost totaled approximately \$375,000.

The City has a street sweeper which is utilized on an as-needed basis. Typically this correlates to quarterly use for the traveled roadways in the City of Chickasaw. The City also cleans the major roadways before and after City events such as a parade. Additionally the street sweeper will be used when large construction trucks inadvertently lose materials such as dirt.

The City does not currently have a deicing program since icing of roadways and bridges is not common in this area.

#### **4.10 Structural Controls Maintenance**

The City of Chickasaw cleans and removes debris from all drains as necessary in order to prevent drainage problems. The Public Works Department maintains a regular inspection and maintenance schedule. Storm inlets and detention ponds are inspected at least once every three months and all necessary maintenance is performed. Also, elements of the drainage system are inspected before and after heavy rains and repairs are performed as needed. The Public Works Department maintains weekly progress logs.

During the permit period the City performed necessary repairs to the existing drainage systems to ensure proper drainage. The city replaced the deteriorated storm sewer on Valley Road at an estimated cost of \$30,000. The City also cleans the debris that accumulates on the screens at the storm water pumps as needed to maintain proper operation.

#### **4.11 Industrial Inspection**

There are no facilities subject to regulations under the Resource Conservation and Recovery Act (RCRA) within the City's jurisdiction.

#### **4.12 Flood Management**

The ordinance adopted by the City of Chickasaw requires responsible parties to calculate the impact that their land disturbing activities will have on the City's drainage capacity and to implement controls should analysis show that the quantity of water generated during storm flows by the development will negatively impact the City's drainage capacity or downstream property. The City Building Inspector may then require the following:

- Water surface profiles plotted for the conditions of pre- and post-development for a 10-year design storm.
- Water surface profiles plotted for the conditions of pre- and post-development for the 100-year design storm.
- Elevations of all structures potentially damaged by 10- and 100-year flows.

Appropriate storm water management facilities are required by the City based on the findings of these profiles and evaluations. The City reviews any reported flood/drainage problems and takes appropriate action based on the severity of the problem.

Past projects associated with flood management have included the removal of debris, fallen trees, and other blockages to advance flow from wetland canals, streams, and creeks within the city. The City installed a bulkhead at Brooks Park utilizing tie-backs.

Future plans for improving flood management include a project at 12<sup>th</sup> Avenue from Kansas Street across Iroquois Street to Gum Tree Branch. The estimated cost of the improvements total approximately \$450,000.

#### **4.13 Municipal Facilities**

The City's Public Works Department conducts routine cleaning of drainage systems, including open ditches and closed pipe systems. The City also performs minor construction drainage projects as needed. The City utilizes an oil recovery tank for their vehicles.

The City cleans their parks after every sporting event, cookouts, and concerts by removing all litter and looking to make sure all facilities including site drainage is in working condition. The City also does weekly cleaning of the parks during the active seasons for that park.

#### **4.14 Oil and Household Hazardous Waste**

The City of Chickasaw provides residents with a newsletter every two months which provides information on activities within the community. The City conducts an annual non hazardous waste/garbage collection day called “Clean Sweep” for city residents at no extra charge. Additionally, residents are provided information on the disposal of common household wastes and given drop-off locations for those materials not accepted by the City.

#### **4.15 Sanitary Sewer Seepage**

Through an ongoing review of the sewer system infrastructure sanitary sewer collection system pipe replacements and various pipe and pump station repairs are completed as needed. Activities in these areas will reduce sewer overflows and inflow/infiltration. During the permit period the City cleaned and television inspected about 3,000 linear feet of their sanitary sewer mains at an approximate cost of \$9,500. Additionally, the City installed a new pump station at their lagoons and performed point repairs and rehabilitation of the existing sanitary sewer system costing approximately \$281,000.

A total of three (3) Sanitary Sewer Overflows (SSO's) were reported this year. The overflows were attributed to Inflow/Infiltration during heavy rain events. All SSO's were promptly addressed by the sewer department and reported in accordance with ADEM Guidelines.

