



# CONTAMINATION SCREENING EVALUATION REPORT

PROJECT DEVELOPMENT AND ENVIRONMENT STUDY  
COUNTY ROAD 510/85 STREET  
From County Road 512 to 58 Avenue,  
ETDM Number: 14233

Indian River County, Florida  
Financial Management Number: 405606-2-22-02  
Federal Aid Project No.: 4984-004-S

*The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated December 14, 2016, and executed by the Federal Highway Administration and FDOT.*

Prepared for  
Florida Department of Transportation  
District Four  
3400 West Commercial Boulevard  
Fort Lauderdale, FL 33309-3421

SEPTEMBER 2017



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23  
24 Metric Engineering, Inc.  
25 SEPTEMBER 2017

## EXECUTIVE SUMMARY

1

2 The Florida Department of Transportation (FDOT) is conducting a Project Development and  
3 Environment (PD&E) Study to investigate widening a segment of County Road (C.R.) 510 from  
4 two to four lanes, extending from C.R. 512 (Sebastian Boulevard/85 Street) to 58 Avenue, in  
5 Indian River County, Florida. The project corridor stretches 5.27 miles, is generally rural in  
6 nature and includes a mixture of agricultural, educational, commercial, industrial and  
7 residential facilities.

8 This project consists of improving capacity on C.R. 510 from C.R. 512 to 58 Avenue, in Indian  
9 River County (IRC), Florida, in order to achieve an acceptable Level of Service (LOS) on the  
10 facility in the future condition. While the roadway currently operates at an acceptable LOS,  
11 conditions will deteriorate below acceptable standards if no improvement occurs by 2040, as  
12 the roadway will have insufficient capacity to accommodate the project travel demand.

13 Information was obtained for this report from Florida Department of Environmental Protection  
14 and the US Environmental Protection Agency databases as well as field investigations and  
15 reviews of historic and aerial photographs and other documents. A total of ten potentially  
16 contaminated sites were identified in the vicinity of the build alternatives and five of those sites  
17 were assigned a risk rating of “Low”. Five sites, Sunoco #0613-2641, Shark Mart Mobil, Ryall  
18 Groves Inc., the Bethel Service Station, and current or former agricultural areas were assigned a  
19 risk rating of “Medium”. Sunoco #0613-2641 is a gas station located at the intersection of C.R.  
20 510 and C.R. 512. It contains three underground storage tanks (USTs) and previous  
21 contamination cleanup has been completed. Shark Mart Mobil is also a gas station, located at  
22 the intersection of C.R. 510 and C.R. 512 and has associated USTs. Following a discharge of  
23 contaminants, soil was removed and a Site Rehabilitation Completion Order was issued. Ryall  
24 Groves Inc. is the site of a former citrus production operation and could have contained mixing  
25 stations for herbicides. The Bethel Service Station site is located adjacent to the southern side  
26 of the project corridor, on the southeastern quadrant of the intersection of C.R. 510 and 64  
27 Avenue. It contained USTs and in 1990 approximately 300 gallons of gasoline were observed to  
28 have leaked during removal of a UST. Subsequent testing revealed a soil contamination plume  
29 that extended under 64 Avenue and soil was excavated in May 2016. This site is currently listed  
30 as an active petroleum cleanup site. Current and former agricultural lands occupy the majority  
31 of the project area and were assigned a risk rating of “Medium” due to potential contamination  
32 from herbicides or pesticides.

33 Proposed pond 2-2 is adjacent to Site 4, Sebastian River High School, which has a risk rating of  
34 Low. All of the pond sites occur on former agricultural lands that are assigned a “Medium” risk  
35 rating. The sites with a “Medium” or “High” risk rating are recommended for additional

1 assessment, such as possible soil and groundwater testing, if right-of-way acquisition or  
2 subsurface work (including construction of any structures or stormwater ponds) is proposed on  
3 or adjacent to those sites.

4

**TABLE OF CONTENTS**

1  
2 EXECUTIVE SUMMARY ..... i  
3 1.0 INTRODUCTION ..... 1-1  
4 PROJECT BACKGROUND ..... 1-1  
5 2.0 PROJECT PURPOSE AND NEED ..... 2-1  
6 PROJECT OBJECTIVE ..... 2-1  
7 PROJECT NEED ..... 2-1  
8 3.0 PROJECT ALTERNATIVES ..... 3-1  
9 NO BUILD ..... 3-1  
10 TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS (TSM&O) ALTERNATIVES 3-1  
11 BUILD ALTERNATIVES ..... 3-1  
12 4.0 PROJECT AREA DESCRIPTION ..... 4-1  
13 LAND USE ..... 4-1  
14 ELEVATION AND HYDROLOGY ..... 4-10  
15 SOILS ..... 4-14  
16 5.0 METHODOLOGY ..... 5-1  
17 DATA GATHERING ..... 5-1  
18 6.0 PROJECT IMPACTS ..... 6-1  
19 7.0 REGULATORY STATUS OF SITES ..... 7-1  
20 Site No. 1 ..... 7-1  
21 Site No. 2 ..... 7-2  
22 Site No. 3 ..... 7-3  
23 Site No. 4 ..... 7-3  
24 Site No. 5 ..... 7-3  
25 Site No. 6 ..... 7-4  
26 Site No. 7 ..... 7-4  
27 Site No. 8 ..... 7-5  
28 Site No. 9 ..... 7-5  
29 ETDM COMMENTS ..... 7-6  
30 8.0 RECOMMENDATIONS ..... 8-1  
31 9.0 REFERENCES ..... 9-1

**LIST OF TABLES**

35 Table 2-1 Existing (2015) Conditions ..... 2-3  
36 Table 2-2 Future (2040) Conditions ..... 2-3  
37 Table 4-1- Soils in Project Area ..... 4-15  
38 Table 6-1 Site Information ..... 6-2

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21

**LIST OF FIGURES**

Figure 1-1 Project Location ..... 1-2  
Figure 3-1 Project Segmentation ..... 3-1  
Figure 3-2 Segment 1 Typical Section with Alignment Features ..... 3-2  
Figure 3-3 Segment 2 Typical Section with Alignment Features ..... 3-3  
Figure 3-4 Segment 3 Typical Section with Alignment Features ..... 3-4  
Figure 3-5 Segment 4 Typical Section with Alignment Features ..... 3-5  
Figure 3-6 Typical Section Details ..... 3-6  
Figure 4-1 Land Use in Western Half of Project Area ..... 4-3  
Figure 4-2 Land Use in Eastern Half of Project Area ..... 4-4  
Figure 4-3 Elevation Map ..... 4-11  
Figure 4-4 Surface Hydrology Western Half of Project Area ..... 4-12  
Figure 4-5 Surface Hydrology Eastern Half of Project Area ..... 4-13  
Figure 4-6 Soils Map Western Half of Project ..... 4-16  
Figure 4-7 Soils Map Eastern Half of Project ..... 4-17  
Figure 6-1 Potentially Contaminated Sites ..... 6-3

**APPENDICES**

APPENDIX A: SITE INFORMATION (MEDIUM AND HIGH RISK SITES)  
APPENDIX B: HISTORIC PHOTOGRAPHS

## Acronyms

1		
2	AADT	Annual Average Daily Traffic
3	ATRP	Abandoned Tank Restoration Program
4	C.R.	County Road
5	CERCLA	Comprehensive Environmental Response, Compensation, and Viability Act
6	CSER	Contamination Screening Evaluation Report
7	EDI	Early Detective Incentive
8	ETDM	Efficient Transportation Decision Making
9	ERP	Environmental Resource Permit
10	EST	Environmental Screening Tool
11	FDEP	Florida Department of Environmental Protection
12	FDOT	Florida Department of Transportation
13	FEMA	Federal Emergency Management Agency
14	FGDL	Florida Geographic Data Library
15	FHWA	Federal Highway Administration
16	FLUCCS	Florida Land Use Cover and Forms Classification System
17	FY	Fiscal Year
18	GIS	Geographic Information Systems
19	ID	Identification
20	LIDAR	Light Detection and Ranging
21	LOS	Level of Service
22	L RTP	Long Range Transportation Plan
23	LSRAP	Limited Scope Remedial Action Plan
24	mph	Miles Per Hour
25	MPO	Metropolitan Planning Organization
26	MW	Monitoring Well
27	NPL	National Priorities List
28	NRCS	National Resources Conservation Service
29	OFW	Outstanding Florida Water
30	PD&E	Project Development and Environment
31	RCRA	Resource Conservation and Recovery Act
32	S.R.	State Road
33	SRCO	Site Rehabilitation Completion Order
34	SJRWMD	St. John's River Water Management District
35	SUPER	State Underground Petroleum Environmental Response Act
36	TIP	Transportation Improvement Program
37	TSAR	Template Site Assessment Report
38	TSM&O	Transportation Safety Management and Operations
39	USEPA	U.S. Environmental Protection Agency
40	USGS	U.S. Geological Survey
41	UST	Underground Storage Tank
42	V/C	Volume to Capacity
43	WSCA	Wabasso Scrub Conservation Area

## 1.0 INTRODUCTION

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study to evaluate alternatives for mobility and safety improvements to County Road (C.R.) 510 in Indian River County, Florida. The project extends 5.27 miles along C.R. 510 from its intersection with C.R. 512/Sebastian Boulevard to 58 Avenue. A project location map is provided as **Figure 1-1**. C.R. 510 is primarily a two-lane roadway that is functionally classified as an Urban Principal Arterial for east-west traffic movements. There are three bridge structures along C.R. 510 and an open drainage system.

This Contamination Screening Evaluation Report (CSER) has been prepared in accordance with the FDOT's *PD&E Manual, Part 2, Chapter 22 (Contamination Impacts)*, updated June 14, 2017, which incorporates the requirements of the National Environmental Policy Act (NEPA), and related federal and state laws. This report identifies and evaluates known or potential contamination issues, presents recommendations concerning these issues, and discusses possible impacts to the proposed project in relation to the proposed project alternatives. The remainder of Section 1 and Section 2 describe the project background and the purpose and need and were developed by FDOT then inserted into this report.

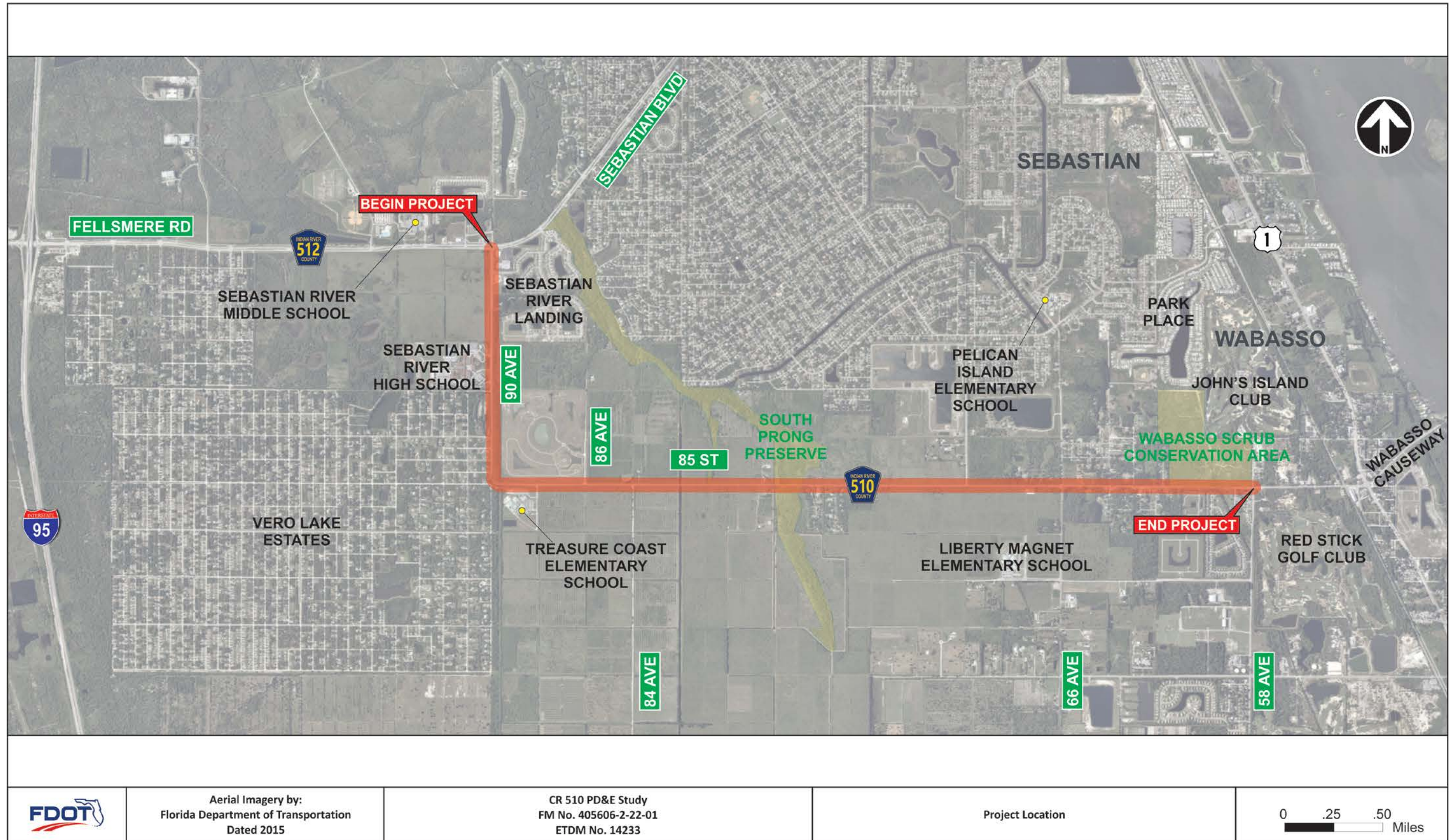
## PROJECT BACKGROUND

The subject project is located just west and south of Sebastian, a city in Indian River County, Florida. This area is within the northern part of Florida's Treasure Coast, so named after the discovery of treasure from the 1715 Spanish Treasure Fleet, lost in a hurricane near the Sebastian Inlet.

The project entails the investigation of widening a segment of County Road (C.R.) 510 from two to four lanes extending from C.R. 512 (Sebastian Boulevard) to 58th Avenue for a total distance of 5.27 miles (**Figure 1-1**). C.R. 510 links the local community of Wabasso to C.R. 512 (Sebastian Boulevard), the main east-west arterial serving Sebastian. The project corridor is generally rural in nature and includes a mixture of agricultural, educational, commercial, industrial and residential facilities.

C.R. 510 is owned and maintained by Indian River County and is functionally classified as an urban principal arterial. The proposed project will provide additional capacity to meet the future traffic needs resulting from projected population and employment growth within the projected area expected as a result of various residential development. The Indian River County Metropolitan Planning Organization (MPO) has identified C.R. 510 in their 2035 Long Range Transportation Plan (LRTP) initial roadway needs plan alternative projects, cost feasible plan as a "Core Project" and in their Transportation Improvement Program (TIP).





Aerial Imagery by:  
Florida Department of Transportation  
Dated 2015

CR 510 PD&E Study  
FM No. 405606-2-22-01  
ETDM No. 14233

Project Location

0 .25 .50  
Miles

1  
2

Figure 1-1 Project Location

**2.0 PROJECT PURPOSE AND NEED**

**PROJECT OBJECTIVE**

This project consists of improving capacity on C.R. 510 from C.R. 512 to 58 Avenue, in Indian River County (IRC), Florida, in order to achieve an acceptable Level of Service (LOS) on the facility in the future condition. While the roadway currently operates at an acceptable LOS, conditions will deteriorate below acceptable standards if no improvement occurs by 2040, as the roadway will have insufficient capacity to accommodate the project travel demand.

**PROJECT NEED**

It is important to note that this roadway is deemed deficient in the Indian River County 2040 Long Range Transportation Plan (LRTP) based on the projected 2035 AADT volumes derived from the Greater Treasure Coast Regional Planning Model for the Grid Densification Roadway Needs Plan Alternative. The results of the analysis revealed that portions of the project segment are expected to have volume to capacity (V/C) ratios of 0.63 – 1.35 and above 1.65. Roadways are deemed deficient if the volume to capacity (V/C) ratio exceeds 0.9. As such, this segment of C.R. 510 will experience congestion by 2035 if additional improvements are not made. Overall, the proposed improvement is anticipated to allow C.R. 510 to continue to serve as a critical arterial in facilitating the west-east movement of local and regional traffic (including truck traffic) as it traverses Indian River County connecting C.R. 512 to S.R. A1A on the barrier island. The increased capacity on C.R. 510 is intended to improve traffic operations along the corridor and enhance access to targeted areas of growth within the county.

There are three bridge structures (880047, 880063, 880044), one at M.P. 1.276 - 1.284, one at M.P. 2.226 - M.P. 2.240, and one at M.P. 2.726 - M.P. 2.735. The project is 5.27 miles in length and the acquisition of some right-of-way is anticipated. C.R. 510 is owned and maintained by Indian River County. According to the adopted Indian River County Comprehensive Plan, C.R. 510 is classified as an Urban Principal Arterial and is critical in facilitating the west-east movement of traffic in Indian River County. It connects Interstate 95 (I-95) to S.R. A1A. Additionally this roadway provides access to commercial, educational, residential and agricultural uses. The project is anticipated to cost \$100,000,000, of which the great majority will be Federally-funded dollars. C.R. 510 from C.R. 512/85 Street to 58 Avenue is identified as a cost-feasible project in the Indian River County 2040 LRTP.

C.R. 510 is designated as an emergency evacuation route by both the Florida Division of Emergency Management and Indian River County. By increasing capacity, the improvement on C.R. 510 is anticipated to enhance emergency evacuation and response times by:

- Improving access to other emergency evacuation routes designated by the Florida Division of Emergency Management (C.R. 510, C.R. 512, and I-95); and
- Increasing the number of residents from the coastal communities of eastern Indian River County that can be evacuated during an emergency event.

The project is also identified within the Indian River County Metropolitan Planning Organization's (MPO) FY 2016/2017 -FY 2020/21 Transportation Improvement Program (TIP). It should additionally be noted that \$4,433,546 is programmed for the Project Development and

1 Environment (PD&E) Study and \$4,207,416 is programmed for the Right of Way phase in 2020  
2 within the FY 2016/2017- FY2020/2021 Indian River County MPO TIP.

3 As the Indian River County 2040 LRTP Infill Alternative Land Use scenario matures along the C.R.  
4 510 corridor encouraging higher densities and mixed-use development, premium transit service  
5 will be considered on C.R. 510 to serve and connect the transit-supportive land uses. Sidewalks  
6 and bicycle lanes are additionally anticipated as part of the widening as the corridor is intended  
7 to provide for adequate multi-modal facilities. While paved shoulders are currently present,  
8 they are also anticipated to be maintained as part of the project. Overall, the project is  
9 expected to accommodate multi-modal facilities and enhance corridor access for transit users,  
10 bicyclists, and pedestrians.

11 The logical termini begins at the signalized intersection of C.R. 512/85 Street and terminates at  
12 the signalized intersection of 58 Avenue. C.R. 510 is designated as an emergency evacuation  
13 route by both the Florida Division of Emergency Management and Indian River County. By  
14 increasing capacity, the improvement on C.R. 510 is anticipated to enhance emergency  
15 evacuation and response times.

16 The primary need for additional capacity on of C.R. 510 from C.R. 512/85 Street to 58 Avenue is  
17 in order to achieve an acceptable Level of Service (LOS) on the facility in the future condition.  
18 While the roadway currently operates at an acceptable LOS, conditions will deteriorate below  
19 acceptable standards if no improvement occurs by 2040, as the roadway will have insufficient  
20 capacity to accommodate the project travel demand. The need for the project is based on the  
21 following primary and secondary criteria.

22  
23 **PRIMARY CRITERIA**  
24 ***CAPACITY/TRANSPORTATION DEMAND: Improve Traffic Operations (LOS and Volume to***  
25 ***Capacity Ratio)***

26 This project is anticipated to improve traffic operations along C.R. 510 by increasing operational  
27 capacity to meet the future travel demand projected as a result of Indian River County  
28 population and employment growth. The existing and future traffic conditions for the project  
29 corridor are as follows (**Tables 2-1 and 2-2**):  
30

31 It is important to note that this roadway is deemed deficient in the Indian River County 2040  
32 Long Range Transportation Plan (LRTP) based on the projected 2040 AADT volumes derived  
33 from the Greater Treasure Coast Regional Planning Model for the Grid Densification Roadway  
34 Needs Plan Alternative. The results of the analysis revealed that portions of the project  
35 segment are expected to have volume to capacity ratio (V/C) of 0.63 – 1.35 and above 1.65.  
36 Roadways are deemed deficient if the volume to capacity (V/C) ratio exceeds 0.9. As such, this  
37 segment of C.R. 510 will experience congestion by 2040 if additional improvements are not  
38 made.

39  
40  
41

1

**Table 2-1 Existing (2015) Conditions**

Limits		# of Lanes	LOS D	AADT Existing	
From	To	(speed limit)	SV	2015	V/C
CR 512	Mako Way	3 Lanes Divided (>40 MPH)	26,280	13,000	0.49
Mako Way	800' West Of Treasure Coast Elementary	2 Lanes Divided (>40 MPH) with LT lanes	16,730	12,800	0.77
800' West Of Treasure Coast Elementary	500' East Of Treasure Coast Elementary	2 Lane Undivided (<35 MPH) with LT lanes	13,320	12,000	0.90
500' East Of Treasure Coast Elementary	66 Avenue	2 Lane Undivided (>40 MPH)	12,740	13,000	1.02
66 Avenue	58 Avenue	2 Lane Undivided (<35 MPH) with LT lanes	13,320	11,000	0.83

2

3

4

**Table 2-2 Future (2040) Conditions**

Limits		# of Lanes	LOS D	AADT NO BUILD		# of Lanes	LOS D	AADT BUILD	
From	To	(speed limit)	SV	2040	V/C	(speed limit)	SV	2040	V/C
CR 512	Mako Way	3 Lanes Divided (>40 MPH)	26,280	16,500	0.63	4 Lanes Divided (>40 MPH)	35,820	18,500	0.52
Mako Way	800' West Of Treasure Coast Elementary	2 Lanes Divided (>40 MPH) with LT lanes	16,730	17,400	1.04	4 Lanes Divided (>40 MPH)	35,820	19,200	0.54
800' West Of Treasure Coast Elementary	500' East Of Treasure Coast Elementary	2 Lanes Undivided (<35 MPH) with LT lanes	13,320	18,000	1.35	4 Lanes Divided (<35 MPH)	29,160	19,000	0.65
500' East Of Treasure Coast Elementary	66 Avenue	2 Lanes Undivided (>40 MPH)	12,740	21,000	1.65	4 Lanes Divided (>40 MPH)	35,820	23,250	0.65
66 Avenue	58 Avenue	2 Lanes Undivided (<35 MPH) with LT lanes	13,320	17,000	1.28	4 Lanes Divided (<35 MPH)	29,160	21,000	0.72

5

1 Overall, the proposed improvement is anticipated to allow C.R. 510 to continue to serve as a  
2 critical arterial in facilitating the west-east movement of local and regional traffic (including  
3 truck traffic) as it traverses Indian River County connecting C.R. 512 to S.R. A1A on the barrier  
4 island. The increased capacity on C.R. 510 is intended to improve traffic operations along the  
5 corridor and enhance access to targeted areas of growth within the county.

6

7 **SECONDARY CRITERIA**

8 ***MODAL INTERRELATIONSHIPS: Enhance Transit, Pedestrian, and Bicycle Access***

9 As the Indian River County 2040 LRTP Infill Alternative Land Use scenario matures along the C.R.  
10 510 corridor encouraging higher densities and mixed-use development, premium transit service  
11 will be considered on C.R. 510 to serve and connect the transit-supportive land uses. Sidewalks  
12 and bicycle lanes are additionally anticipated as part of the widening as the corridor is intended  
13 to provide for adequate multi-modal facilities. While paved shoulders are currently present,  
14 they are also anticipated to be maintained as part of the project. Overall, the project is  
15 expected to accommodate multi-modal facilities and enhance corridor access for transit users,  
16 bicyclists, and pedestrians.

17 Transportation Demand

18 The population of Indian River County is projected to increase from 138,028 in year 2010 to  
19 202,295 in year 2040, with a 47% 30-year growth rate (Source: Indian River County 2040 LRTP).  
20 As the population of the county increases, developments in the county will continue to grow  
21 thereby increasing the amount of traffic on the roads.

22 Employment is projected to grow from 65,244 in 2010 to 90,968 in 2040. Based on the  
23 socioeconomic characteristics of the Indian River County 2040 LRTP Infill Alternative Land Use  
24 scenario,

- 25 • Population within the proximate Traffic Analysis Zones (TAZs) 2-mile buffer is projected  
26 to grow from 21,096 in 2010 to 34,434 in 2040 (1.65% annual growth rate).
- 27 • Employment within the proximate TAZs 2-mile buffer is projected to increase from  
28 3,421 in 2010 to 5,588 in 2040 (1.65% annual growth rate).

29 Further, 2 Planned Unit Developments and 0 approved Developments of Regional Impact are  
30 present along the corridor.

31 System Linkage

32 The proposed capacity improvements to C.R. 510 will help improve connectivity within the  
33 roadway network by enhancing mobility to the C.R. 510 corridor. Enhancing mobility in this  
34 area will provide an additional route and improve the movement of people, goods and services  
35 to and from Indian River County.

36

37 Plan Consistency

38 C.R. 510 from C.R. 512/85 Street to 58 Avenue is identified as a cost-feasible project, not  
39 currently funded for construction in the Indian River County 2040 LRTP. The project is also  
40 identified within the Indian River County Metropolitan Planning Organization's (MPO) FY  
41 2016/2017 -FY 2020/21 Transportation Improvement Program (TIP). It should additionally be

1 noted that \$4,433,546 is programmed for the Project Development and Environment (PD&E)  
2 Study and \$4,207,416 is programmed for the Right of Way phase in 2020 within the FY  
3 2016/2017- FY2020/2021 Indian River County MPO TIP.

#### 4 Social Demands & Economic Development

##### 6 *Enhance Emergency Evacuation and Response Times*

7 C.R. 510 is designated as an emergency evacuation route by both the Florida Division of  
8 Emergency Management and Indian River County. By increasing capacity, the improvement on  
9 C.R. 510 is anticipated to enhance emergency evacuation and response times by:

- 10 • Improving access to other emergency evacuation routes designated by the Florida  
11 Division of Emergency Management (C.R. 510, C.R. 512, and I-95); and
- 12 • Increasing the number of residents from the coastal communities of eastern Indian  
13 River County that can be evacuated during an emergency event.