## **5.0 SUMMARY OF PROPOSED PROGRAM MODIFICATIONS**

The City of Chickasaw along with other smaller cities in Mobile and Baldwin County were included in a Phase I permit with the City of Mobile. On behalf of the City, Volkert representatives have had several conversations regarding the proposed amendments to the MS4 program. Based on several factors including populations/land use, water quality, and existing programs/ordinances, the City of Chickasaw is requesting to be removed from the MS4 Stormwater Permit under a separate letter not included in this report.

## 6.0 FISCAL ANALYSIS

### 6.1 Past Fiscal Year (Ending 9/2010)

#### Storm Water Management Estimated Budget

#### City of Chickasaw

##### Implementation

Salaries/Wages \$ 80,056

Equipment/Supplies \$ 168,000

Education \$ -0-

Community Safe House Shelter (Grant) \$ 718,000

Total Estimated Budget \$ 966,056

### 6.2 Current Fiscal Year (Ending 9/2011)

#### Public Works Department

##### Implementation

Salaries/Wages(All Maintenance personnel) \$ 260,000

Equipment/Supplies/Services \$ 200,000

Education \$ 1,000

Widening of Mike Box Bridge \$ 375,000

Total Estimated Budget \$ 836,000

## 7.0 MONITORING RESULTS

### 7.1 Monitoring Locations

The following is a list of field screening locations and the major outfall site. Individual sampling sites are indicated on maps included in Appendix A.

- One (1) major outfall at the South end of St. Frances Street
- 10 field screening locations:
  1. 500 Viaduct Rd @ Arc Terminals near south side of railroad tracks
  2. South end of Howell Street near UOP Gate 3 just pass the railroad and Southern St. next to 15mph sign marker.
  3. Second drain on the east side of the intersection of Thompson Drive and Hopi Drive
  4. 1002 Thompson Blvd at bridge crossing across from Wasson Avenue Central Electrical Substation
  5. Intersection of Fox Avenue and 9<sup>th</sup> Avenue
  6. North end of Mauvilla Drive South, adjacent to the I-65 bridge
  7. Hillside Drive across from 507 Hillsdale Drive
  8. Drop inlet at 220/222 Casche Circle
  9. Drop inlet at 312 Idlewood Drive
  10. Across the street from 321 Grant Avenue just west of Craft Hwy

## 7.2 Wet Weather Data

Wet weather data included in this report consists of a representative sample collected at the designated major outfall as identified in this report. This sample data is included in Appendix B. Review of the results note the possibility that the receiving stream is backwashing into the storm water at the point of the sampling. The sampling results indicate low pollutant levels and loadings. There are no indications that the City is contributing to the elevated mercury levels of the receiving streams.