14 The population of Indian River County is projected to increase from 138,028 in year 2010 to  
15 202,295 in year 2040, with a 47% 30-year growth rate (Source: Indian River County 2040 LRTP).  
16 As the population of the county increases, developments in the county will continue to grow  
17 thereby increasing the amount of traffic on the roads. Employment is projected to grow from  
18 65,244 in 2010 to 90,968 in 2040.

19 Economic Development: Currently, the land around the proposed project is mainly agricultural  
20 and industrial. A review on satellite view illustrated green space and undisturbed land with a  
21 low density residential land use area in the northern part of the proposed project. Within the  
22 proposed project are two major employers; i.e., a Publix Supermarket and a Winn-Dixie. There  
23 are also two churches and five (5) parks. The North Indian River County Library is identified as a  
24 cultural facility. The median household income of the Sebastian South community is \$53,750,  
25 above the countywide median household income of \$47,341.

26 The 2040 Indian River County LRTP Public Process and Land Use Vision Plan identified land uses  
27 centered on an "infill and clustered" development pattern. The future land use plan included  
28 the following focus growth areas:

- 29 • Downtown districts
- 30 • Neighborhood commercial districts
- 31 • Neighborhood infill development districts
- 32 • US 1 development corridor
- 33 • Regional workplace districts
- 34 • Airport workplace districts
- 35 • Fellsmere Annex

### 3.0 PROJECT ALTERNATIVES

The alternatives considered include the No Build Alternative, Transportation Systems Management and Operations Alternatives, and Build Alternatives. A multi-phase alternative development, evaluation and selection process was employed to properly assess all Alternatives considered for the proposed improvements of C.R. 510 within the project limits.

#### NO BUILD

The “No Build” alternative assumes the retainment of existing conditions. It is used as a benchmark condition in order to compare the costs and benefits of implementing the proposed improvements to those incurred by continuing to use the existing facility. In this case, the “No Build” alternative would entail the retainage of the existing conditions within the project limits with its present geometric, operational and access deficiencies. The existing facility within the project confines is inadequate in terms of future capacity. It is evident that adoption of this alternative would not solve any of the existing needs associated with the project. However, the “No Build” alternative will be maintained as a viable option providing an effective yardstick or baseline condition by which other project alternatives will be compared throughout the project alternative selection process.

#### TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS (TSM&O) ALTERNATIVES

The Transportation Systems Management and Operations (TSM&O) alternatives are comprised of minor improvements options that are usually generated to alleviate specific traffic congestion/safety problems, or to obtain maximum utilization out of the existing facility by improving operational efficiency. These alternatives do not serve as a benchmark function but rather they insure that a wide range of realistic alternatives are considered by decision makers. The various TSM&O alternatives that were investigated include the upgrade of the existing facility by means of intersection widening and turning lane storage enhancements, improved/modified signalization, improved signing, markings and delineation.

Even though some beneficial effects can be obtained through the use of low cost improvements, the overall capacity restriction of maintaining the existing roadway section precludes the attainment of any significant improvement in the overall project level of service. It is because of this fact that these alternatives were considered to have minimum value. Therefore, it is recommended that the TSM&O alternatives be rejected and only the major reconstruction options be considered for further study. As stated, several of the proposed intersection improvements previously identified will be incorporated into the design of the major project alternatives.

#### BUILD ALTERNATIVES

Prior to initiating the development of alternatives, the project was broken down into four (4) distinct segments. Each segment has rather unique characteristics as well as potential differences in right-of-way, operational, geometric and environmental features and are shown on **Figure 3-1**. The segmental breakdown methodology ensures that the generated alternatives

1 are more responsive to the needs of each segment rather than to the generalized project's  
2 needs.

3  
4 After a comprehensive alternative generation and evaluation process which includes more than  
5 twelve (12) typical section/alignment combinations, one alternative was selected as being the  
6 most effective option within each segment. **Figures 3-2** through **3-5** depict the Recommended  
7 Alternative Features per segment, and **Figure 3-6** depicts the typical section details.

8  
9 A brief description of the build alternative per segment is as follows:

10  
11 **Segment 1**

12 **Typical Section G with East Alignment** is a 4-lane urban typical sections with a Design Speed of  
13 45 mph. The total proposed right-of-way for this section is 108-feet. This typical section  
14 features 12-foot travel lanes, 7-foot bicycle lanes, a 22-foot median, and 5-foot sidewalks with a  
15 3-foot grass buffer between the curb and the sidewalks. An access class 3 is proposed for this  
16 segment. **Figure 3-2** shows some of the most distinctive features of this option within Segment  
17 1, including the proposed median openings.

18  
19 **Segment 2**

20 **Typical Section G with East/North Alignment** is a 4-lane urban typical sections with a Design  
21 Speed of 45 mph. The total proposed right-of-way for this section is 108-feet. This typical  
22 section features 12-foot travel lanes, 7-foot bicycle lanes, a 22-foot median, and 5-foot  
23 sidewalks with a 3-foot grass buffer between the curb and the sidewalks. The horizontal curve  
24 within this segment will be reconstructed to allow 45 mph design speed and improve safety  
25 conditions. The access provided for the Vero Lake Estate to C.R. 510 has been limited to 87  
26 Street. Also, access to C.R. 510 from 86 Street and 86 Place has been eliminated. This  
27 alternative proposes to close the existing C.R. 510 and remove the existing bridge over Lateral  
28 Canal D. **Figure 3-3** illustrates some of the most distinctive features of this option within  
29 Segment 2.

30  
31 **Segment 3**

32 **Typical Section A with Center Alignment** is a 4-lane sub-urban typical section with a design  
33 speed of 50 mph. The total proposed right-of-way for this section is 163 feet. This typical  
34 section features 12-foot travel lanes, 7-foot bicycle lanes, 4-foot inside shoulders, curb and  
35 gutter on both sides and 5-foot sidewalks with a wide buffer between the roadway and the  
36 sidewalks. Additionally, there is a 32-foot drainage easement along the north side of the  
37 roadway to treat offsite drainage impacted by the project. Median openings have been given  
38 throughout the segment to allow access for the various stakeholders/property owners along  
39 the segment. **Figure 3-4** illustrates some of the most distinctive features of this option within  
40 Segment 3.

41  
42 **Segment 4**

43 **Typical Section E with North Alignment** from 66 Avenue to 61 Drive and **South Alignment** from  
44 61 Drive to 58 Avenue is a 4-lane urban typical section with a Design Speed of 45 mph. The total

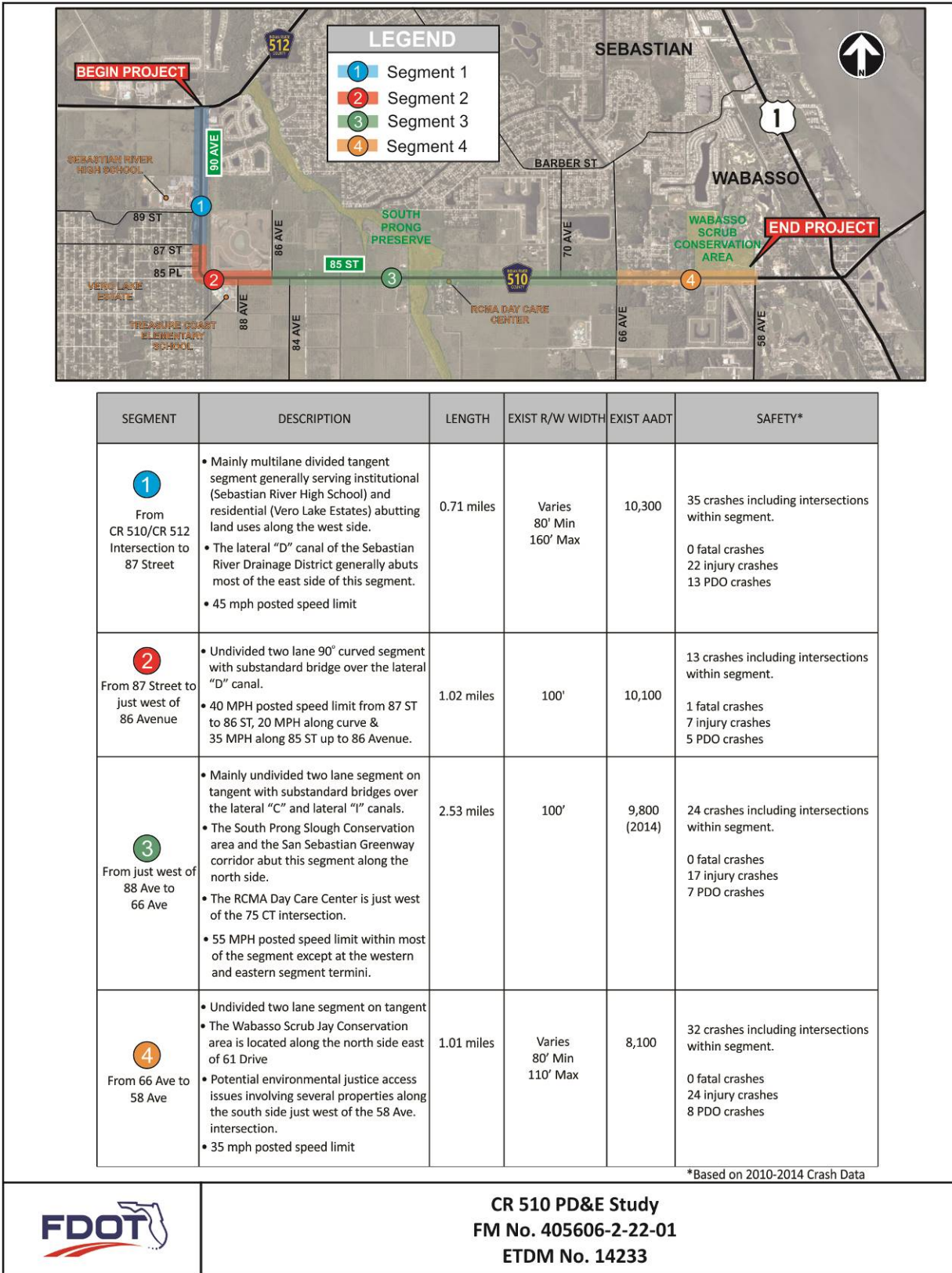


1 proposed right-of-way for this section is 104-feet. This typical section features 11-foot travel  
2 lanes, 7-foot bicycle lanes, 6-foot sidewalks against the curb and a 22 -foot median. **Figure 3-5**  
3 illustrates some of the salient characteristics of this alternative within this segment including  
4 the various partial median openings that have been given to the communities along this  
5 segment.

6

#### 7 **Stormwater Ponds**

8 For stormwater treatment and attenuation design the project was divided into 10 separate  
9 stormwater management basins. Four (4) potential pond locations per basin were evaluated as  
10 per the Pond Siting Report prepared as part of this PD&E study. However, only the two ponds  
11 that were ranked first and second as part of the pond siting process were evaluated in this  
12 report. During final design, only one recommended pond will be selected per basin for water  
13 quality treatment and storage capacity. The top two pond alternatives per basin are shown in  
14 **Figures 4-1 and 4-2.**



1  
2

**Figure 3-1 Project Segmentation**

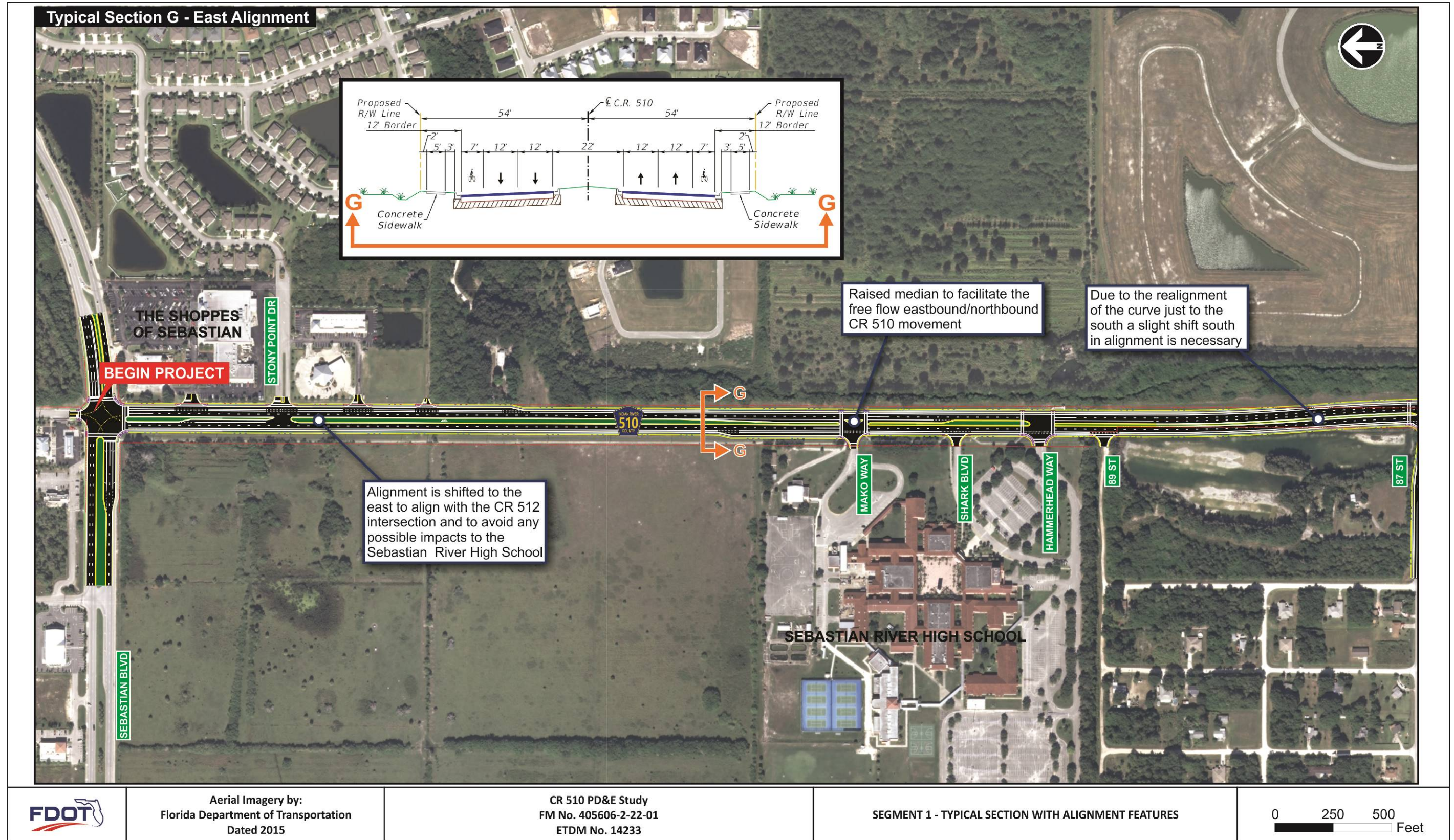
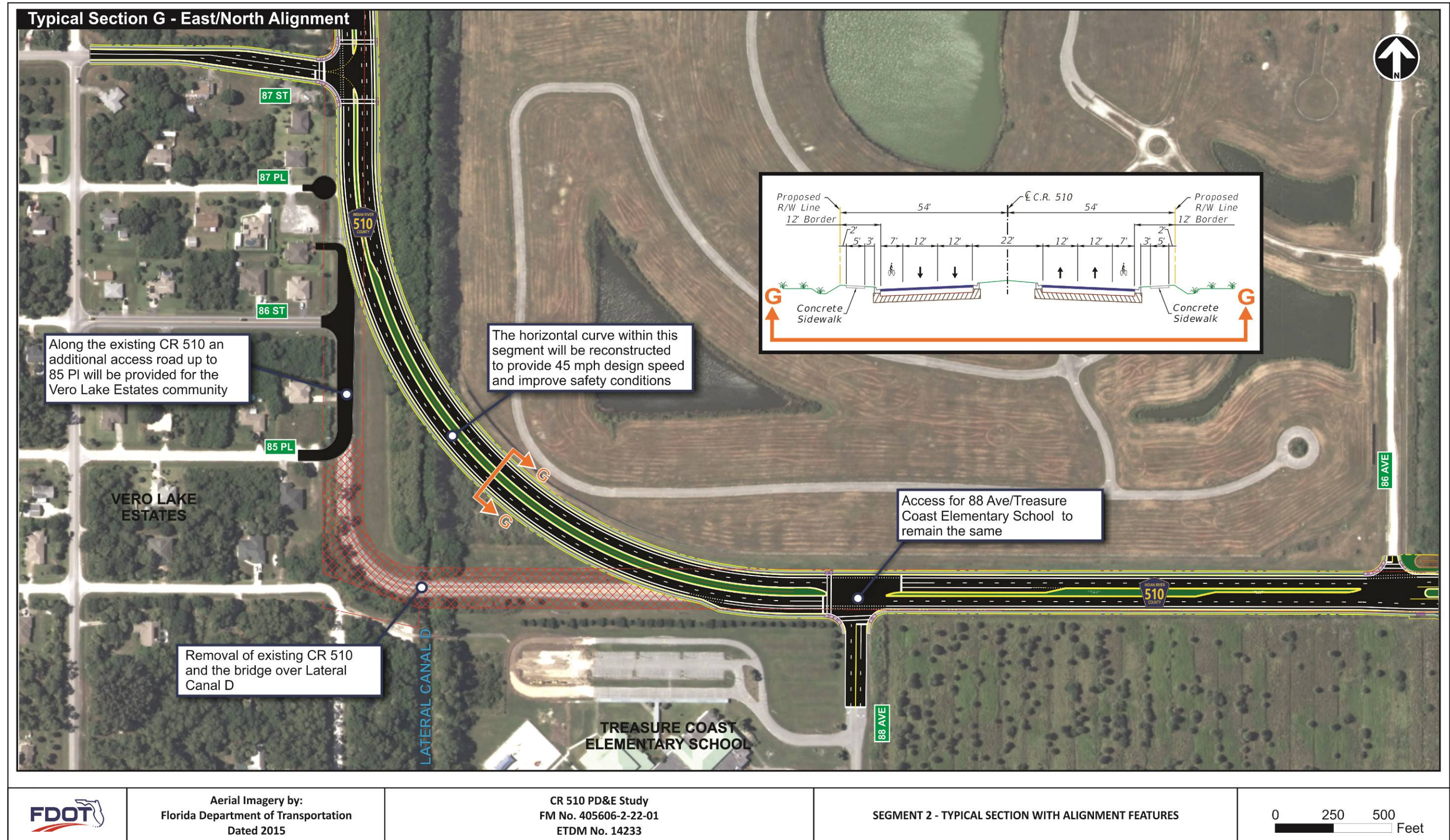


Figure 3-2 Segment 1 Typical Section with Alignment Features



1  
2  
3

Figure 3-3 Segment 2 Typical Section with Alignment Features

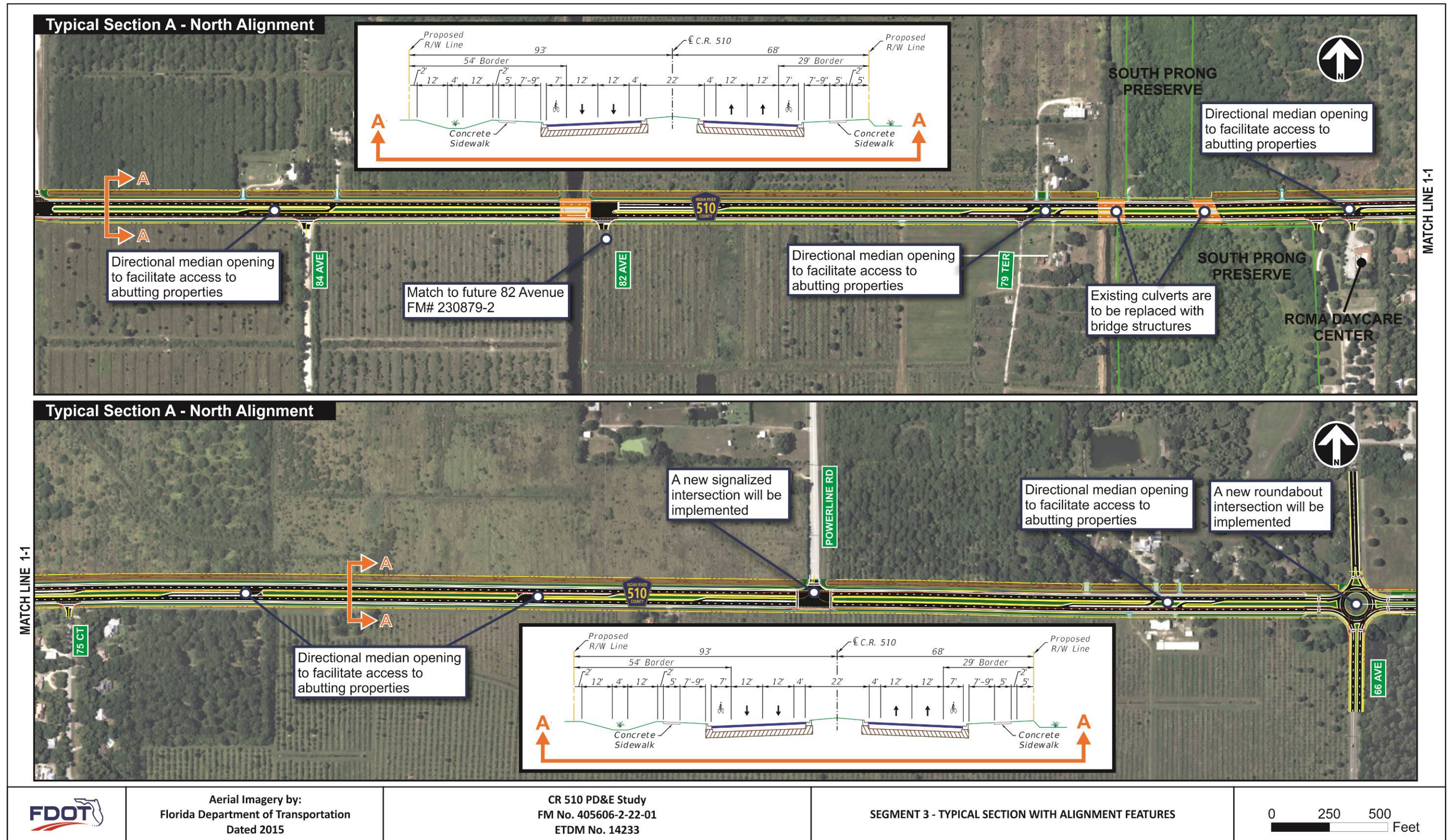
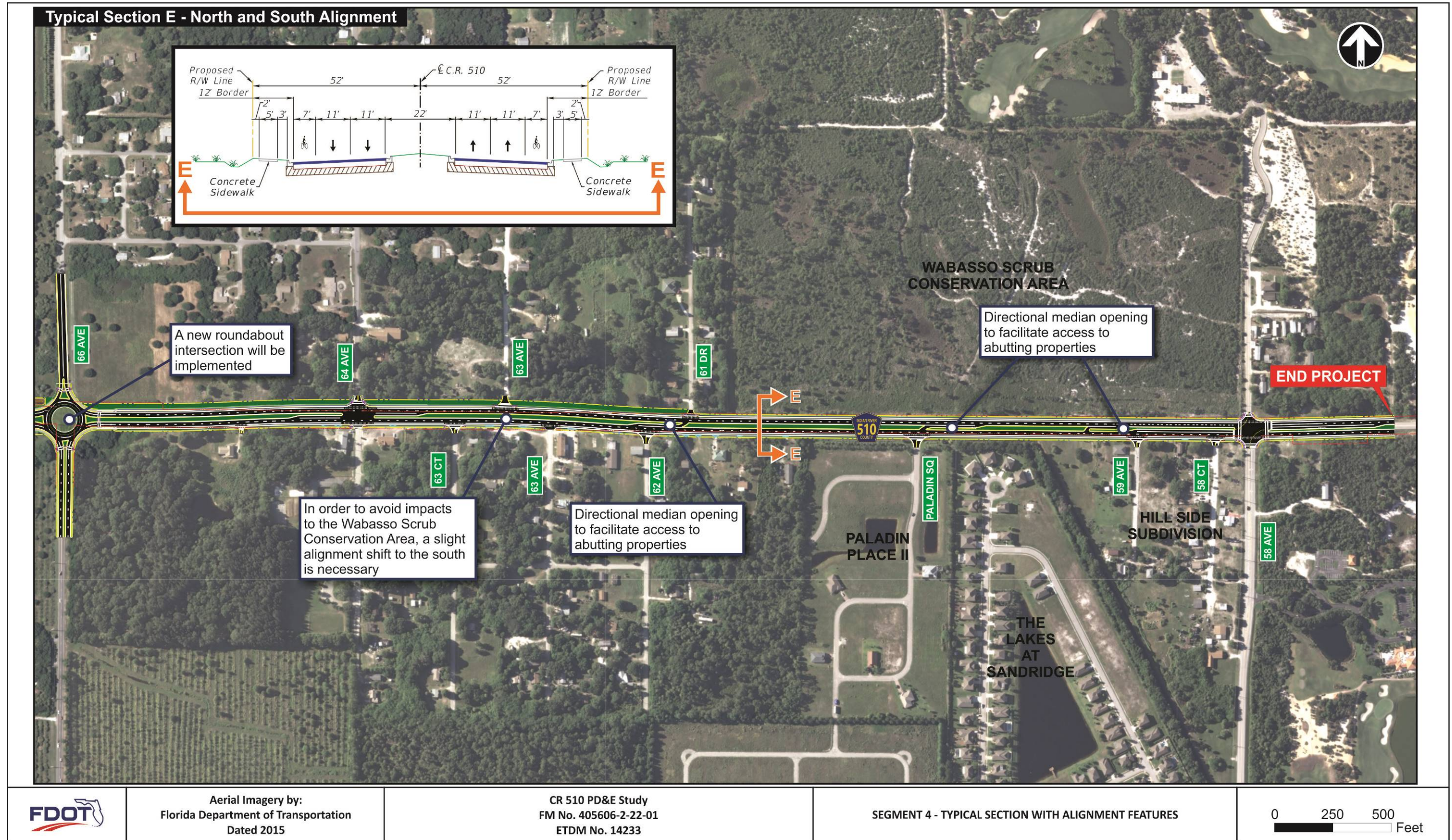