### **7.3 Dry Weather Data**

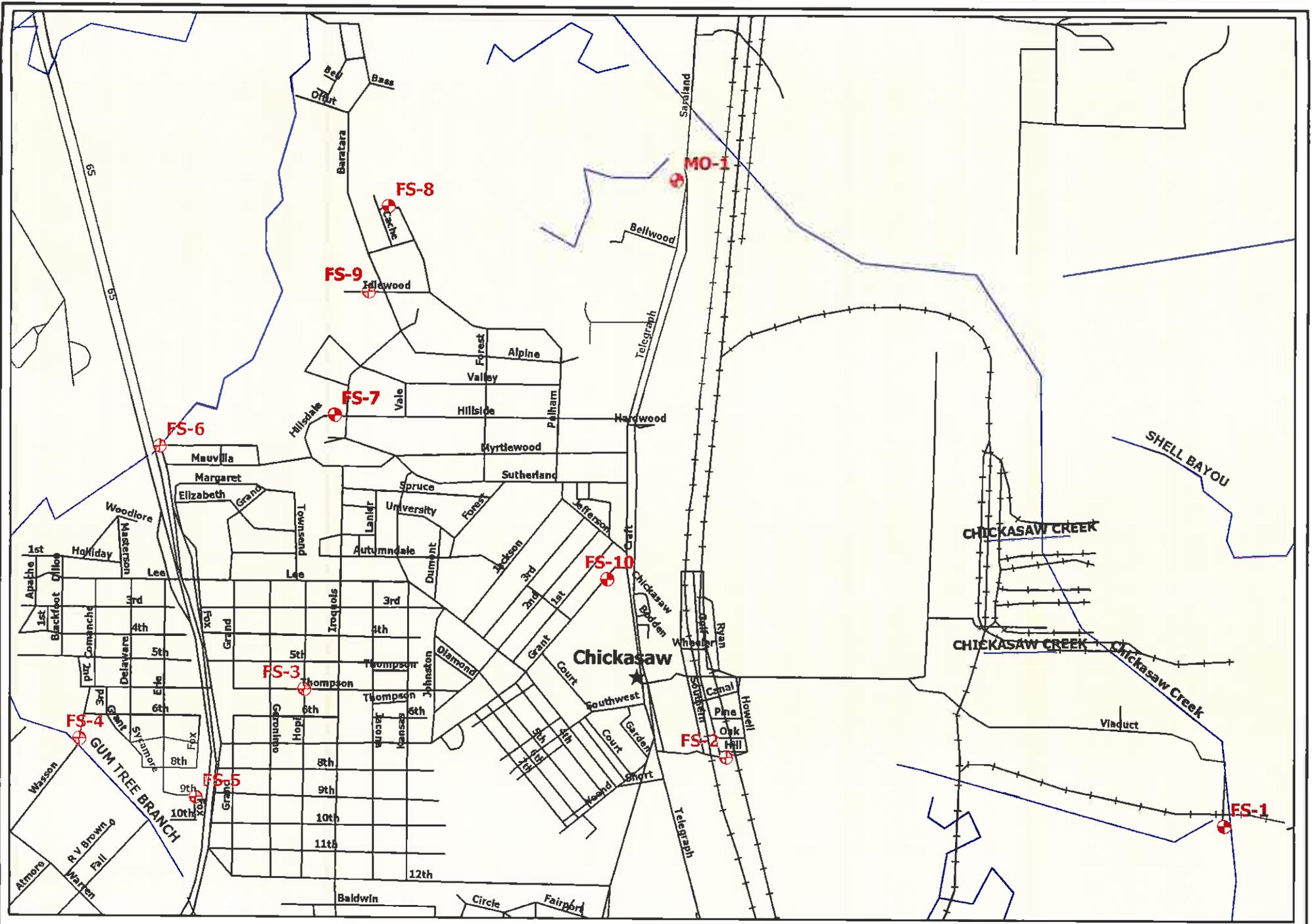
Dry weather field screenings were performed within the permit period. All sites appeared to be in operable condition. There were no illicit discharges at the time of the inspection.

## 8.0 SUMMARY

This report includes a history and overview of the City of Chickasaw's MS4 Program, monitoring results and locations and a review of the programs elements and activities. The City has implemented and performs the EPA recommended program elements as part of their ADEM MS4 Permit. The intent of the program is to reduce pollutants in storm water that is discharged from the storm water system and to prevent the degradation of receiving streams. The receiving stream for the City of Chickasaw is Chickasaw Creek which is listed on the 2010 Alabama §303(d) List for impaired waterways. The listed cause for the impairment is an elevated concentration of the metal Mercury from an unknown source. Monitoring results provided indicate low pollutant levels and loadings; there are no indications that the City is contributing to the elevated Mercury levels of the receiving stream.

The City of Chickasaw will continue to focus on storm water management and look for ways to enhance their current program.

# Appendix A



# Appendix B



4320 Midmost Drive Mobile, Alabama 36609  
Phone (251) 344-9106 Fax (251) 341-9492

Volkert Environmental Group  
P.O. Box 7434  
Mobile AL, 36670  
Attention: Melissa O'Sullivan

Project: Major Outfall Monitoring  
Project Number: MS-4 / MO -1 -Chickasaw

Reported:  
10/03/11 11:19

### ANALYTICAL REPORT

Enclosed are the results of analyses for the samples listed below that were received by the laboratory on 07/12/11 13:55. If you have any questions concerning this report, please feel free to call Ken Mohr at (251) 344-9106.