Figure 3-4 Segment 3 Typical Section with Alignment Features

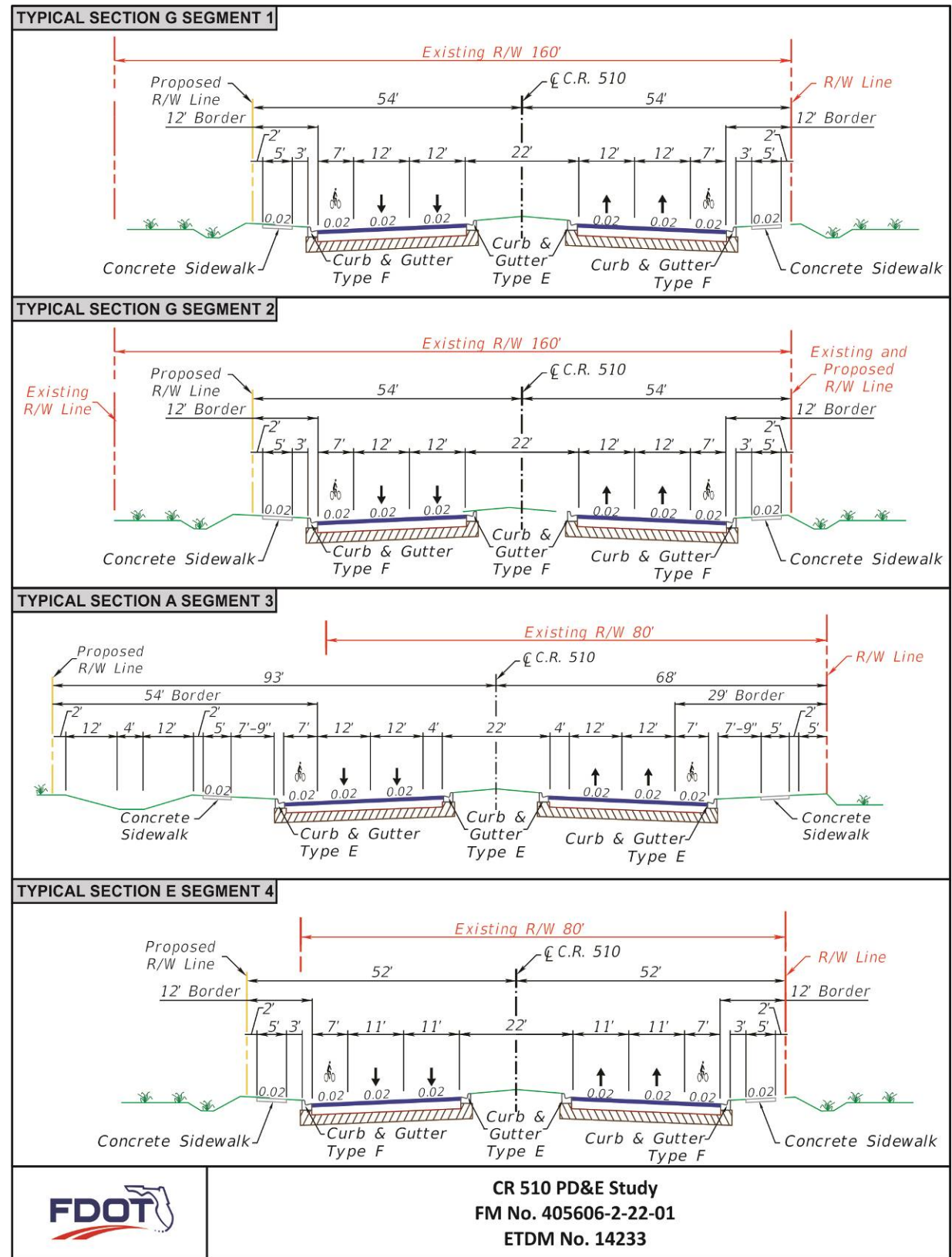
1  
2  
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1



2  
 3

Figure 3-5 Segment 4 Typical Section with Alignment Features



1  
 2  
 3

Figure 3-6 Typical Section Details

## 4.0 PROJECT AREA DESCRIPTION

The project occurs in Indian River County, southwest of the City of Sebastian. The term “project corridor” is used in this document to represent a smaller area that encompasses the existing C.R. 510 right-of-way and the recommended alternative. The term “project area” represents a larger expanse that encompasses the project corridor as well as all land within 500 feet of the centerline of C.R. 510.

The project area is primarily agricultural, with pastures, citrus groves, and home sites scattered throughout. However, increased residential development is encroaching from the City of Sebastian to the north and from Vero Lake Estates, a housing development that borders the project. A shopping center and two gas stations are located at the intersection of C.R. 510 and C.R. 512 at the project’s western terminus. Approximately one half-mile south of that intersection and immediately west of C.R. 510 is Sebastian River High School. C.R. 510 makes a 90 degree bend approximately 1.25 miles from the project’s western terminus so that the westernmost part of C.R. 510 runs north-south and the more eastern section runs east-west. Treasure Coast Elementary School occurs south of C.R. 510, just east of the 90 degree bend in C.R. 510. Immediately northeast of that bend is a large area that was cleared for residential development. Streets and utilities were installed but no construction of houses has begun.

The majority of the agricultural lands in the project area are abandoned citrus fields. Most of these fields contain standing dead citrus trees on raised rows with furrows between each row. Dead citrus trees in some fields have been cleared and additional clearing is ongoing. East of 66 Avenue residential land use becomes more common. Three canals cross the project corridor, each is oriented north-south.

Indian River County owns three notable conservation properties adjacent to this project. In the northeast quadrant of the intersection of C.R. 510 and C.R. 512 is the Ansin Tract, which contains forested land stretching from that intersection to the Saint Sebastian River. Near the middle of the project, the south prong of the Saint Sebastian River is surrounded by two tracts of land owned by Indian River County and managed as the South Prong Preserve. At the projects eastern terminus is the Wabasso Scrub Conservation Area (WSCA), which contains scrub habitats and has been used previously for mitigation for federally listed Florida scrub jays (*Aphelocoma coerulescens*).

### LAND USE

Land use cover descriptions provided for both uplands and wetlands are classified utilizing the *Florida Land Use Cover and Forms Classifications System* (FLUCCS) designations. Existing land use in the project area was initially determined utilizing US Geological Survey (USGS) maps, historical images, aerial photographs, and land use mapping from the St. Johns River Water Management District (SJRWMD) (2009-2012). Land use categories in the project area reported by SJRWMD were verified in the field. Field reviews generally confirmed the SJRWMD land use mapping, with minor updates that are described below. Land use categories in the project area as mapped by SJRWMD are shown in **Figures 4-1** and **4-2** and each land use category in the project area is described below along with its location.



1 **Residential, Low Density (FLUCCS – 1100)**

2 This category is reserved for low density residential areas that have from one half to two acres  
3 per dwelling unit. Residential, Low Density land uses are often located in newly established  
4 sections of large urban areas or on urban-rural fringe. This land use type occurs immediately  
5 east of the project corridor approximately 0.3 mile south of the intersection of C.R. 510 and C.R.  
6 512 and also immediately east of the South Prong Preserve, south of C.R. 510. A third area of  
7 this land use type occurs south of C.R. 510 between Power Line Road and Schumann Drive.

8 **Residential, Rural (FLUCCS - 1180)**

9 This residential category is restricted to areas where the density is two to five acres per  
10 dwelling unit. It is used for areas with low dwelling unit densities, but not low enough to be put  
11 into a non-residential category, as with farmsteads. This class may contain a mosaic of small  
12 open areas, natural vegetation, or miscellaneous land covers/uses. This land class is found in  
13 one location in the project area, immediately west of the South Prong Preserve and east of 82  
14 Avenue.

15 **Low Density Under Construction (FLUCCS - 1190)**

16 This category refers to low density residential areas that are in the process of construction.  
17 When completed they will fall into the 1100 class, with more than one half and less than two  
18 acres per dwelling unit. There is no time limit set on completion of the areas under  
19 construction. However, if the in-fill process is indefinitely stalled, the code 1920 is used instead.  
20 This class is found in one location in the project area, on the north and east side of the 90  
21 degree bend in C.R. 510.

22 **Residential, Medium Density (FLUCCS – 1200)**

23 This category is reserved for medium density residential areas that have from two to five  
24 dwelling units per acre. Rural and recreational types of subdivisions will be included in the  
25 residential category since this land is almost entirely committed to residential use even though  
26 forest or open areas may be present also. This class is found in two locations in the project  
27 area, at the eastern terminus and at the western side of the project corridor near the 90 degree  
28 bend in C.R. 510.

29 **Medium Density Under Construction (FLUCCS – 1290)**

30 This category refers to medium density residential areas that are in the process of construction  
31 and will have between two and five dwelling units per acre when finished. If more than half of  
32 the area is constructed, and work is in progress, these areas should be coded as though  
33 complete, using 1200. There is no time limit set on completion of the areas under construction.  
34 However, if the in-fill process is indefinitely stalled, the code 1920 is used instead. This land use  
35 type is found in one location of the project area, east of C.R. 510 approximately 0.4 miles south  
36 of the projects' western terminus.

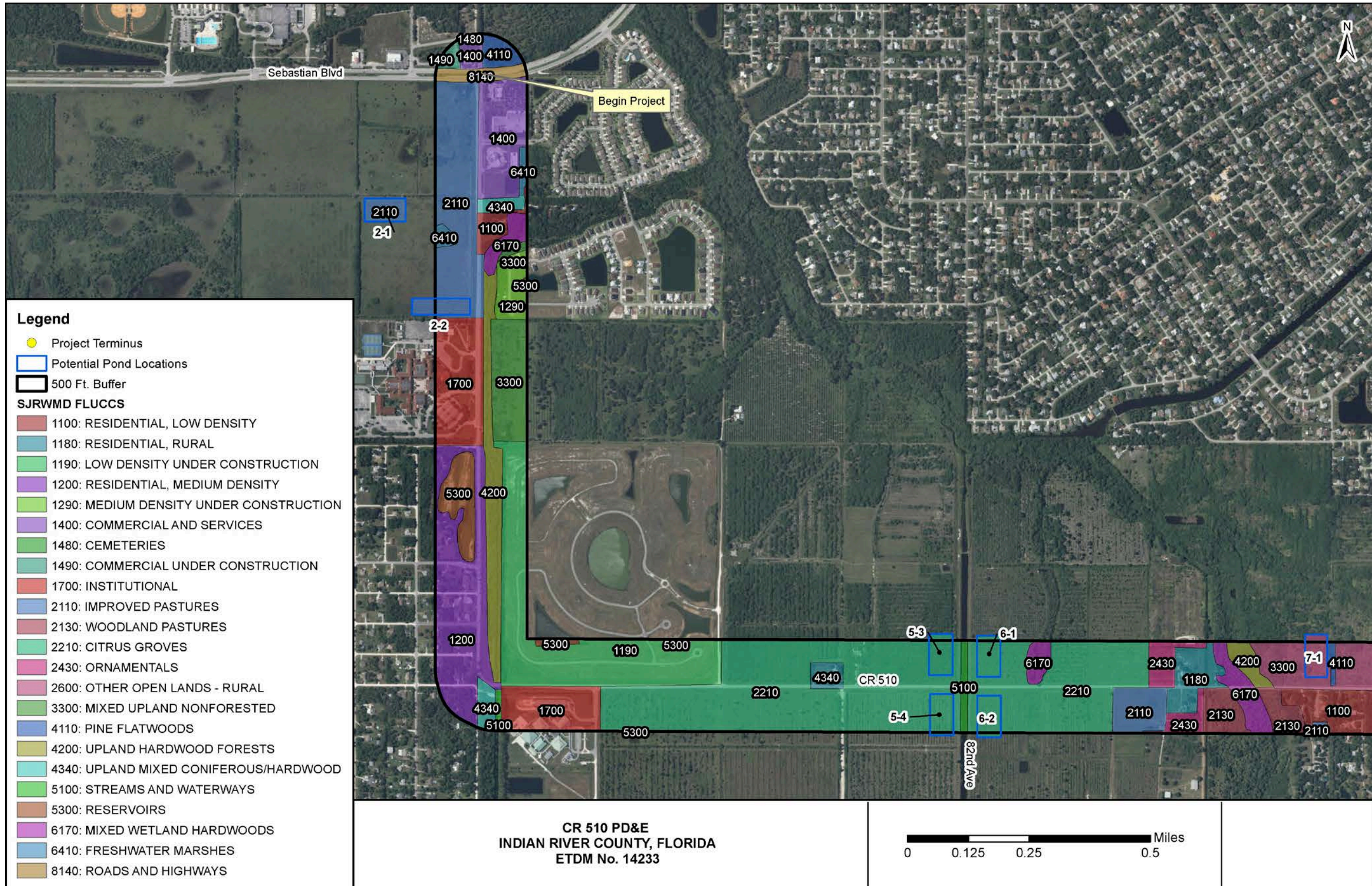


Figure 4-1 Land Use in Western Half of Project Area

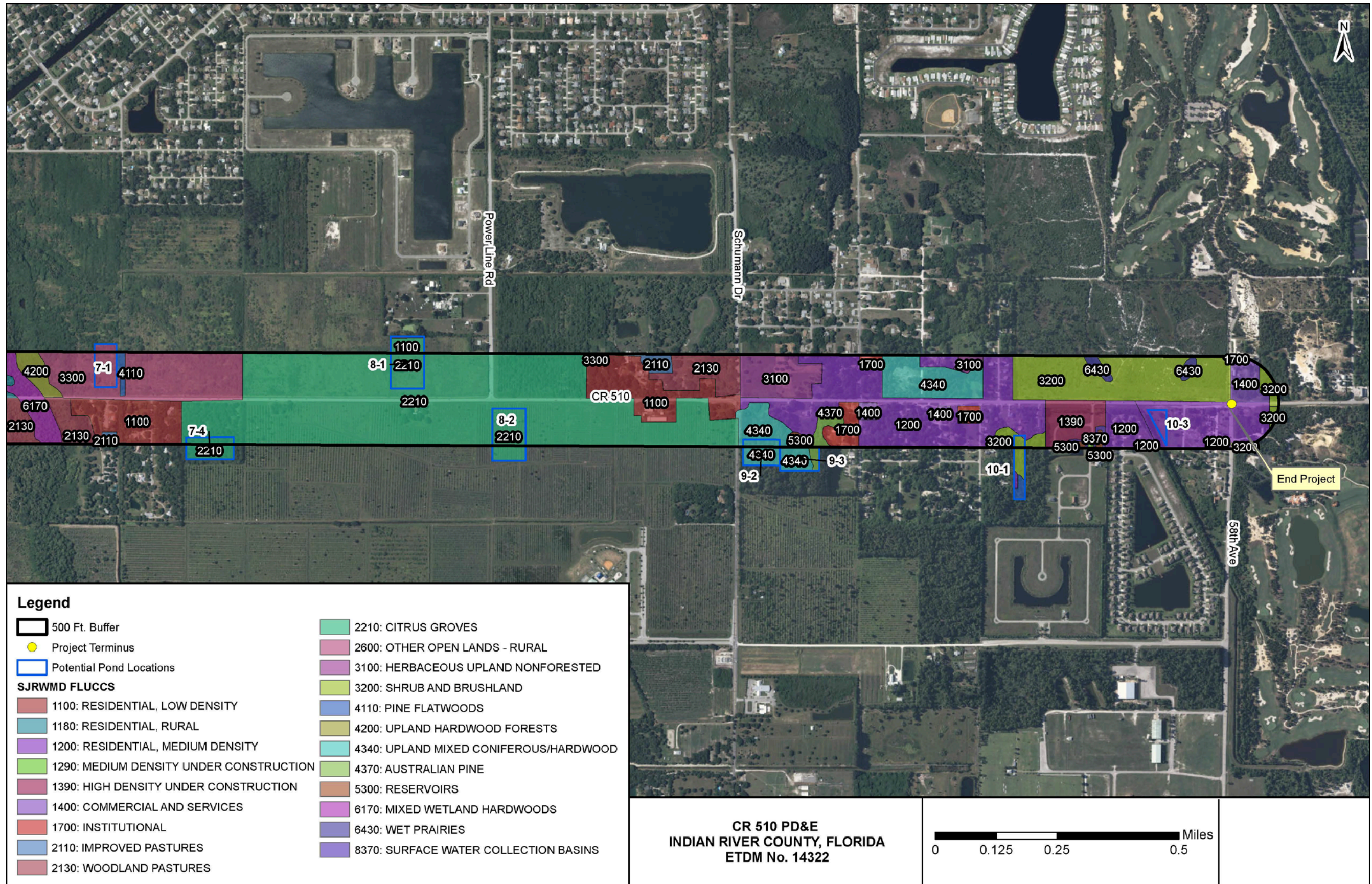


Figure 4-2 Land Use in Eastern Half of Project Area

1 **High Density Under Construction (FLUCCS – 1390)**

2 This category refers to high density residential areas that are in the process of construction. If  
3 more than half of the area is constructed, and work is in progress, these areas should be coded  
4 1300, as though complete. There is no time limit set on completion of the areas under  
5 construction. However, if the in-fill process is indefinitely stalled, the code 1920 is used instead.  
6 This category occurs in one location, on the south side of the corridor near the eastern  
7 terminus approximately 0.25 mile west of 58 avenue.

8 **Commercial and Services (FLUCCS – 1400)**

9 This is an active land use category that includes a broad range of uses and operations providing  
10 diverse products and services which often occur in complex mixtures. Subclasses include retail  
11 and wholesale, professional, cultural and entertainment, and tourist services, as well as others.  
12 The 1400 class includes shopping centers, commercial strip developments, warehouses, junk  
13 yards, campgrounds and amusement parks. These areas are usually located along main  
14 transportation routes or at the intersections of secondary transportation corridors. This land  
15 use category is found in five separate locations in the project area; two are at the intersection  
16 of C.R. 510 with C.R. 512, two more occur south of C.R. 510 between 64 Avenue and 62 Avenue,  
17 and one area of Commercial and Services land use occurs at the intersection of C.R. 510 and 58  
18 Avenue.

19 **Cemeteries (FLUCCS – 1480)**

20 This category includes all burial grounds of any age and type. These are a diverse group, which  
21 includes both human and pet cemeteries; old, in-active cemeteries covered by dense canopy;  
22 brand new facilities with open expanses of lawn that are not yet “populated”; and all  
23 combinations in between. One cemetery is located near the western terminus of the project,  
24 approximately 400 feet north of the C.R. 510 intersection with C.R. 512.

25 **Commercial and Services Under Construction (FLUCCS – 1490)**

26 This class includes all 1400 classes that are in the process of construction. It includes  
27 cemeteries, oil and gas storage, and all other land uses in the 1400 group that are under  
28 construction. This class is found in one location in the project area, approximately 250 feet  
29 northwest of the C.R. 510 and C.R. 512 intersection at the western terminus of the project.

30 **Institutional (FLUCCS – 1700)**

31 The institutional class is an active, general land use class that includes a broad range of  
32 institutional uses which can be difficult to differentiate individually. It includes uses such as  
33 educational, religious, medical and health care, governmental, correctional, commercial child  
34 care, and others. Educational institutions encompass all levels of public and private schools,  
35 colleges, universities, training centers, etc. The institutional class is found in six locations within  
36 the project area. Two schools are found along the corridor; Sebastian River High School, which  
37 is located 0.5 miles south of C.R. 512, and Treasure Coast Elementary School, which is located  
38 south of C.R. 510 just east of the 90 degree bend. Three locations of Institutional land use occur  
39 between Schumann Drive and 62 Avenue, both north and south of the project corridor. These  
40 include a church and pre-kindergarten facility as well as land the Indian River County Property

1 Appraiser lists as '3300 – Night club/Bar/Lounge'. The last institutional area located within the  
2 project area is a church approximately 500 feet north of C.R. 510 on 58 Avenue.

### 3 **Improved Pastures (FLUCCS – 2110)**

4 Improved pastures are the most intensively managed of the pastureland classes. They are  
5 usually cleared, tilled, reseeded with specific grass types and periodically improved with brush  
6 control and fertilizer application. In most cases they show some direct evidence of cattle, such  
7 as watering ponds, feed bunkers, fencing, corrals, barns or cow trails. This land use category is  
8 present in the project area southwest of the intersection of C.R. 510 and C.R. 512. There are  
9 two other small areas of improved pasture, south of C.R. 510, 0.3 and 0.75 miles east of 82  
10 Avenue, respectively.

### 11 **Woodland Pastures (FLUCCS – 2130)**

12 Pasturelands that have from 25 percent to 100 percent forest canopy are included in this  
13 category. It does not include open pasturelands with patches of tree canopy large enough to  
14 qualify as upland forest. Woodland pastures are generally unimproved. Evidence of grazing, if  
15 visible, may include cattle trails leading to feed bunkers, salt licks and watering areas.  
16 Woodland Pastures occur south of C.R. 510 on either side of riparian forest on the South Prong  
17 Preserve and north of C.R. 510 immediately west of Schumann Drive.

### 18 **Citrus Groves (FLUCCS – 2210)**

19 This class is for active citrus groves, such as oranges, grapefruits, and tangerines. Land use  
20 classified as Citrus Groves occurs in two large sections of the project area, north and south of  
21 C.R. 510 from 86 Avenue to approximately 0.1 mile west of 79 Terrace and north and south of  
22 C.R. 510 from 75 Court to 66 Avenue. These areas are not currently used for citrus production  
23 and anecdotal reports from landowners suggest that they began to be abandoned after  
24 infestation with pests and disease following a hurricane in 2004.

### 25 **Ornamentals (FLUCCS – 2430)**

26 This category is for facilities that raise ornamental plants for off-site use. This category does not  
27 include ornamental trees. There are two areas of Ornamental land use in the project area. They  
28 are located north and south of C.R. 510, approximately 0.35 mile east of 82 Avenue. During  
29 field inspections in 2016 it did not appear that these parcels were currently being used to raise  
30 ornamental plants.

### 31 **Herbaceous Upland Nonforested (FLUCCS – 3100)**

32 This is one of three land cover classes used for upland nonagricultural, non-forested lands  
33 which contain no evidence of cattle grazing. Specifically, 3100 is used for areas that have over  
34 67 percent herbaceous cover, not counting any forested inclusions, which may be up to 25  
35 percent of the area. Traditional rangelands for the 3100 cover class include prairie grasses  
36 which occur on the upland margins of the wetland zone and may be periodically inundated by  
37 water. Generally, it is the marginal area between marsh and upland forested areas. This land  
38 use type occurs in one place in the project area, northeast of the intersection of C.R. 510 and  
39 Schumann Drive.

40

1 **Shrub and Brushland (Wax myrtle or Saw palmetto) (FLUCCS – 3200)**

2 This is one of three land cover classes used for upland nonagricultural, non-forested lands  
3 which contain no evidence of cattle grazing. Specifically, 3200 is used for areas that have over  
4 67 percent shrub cover and less than 33 percent herbaceous cover (this proportion ignores any  
5 forested patches, which may cover up to 25 percent of the total area). This cover class includes  
6 areas where tree species are regenerating naturally after clear cutting or fire, but are less than  
7 20 feet tall. Most of the WSCA, northwest of the C.R. 510 and 58 Avenue intersection, is  
8 categorized as Shrub and Brushland. Another patch occurs south of C.R. 510 just east of 62  
9 Avenue and three patches of Shrub and Brushland occur in the project area east of 58 Avenue.

10 **Mixed Upland Non-Forested (FLUCCS – 3300)**

11 This class is used for upland non-forested landscape in which neither herbaceous nor shrubs  
12 cover over two thirds of the area. This cover class may include areas where tree species are  
13 regenerating naturally after clear cutting or fire, but are less than 20 feet tall. These include  
14 native hardwood and coniferous species, but does not apply to plantations. In the project area  
15 this land use type occurs in three locations. One is east of C.R. 510, 0.5 mile south of C.R. 512  
16 and the other two are north of C.R. 510, immediately east of the South Prong Preserve.

17 **Pine Flatwoods (FLUCCS – 4110)**

18 This class is for naturally generated pine flatwoods. The canopy closure must be 25 percent or  
19 more and the trees must average over 20 feet tall. The pine flatwoods class is dominated by  
20 either slash pine, longleaf pine, or both. Common understory species include saw palmetto,  
21 wax myrtle, gallberry and a wide variety of herbs and brush. Pine flatwoods are the most  
22 prevalent community in natural areas. Most pine flatwoods occur on broad, low, flat areas with  
23 seasonal high water tables but not on hydric soils. They transition into mesic flatwood and  
24 hardwood communities on higher ground and into hydric flatwoods, cypress and other  
25 wetlands on the lower edges. Pine flatwoods are found in two places in the project area. The  
26 Ansin Tract, northeast of the intersection of C.R. 510 and C.R. 512 is classified as Pine  
27 Flatwoods, and a small area north of C.R. 510, approximately 0.8 mile east of 82 Avenue, is also  
28 classified as Pine Flatwoods.

29 **Upland Hardwood Forest (FLUCCS – 4200)**

30 Upland Hardwood Forests may include forest communities such as oak-pine-hickory, Brazilian  
31 pepper, live oak, wax myrtle-willow, mixed temperate or tropical hardwoods, and beech-  
32 magnolia. Upland forests are naturally generated, and do not include hardwood plantations, or  
33 planted groves of citrus or pecans. However, almost all forests are subject to human influence  
34 and the composition of the forest is, to a degree, determined by management factors. The  
35 trees must average over 20 feet tall at the time of photography and up to one third of the  
36 canopy may be comprised of coniferous species. Upland Hardwood Forests in Florida are found  
37 wherever hydrology, fire, and management practices permit their establishment and they may  
38 occur as inclusions in most other land cover types. Upland Hardwood Forest occurs in two  
39 locations in the project area. The largest area is a linear strip of land immediately east of C.R.  
40 510 that extends from approximately 0.5 mile south of the intersection of C.R. 510 and C.R. 512  
41 south to the 90 degree bend in C.R. 510. This narrow stand of Upland Hardwood Forest grows  
42 on either side of the canal. Another area of Upland Hardwood Forest is located north of C.R.  
43 510, immediately east of wetlands on the South Prong Preserve.

1 **Upland Mixed Coniferous/Hardwood (FLUCCS – 4340)**

2 This category is used for those forested areas in which neither upland conifers nor hardwoods  
3 achieve 67 percent crown canopy dominance. It may include communities such as oak-pine-  
4 hickory, Brazilian pepper, live oak, wax myrtle-willow (not hydric), mixed temperate or tropical  
5 hardwoods, and beech-magnolia. Upland pine communities include slash, longleaf, and sand  
6 pines. Upland Mixed Coniferous/Hardwoods are found in four places in the project area. The  
7 first is located east of C.R. 510, approximately 0.25 mile south of the intersection of C.R. 510  
8 and C.R. 512. The second is located south of C.R. 510, directly south of the 90 degree bend. The  
9 third area is located directly southeast of the intersection of C.R. 510 and Schumann Drive. The  
10 fourth area of Upland Mixed Coniferous/Hardwoods is located north of C.R. 510 approximately  
11 0.35 mile east of Schumann Drive.

12 **Australian Pine (FLUCCS – 4370)**

13 This class is used for Australian Pine communities. The canopy closure is 25% or greater, with  
14 at least two thirds dominance by Australian pine trees that average at least 20 feet tall. One  
15 area of Australian Pine is located in the project area, south of C.R. 510, approximately 0.35 mile  
16 east of Schumann Drive. An additional area of Australian Pines that was not mapped by  
17 SJRWMD was found during field surveys. It occurs just east of C.R. 510 and approximately 0.3  
18 miles south of the intersection of C.R. 510 and C.R. 512.

19 **Streams and Waterways (FLUCCS – 5100)**

20 This category includes rivers, creeks, canals and other linear water bodies that are 10 meters or  
21 greater in width. This class includes both natural and modified waterways, as well as man-made  
22 canals and channels. Two areas mapped as Streams and Waterways occur in the project area,  
23 both are man-made canals. The first is mapped south of C.R. 510 immediately east of the 90  
24 degree bend in C.R. 510. Though this canal is only mapped by SJRWMD south of C.R. 510, the  
25 canal extends under CR 510 and parallels the roadway as it run north. The second canal  
26 mapped by SJRWMD under land use runs parallel to and immediately west of 82 Avenue.  
27 Another canal is located just west of the South Prong Preserve but was not mapped as a distinct  
28 land use type by SJRWMD. The South Prong Preserve contains the south prong of the St.  
29 Sebastian River, but is not mapped as Streams and Waterways by SJRWMD.

30 **Reservoirs- Pits, Retention Ponds, Dams (FLUCCS – 5300)**

31 Reservoirs are artificial impoundments of water, or water bodies that have been significantly  
32 modified from their natural state. They are used for irrigation, flood control, municipal and  
33 rural water supplies, stormwater treatment, recreation and hydro-electric power generation.  
34 One large Reservoir in the project area is located west of C.R. 510, approximately 0.75 mile  
35 south of the intersection of C.R. 510 and C.R. 512. Two Reservoirs associated with the stalled  
36 development of a residential neighborhood immediately northeast of the 90 degree bend in  
37 C.R. 510 are in the project area, and an additional pond occurs in an abandoned citrus field just  
38 east of Treasure Coast Elementary School. Three small reservoirs are mapped south of C.R. 510  
39 and east of Schumann Drive. One area that is mapped as Commercial and Services contains a  
40 stormwater pond. It is approximately 0.2 mile south of C.R. 512, east of C.R. 510.

41

1 **Mixed Wetland Hardwoods (FLUCCS – 6170)**

2 This class is reserved for those wetland hardwood communities which are composed of a large  
3 variety of hardwood species tolerant of hydric conditions yet exhibit an ill-defined mixture of  
4 species. This land use type is mapped in three locations in the project area. One of those  
5 locations is immediately east of C.R. 510, approximately 0.35 miles south of C.R. 512. Another is  
6 north of C.R. 510 just east of 82 Avenue. Another area of Mixed Wetland Hardwoods occurs in  
7 the South Prong Preserve where riparian forests follow the south prong of the Saint Sebastian  
8 River.

9 **Freshwater Marshes (FLUCCS – 6410)**

10 This class is used for wetland communities having a representative suite of plant species such as  
11 sawgrass, cattail, arrowhead, and the common reed. Freshwater marshes tend to be open  
12 expanses of grasses, sedges, rushes, and other types of herbaceous plants. Periods of  
13 inundation are intermediate between Deep Marshes (emergent 6440) and Wet Prairies (6430).  
14 Sites are usually covered with water at least two months of the year and undergo prolonged  
15 periods of soil saturation. Two areas of Freshwater Marshes are found in the project area. One  
16 is an isolated low lying section of cattle pasture located west of C.R. 510, approximately 0.3  
17 mile south of the intersection of C.R. 510 and C.R. 512. The other is located east of C.R. 510,  
18 approximately 0.25 mile south of the intersection of C.R. 510 and C.R. 512, between a  
19 residential neighborhood and a commercial building. It may no longer meet the definition of  
20 Freshwater Marsh as it is now mostly forested.

21 **Wet Prairies (FLUCCS – 6430)**

22 This classification is composed of dominantly grassy vegetation on wet soils and is usually  
23 distinguished from marshes by having less water and shorter herbage. Wet Prairies occur in  
24 depressions in the landscape within flatwoods and pastures, and are also found at the edges of  
25 cypress domes and marshes. Conditions supporting wet prairies may also support forested  
26 depressions or wetland savannahs under other management and fire regimes.

27 Wet Prairies may also result from alterations of hydrology, such as former marshes that are  
28 drying out from artificial drainage or groundwater drawdowns; or former low flatwoods with a  
29 rising water table due to impoundment or precipitation. Two small areas of Wet Prairie occur in  
30 the project area. Both are on the WSCA, approximately 0.1 and 0.3 mile west of 58 Avenue.

31 **Surface Water Collection Basins (FLUCCS – 8370)**

32 This category is used for holding ponds, impoundments and infiltration ponds, utilized within  
33 residential subdivisions or communities and along freeway corridors, for temporary collection  
34 and holding of surface water runoff. Generally, these are open spaces excavated for temporary  
35 seasonal water collection within the urban context. It is not used for treatment ponds and  
36 other "reservoirs" that generally function as **permanent** water bodies. It is not used for holding  
37 ponds in mining applications. Two Surface Water Collection Basins are mapped in the project  
38 area, south of C.R. 510 approximately 0.3 miles west of 58 Avenue.



## 1 **ELEVATION AND HYDROLOGY**

2 The project area is located on relatively flat land with a ground elevation ranging between  
3 approximately sea level and 35 feet. There is a slight rise in elevation from west to east with the  
4 most significant rise in elevation near the eastern-most portion of the project area. The  
5 National Resources Conservation Service (NRCS) reports the depth to water table in the project  
6 area is between 0 and 18 inches. **Figure 4-3** shows an elevation map created with data collected  
7 by the National Oceanic and Atmospheric Administration and the U.S. Department of  
8 Commerce in 2007 using Light Detection and Ranging (LIDAR) in North American Datum 1983  
9 (NAD 83).

10 Major canals and hydrologic features in the vicinity of the project are shown in **Figure 4-4** and  
11 **4-5**. There are three unnamed man-made canals abutting the project corridor, all are oriented  
12 north-south. The first intersects C.R. 510 immediately east of the 90 degree bend in C.R. 510  
13 and parallels much the westernmost portion of the project, where C.R. 510 is oriented north to  
14 south. The second canal intersects C.R. 510 immediately west of the intersection of C.R. 510  
15 and 82 Avenue. A third canal runs north-south and crosses C.R. 510 just east of 79 Terrace, next  
16 to the south prong of the Saint Sebastian River.

17 The closest major water feature is the Saint Sebastian River, located approximately one mile  
18 northeast of the project corridor. The south prong of the Saint Sebastian River crosses the  
19 project corridor at the South Prong Preserve. Stormwater run-off within the project corridor  
20 ultimately drains into the central Indian River Lagoon via man-made canals and conveyances  
21 leading to the Indian River County North Canal. This canal discharges water into a portion of the  
22 Indian River Lagoon that is a designated Outstanding Florida Water (OFW).

23 According to the flow pattern map from the SJRWMD, groundwater flow in the project area is  
24 generally to the east-northeast. The project is underlain by a surficial aquifer system that is not  
25 a Sole Source Aquifer as identified by the U.S. Environmental Protection Agency (USEPA).

26 Based on a review of the Florida Department of Health website  
27 (<http://gis.doh.state.fl.us/ehwater/index.html>), 20 potable wells are present adjacent to the  
28 project area. Three wells are located approximately 300 feet northeast of the intersection of  
29 C.R. 510 and 58 Avenue. Three wells are located approximately 200 feet north of C.R. 510, 0.45  
30 mile west of 58 Avenue. Two are located approximately 100 feet south of C.R. 510, 0.45 mile  
31 west of 58 Avenue. One well is located approximately 40 feet south of C.R. 510, 0.4 mile east of  
32 Schumann Drive. Two wells are located approximately 100 and 700 feet south of C.R. 510, 0.25  
33 mile east of Schumann Drive. Two wells are located approximately 40 and 650 feet south of C.R.  
34 510, 0.2 mile east of Schumann Drive. One well is located approximately 350 feet north of C.R.  
35 510, 0.2 mile east of Schumann Drive. A row of five wells is located approximately 300 to 1000  
36 feet south of C.R. 510, 1.1 miles east of 82 Avenue. One well is located approximately 40 feet  
37 northwest of the intersection of C.R. 510 and C.R. 512.

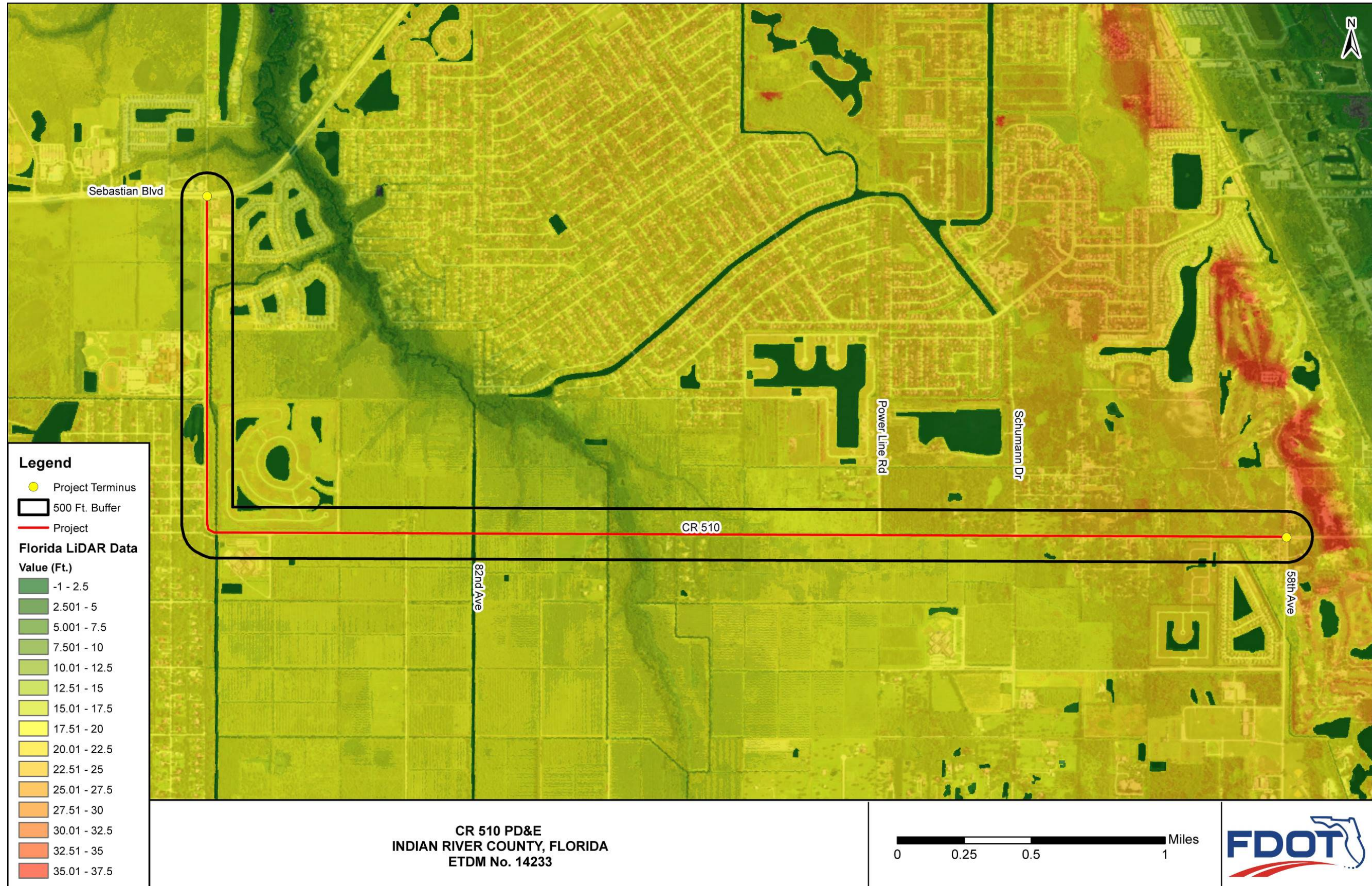


Figure 4-3 Elevation Map

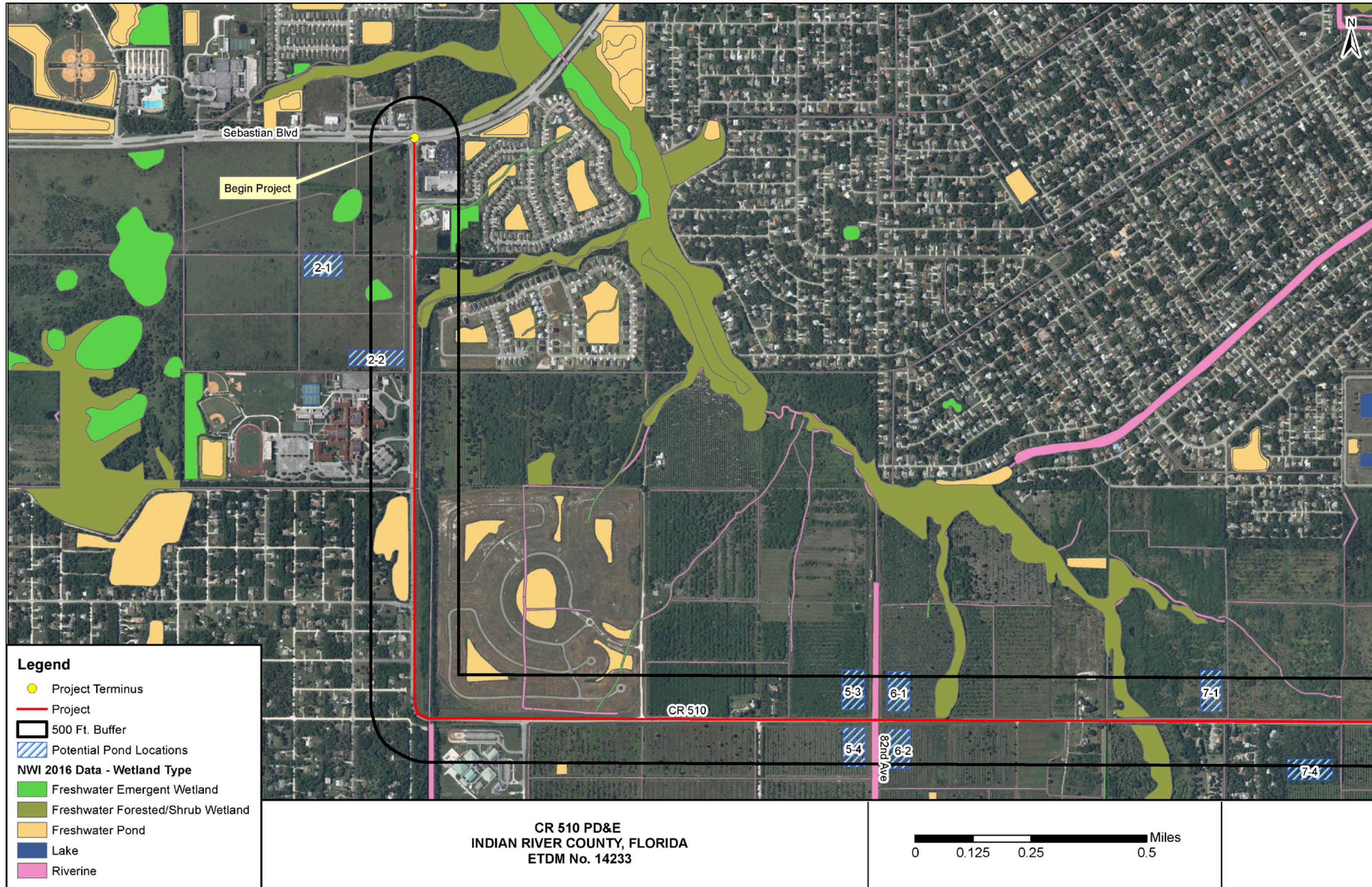


Figure 4-4 Surface Hydrology Western Half of Project Area

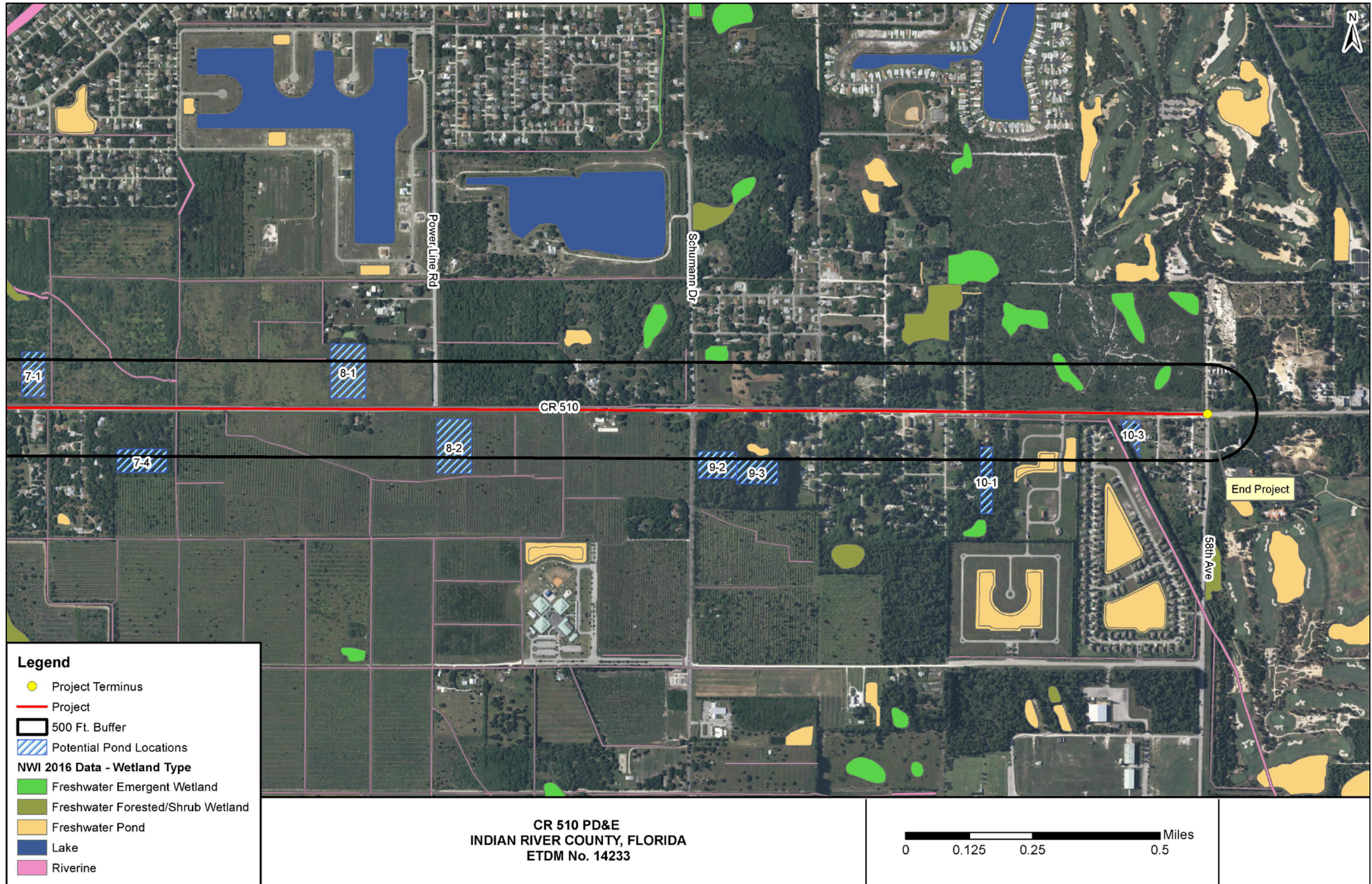


Figure 4-5 Surface Hydrology Eastern Half of Project Area

1 This project is located within the SJRWMD’s Indian River Lagoon Basin. According to the Federal  
2 Emergency Management Agency (FEMA) Flood Insurance Rate Map (updated December 4,  
3 2012), most of the project area is located within flood zone X, which is outside of the 500-year  
4 floodplain. There are three small areas within the project area mapped as flood zone A, which  
5 are areas of 500-year flood; areas of 100-year flood with average depths of less than one foot  
6 or width drainage areas less than one square mile; or areas protected by levees from 100-year  
7 flood. These areas mapped as flood zone A are located 0.3 mile south of the intersection of C.R.  
8 510 and C.R. 512, 0.15 mile east of 82 Avenue, and 0.5 mile east of 82 Avenue.

## 9 **SOILS**

10 The NRCS (2014) indicates 10 soil types occur in the project area, and nine soil types exist  
11 within the project corridor, where soil disturbance would occur under the proposed build  
12 alternative (**Figure 4-6**). The soil types in the project area are listed in **Table 4-1** along with  
13 descriptions and ratings from NRCS. Three hydric soils are known to occur in the project area:  
14 Pineda Fine Sand, Winder Fine Sand, and Riviera Fine Sand. No prime farmland soils occur in  
15 Indian River County. EauGallie Fine Sand, Wabasso Fine Sand, Winder Fine Sand, Oldsmar Fine  
16 Sand, Pineda Fine Sand, and Riviera Fine Sand are considered farmland soils of unique  
17 importance.

18  
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1

**Table 4-1- Soils in Project Area**

Soil Type	Environmental Association	Approximate Percent of Project Area
Archbold	This soil type consists of nearly level to sloping soils on the Atlantic Coastal Ridge and other elevated knolls on flatwoods. This is not a hydric soil.	3.6%
Astatula	This soil type consists of excessively drained, very rapidly permeable soils that formed in thin deposits of marine or eolian sand. These nearly level to gently sloping soils are on the Atlantic Coastal Ridge. This is not a hydric soil.	2.3%
EauGallie fine sand	This soil type consists of nearly level sandy soils, mainly on broad, low ridges. Permeability is rapid to moderately rapid in soils formed in beds of loamy marine sediments. Typical natural vegetation consists of slash pine, saw palmetto, cabbage palm, wax myrtle, wiregrass, bluestems, and panicums. This is rated as a farmland soil of unique importance. This is not a hydric soil.	1.7%
Electra	This soil type consists of deep, somewhat poorly drained, slowly permeable or very slowly permeable soils that formed in thick beds of sandy and loamy marine sediment. These nearly level to gently sloping soils are on knolls and in adjacent drainageways. This is not a hydric soil.	1.3%
Oldsmar fine sand	This soil type consists of nearly level, sandy soils on low and on low knolls in floodplains. Permeability is rapid to moderately rapid. Typical natural vegetation includes slash pine, saw palmetto, inkberry, rusty lyonia, blackroot, pennyroyal, pineland threeawn, chalky bluestem, and panicums. This is not hydric soil.	13.0%
Pineda fine sand	This soil type consists of soils that formed beds of sandy and loamy sediments influenced by underlying alkaline material. These soils are on broad low flats and in low areas bordering swamps and lakes. Permeability is slow to very slow. Typical natural vegetation is scattered slash pine, cabbage palm, wax myrtle, saw palmetto, blue maidencane, pineland threeawn, and panicums. <b>This is a hydric soil.</b>	1.9%
Wabasso fine sand	This soil type consists of nearly level sandy soils formed in sandy and loamy marine sediments. These soils are on broad flatlands. Permeability is rapid to moderately rapid. Typical natural vegetation consists of slash pine, cabbage palm, saw palmetto, wax myrtle, fetterbush, inkberry, pineland threeawn, bluestems, and panicums. This is not hydric soil.	25.3%
Winder fine sand	This soil type consists of nearly level soils formed in unconsolidated marine sands and clays that are influenced by underlying alkaline material. Soils are located on low hammocks and in poorly defined drainageways. Permeability is slow to very slow. Typical natural vegetation includes cabbage palm, laurel oak, slash pine, wax myrtle, blue maidencane, chalky bluestem, sand cordgrass, sawgrass, sedges, and water tolerant grasses. <b>This is a hydric soil.</b>	6.5%
Myakka	This soil type consist of poorly drained, moderately permeable to moderately rapidly permeable soils that formed in beds of sandy marine sediment. These nearly level soils are on broad flatwoods and in depressions. This is not a hydric soil.	4.3%
Riviera Fine Sand	This soil type consists of nearly level soil and is poorly drained. Typical natural vegetation consists of blue maidencane, pineland threeawn, cabbage palmetto, sand cordgrass, toothache grass, broomsedge bluestem, creeping bluestem, Florida paspalum, and saw palmetto. Permeability is moderately low to moderately high. <b>This is a hydric soil.</b>	30.2%
Water	-	9.9%
<b>TOTAL</b>		<b>100%</b>