Sample Description	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
MO-1 Chickasaw	11G0164-01	Surface Water	Grab	07/11/11 14:40	07/12/11 13:55
MO-1 Chickasaw (Composite)	11G0164-02	Surface Water	Composite	07/11/11 17:40	07/12/11 13:55

Ken Mohr, Project Manager



*The test results in this report meet NELAP requirements for accredited parameters, unless otherwise noted, and relate only to the sample(s) received by this laboratory. This report must be reproduced in its entirety, unless approved by the laboratory.*

*Results are reported on a Wet weight basis, unless otherwise noted.*

Volkert Environmental Group  
 P.O. Box 7434  
 Mobile AL, 36670  
 Attention: Melissa O'Sullivan

Project: Major Outfall Monitoring  
 Project Number: MS-4 / MO -1 -Chickasaw

Reported:  
 10/03/11 11:19

**MO-1 Chickasaw**

Date Sampled: 07/11/11 14:40  
 Date Received: 07/12/11 13:55

**11G0164-01 (Surface Water)**

Sampled by: Butch Nolin  
 Sample Type: Grab

Analyte	Batch	Prepared	Analyzed	Analyst	Method	RL	Units	Result	Qualifier
<u>Field Parameters</u>									
pH	1H17013	07-11-11 14:40	07-11-11 14:40	CVN	EPA 150.1	0.01	su	6.99	
<u>Classical Chemistry Parameters</u>									
Oil & Grease	1G14012	07-18-11 08:30	07-18-11 08:30	AE1	EPA 1664	2	mg/L	< 2	U

**MO-1 Chickasaw (Composite)**

Date Sampled: 07/11/11 17:40  
 Date Received: 07/12/11 13:55

**11G0164-02 (Surface Water)**

Sampled by: Butch Nolin  
 Sample Type: Composite

Analyte	Batch	Prepared	Analyzed	Analyst	Method	RL	Units	Result	Qualifier
<u>Classical Chemistry Parameters</u>									
Biochemical Oxygen Demand	1G13004	07-13-11 14:02	07-18-11 08:16	ARC	SM 5210B	2	mg/L	16	
Chemical Oxygen Demand	1G13015	07-13-11 09:45	07-13-11 09:45	RLS	SM 5220D	20	mg/L	283	
Nitrite as N	1G13023	07-13-11 14:40	07-13-11 14:40	AET	SM 4500NO2-B	0.02	mg/L	0.02	
Nitrate as N	1G13016	07-13-11 14:40	07-13-11 14:40	RLS	EPA 353.2	0.1	mg/L	0.2	
Phosphorus-Total Dissolved	1G22008	07-21-11 12:30	07-21-11 12:30	RLS	EPA 365.4	0.100	mg/L	< 0.100	U
Phosphate, Total as P	1G26001	07-25-11 13:05	07-25-11 13:05	RLS	EPA 365.4	0.100	mg/L	1.42	
Total Dissolved Solids	1G13014	07-13-11 16:15	07-13-11 16:15	AET	SM 2540C	5	mg/L	425	
Total Kjeldahl Nitrogen	1G22001	07-21-11 12:30	07-21-11 12:30	RLS	EPA 351.2	0.5	mg/L	15.7	
Total Suspended Solids	1G12021	07-12-11 16:00	07-12-11 16:00	AET	SM 2540D	5	mg/L	638	

Volkert Environmental Group  
 P.O. Box 7434  
 Mobile AL, 36670  
 Attention: Melissa O'Sullivan

Project: Major Outfall Monitoring  
 Project Number: MS-4 / MO -1 -Chickasaw

Reported:  
 10/03/11 11:19

**Classical Chemistry Parameters - Quality Control**

Analyte	RL	Units	Result	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Blank (1G12021-BLK1)</b>				Prepared & Analyzed 07/12/11						
Total Suspended Solids	5	mg/L	ND							U
<b>Duplicate (1G12021-DUP1)</b>				Prepared & Analyzed 07/12/11						
Total Suspended Solids			56		62			10	26	
<b>Duplicate (1G12021-DUP2)</b>				Prepared & Analyzed 07/12/11						
Total Suspended Solids			647		638			1	26	
<b>Blank (1G13004-BLK1)</b>				Prepared 07/13/11 Analyzed 07/18/11						
Biochemical Oxygen Demand	2	mg/L	ND							U
<b>LCS (1G13004-BS1)</b>				Prepared 07/13/11 Analyzed 07/18/11						
Biochemical Oxygen Demand			208	198		105	84.6-115.4			
<b>LCS Dup (1G13004-BSD1)</b>				Prepared 07/13/11 Analyzed 07/18/11						
Biochemical Oxygen Demand			200	198		101	84.6-115.4	4	30	
<b>Duplicate (1G13004-DUP1)</b>				Prepared 07/13/11 Analyzed 07/18/11						
Biochemical Oxygen Demand	2	mg/L	10200		9990			2	35	
<b>Blank (1G13014-BLK1)</b>				Prepared & Analyzed 07/13/11						
Total Dissolved Solids	5	mg/L	ND							U



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 Mobile AL, 36670  
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**Classical Chemistry Parameters - Quality Control**

Analyte	RL	Units	Result	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Duplicate (1G13014-DUP1)</b>		<b>Source: 11G0164-02</b>		Prepared & Analyzed		07/13/11				
Total Dissolved Solids	5	mg/L	413		425			3	10	
<b>Reference (1G13014-SRM1)</b>				Prepared & Analyzed		07/13/11				
Total Dissolved Solids		mg/L	149	149		100	91.1-108.9			
<b>Blank (1G13015-BLK1)</b>				Prepared & Analyzed		07/13/11				
Chemical Oxygen Demand	20	mg/L	ND							U
<b>LCS (1G13015-BS1)</b>				Prepared & Analyzed		07/13/11				
Chemical Oxygen Demand	40	mg/L	1020	1000		102	85-115			
<b>LCS Dup (1G13015-BSD1)</b>				Prepared & Analyzed		07/13/11				
Chemical Oxygen Demand	40	mg/L	998	1000		100	85-115	2	25	
<b>Matrix Spike (1G13015-MS1)</b>		<b>Source: 11G0147-01</b>		Prepared & Analyzed		07/13/11				
Chemical Oxygen Demand	80	mg/L	3020	2000	1150	93	75-125			
<b>Matrix Spike Dup (1G13015-MSD1)</b>		<b>Source: 11G0147-01</b>		Prepared & Analyzed		07/13/11				
Chemical Oxygen Demand	80	mg/L	3020	2000	1150	93	75-125	0.1	25	
<b>Blank (1G13016-BLK1)</b>				Prepared & Analyzed		07/13/11				
Nitrate as N	0.1	mg/L	ND							U

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**Classical Chemistry Parameters - Quality Control**

Analyte	RL	Units	Result	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>LCS (1G13016-BS1)</b>				Prepared & Analyzed 07/13/11						
Nitrate as N	0.1	mg/L	0.9	1.00		93	90-110			
<b>LCS Dup (1G13016-BSD1)</b>				Prepared & Analyzed 07/13/11						
Nitrate as N	0.1	mg/L	0.9	1.00		92	90-110	0.3	25	
<b>Matrix Spike (1G13016-MS1)</b>				Source: 11G0160-01 Prepared & Analyzed 07/13/11						
Nitrate as N	0.1	mg/L	1.1	1.00	0.1	98	90-110			
<b>Matrix Spike Dup (1G13016-MSD1)</b>				Source: 11G0160-01 Prepared & Analyzed 07/13/11						
Nitrate as N	0.1	mg/L	1.1	1.00	0.1	98	90-110	0	25	
<b>Calibration Check (1G13017-CCV1)</b>				Prepared & Analyzed 07/13/11						
Nitrate as N		mg/L	1.0	1.00		96	90-110			
<b>Calibration Check (1G13017-CCV2)</b>				Prepared & Analyzed 07/13/11						
Nitrate as N		mg/L	1.0	1.00		97	90-110			
<b>Blank (1G13023-BLK1)</b>				Prepared & Analyzed 07/13/11						
Nitrite as N	0.02	mg/L	ND							U
<b>LCS (1G13023-BS1)</b>				Prepared & Analyzed 07/13/11						
Nitrite as N	0.02	mg/L	0.0513	0.0500		103	85.6-120			