Source: NRCS 2014; USDA 1987: 22–23, 25, 28, 31–34, 36, 45, 55

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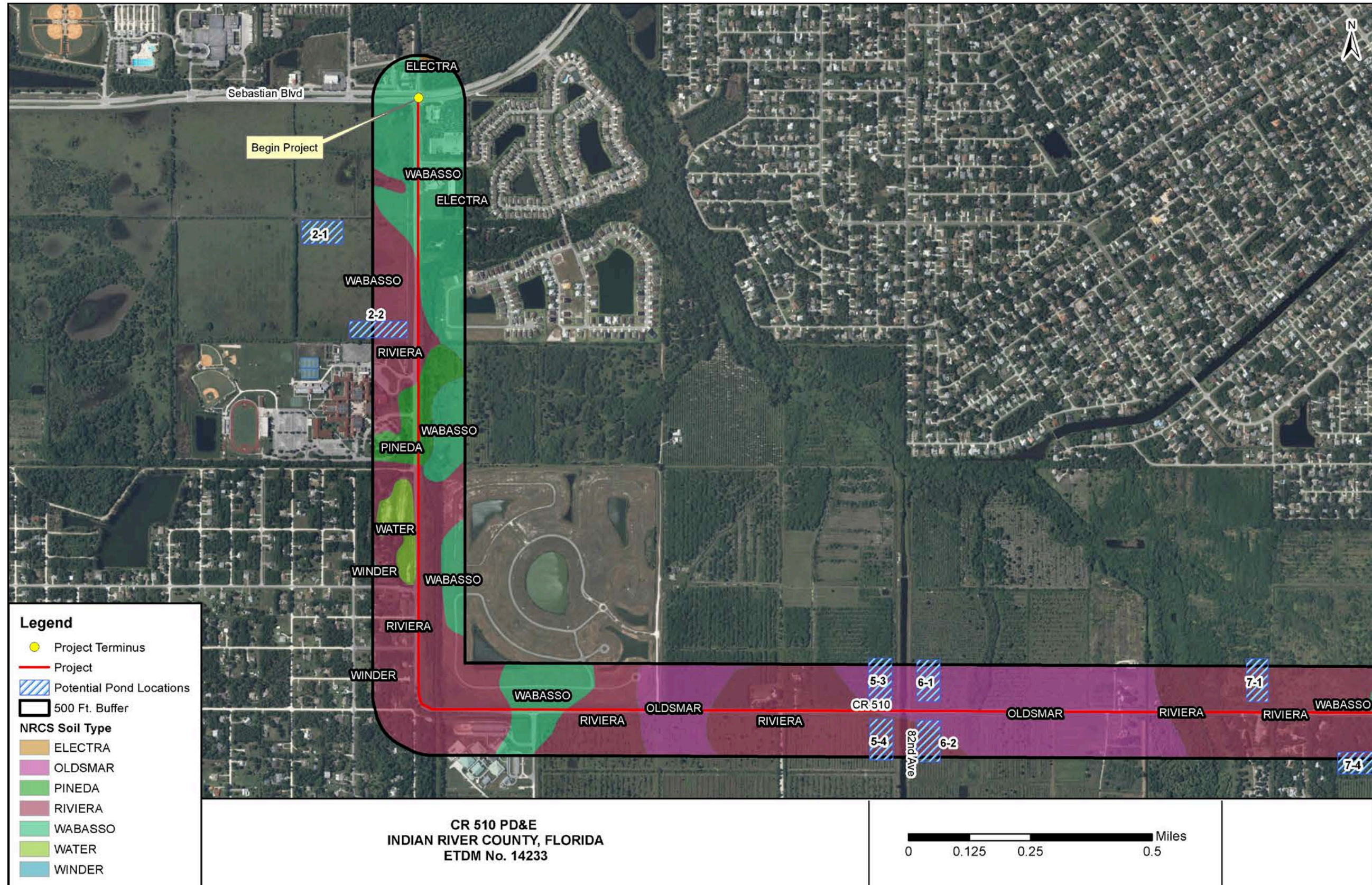


Figure 4-6 Soils Map Western Half of Project

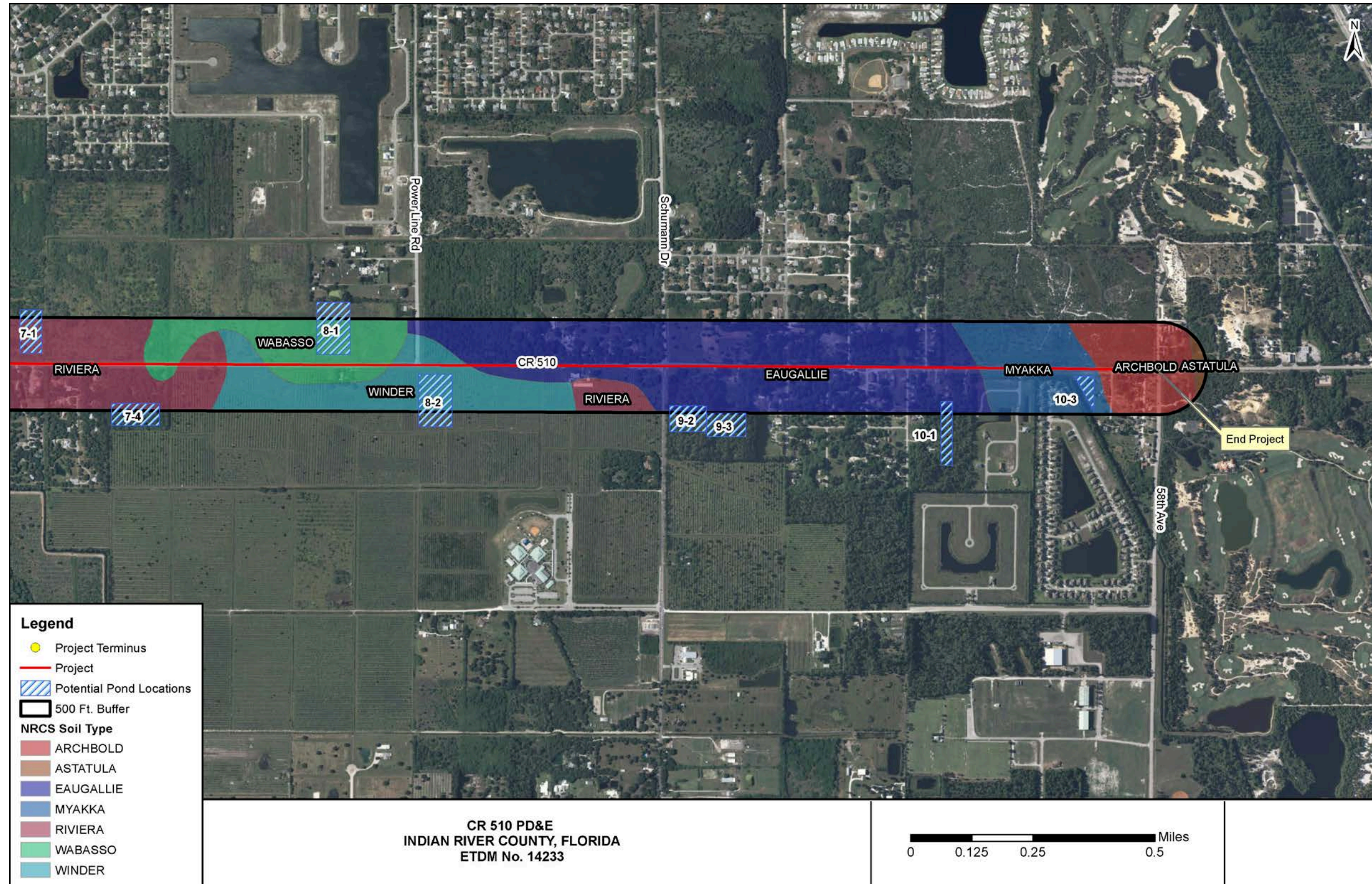


Figure 4-7 Soils Map Eastern Half of Project



## 5.0 METHODOLOGY

1  
2 In accordance with Part 2, Chapter 22 (revised June 14, 2017) of the *PD&E Manual*, this  
3 Contamination Screening Evaluation (Level 1) was conducted to evaluate potential  
4 contamination concerns associated with the recommended alternative. In addition to sites  
5 initially identified and assessed in the field, this report identifies and evaluates known landfills,  
6 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also known  
7 as Superfund) sites, and National Priorities List (NPL) sites within one half mile of the project  
8 corridor. Known sites of petroleum contamination, drycleaners, and non-petroleum  
9 contamination within 500 feet of the project corridor were identified and investigated, as were  
10 non-landfill solid waste sites within 1,000 feet of the project corridor. This evaluation includes  
11 the following:

- 12 • A review of Efficient Transportation Decision Making (ETDM) Summary Report and  
13 Environmental Screening Tool (EST) contamination data;
- 14 • A review of the Florida Department of Environmental Protection (FDEP) OCULUS  
15 database and USEPA Resource Conservation and Recovery Act (RCRA) databases;
- 16 • A review of the most up-to-date GIS layers downloaded from the Florida Geographic  
17 Data Library (FGDL) involving contamination related information;
- 18 • Field review of project corridor and potential contamination sites;
- 19 • Field review of vacant lots;
- 20 • Ownership history information of each potential contamination site;
- 21 • Historic aerial image review;

22 Recommendations regarding contamination concerns are based on reasonably ascertainable  
23 information obtained from the data collection activities identified above.

## 24 DATA GATHERING

### 25 Government Databases Search

26 Information regarding potential contamination sites was obtained from the ETDM Geographic  
27 Information System (GIS) Analysis Results Tool (EST – contamination layer), which includes  
28 information on Biomedical Waste, Brownfield Location Boundaries, Dry Cleaners, Gasoline  
29 Stations, Petroleum Tanks, Hazardous Waste Sites, NPL Superfund Sites, Nuclear Site Locations,  
30 On-site Sewage (septic tanks), State Underground Petroleum Environmental Response Act  
31 (SUPER Act) Risk Sources, Solid Waste Facilities, Tanks 2007, Toxic Release Inventory Sites, and  
32 Resource Conservation and Recovery Act (RCRA) Regulated Facilities. In addition to these  
33 aforementioned resources, the FGDL database was used to locate GIS files and identify facility  
34 IDs.

1 **Regulatory File Review**

2 File Reviews were conducted online using the FDEP OCULUS database and USEPA RCRA  
3 websites. An FDOT CSER produced in 2005 as part of Federal Project ID No. 4984-003-S was  
4 reviewed and information from it was incorporated into this document as well.

5

6 **Historical Aerial Photograph Review**

7 A review of historical aerial photos was performed for the project area. The University of  
8 Florida Digital Collections Website (<http://ufdc.ufl.edu/aerials/all/table/2>) was used to review  
9 aerial photographs from 1943 through 1981 and Google Earth historic aerial imagery was  
10 examined for the period from 1994 to present. The aerial images were reviewed for potential  
11 contamination concerns, including but not limited to mounds, depressions, storage areas or  
12 drastic changes in landscaping or geographic features. A brief discussion of the review of  
13 historic aerial photographs is provided below.

- 14 • 1943 - A roadway is visible in the current location of C.R. 510. A canal is visible, and the  
15 South Prong Slough is visible as a corridor of riparian vegetation. The western portion of the  
16 project area is undeveloped except for some development immediately west of the South  
17 Prong Slough. The project area east of the South Prong Slough is predominantly in  
18 agricultural use.
- 19 • 1951 - Additional agricultural development is visible immediately north of C.R. 510,  
20 between the 90 degree bend in the roadway and 84 Avenue.
- 21 • 1970 - Agricultural fields are widespread throughout the project area. The streets in Vero  
22 Lake Estates, between 89 Street and 77 Street, have been established.
- 23 • 1981 - Most of the broader region and the project area has been developed for agriculture.  
24 Corridors of riparian vegetation persist along the South Prong Slough and Saint Sebastian  
25 River.
- 26 • 1994 - Home sites on relatively large parcels of land are visible in Vero Lake Estates. The  
27 majority of the project area is under agricultural use, likely citrus. Sebastian River High  
28 School is visible. Houses are visible east of 64 Avenue, though The Lakes at Sandridge  
29 subdivision is not present and that area is agricultural fields. The Bethel Service Station is  
30 visible. A small building is visible immediately southeast of the intersection of C.R. 510 and  
31 C.R. 512.
- 32 • 1999 - The building for the Shark Mart Mobil gas station at the intersection of C.R. 510 and  
33 C.R. 512 is visible in its current configuration. A different building than currently exists is  
34 visible on the opposite side of the intersection, at the future site of the Sunoco gas station.
- 35 • 2004 - Treasure Coast Elementary School is visible. Construction zones in what will become  
36 neighborhoods southeast and northwest of the intersection of C.R. 510 and C.R. 512 are  
37 visible. Residential areas near the eastern end of the project, south of C.R. 510, are also  
38 under development.

- 1 • 2005 - The shopping center immediately southeast of the intersection of C.R. 510 and C.R.  
2 512 is present.
- 3 • 2007 - Land clearing and road building has begun on the streets between 86 Avenue and  
4 C.R. 510, south of 89 Street.
- 5 • 2008 - The Sunoco gas station is present at the intersection of C.R. 510 and C.R. 512.  
6

### 7 **Field Reviews**

8 Field reviews of the project area were conducted on May 3 and June 21, 2016. The actual  
9 location of the potentially contaminated sites and the current occupancy and operations at  
10 each site were verified during the field reviews. Photographs were taken of all potentially  
11 contaminated sites that were identified and photographs and related information of any sites  
12 rated as “Medium” or “High” risk are provided in **Appendix A**.

### 13 14 **Risk Ratings**

15 Based on the compilation of data collection activities described above, each site was assigned a  
16 risk rating based on the methods in Chapter 22 of the PD&E Manual. The ratings system  
17 expresses the degree of concern for a potential contamination impact to the project via cost  
18 and schedule. Each site was assigned a contamination risk rating of No, Low, Medium or High  
19 based on the following criteria:

- 20 1. No - A review of available information on the property and a review of the design plans  
21 indicates there is no potential for contamination to impact the project. It is possible that  
22 contaminants had been handled on the property. However, all information (assessment  
23 reports, monitoring well abandonments, results of recent soil and groundwater  
24 sampling, etc.) indicate that contamination impacts are not expected.
- 25 2. Low - A review of available information indicates that former or current activities on the  
26 property have an ongoing contamination concern, has a hazardous waste generator  
27 identification (ID) number, or handles hazardous materials in some capacity. However,  
28 based on all available information and current design plans, it is not likely that there  
29 would be any contamination impacts related to this project.
- 30 3. Medium - After a review of all available information, the potential contamination has  
31 been identified. This may include known soil and/or groundwater contamination that  
32 may not require remediation, is currently being remediated, or that is currently in the  
33 monitoring only phase. The complete status of remediation is important to determine  
34 what FDOT must do if the property were to be acquired. If there is insufficient reliable  
35 information (such as regulatory records or site historical documents) to make a  
36 determination as to the potential for contamination, and there is reasonable suspicion  
37 that contamination may exist, the property should be rated at least as a “Medium”. A  
38 recommendation should be made for each property in this category based on whether it  
39 would be within the proposed project, what additional assessment or remedial actions

1            might be required if the property is acquired, and the possible requirements for  
2            additional actions if there is a need to avoid the property. This ranking is the lowest  
3            possible rating a currently operating petroleum fueling or storage facility can receive in  
4            an assessment document, based on its distance to the ROW, contamination type, need  
5            for dewatering in the area, etc.

6            4. High - After a review of all available information and current conceptual or design plans,  
7            there is a reasonable potential for contamination impacts during construction. Once the  
8            Design Alternative has been selected, sites rated with high contamination potential  
9            require further assessment to confirm and delineate potential contaminants and to  
10           determine if remediation or special construction provisions will be needed during  
11           construction. The recommendation for this rating should include a listing of the  
12           parameters of concern and media to be assessed, and if known, what construction  
13           activities will occur within or adjacent to the contaminated media. Properties used  
14           historically as gasoline stations and which have not been evaluated or assessed would  
15           likely receive this rating

16

## 6.0 PROJECT IMPACTS

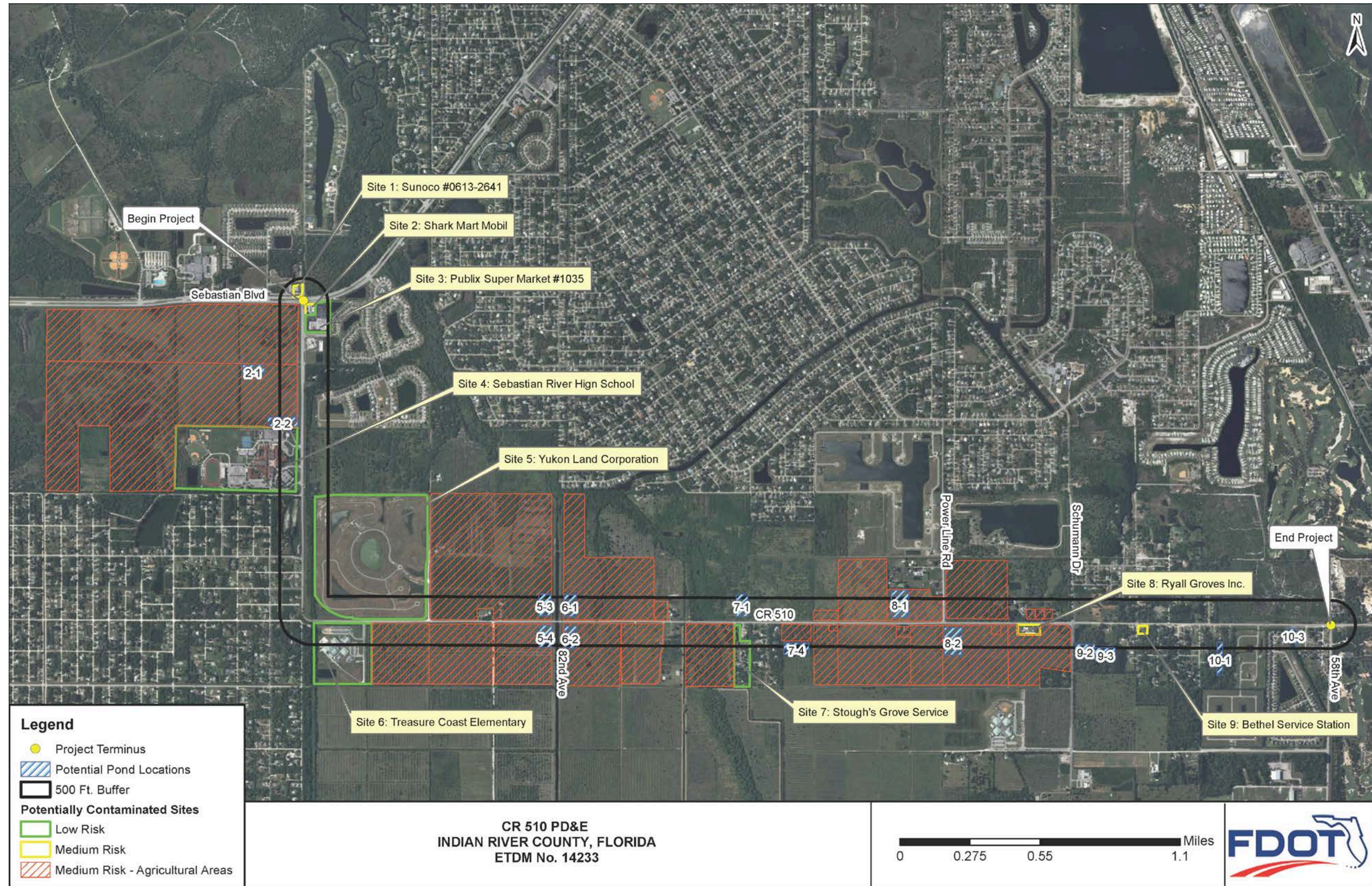
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Known or potential contamination sources identified during this study are presented in **Table 6.1**. No CERCLA, NPL sites, or landfills were identified within one half mile of the project corridor. Most of the project area was previously used for agricultural and that causes some potential risk of contamination. **Figure 6-1** shows the locations of potentially contaminated sites listed in **Table 6.1**. Proposed pond 2-2 is adjacent to Site 4, Sebastian River High School. Agriculture has historically been widespread in Indian River County and all the proposed pond sites occur on lands previously used for agriculture. Data and information related to specific potential contamination sites that were rated as High or Medium risk are provided in **Appendix A**. The “No Build” and TSM&O Alternatives are not anticipated to cause potential contamination impacts.

1

**Table 6-1 Site Information**

Site #	Facility Name	Segment	Address	Facility ID (FDEP/RCRA)	Databases	Concern	Distance of Contamination from Project Corridor	Risk Rating
1	Sunoco #0613-2641	1	9020 C.R. 512	8509326	FDEP OCULUS	Petroleum products	Adjacent	Medium
2	Shark Mart Mobil	2	9490 90 Ave.	9602448	FDEP OCULUS	Petroleum products	Adjacent	Medium
3	Publix Super Market #1035	3	1451 Sebastian Blvd #200	9810584	FDEP OCULUS	Fuel	Adjacent	Low
4	Sebastian River High School	1	9001 90 Ave.	110006393125	RCRA	Biomedical Waste	Adjacent	Low
5	Yukon Land Corporation	2	8790 85 St.	None	None	Above Ground Storage Tanks	Co-located	Low
6	Treasure Coast Elementary	2	8955 85 St.	110064754573	RCRA	Biomedical Waste	Adjacent	Low
7	Stough's Grove Service	2	7675 85 Street	8520277	FDEP OCULUS	Gasoline	Adjacent	Low
8	Ryall Groves Inc.	3	6815 85 St.	None	None	Above Ground Storage Tanks	Adjacent	Medium
9	Bethel Service Station	4	6375 85 Street	9100095	FDEP OCULUS	Petroleum products	Adjacent	Medium
10	Former or Current Agricultural Areas	All	No discreet address	None	None	Herbicide, Pesticide	Co-located and Adjacent	Medium



1  
 2

Figure 6-1 Potentially Contaminated Sites

## 7.0 REGULATORY STATUS OF SITES

No CERCLA, NPL Superfund Sites or landfills were identified within one half mile of the project corridor. **Table 6.1** lists sites that were identified with specific potential contamination concerns. Six of the sites were identified in the FDEP Storage Tanks Database and one site was identified in the Hazardous Waste Database. Sites 3, 4, 5, 6, and 7 were assigned a risk rating of “Low”; Sites 1, 2, 8, 9 and 10 were assigned a risk rating of “Medium”; and no sites were assigned the risk rating of ‘High’.

A CSER produced for FDOT in 2005 identified multiple sites that were reviewed and considered for inclusion in this document. Sites 1, 2, 4, 6 and 9 were also identified in the 2005 CSER during database reviews for this document. The sites identified in the 2005 CSER as Sites 7 (7950 85 Street), 8 (8406 79 Street), and 9 (8406 79 Terrace) were considered No Risk and are not included in this document. The site at 7950 85 Street is not identified in any regulatory databases and there are no records of storage tanks or release of any contaminants. The site at 8406 79 Street is not listed in any regulatory databases, no contamination has been identified, and the site is approximately 1,000 feet from the project. The site at 8406 79 Terrace contained underground storage tanks (USTs) and remediation resulted in a No Further Action status. For these reasons and because this site is approximately one half mile from the project, it is not included in this document. A site at 8690 86 Avenue was identified in the 2005 CSER as being Low risk. That site reportedly contained truck or trailer mounted Above Ground Storage Tanks (ASTs) that were removed and there was no evidence of discharge of any contaminants. That site is not included in this document because it is more than 2,500 feet from the project and the tanks were mobile and not permanently stored there. The site identified in the 2005 CSER as Yukon Land Corporation at 8790 85 Street was incorporated into this document as site number 5. The site identified in the 2005 CSER at 6815 85 Street was incorporated into this document as site number 8. Proposed pond 2-2 is adjacent to Site 4, Sebastian River High School, which was also identified in the 2005 CSER. None of the other proposed ponds are located on or adjacent to any identified sources of potential contamination identified in the 2005 CSER or during the course of the current PD&E study.

Site descriptions and their regulatory status are provided below. The Florida Department of Health records noted that onsite sewage facilities exist at several houses as well as a day care located at 7625 85 Street. Comments received through the ETDM process regarding contamination are provided along with responses following site descriptions.

### Site No. 1

Sunoco #0613-2641

9020 C.R. 512

Facility ID: 8509326

Risk Rating: Medium

This facility is located on the northwest corner of the intersection of C.R. 512 and C.R. 510, adjacent to the proposed project. According to the Indian River County Property Appraiser, the



1 property is owned by Cole Su Sebastian FL LLC. A Contamination Assessment Report dated June  
2 23, 1994, stated that no record was ever filed to document the type, source, or quantity of  
3 product discharge at this facility from the three 10,000-gallon USTs that are registered to the  
4 site. It suggested the contamination discovered on the site is the result of minor discharges  
5 during fueling operations. This report noted the site became eligible for state cleanup under the  
6 Early Detective Incentive (EDI) Program on October 28, 1988 and that the assessment was being  
7 conducted to determine the extent of the contamination and to determine the need for  
8 remediation. During a June 1994 inspection no liquid phase hydrocarbons, or free floating  
9 product, was observed on the site or in any of the monitoring wells. The area of highest organic  
10 vapor responses from the soil assessment was near the western edge of the UST pad at a depth  
11 of approximately three feet below sea level. The groundwater assessment found the very  
12 limited dissolved hydrocarbon plume to be centered on monitoring well (MW) -5, which  
13 penetrates the UST bed. A Well Abandonment Report dated January 29, 2010 outlined how  
14 activities were completed to remove four monitoring wells to comply with the Provisional No  
15 Further Action Proposal Approval received from FDEP on December 14, 2010. This site is listed  
16 in the FDEP Storage Tank & Petroleum Contamination Monitoring database as cleanup status  
17 completed, dated August 31, 2011. The most recent document available on the Oculus  
18 database is a Storage Tank Facility QA/QC Site Inspection Report dated December 31, 2014,  
19 which did not identify any issues with the site. Because this site operates as gas station and  
20 previous contamination cleanup was completed, a risk rating of **Medium** is assigned to this site.  
21

## 22 **Site No. 2**

23 Shark Mart Mobil  
24 9490 90 Avenue  
25 Facility ID: 9602448  
26 Risk Rating: Medium

27 This site is located at the southeast quadrant of the intersection of C.R. 510 and C.R. 512,  
28 immediately adjacent to the project corridor. According to the Indian River County Property  
29 Appraiser, the property is owned by Donnini Enterprises, Inc. A Discharge Report Form dated  
30 August 12, 2010 states that soil analysis results, conducted as part of spill bucket closure  
31 assessment activities, indicated that soil contamination was present. Source removal activities  
32 were conducted on August 17, 2010 on the regular and premium USTs. Approximately five to  
33 six yards of soil, or 1,000 gallons, was removed by vacuum truck from the areas surrounding  
34 each of the spill buckets. The removed soil was analyzed and did not report any petroleum  
35 constituents in excess of the FDEP's standards. The site was issued a Site Rehabilitation  
36 Completion Order (SRCO) on October 22, 2010 in response to the Limited Source Removal  
37 Report dated September 15, 2010. The most recent document available on the Oculus database  
38 is a Storage Tank Facility Annual Compliance Site Inspection Report dated January 6, 2015.  
39 Because this site currently operates as a gas station and contaminated soil was removed  
40 resulting in a SRCO, this site is assigned a risk rating of **Medium**.  
41

1 **Site No. 3**

2 Publix Super Market #1035  
3 1451 Sebastian Boulevard #200  
4 Facility ID: 9810584

5 Risk Rating: Low

6 This site is located approximately 100 feet east of the project corridor, near the project's  
7 western terminus with SR 512. According to the Indian River County Property Appraiser, the  
8 property is owned by BW 512, Inc. The earliest document available on the Oculus database is a  
9 Storage Tank Facility Installation Site Inspection report dated November 21, 2008, which stated  
10 that a 1,000 gallon generator was installed during this inspection. Electronic monitoring  
11 equipment was installed for this generator tank system in December 29, 2008. The only  
12 documents available on the database after this installation report are annual inspection  
13 reports, no compliance or contamination issues were identified in any report. The most recent  
14 inspection report is dated September 16, 2015. Because fuel is stored on site, but because  
15 there is no record of any violations or a release of any contaminants, this site is assigned a risk  
16 rating of **Low**.

17

18 **Site No. 4**

19 Sebastian River High School  
20 9001 90 Avenue  
21 Risk Rating: Low  
22 Facility ID: 110006393125

23 This site is located immediately west of C.R. 510 and adjacent to the proposed project,  
24 approximately one half mile south of C.R. 512. According to the Indian River County Property  
25 Appraiser, the property is owned by the Indian River School Board. It has been in operation as a  
26 high school since 1994 and because this site is a school it is listed as a Biomedical Waste Facility.  
27 It is an RCRA-regulated facility and a Small Quantity Generator but has no record of  
28 enforcement violations or onsite contamination in the RCRA database. Because there is no  
29 reported history of contamination, this site is assigned a risk rating of **Low**.

30

31 **Site No. 5**

32 Yukon Land Corporation  
33 8790 85 Street  
34 Risk Rating: Low  
35 Facility ID: None

36 This site is located immediately north of the existing C.R. 510, across from Treasure Coast  
37 Elementary and east of the Lateral D canal. The proposed project cuts across the southwest  
38 portion of this parcel. This site was identified in a CSER produced for FDOT in 2005 and was not  
39 listed in any regulatory database. According to the Indian River County property appraiser it is  
40 owned by G. M Lawrence and Co. The 2005 CSER noted that the site was used for citrus  
41 production and included photographs from the property appraiser that show two above ground

1 storage tanks. The 2005 CSER reports that site was overgrown with vegetation and there was  
2 no evidence of spills or staining. It cites a Site Inspection Report from October 12, 2004  
3 revealing that all the tanks had been removed. This area has been cleared and graded for  
4 residential development since the 2005 CSER and there are no remnants of the buildings that  
5 housed the tanks. Because there is no documentation of contamination and this site is  
6 approximately 200 feet north of the project, it is assigned a risk rating of **Low**.  
7

## 8 **Site No. 6**

9 Treasure Coast Elementary  
10 8955 85 St  
11 Risk Rating: Low  
12 Facility ID: 110064754573

13 This site is located immediately south of C.R. 510, adjacent to the proposed project, where the  
14 roadway makes a 90 degree bend. According to the Indian River County Property Appraiser, the  
15 property is owned by the Indian River School Board. It has been in operation as a school since at  
16 least 2004 and because this site is a school it is listed as a Biomedical Waste Facility. There is no  
17 reported history of contamination or listing in any other contamination related databases;  
18 therefore, this site is assigned a risk rating of **Low**.  
19

## 20 **Site No. 7**

21 Stough's Grove Service  
22 7675 85 Street  
23 Facility ID: 8520277  
24 Risk Rating: Low

25 This site lies adjacent to the project corridor south of C.R. 510, immediately east of the South  
26 Prong Slough. According to the Indian River County Property Appraiser, the property is owned  
27 by Mario St. Martin. A Discharge Reporting Form dated October 23, 1990 described an  
28 estimated 10 gallons of regular, unleaded gasoline were discovered during removal of a 1,000-  
29 gallon UST. Groundwater and soil samples were collected and tested for contaminants and no  
30 contamination above FDEP allowable levels was detected. A Closure Assessment Form dated  
31 December 18, 1990 was submitted and this tank was closed and removed from the facility. No  
32 other documents are available in the database for this site. This site is not listed on the FDEP  
33 Contamination Locator Map, which helps to identify sites currently monitored due to a history  
34 of contamination. Because of the long timespan (16 years) since removal of the UST, the  
35 relatively small amount of unleaded gasoline and groundwater and soil sample results, this site  
36 is assigned a risk rating of **Low**.  
37  
38  
39

1 **Site No. 8**

2 Ryall Groves Inc.

3 6815 85 Street

4 Facility ID: None

5 Risk Rating: Medium

6 This site is located adjacent to the proposed project, south of C.R. 510 between Power Line  
7 Road and Schuman Drive. It was identified in a CSER produced for FDOT in 2005. According to  
8 the Indian River County Property Appraiser the parcel is owned by Ryall Development Group,  
9 LLC and is used for citrus production. The 2005 CSER noted that despite the site not being  
10 identified in any regulatory databases, it contained three 1,000-gallon above ground storage  
11 tanks. The contents of the tanks were not verified and the tanks were in secondary  
12 containment and there was no sign of dead vegetation or staining. One white, plastic 1,000-  
13 gallon above ground storage tank was visible during inspections in 2016. Multiple attempts  
14 were made at contacting the landowner but were ultimately unsuccessful. Because it was  
15 previously used for citrus production and may have contained mixing stations for herbicides,  
16 this site was assigned a risk rating of **Medium**.

17

18 **Site No. 9**

19 Bethel Service Station

20 6375 85 Street

21 Facility ID: 9100095

22 Risk Rating: Medium

23 This site is located adjacent to the southern side of the project corridor, on the southeastern  
24 quadrant of the intersection of C.R. 510 and 64 Avenue, near the project's eastern terminus.  
25 According to the Indian River County Property Appraiser, the property is owned by Marilyn  
26 Theresa Raymond. A Discharge Reporting Form, dated October 7, 1990, estimates that  
27 approximately 300 gallons of regular, unleaded gasoline were observed to have leaked from the  
28 UST during tank removal. Two USTs were closed and removed during this event, including a  
29 550-gallon tank for leaded gasoline and a 1,000-gallon tank for unleaded gasoline. The cited  
30 cause of the leak was "loose connection", "corrosion", and "overfill". The discharge was  
31 determined to be eligible for state funds for cleanup under the Abandoned Tank Restoration  
32 Program (ATRP) on March 6, 1991. A Template Site Assessment Report (TSAR) dated October 6,  
33 2005 included a soil screening and identified an area of contaminated soil in the former UST  
34 area. Based on high site water table elevations and 2007 groundwater data, a proposal to  
35 conduct additional sampling and prepare a Limited Scope Remedial Action Plan (LSRAP) was  
36 submitted in 2008. Correspondence from the FDEP dated June 14, 2008 indicated the site  
37 funding was discontinued due to changes to the minimum priority score. No additional  
38 assessment activities were conducted until Site Characterization Screening Activities in 2013.  
39 Groundwater analytical results revealed continued contaminants that appeared to extend  
40 beneath 64 Avenue but not onto the west-adjointing property. Soil samples collected and  
41 analyzed on September 25, 2015 and March 7, 2016 identified that the soil contamination  
42 plume continued to be limited to the first two to four feet below the land surface. As a result,

1 soil excavation at this location up to six feet below the land surface was approved and  
2 conducted at this facility on May 26, 2016. That is the most recent record available on the  
3 Oculus database. This is currently listed as an active petroleum cleanup site on the FDEP  
4 Contamination Locator Map. Due to a documented history of contamination and ongoing  
5 cleanup effort this site is assigned a risk rating of **Medium**.  
6

## 7 **Site No. 10**

8 Agricultural Areas  
9 No Discreet Address

10 Facility ID: None  
11 Risk Rating: Medium

12 Site number 10 encompasses the majority of the project area because of current or former  
13 agricultural use. Historic photographs of the project area show very little agricultural use in  
14 1943 with increasing agricultural use through the 1970's. By 1994 the majority of the project  
15 area was used for agriculture, particularly citrus production. Most of those citrus orchards are  
16 now abandoned following the spread of a citrus disease in the early 2000's. Agriculture could  
17 have involved mixing or storage tanks for herbicides or pesticides, as well as dipping tanks for  
18 livestock. Because of this potential presence of contaminants, all current or former agricultural  
19 areas are assigned a risk rating of **Medium**.  
20

## 21 **ETDM COMMENTS**

### 22 **USEPA Comments**

23 **Contamination Degree of Effect:** Minimal

24 **Reviewed By:** Kim Gates, USEPA

25 **Coordination Document:** PD&E Support Document As Per PD&E Manual

26 **Identified Resources and Level of Importance:** Human health, soils, surface waters and  
27 groundwater

28 **Comments on Effects To Resources:** "Based on information in the EST, there are no  
29 USEPA-designated Brownfields or National Priorities List sites within one mile of the  
30 project corridor. One RCRA-regulated facility, Sebastian River High School, is located  
31 within 100 feet of C.R. 510; it is a Small Quantity Generator with no enforcement  
32 violations or onsite contamination recorded in the USEPA's RCRA Info database.  
33 However, a number of State-regulated facilities are located in the project vicinity,  
34 including Petroleum Contamination Monitoring Sites and Storage Tank Contamination  
35 Monitoring sites. Considering the potential need for more than 160 feet of right-of-way  
36 for widening C.R. 510 to four lanes (see page 90 in Indian River County's Comprehensive  
37 Plan, Chapter 4 Transportation Element,  
38 [http://www.irccdd.com/Planning\\_Division/CP/2030/Ch04-Transportation.pdf](http://www.irccdd.com/Planning_Division/CP/2030/Ch04-Transportation.pdf)), the

1 USEPA encourages updating the Contamination Screening Evaluation Report prepared in  
2 2005. All sites within the project corridor (including buffer areas) need to be evaluated  
3 for the presence of potential contamination within the right-of-way or contamination  
4 that may have migrated onto or under the right-of way.”

5 **Response to Agency Comments:** Sebastian River High School was included in this CSER  
6 as a potentially contaminated site. Additional sites found in state and Federal databases  
7 were also included. An updated CSER was prepared for this PD&E study and examined  
8 all known sites (including those identified in the referenced previous PD&E study) within  
9 and adjacent to the project corridor for the presence of potential contamination.

10  
11 **FHWA ETDM Comments**

12 **Contamination Degree of Effect:** Minimal

13 **Reviewed By:** Luis D. Lopez, FHWA

14 **Coordination Document:** PD&E Support Document As Per PD&E Manual

15 **Identified Resources and Level of Importance:** No additional resources

16 **Comments on Effects To Resources:** “The updated CSER should identify the  
17 contaminated areas and it should be analyzed any measure to avoid or minimize the  
18 effect of the contamination.”

19 **Response to Agency Comments:** An updated CSER was prepared that identifies and  
20 analyzes potential contamination so that impacts may be avoided and minimized as  
21 much as possible.

22 **SJRWMD ETDM Comments**

23 **Contamination Degree of Effect:** Minimal

24 **Reviewed By:** Nathan Ottoson, SJRWMD

25 **Coordination Document:** Environmental Resource Permit Required

26 **Identified Resources and Level of Importance:** Minimal involvement on contamination

27 **Comments on Effects To Resources:** “Minimal”

28 **Response to Agency Comments:** An updated CSER was prepared to address potential  
29 contamination impacts.

1

## 8.0 RECOMMENDATIONS

2 Information was obtained for this report through observations during on-site visits and  
3 database information from the FDEP and USEPA as well as a separate CSER completed in 2005.  
4 A total of 10 sites within or adjacent to the project corridor were identified and reviewed for  
5 potential contamination risk. Five of those sites were given a rating of “Low” risk for  
6 contamination impacts. Sites 1 (Sunoco #0613-2641), 2 (Shark Mart Mobil), 8 (Ryall Groves  
7 Inc.) 9 (Bethel Service Station), and 10 (Agricultural Areas) were assigned a “Medium” risk  
8 rating. No sites were given the risk rating of “High”. Proposed pond 2-2 is adjacent to Site 4,  
9 Sebastian River High School, which is rated as “Low” risk and all of the pond sites are located on  
10 former agricultural lands (Site 10).

11 Level II Contamination Assessment investigations are recommended for any areas that have  
12 proposed dewatering or subsurface work activities (e.g. pole foundations, drainage features)  
13 occurring adjacent to or at any of these sites. If dewatering will be necessary during  
14 construction, a SFWMD Water Use Permit will be required. The contractor will be held  
15 responsible for ensuring compliance with any necessary dewatering permit(s). A dewatering  
16 plan may be necessary to avoid potential contamination plume exacerbation. All permits will be  
17 obtained in accordance with Federal, State, and local laws and regulations and in coordination  
18 with the District Contamination Impact Coordinator.

1

## 9.0 REFERENCES

2

Florida Department of Transportation. 2005. Draft Contamination Screening Evaluation Report. CR 510 (Wabasso Road) PD&E Study from CR 512 to Indian River Bridge No. 880052. Federal Project ID No. 4984-003-S, Financial Project ID No. 405606-1-22-01. 377pp.

5

6

Natural Resources Conservation Service. 2014. Web Soil Survey. Online tool provided by U.S. Department of Agriculture. Available at:

7

8

<http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>. Last accessed 2016.



1  
2  
3  
4

APPENDIX A- SITE INFORMATION (MEDIUM AND HIGH RISK SITES)

## Site 1- Sunoco #0613-2641

9020 C.R. 512

Facility ID: 8509326

Risk Rating: Medium



Photo 1: View of the site facing southeast



Photo 2: View of interior of site facing west



Photo 3: View of interior of site facing northeast

JUN 28 1994

Technical Review Section

RECEIVED  
D.E.R.

JUN 27 AM 11

STORAGE TANK  
REGULATION

ARDAMAN & ASSOCIATES, INC

CONTAMINATION ASSESSMENT REPORT  
MAPCO SS# 6170  
9020 95th STREET  
SEBASTIAN, FLORIDA  
FAC# 318509326  
EDI# 31-3108

Prepared For: Mr. James E. O'Neal, E.I.T  
Environmental Engineer  
MAPCO Petroleum Inc.  
1101 Kermit Drive  
Suite 800  
Nashville, TN 37217

June 23, 1994

Prepared By:



Kent B. Roberts,  
Project Manager

Reviewed By:



Steve Dublin, P.E.  
Vice President



318509326



Ardaman & Associates, Inc.

Geotechnical, Environmental and  
Materials Consultants

June 24, 1994

File # 94-808

Florida Department of Environmental Regulation  
Storage Tank Regulation Section  
2600 Blairstone Road  
Twin Towers Office Bldg.  
Tallahassee, FL. 32399-2400

Bureau of Waste Cleanup

JUN 28 1994

RE: Contamination Assessment Report  
MAPCO SS# 6170  
9020 95th Street, Sebastian, FL.

Technical Review Section

*FAC # 318509326*

Dear Project Manager;

*EDI*

Please find enclosed two copies of a contamination assessment report for the above referenced site. If you have any questions or comments concerning the enclosed please feel free to contact us at (305) 969-8788.

Very Truly Yours  
Ardaman & Associates

  
Kent B. Roberts  
Project Manager

  
Steve Dublin, P.E.  
Vice President

TABLE OF CONTENTS

1.0 INTRODUCTION.....4

2.0 BACKGROUND.....4

    2.1 Site Location and Description.....4

3.0 ENVIRONMENTAL SETTING.....5

    3.1 Topography.....5

    3.2 Regional Geology.....6

    3.3 Regional Hydrology.....6

    3.4 Underground Utility Survey.....7

    3.5 Tank and Line Testing.....7

    3.6 Proximity to Public Water Supplies.....7

4.0 CONTAMINATION ASSESSMENT METHODOLOGIES.....8

    4.1 Soil Borings.....8

    4.2 Monitor Well Installations.....9

        4.2.1 Shallow Well Installations.....9

        4.2.2 Deeper Well Installations.....9

    4.3 Data Collection Procedures.....10

        4.3.1 Sample Collection and Analysis.....10

        4.3.2 Aquifer Characteristic.....10

5.0 CONTAMINATION ASSESSMENT RESULTS.....11

    5.1 Site Geology and Hydrogeology.....11

    5.2 Liquid Phase Hydrocarbons Assessment Results.....12

    5.3 Soil Assessment Results.....12

    5.4 Groundwater Assessment Results.....13

    5.5 Aquifer Characteristic Testing Results.....14

6.0 QUALITY ASSURANCE AND HEALTH AND SAFETY.....15

7.0 SUMMARY AND CONCLUSIONS.....15

8.0 RECOMMENDATIONS.....16

9.0 REFERENCES.....18

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## LIST OF FIGURES

<u>Figure</u>	<u>Description</u>
1	Index Map
2	Local Land Use Map
3	Site Plan
4	Well Construction Diagram
5	Hydraulic Gradient Map (5/04/94)
5A	Hydraulic Gradient Map (6/14/94)
6	Benzene Plume Map
7	BTEX Plume Map
8	Vadose Zone Plume Map

## LIST OF TABLES

<u>Table</u>	<u>Description</u>
1	Well Construction Summary
2	Monitor Well Data Summary
3	Field Test Groundwater Quality Data
4	OVA Test Results
5	Analytical Groundwater Quality Data
6	Private Well Data

## LIST OF APPENDICES

<u>Appendix</u>	<u>Description</u>
A	Boring Logs/Monitor Well Diagrams
B	Analytical Results & Chain of Custodies
C	Aquifer Characteristic Testing
D	Contamination Assessment Summary Sheet
E	Tank & Line Tests

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## 1.0 INTRODUCTION

Ardaman & Associates, Inc. (Ardaman) has prepared a Contamination Assessment Report (CAR) for the MAPCO convenience store #6170 located at 9020 95th Street, in Sebastian, Florida. The site is registered as facility # 318509326 with the Florida Department of Environmental Protection (DEP). The site became eligible for state cleanup under the Early Detection Incentive (EDI) Program on October 28, 1988. The principle objectives of the assessment are outlined below:

- 1) Determine the source of any hydrocarbon contamination.
- 2) Determine the type, degree and extent of any hydrocarbon contamination of the soil and groundwater.
- 3) Determine the factors controlling contaminant migration.
- 4) Evaluate the relationship between the contamination and any possible sensitive receptors.

Information from the CAR will be used to assess the need for site remediation. Should site remediation be deemed necessary, aquifer characteristics and other data developed, during the preparation of this CAR, will be used in the preparation of a Remedial Action Plan.

## 2.0 BACKGROUND

### 2.1 Site Location and Description

The MAPCO facility is located on the northwest corner of the intersection of State Road 512 (Fellsmere Road) and County Road 510 in the western outskirts of the town of Sebastian. Figure 1 is a portion of the United States Geological Survey (USGS), "Fellsmere, Florida," quadrangle map showing the relative location of the facility. The site is located in the SE quarter of Section 22, Township 31 S, Range 37 E of Indian River County (Figure 1). Properties immediately surrounding the facility are generally undeveloped pasture lands or citrus groves. The facility is bound to the north by an old cemetery, and to the South, East and West by open pastures or wooded tracts. Figure 2 is a Local Land Use Map of the area.

The site is rectangular in shape and covers approximately half an acre. The property is currently operating as a convenience store and retail fueling outlet dispensing three grades of unleaded petroleum products from three (3) underground storage tanks (USTs) located directly south of the building. These tanks have a 10,000 gallon capacity and are constructed of steel, with asphalt coating.

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Overspill protection was installed in May of 1987. The tanks have an impressed current type of cathodic protection.

Figure 3 is a site plan showing the location of the facility and pertinent site features. Ardaman personnel initially visited the site on April 28, 1994. At that time, five 2-inch diameter monitor wells were present. Four were located near the corners of the UST pad and one at the western end of the dispenser island. Since the dispenser island straddles the center tank, monitor well five (MW-5) actually penetrates the UST bed between two of the underground storage tanks.

A review of the Department of Environmental Protection's data base and file for the MAPCO facility indicated that there is no record of any Initial Remedial Action (IRA) having been undertaken at this site. No information is available with regard to the type, source, or quantity of the product discharged at this facility. No specific incident of discharge or inventory loss is on file.

### 3.0 ENVIRONMENTAL SETTING

#### 3.1 Topography

The site lies on the Pamlico Terrace in Indian River County between the Atlantic Coastal Ridge and the Ten-Mile Ridge. The Pamlico terrace is an ancient marine terrace which marked the ocean bottom at a time when the sea stood higher than it does now. Most of the terrace is less than 25 feet above sea level. The Atlantic Coastal Ridge, which reaches altitudes of more than 50 feet, is a remnant of an offshore bar that was formed in the Pamlico sea. West of the Coastal Ridge is a flat or shallow trough-shaped area that is analogous to the present Indian River. About 7 miles west of the Coastal Ridge is a less pronounced ridge named the "Ten Mile Ridge".

The area between the Atlantic Coastal Ridge and the Ten-mile Ridge was swampy and lacked prominent stream channels other than the South Prong of Sebastian Creek at the North. Drainage was generally northward although during periods of high water some water drained eastward through gaps in the Atlantic Coastal Ridge. Surface water drainage patterns have been altered by man made drainage systems.

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### 3.2 Regional Geology

The formations underlying Indian River County dip slightly southeastward. They differ somewhat in composition and character and are the result of marine deposition during earlier periods of the earth's history.

Deposits of Pleistocene age, extending from land surface to depths of 100 to 150 feet are represented by the Anastasia and Fort Thompson Formations. The Anastasia Formation is present along the coast and grades inland into the Fort Thompson formation in the vicinity of the Ten-mile Ridge. Both the Anastasia and the Fort Thompson are composed primarily of sand and shell fragments, the main differences being that the grains and fragments are finer in the Fort Thompson and that the Anastasia contains many cemented layers.

Below the Fort Thompson and Anastasia Formations are deposits of Miocene age whose thickness ranges from 200 to 300 feet. The upper part of the Miocene sediments is undifferentiated and may be the equivalent of the Tamiami Formation. They consist of a series of clays, sandy clays and shell with some well cemented zones.

Underlying these undifferentiated deposits is the Hawthorn Formation, also of Miocene age. This formation consists of green and brown clay, sandy clay, and some limestone beds. In general, the Miocene sediments are much finer-grained than the overlying Pleistocene deposits.

Underlying the Miocene deposits are several hundred feet of limestone and dolomite of the Oligocene and Eocene ages.

### 3.3 Regional Hydrology

Two aquifers are present in Indian River County: the shallow aquifer consisting of all the unconsolidated or partly consolidated permeable deposits of the Anastasia and Fort Thompson formations, which extend from the land surface to a depth of about 150 feet; and the Floridan aquifer which consists of limestone and dolomite of middle Eocene and Oligocene age underlying the Hawthorne Formation of Miocene age. The two aquifers are separated by confining beds consisting of clay and other fine grained materials of the Hawthorne and younger formations.

The porosity of the shallow aquifer may be as great as 25%. The porosity of the Floridan may be only a few percent. However, the voids in the Floridan are well interconnected so water moves readily through this aquifer. Therefore, although the shallow

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aquifer contains several times more water per unit volume than the Floridan aquifer, the Floridan will transmit several times more water per unit volume than the shallow aquifer. Yields of 300 to 500 gal/min are obtained from 10" wells in the shallow aquifer, but yields of as much as 3000 gal/min are obtained from 10-inch wells that tap the Floridan aquifer.

The shallow aquifer is recharged mostly by direct infiltration of rainfall. There is little interchange between water in the shallow aquifer and that in the Floridan aquifer because of the thick confining bed. However, within the irrigation districts an important quantity of water is added to the shallow aquifer by artificial recharge of water withdrawn from the Floridan wells for irrigation.

#### 3.4 Underground Utility Survey

On May 19, 1994, a survey of underground utilities directly connected with the site and located within the vicinity was completed. This survey was based on a markout of utilities coordinated through the Underground Notification Clearance Liaison for Excavation (UNCLE). Utilities which were located during the markout are shown on the Site Plan (Figure-3). There is no apparent correlation between the location and depths of subsurface utilities and the contaminant plume.

#### 3.5 Tank and Line Testing

The structural integrity of the underground storage tank and lines were tested on September 14, 1992 and again on June 21, 1994 by Tanknology Corporation International. All tanks and lines were determined to be tight. The results of these tests can be found in Appendix E.

#### 3.6 Proximity to Public Water Supplies

The proximity of the site to private wells, public well fields and surface water bodies was researched with the aid of published listings, maps and visual observations. There is a public potable water well on site to serve the convenience store. The location of this well can be found in figure 3. A review of the well completion reports and consumptive use permits on file at the St. Johns River Water Management District indicates that there are no other private wells within a quarter mile radius of the site or public wells within a half mile radius. The nearest surface water

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body is the Sebastian River South Prong located approximately one quarter of a mile to the East.

#### 4.0 CONTAMINATION ASSESSMENT METHODOLOGIES

##### 4.1 Soil Boring

A soil boring and field screening program was conducted to assess the potential horizontal and vertical extent of soil contamination in the UST and dispenser area. There is no record of diesel fuel ever having been stored or dispensed at this site. However, results from an initial round of monitor well sampling indicated that some naphthalenes were present in the groundwater. Therefore, an OVA reading of 50 ppm was used to define "excessively contaminated" soils. A total of 4 soil borings were drilled to assess the vadose zone. The approximate locations of these borings are shown on Figure 3.

All soil borings were continuously sampled to a depth of approximately four (4) feet below land surface (bls). Lithologic logs were prepared in the field for each boring. Upon completion, the boring holes were abandoned by grouting to the surface with neat cement.

Soil borings were completed utilizing a stainless steel hand-auger after a 4" diameter hole was cut through the concrete pavement with a rotary hammer drill. The hand auger was advanced manually. Soil samples were screened in the field with a Foxboro Model 128 Organic Vapor Analyzer (OVA) equipped with a flame ionization detector (FID). OVA responses were recorded using the headspace analysis method. Field headspace analyses were conducted by placing the composite soil sample, one-half full, into a 16-ounce jar. The mouth of the jar was then sealed with a layer of tin foil. After a 5-minute equilibration period, the OVA's probe was inserted through the tin foil and into the jar. The equipment was monitored and a peak reading obtained. The depth from which the sample was collected and the OVA response were noted. OVA responses were recorded first without and then with an activated charcoal filter. This was done in order to determine if natural methane gas contributed to the OVA response. The carbon filter absorbs the organic vapors, and allows the methane to pass through and be detected by the FID. The field screening results are summarized in Table 4.

##### 4.2 Monitor Well Installations

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#### 4.2.1 Shallow Monitor Well Installations

Ardaman personnel installed one (1) shallow monitor well in order to fully delineate the contaminant plume in the horizontal direction. Results from the gaging and sampling of the five (5) pre-existing wells MW-1 through 5 were used to determine the optimum location of this new well. The locations of all the wells are shown in Figure-3. The monitor well was installed using hollow stem auger drilling methods and is approximately 12.5 feet in total depth. The well was constructed with a two foot length of 2-inch diameter, flush threaded, Schedule 40 PVC casing coupled to a ten (10) foot length of 0.010-inch slotted PVC well screen. Approximately 1 foot of well screen was set above the water table with 9 feet extending into the water bearing zone. This was done in order to intercept the upper most fluctuations of the surficial aquifer.