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**Classical Chemistry Parameters - Quality Control**

Analyte	RL	Units	Result	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>LCS Dup (1G13023-BSD1)</b>				Prepared & Analyzed 07/13/11						
Nitrite as N	0.02	mg/L	0.0513	0.0500		103	85.6-120	0	15	
<b>Matrix Spike (1G13023-MS1)</b>				Source: 11G0172-01 Prepared & Analyzed 07/13/11						
Nitrite as N	0.02	mg/L	0.0516	0.0500	ND	103	75.1-124			
<b>Matrix Spike Dup (1G13023-MSD1)</b>				Source: 11G0172-01 Prepared & Analyzed 07/13/11						
Nitrite as N	0.02	mg/L	0.0523	0.0500	ND	105	75.1-124	1	20	
<b>Blank (1G14012-BLK1)</b>				Prepared & Analyzed 07/18/11						
Oil & Grease	2	mg/L	ND							U
<b>LCS (1G14012-BS1)</b>				Prepared & Analyzed 07/18/11						
Oil & Grease	2	mg/L	38.5	40.0		96	78-114			
<b>Matrix Spike (1G14012-MS1)</b>				Source: 11G0207-02 Prepared & Analyzed 07/18/11						
Oil & Grease	2	mg/L	41.7	40.0	ND	104	78-114			
<b>Blank (1G22001-BLK1)</b>				Prepared & Analyzed 07/21/11						
Total Kjeldahl Nitrogen	0.5	mg/L	ND							U
<b>LCS (1G22001-BS1)</b>				Prepared & Analyzed 07/21/11						
Total Kjeldahl Nitrogen	0.5	mg/L	8	8.20		96	90-110			



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**Classical Chemistry Parameters - Quality Control**

Analyte	RL	Units	Result	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>LCS Dup (1G22001-BSD1)</b>				Prepared & Analyzed 07/21/11						
Total Kjeldahl Nitrogen	0.5	mg/L	8	8.20		98	90-110	2	25	
<b>Matrix Spike (1G22001-MS1)</b>				Prepared & Analyzed 07/21/11						
Source: 11G0163-02				8.20	ND	102	75-125			
Total Kjeldahl Nitrogen	0.5	mg/L	8							
<b>Matrix Spike Dup (1G22001-MSD1)</b>				Prepared & Analyzed 07/21/11						
Source: 11G0163-02				8.20	ND	102	75-125	0	25	
Total Kjeldahl Nitrogen	0.5	mg/L	8							
<b>Calibration Check (1G22004-CCV1)</b>				Prepared & Analyzed 07/21/11						
Total Kjeldahl Nitrogen		mg/L	9	10.0		94	90-110			
<b>Calibration Check (1G22004-CCV2)</b>				Prepared & Analyzed 07/21/11						
Total Kjeldahl Nitrogen		mg/L	9	10.0		95	90-110			
<b>Calibration Check (1G22004-CCV3)</b>				Prepared & Analyzed 07/21/11						
Total Kjeldahl Nitrogen		mg/L	10	10.0		97	90-110			
<b>Calibration Check (1G22004-CCV4)</b>				Prepared & Analyzed 07/21/11						
Total Kjeldahl Nitrogen		mg/L	9	10.0		94	90-110			
<b>Blank (1G22008-BLK1)</b>				Prepared & Analyzed 07/21/11						
Phosphorus-Total Dissolved	0.100	mg/L	ND							



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**Classical Chemistry Parameters - Quality Control**