The annular space between the screen and the borehole was packed with 20-30 grade silica sand to at least one foot above the screened interval. A one foot thick bentonite seal was placed on top of the sand pack. The remainder of the well's annulus was grouted to the surface with neat cement to prevent the migration of surface contaminants along the borehole. The monitor well was completed at the surface with an 8-inch diameter, cast iron, flush mounted, manhole type vault set in a concrete pads. The well was fitted with a locking cap and secured with a lock. A typical monitoring well detail is shown in Figure-4. Table 1 is a well construction summary listing pertinent information for each well. The monitor well was developed by surging and overpumping until the discharge water appeared sediment free.

#### 4.2.2 Deep Monitor Well Installation

In order to assess the maximum vertical extent of contamination, one "deep" monitor well was drilled. A 2-inch diameter, deep monitor well (MW-7D) was installed on the eastern side of the property. The positioning of the deep well was dictated, to a large extent, by the numerous underground utilities running in an East-West direction just South of the tank pad and by the overhead power lines running in a North-South direction just East of the tank pad. The general direction of groundwater flow is to the East towards the Sebastian River South Prong. The deep well was screened from a depth of 18.5 to 23.5 feet bls. The deep well was also installed by using a truck mounted hollow stem auger drill rig.

Monitor well MW-7D was generally constructed as described earlier in the shallow monitor well installation section. A one-foot thick

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bentonite seal was placed on top of the sand pack. The deep well location is shown in figure 3.

#### 4.3 Data Collection Procedures

##### 4.3.1 Sample Collection and Analysis

Soil samples were field screened for organic vapors by the headspace method, as discussed in Section 4.1.

Groundwater samples were collected from the five (5) existing compliance wells on May 4, 1994. Collected samples were analyzed for parameters included in EPA Methods 601 (Purgeable Halocarbons), EPA Method 602 with MTBE (Volatile Organic Aromatics), EPA Method 504, (Ethylene Dibromide (EDB)), EPA Method 610 (Polynuclear Aromatic Hydrocarbons), EPA 418.1 Total Petroleum Hydrocarbons and EPA 239.2 (Lead, Total). Cumulatively, these analyses are known as the Gasoline/Kerosine Analytical Group. All laboratory analysis was performed by Savannah Laboratories & Environmental Services, Inc., a State certified analytical laboratory (DHRS #890142G). The laboratory analytical reports, along with the chain of custody documentation, are included in Appendix B. On May 25, 1994, monitor wells MW-6, MW-7D and the potable water well were sampled for Purgeable Aromatics (EPA Method 602) and Polynuclear Aromatic Hydrocarbons (EPA Method 610). All monitoring wells were sampled following Ardaman & Associates standard sampling procedures, as outlined in our Generic Quality Assurance Plan #900305G, on file with and approved by the Florida Department of Environmental Protection (FDEP). Prior to sampling, the wells were purged of three (3) to five (5) well volumes, so that representative groundwater samples could be collected. The samples were collected from Teflon bailers and transferred to laboratory supplied bottles which contained the appropriate preservatives. The samples were packed in ice and hand delivered to the laboratory. Proper chain of custody documentation accompanied the samples.

##### 4.3.2 Aquifer Characteristic Testing

The top of casing elevations of the pre-existing monitor wells were surveyed with a level/transit on April 28, 1994. Casing head elevations were referenced to an arbitrary benchmark which was assigned an elevation of twenty feet. The top of casing of all monitor wells were surveyed on May 19, 1994. The May 19th survey results matched the April 28th survey results within one-one hundredth of a foot. It was not necessary to reposition the

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instrument during either surveying event. Depth to liquid phase hydrocarbons (LPH) and/or water was measured to the nearest one-one hundredth of a foot with a sonic interface probe. Depths were recorded on three separate occasions in order to assess the changes in water table elevation due to precipitation or possible draw down from the on-site water well.

Slug tests were performed on three (3) selected monitor wells (MW-6, MW-7D, and MW-4) using the slug out method. The selected wells were from areas believed to be most representative of the site's hydrogeology. With the slug test method, the hydraulic conductivity of a well is determined from the rate of rise of the water level in the well after a certain volume or "slug" is rapidly removed from the well. The slug consisted of a 3.5 foot length of 1 & 1/4 inch diameter, Schedule 40, PVC pipe that had been capped and filled with portland cement. First, a calibrated pressure transducer, rated at 20 psi, was lowered to within a foot of the bottom of the well. The pressure transducer's cable was connected to an electronic data logger. Then the slug was completely submerged. After the water level in the well had reached equilibrium, the slug was rapidly removed and water level versus time was recorded with the datalogger.

Groundwater quality parameters, such as temperature, conductivity, iron content, hardness and pH were measured from water samples taken from selected monitor wells. Table 3 is a summary of these field measurements. This data may be used to determine if a future remediation system will need a fouling prevention pre-treatment system.

## 5.0 CONTAMINATION ASSESSMENT RESULTS

### 5.1 Site Geology and Hydrogeology

The shallow subsurface geology was assessed through the examination of soil cuttings and cores generated during soil boring and monitor well installation activities. Lithologic descriptions for each boring and monitor well are included in Appendix A.

The shallow subsurface generally consisted of relatively thick deposits of unconsolidated, quartz sand. The quartz sand deposits, which ranged in color from orange to brown, were fine to medium grained, and contained some clay. Shell fragments were observed in the drill cuttings from below 15 feet. No significant hydraulic confining units were encountered during this assessment.

The depth to water measurements for the monitor wells were recorded on May 4, 1994, May 19, 1994 and June 14, 1994. The groundwater

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table lies at 3 to 5 feet bls. The range of groundwater fluctuation observed between the monitoring periods was an average of 1.0 foot.

Depth to water measurements taken on May 4, 1994 and June 14, 1994 were used to calculate relative water table elevations and are presented in Table-2. Areas of equal water table elevations were contoured to determine the local groundwater flow direction, as shown in Figures 5 and 5A. Groundwater flow is perpendicular to the contour lines from areas of higher to lower water table elevations. Groundwater flow appears to be slightly contorted in the area of the tank farm. However the gradient maps show the water table sloping to the East southeast in the general direction of the Sebastian River South Prong.

There was no apparent influence from the on-site potable water well on the depth to water measurements performed during this assessment. The water well pump operates on a very intermittent basis. It will turn on automatically when the pressure in the water storage tank, located on top of the pump shed, drops below a preset level. The water well's screened interval is below eighty (80) feet.

The local hydraulic gradient was determined from the difference in water table elevations between monitor wells MW-1 and MW-6. This difference was then divided by the distance between the two wells. Based on these results, the local hydraulic gradient is estimated to be 0.0064ft/ft.

#### 5.2 Liquid Phase Hydrocarbon Assessment Results

Liquid phase hydrocarbons, (or free floating product), was not observed in any of the monitor wells or anywhere else on site during the conduct of this assessment.

#### 5.3 Soil Assessment Results

Field screening results of the headspace analysis ranged from 0 to 170 parts per million (ppm) and are summarized in Table-4. The area of highest organic vapor responses was near the western edge of the UST pad at a depth of approximately 3 feet bls. All samples from each soil boring were screened for methane gas using a granulated activated carbon (GAC) filter in-line with the OVA. Methane was detected in several of the soil samples.

Historically, this facility has dispensed only gasoline products. However, Napthalenes were detected in the ground water.

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Therefore, a conservative 50 ppm OVA reading was used to define "excessively contaminated" soils. "Excessively contaminated" unsaturated soils were only encountered in boring SB-2. The volume of "excessively contaminated soils" was estimated at less than 70 cubic yards. An isoconcentration map for "excessively contaminated" soils in the vadose zone is shown on Figure-8. The vadose zone plume was delineated in the horizontal direction to the North by SB-1, to the East by SB-4, to the South by MW-6, and to the West by SB-3).

#### 5.4 Groundwater Assessment Results

Groundwater samples collected from monitor well MW-5 were the only samples containing VOA concentrations above the laboratory instrument's lower detection limits. Samples from this well had benzene concentrations of 96 parts per billion (ppb) and Total VOA concentrations (sum of benzene, ethyl benzene, toluene, and total xylenes) of 111.5 ppb. These dissolved petroleum constituents exceed Target Cleanup Levels, as defined in Chapter 17-770 FAC. Concentrations of total lead were detected in water samples obtained from wells MW-1 through MW-4. However, none of the lead concentrations exceeded the DEP cleanup target level of 0.05 mg/L. Detectable concentrations of Ethylene dibromide were not recorded during this assessment. The concentrations of total naphthalenes detected in MW-5 (130 ppb) also exceeded the DEP target level of 100 ppb.

The very limited dissolved hydrocarbon plume appears to be centered around monitor well MW-5 which penetrates the UST bed. Isoconcentration maps for Benzene and total VOAs are shown in figures 6 and 7 respectively. The Napthalene plume is expected to mirror the BTEX plume shown in figure 7. The dissolved hydrocarbon plumes are fully delineated in the horizontal direction to the North by MW-1 and MW-2, to the East by MW-2 and MW-3, to the South by MW-3, MW-6 and MW-4, and to the west by MW-4 and MW-1.

The dissolved hydrocarbon plumes are delineated in the vertical direction by the "deep" monitor well MW-7D, which was screened to a depth of 25 feet. No measurable levels of the tested parameters were detected in samples collected from MW-6, MW-7D or the on-site potable water well which was sampled as a precautionary measure. The laboratory analytical reports are included in Appendix B and summarized in Table 5.

#### 5.5 Aquifer Characteristic Testing Results

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On June 14, 1994, slug tests were completed in monitor wells MW-6, MW-7D, and MW-4. Data files were created from the water level measurements recorded by means of a Hermit 2000 electronic datalogger. The files were transferred to an IBM compatible computer and print-outs were generated with a word processing program. Drawdown versus time was then plotted on a semi-log scale using a graphics computer program. A best-fitting line was selected for that portion of the plot that was most representative of flow from the undisturbed aquifer. The print-outs, the plot, and the equation for the best fit exponential curve, for each test can be found in Appendix C. Values derived from the plots and other input parameters were then entered into a series of equations developed by Herman Bouwer and R.C. Rice (1976) for determining the hydraulic conductivity of unconfined aquifers with partially penetrating wells. The hydraulic conductivity equations, input parameters and results can also be found in Appendix C.

Assumptions made in calculating the aquifer characteristics include an effective porosity ( $n$ ) of 25%, (based on visual observations of the borings and drill cuttings) and an aquifer thickness of 100 feet. (based on USGS cross section map (Miller, 1987)) The Storativity Coefficient or Specific Yield of the unconfined aquifer was estimated to be 0.15.

The hydraulic conductivity ( $K$ ) at this site varies considerably with depth. This phenomena was observed during the purging of wells MW-6 and MW-7D prior to sampling. The deep well recharged almost immediately following the removal of a well volume of water. MW-6 took over 10 minutes to recharge. The slug test results confirm this change in hydraulic conductivity. It can be explained by the clay content observed in the sands from the shallow auger cuttings. The drill cuttings below 15 feet produced a much cleaner sand.

The ( $K$ ) value derived from the slug test performed on MW-4 fell in between the values obtained for MW-6 and MW-7D. MW-4 is a compliance well located on the southwest corner of the tank pad. The hydraulic conductivity value obtained from this well likely reflects the high permeability of the pea gravel bed used as a cushion for the underground storage tanks. Therefore, the  $K$  value of 27.5 gallons per day per square foot derived from the MW-6 slug test is most likely to represent the hydraulic conductivity of the shallow subsurface through which the hydrocarbon plume might migrate. This value, converted to feet per day, was used to calculate a ground water flow velocity of 0.0932 feet per day. The hydraulic conductivity and transmissivity values derived from all 3 tests may be found in Appendix C.

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#### 6.0 QUALITY ASSURANCE AND HEALTH & SAFETY

Ardaman & Associates, Inc.'s Comprehensive Quality Assurance Plan #900305G is on file with the FDEP. The Comprehensive QAP was prepared in accordance with FDEP's "Guidelines for Preparing Quality Assurance Plans" (DER-QA-001/85) and EPA's "Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual" (EPA Region IV, 1986). Savannah Laboratories & Environmental Services, Inc. Comprehensive QAP #890142G is on file with the FDEP as well.

All samples were analyzed within their applicable holding times. Results of the analyses of the equipment rinsate were below instrument detection limits for all tested parameters. All field work for this assessment was performed under Ardaman's Health and Safety plan. No accidents or excessive personal exposures were documented during site activities.

#### 7.0 SUMMARY AND CONCLUSIONS

On March 28, 1994, Ardaman & Associates, Inc., was retained by MAPCO Petroleum Inc., to conduct a Contamination Assessment for the MAPCO convenience store/service station #6170 (FAC #318509326). The station is located at 9020 95th Street, in Sebastian, Florida. There are three (3) 10,000-gallon steel underground storage tanks at this facility. The tanks contain three grades of unleaded gasoline. There is no record of any Initial Remedial Action (IRA) and no remedial action was taken during the Contamination Assessment Phase of this project. No information is available with regard to the type, source and quantity of the product lost at this facility. No specific incident of discharge or inventory loss has been documented. The tanks and lines tested tight on March 20, 1992 and again on June 21, 1994.

Based on the findings of this assessment, the subsurface, in the immediate vicinity of the UST farm has been affected by the storage and handling of petroleum products. Minor discharges during fueling operations are suspected of being the source of both the limited soil and groundwater contamination.

The horizontal and vertical extent of the hydrocarbons in the soil was studied during the installation of the monitoring wells and soil borings. Excessive soil contamination was assessed through soil head space readings for total organic vapors in the vadose zone. There is an estimated 70 cubic yards of "excessively contaminated" unsaturated soils around the western edge of the tank

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pad. Headspace analyses ranged from 0 to 130 parts per million. The highest organic vapor responses were recorded at a depth of approximately 3 feet bls.

Two (2) monitor wells were installed to help delineate the horizontal and vertical extent of the dissolved hydrocarbon plume at this facility. Calculations presented in this report indicates that the groundwater flow is East-Southeast under a hydraulic gradient of 0.0064 ft/ft.

Groundwater samples collected from monitor well MW-5 contained dissolved hydrocarbons above the laboratory instrument's lower detection limits. Benzene concentrations of 96 parts per billion (ppb), total VOA concentrations of 111.5 ppb total Napthalenes of 130 ppb and MTBE concentrations of 24 ppb were recorded in MW-5. These dissolved petroleum constituents exceed Target Cleanup Levels, as defined in Chapter 17-770 FAC.

The dissolved hydrocarbon plume is fully delineated in the horizontal direction to the North by MW-1 and MW-2, to the East by MW-2 and MW-3, to the South by MW-3, MW-6 and MW-4, and to the west by MW-4 and MW-1. The dissolved hydrocarbon plume is delineated in the vertical direction at a depth of 25 feet bls. A CAR Summary Sheet/Checklist is included in Appendix D.

#### 8.0 RECOMMENDATIONS

Ardaman & Associates, Inc. recommends that a Monitoring Only Plan (MOP) be implemented at this site for the following reasons:

1. Ardaman & Associates Generic Quality Assurance Plan #900305G has been approved by the DEP.
2. Free product is not present at this site.
3. Groundwater contamination is not widespread, does not extend off-site and is not migrating vertically.
4. Groundwater contamination falls well within the DEP monitoring only guidelines for source and perimeter wells at a site with a G-II aquifer and a potable well within a 1/4 mile radius.
5. The tanks & lines tested tight as recently as June 21, 1994.

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6. There is no record of diesel fuel ever having been sold at this site. If the Gasoline Analytical Group reading of 500 ppm is used to define "excessively contaminated soil", there is no excessively contaminated soil at this site. Even with the Kerosene Analytical Group level of 50 ppm, the amount of contaminated soil is very limited.

The following (existing) monitor wells have been selected to meet the monitoring only criteria set forth in 17-770.660 (3) F.A.C.:

	MONITOR WELL	DESIGNATION
1.	MW-5	Source Well
2.	MW-1	Upgradient Well
3.	MW-2	Upgradient Well
4.	MW-3	Downgradient Well
5.	MW-4	Downgradient Well

These wells will be monitored and sampled quarterly for a period of one year. The samples will be analyzed by EPA method 602. Quarterly status reports containing the analytical results will be forwarded to the Department. If, after one year, the hydrocarbon concentrations reflect a decreasing trend and/or meet the end point criteria specified in 17-770.730 (a), a Site Rehabilitation Completion Report (SRCR) will be prepared. If the hydrocarbon concentrations do not show a decreasing trend, a "Short Term Cleanup Strategy" will be proposed in a RAP as per the guidelines published by the DEP's Engineering Support Section dated October 10, 1994.

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## 9.0 REFERENCES

Bouwer, H., and Rice, R.C. "A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells," Water Resources Research, Vol. 12, No. 3, (1976).

Crain, L.J., Hughes, G.H., Snells, L.J., "Water Resources of Indian River County, Florida," United States Geological Survey, Report of Investigations No. 80 (1975).

Driscoll, F.G., "Groundwater and Wells" 2nd Edition, Johnson Division, St. Paul, Minnesota, (1986)

Florida Department of Environmental Regulation, "No Further Action and Monitoring Only Guidelines for Petroleum Contamination Sites", Division of Waste Management Bureau of Waste Cleanup Technical Review Section, (October 1990).

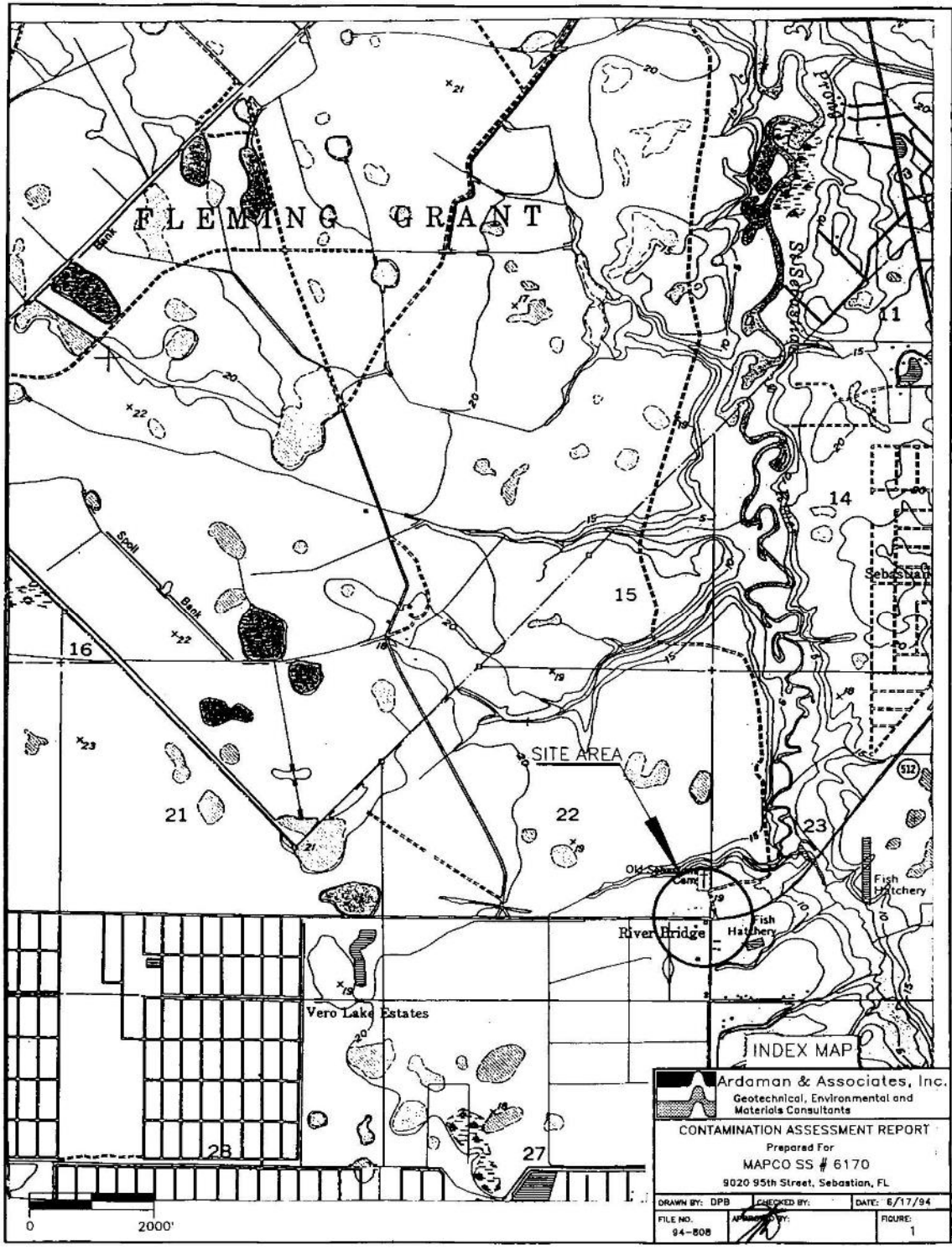
Freeze, R.A. and J.A. Cherry, "Groundwater", Prentice Hall, (1979).

Lehr, J., Hurlburt, S., Gallager, B., Vooytek J., "Design and Construction of Water Wells," The National Water Well Assn. Van Nostrand Reinhold, (1988)

Ardaman & Associates, Inc.