Analyte	RL	Units	Result	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>LCS (1G22008-BS1)</b>				Prepared & Analyzed 07/21/11						
Phosphorus-Total Dissolved	0.100	mg/L	0.641	0.653		98	85-115			
<b>LCS Dup (1G22008-BS1)</b>				Prepared & Analyzed 07/21/11						
Phosphorus-Total Dissolved	0.100	mg/L	0.631	0.653		97	85-115	2	25	
<b>Matrix Spike (1G22008-MS1)</b>				Source: 11G0163-02 Prepared & Analyzed 07/21/11						
Phosphorus-Total Dissolved	0.100	mg/L	0.713	0.653	ND	109	75-125			
<b>Matrix Spike Dup (1G22008-MS1)</b>				Source: 11G0163-02 Prepared & Analyzed 07/21/11						
Phosphorus-Total Dissolved	0.100	mg/L	0.703	0.653	ND	108	75-125	1	30	
<b>Calibration Check (1G22010-CCV1)</b>				Prepared & Analyzed 07/21/11						
Phosphorus-Total Dissolved		mg/L	0.938	1.00		94	0-200			
<b>Calibration Check (1G22010-CCV2)</b>				Prepared & Analyzed 07/21/11						
Phosphorus-Total Dissolved		mg/L	0.945	1.00		94	0-200			
<b>Calibration Check (1G22010-CCV3)</b>				Prepared & Analyzed 07/21/11						
Phosphorus-Total Dissolved		mg/L	0.948	1.00		95	0-200			
<b>Blank (1G26001-BLK1)</b>				Prepared & Analyzed 07/25/11						
Phosphate, Total as P	0.100	mg/L	ND							U

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Analyte	RL	Units	Result	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>LCS (1G26001-BS1)</b>				Prepared & Analyzed 07/25/11						
Phosphate, Total as P	0.100	mg/L	0.645	0.653		99	85-115			
<b>LCS Dup (1G26001-BSD1)</b>				Prepared & Analyzed 07/25/11						
Phosphate, Total as P	0.100	mg/L	0.641	0.653		98	85-115	0.6	25	
<b>Matrix Spike (1G26001-MS1)</b>				Source: 11G0208-01 Prepared & Analyzed 07/25/11						
Phosphate, Total as P	0.100	mg/L	1.20	0.653	0.416	120	75-125			
<b>Matrix Spike Dup (1G26001-MSD1)</b>				Source: 11G0208-01 Prepared & Analyzed 07/25/11						
Phosphate, Total as P	0.100	mg/L	1.21	0.653	0.416	122	75-125	0.8	25	
<b>Calibration Check (1G26015-CCV1)</b>				Prepared & Analyzed 07/25/11						
Phosphate, Total as P		mg/L	0.971	1.00		97	90-110			
<b>Calibration Check (1G26015-CCV2)</b>				Prepared & Analyzed 07/25/11						
Phosphate, Total as P		mg/L	0.998	1.00		100	90-110			
<b>Calibration Check (1G26015-CCV3)</b>				Prepared & Analyzed 07/25/11						
Phosphate, Total as P		mg/L	0.991	1.00		99	90-110			
<b>Calibration Check (1G26015-CCV4)</b>				Prepared & Analyzed 07/25/11						
Phosphate, Total as P		mg/L	0.967	1.00		97	90-110			

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## CASE NARRATIVE

The results presented in this report relate only to the sample(s) received on 7/12/2011 1:55:00 PM for Volkert Environmental Group - 11G0164-01, 11G0164-02

Sample Event Date 7/11/11  
Total Rainfall-Inches - 2.05  
Duration (min) 1 hr 15 minutes- Total 75minutes  
Velocity -(fps)- Min 0.01 Max 1.07 Ave 0.54  
Total Storm Volume (Gallons) 318,090  
pH 6.99

### Sample Receipt

Sample receipt information, including documentation of any deviation(s) from sample receiving quality control acceptance criteria, is provided on attachments to the report including the Sample Receipt Checklist, Chain of Custody, and Field Data Sheet

### Sample Hold Times

All samples were received and analyzed within the recommended hold times unless noted below.

### Instrument Calibration

The initial and continuing calibration verification, if applicable, met acceptance criteria unless noted below.

### QC Parameters

Refer to the following locations within this report for QC parameter exceptions:

- Surrogate and their recoveries, where applicable, are listed below the analytes for the method - any exceptions are qualified
- Blank, Lab Control Spike (LCS)/LCS Duplicates and/or Matrix Spike (MS)/MS Duplicate recoveries, RPDs, and Continuing Calibration Verification (CCV) are provided in the Quality Control Section - any exceptions are qualified. -For Sample Analytes with a "J" qualifier (estimated value), refer to the associated QC data provided in the Quality Control Section for the QC exception

### Definition of Qualifiers

- A** Value reported is the mean of two or more determinations.
- B** Indicates the analyte was detected in a QC Blank but not in any sample.
- CCI** Analyte exceeded the lower acceptance criteria for CCV. Associated sample results are considered estimated values.
- CCH** Analytes exceeded the acceptance criteria for CCV but was biased high, indicating enough sensitivity to detect the analyte.
- E** The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
- IS** Internal Standard Response exceeds the acceptance range of -50% to +100% of the midpoint of the most recent calibration.
- J** Estimated value.
- MS** The RPD and/or % Rec for this matrix spike cannot be accurately calculated due to the background levels of analyte(s).
- Q** Sample held beyond the accepted holding time.
- RPD** The RPD for this duplicate exceeded the established control limit.
- SPK H** The % Rec for this spiked analyte exceeded the control limit but was biased high, indicating enough sensitivity to detect the analyte.
- SPK L** The % Rec for this spiked analyte was below the established control limit.
- T** Value reported is less than the laboratory method detection limit.
- U** Indicates the compound was analyzed for but not detected.
- V** Indicates the analyte was detected in the sample and QC blank.



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- Y The analysis was from an unpreserved or improperly preserved sample.
- Z Too many colonies were present (TNTC): (microbiology)



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Sample Receipt / Integrity Checklist

Client VO Kent Assoc.

Date 7/12/11

Field Courier Butch Nolin

Work Order 1160114

Sample Custodian JCW

Sample coolers and containers

Custody seals on coolers or shipping containers intact? ..... Yes  No  n/a

Outside of coolers or shipping containers are free from damage? ..... Yes  No  n/a

All expected paperwork received (COC & other client specific information)? ..... Yes  No  n/a

Are sample containers intact? ..... Yes  No  n/a

Are samples in proper containers? ..... Yes  No  n/a

Is adequate sample volume present to perform the requested analyses? ..... Yes  No  n/a

Are volatile samples free of headspace (bubbles less than 6 mm in diameter)? ..... Yes  No  n/a

Thermal and Chemical Preservation

Samples received cooled? ..... Yes  No  n/a

Type of cooling/temp? ..... Wet Ice  Blue Ice  n/a  Temp. 16.6

Temperature blank present? ..... Yes  No  n/a

If no cooling present, were samples received within 1 hour of collection? ..... Yes  No  n/a

Is the correct chemical preservative used for all samples? ..... Yes  No  n/a

Is the pH range correct for chemically preserved samples checked at login? ..... Yes  No  n/a

List samples checked for chemical preservation at bench ..... O&G  Metals  VOCs  Other

Chain of Custody

Is COC filled out completely? ..... Yes  No  n/a

Is COC properly relinquished (signed and dated)? ..... Yes  No  n/a

Are any samples missing on COC or from cooler? ..... Yes  No  n/a

Do sample containers match COC? ..... Yes  No  n/a

Holding Times

Are samples received within hold time? ..... Yes  No  n/a

Were short hold time or rush samples taken to appropriate department? ..... Yes  No  n/a

If no, was responsible analyst and/or dept. manager notified? ..... Yes  No  n/a

Does work order meet EnviroChem sample acceptance criteria? ..... Yes  No  n/a

Note: Samples that do not meet acceptance criteria must be documented in the Sample Rejection Log

Field Comments \_\_\_\_\_

Login Comments \_\_\_\_\_

Client Contacted \_\_\_\_\_ Contacted By \_\_\_\_\_ Date/Time \_\_\_\_\_

Client Instructions ..... Cancel Work order  Proceed with work order  (Data will be qualified)