**FIGURES**



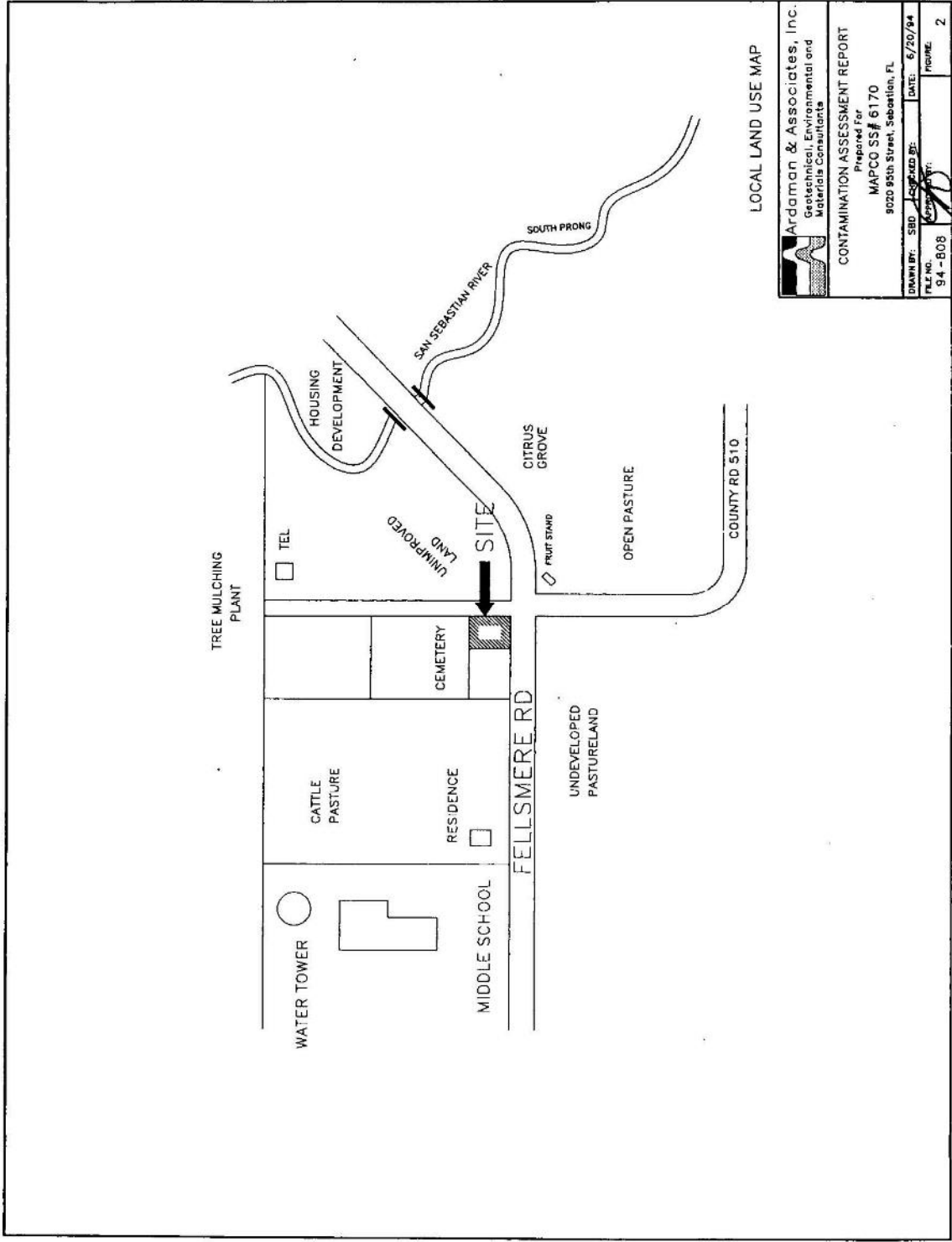
**INDEX MAP**

**Ardaman & Associates, Inc.**  
 Geotechnical, Environmental and  
 Materials Consultants

**CONTAMINATION ASSESSMENT REPORT**  
 Prepared For  
 MAPCO SS # 6170  
 9020 95th Street, Sebastian, FL

DRAWN BY: DPB	CHECKED BY:	DATE: 6/17/94
FILE NO: 94-808	APPROVED BY:	FIGURE: 1





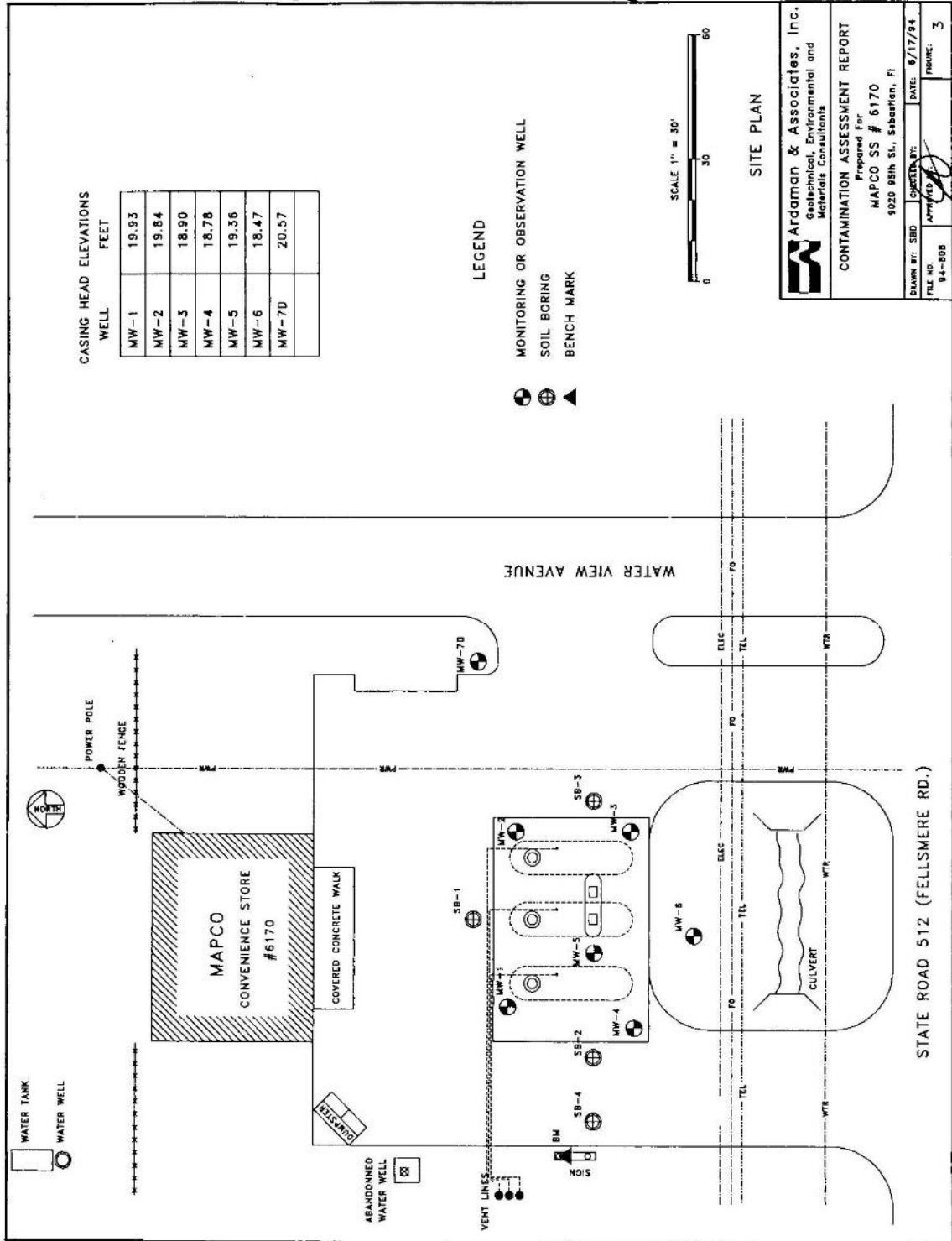
LOCAL LAND USE MAP

**Ardaman & Associates, Inc.**  
 Geotechnical, Environmental and  
 Materials Consultants

Prepared For  
**MAPCO SS# 6170**  
 9020 95th Street, Sebastian, FL

CONTAMINATION ASSESSMENT REPORT

DRAWN BY: SBD	CHECKED BY:	DATE: 6/20/94
FILE NO: 94-808	APPROVED BY:	PAGE: 2



**Ardaman & Associates, Inc.**  
 Geotechnical, Environmental and  
 Materials Consultants

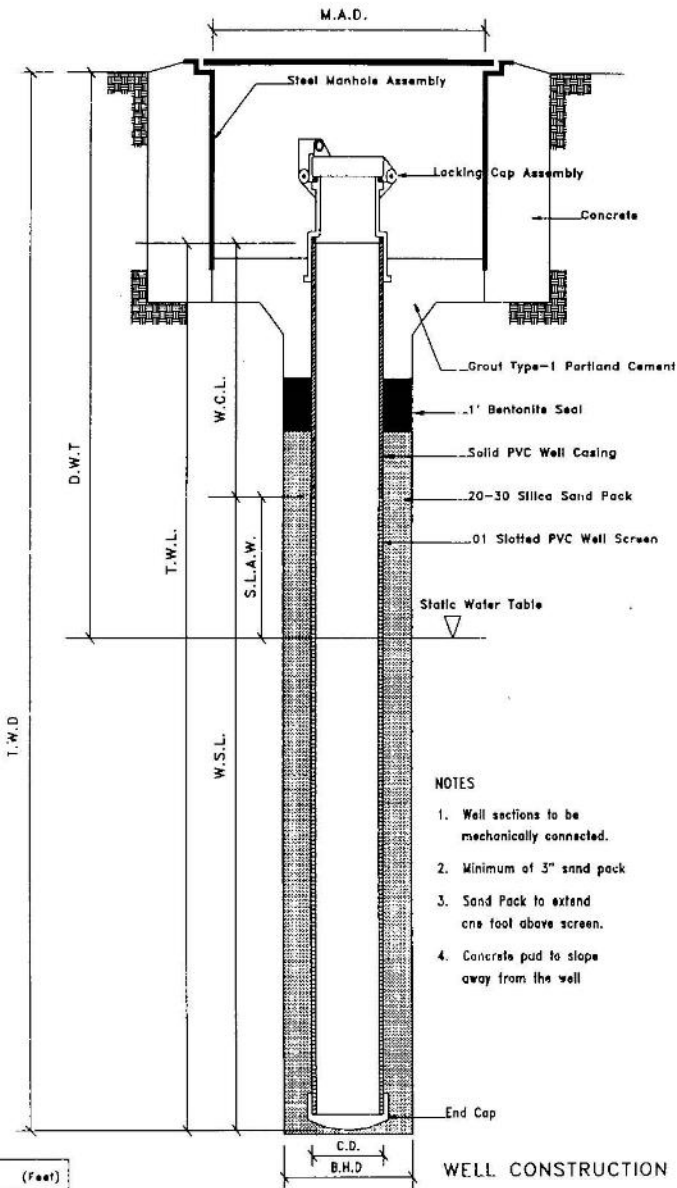
**CONTAMINATION ASSESSMENT REPORT**  
 Prepared For  
 MAPCO SS # 6170  
 9020 95th St., Sebastian, FL

DATE: 6/17/94

DRAWN BY: SBD CHECKED BY: JPP

FILE NO.: 94-005 PROJECT: 3

SHALLOW MONITOR WELL - (TYPICAL)



NOTES

1. Well sections to be mechanically connected.
2. Minimum of 3" sand pack
3. Sand Pack to extend one foot above screen.
4. Concrete pad to slope away from the well

WELL CONSTRUCTION DIAGRAM

MONITOR WELL DATA	(Feet)
Depth to Water (D.T.W.)	3.0
Total Well Depth (T.W.D.)	12.5
Total Well Length (T.W.L.)	12.0
Screen Length Above Water (S.L.A.W.)	1.0
Well Screen Length (W.S.L.)	10.0
Well Casing Diameter (C.D.)	0.167
Well Borehole Diameter (B.H.D.)	0.833
Well Casing Length (W.C.L.)	2.0
Manhole Assembly Diameter (M.A.D.)	0.667

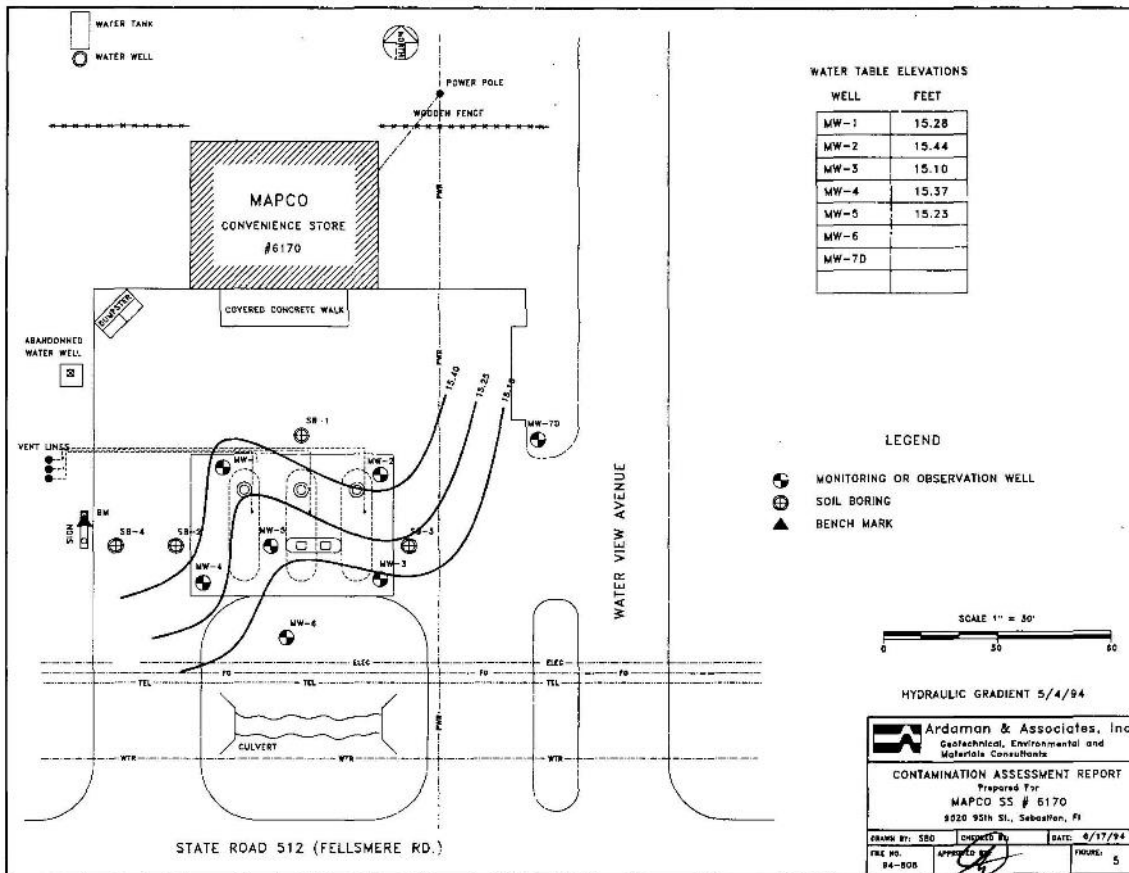
(Not to Scale)

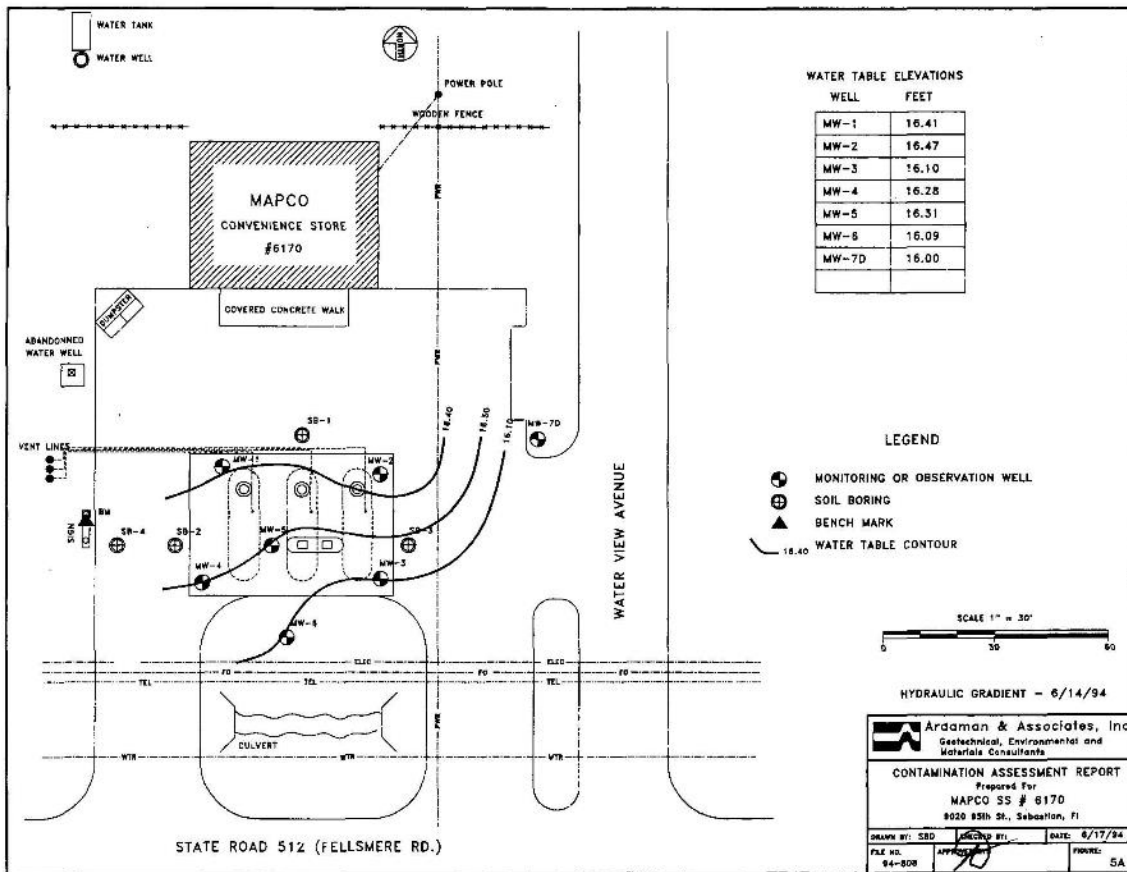
**Ardaman & Associates, Inc.**  
 Geotechnical, Environmental and  
 Materials Consultants

**CONTAMINATION ASSESSMENT REPORT**

Prepared For  
**MAPCO SS# 6170**  
 9020 85th St., Sebring, FL

DRAWN BY: SBD	CHECKED BY:	DATE: 8/17/94
FILE NO: 94-808	APPROVED BY: <i>[Signature]</i>	FIGURE: 4





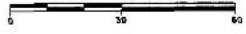
WATER TABLE ELEVATIONS

WELL	FEET
MW-1	16.41
MW-2	16.47
MW-3	16.10
MW-4	16.28
MW-5	16.31
MW-6	16.09
MW-7D	16.00

LEGEND

- ⊕ MONITORING OR OBSERVATION WELL
- ⊕ SOIL BORING
- ▲ BENCH MARK
- 16.40 WATER TABLE CONTOUR

SCALE 1" = 30'

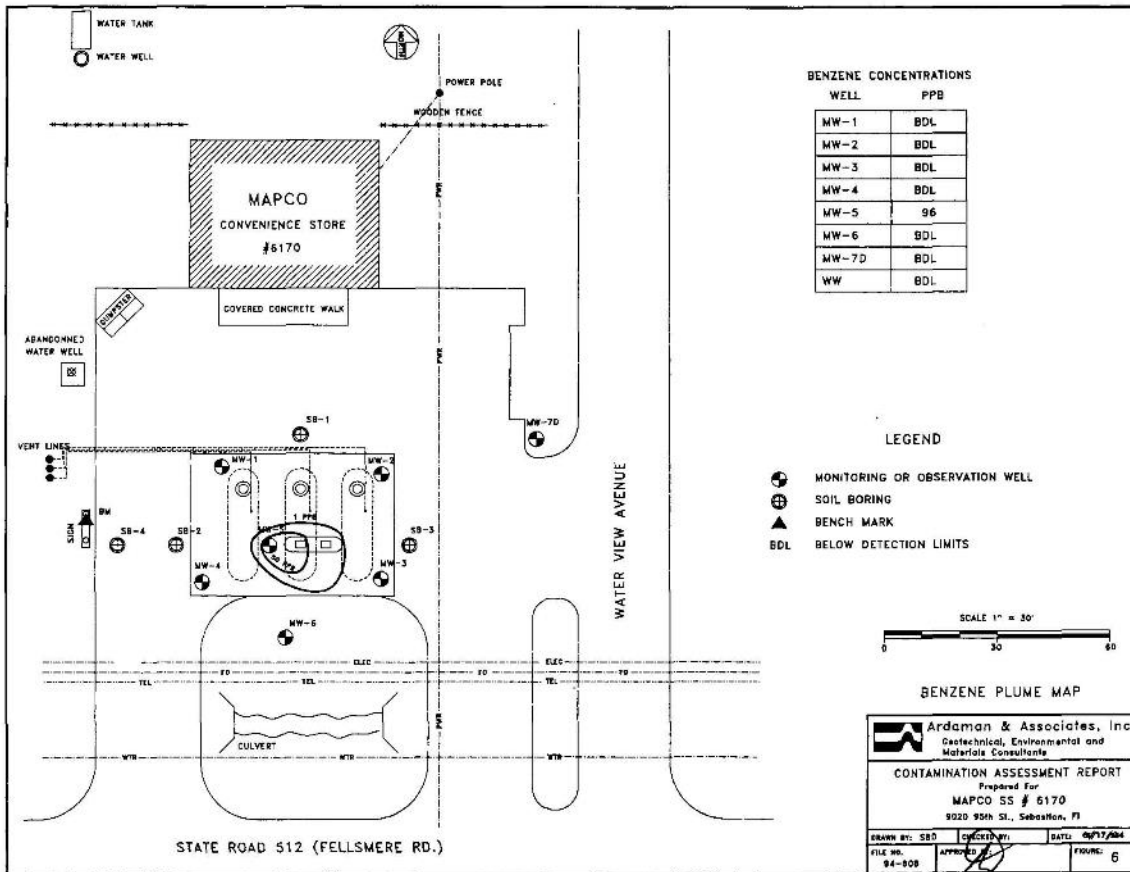


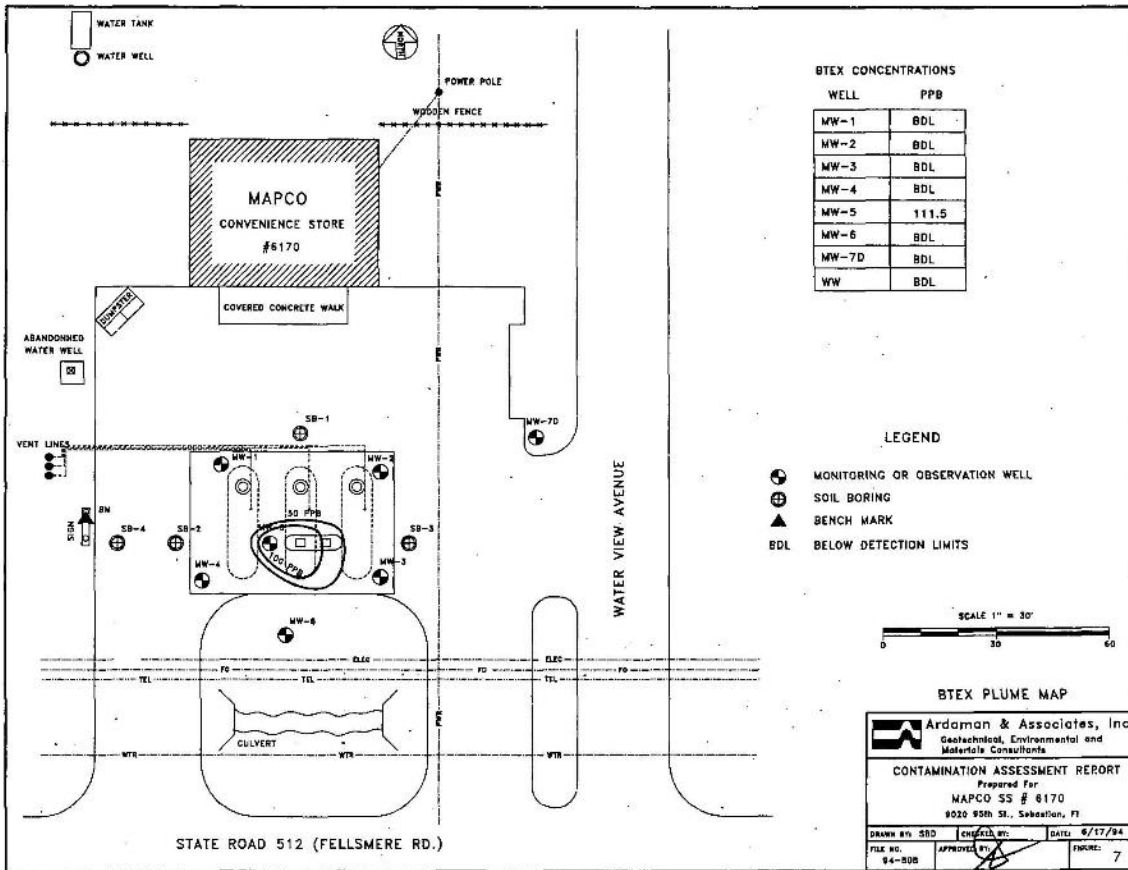
HYDRAULIC GRADIENT - 6/14/94

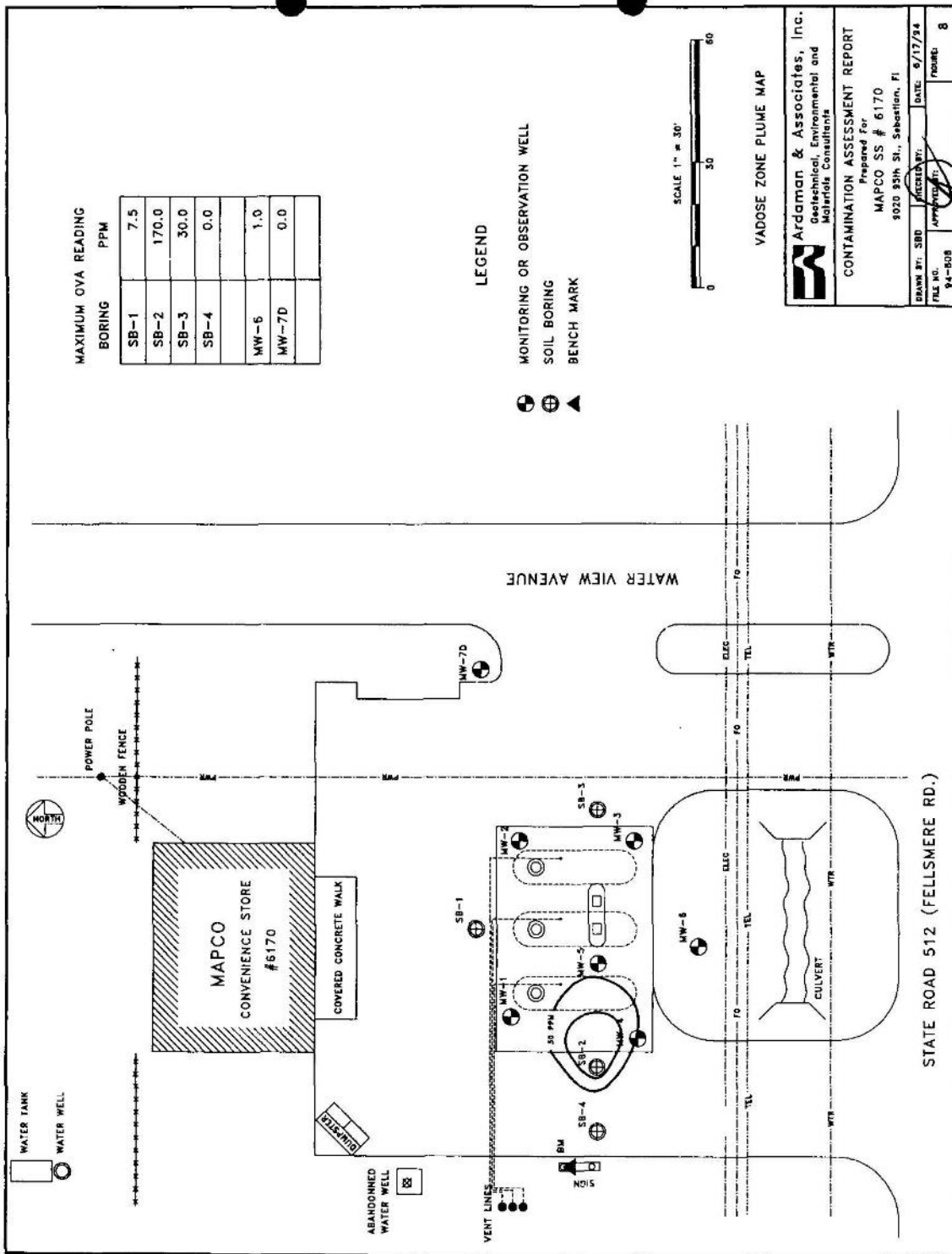
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Materials Consultants

**CONTAMINATION ASSESSMENT REPORT**  
Prepared For  
MAPCO SS # 6170  
8020 85th St., Sebastian, FL

DRAWN BY: SBD  
FILE NO: 94-808  
APPROVED BY: [Signature]  
DATE: 6/17/94  
FIGURE: 5A



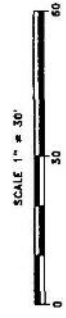




BORING	MAXIMUM OVA READING PPM
SB-1	7.5
SB-2	170.0
SB-3	30.0
SB-4	0.0
MW-6	1.0
MW-7D	0.0

**LEGEND**

- ● MONITORING OR OBSERVATION WELL
- ⊕ SOIL BORING
- ▲ BENCH MARK



**VADOSE ZONE PLUME MAP**

**Ardaman & Associates, Inc.**  
 Geotechnical, Environmental and  
 Materials Consultants

**CONTAMINATION ASSESSMENT REPORT**  
 Prepared For:  
 MAPCO SS # 6170  
 9020 35th St., Sebastian, FL

DATE: 6/17/84  
 DRAWN BY: SBD  
 CHECKED BY: [Signature]  
 FILE NO. 84-508  
 SHEETS 8





**TABLES**

**TABLE 1**  
**Monitoring Well Construction Details**

MAPCC # 6170  
9020 95th Street  
Sebastian, Florida

Well	Diameter	Casing		Screen		Total Depth	Sand Pack
		Material	Length	Material	Length		
MW-1*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-2*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-3*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-4*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-5*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-6	2.0"	Sch 40 PVC	2.00	0.01" Slotted PVC	10'	2.00-12.00	20/30 Silica Sand
MW-7D	2.0"	Sch 40 PVC	20.00	0.01" Slotted PVC	5'	20.00-25.00	20/30 Silica Sand

\*Wells installed by a previous contractor; therefore, well construction details are the result of physical measurements

**TABLE 2**  
**Monitoring Data - 6/14/94**

MAPCO #6170  
 9020 95th Street  
 Sebastian, Florida

Well	Casing Elevation	Depth to Water	Water Table Elevation	Liquid Phase Hydrocarbons
MW-1	19.93	3.52	16.41	0.00
MW-2	19.84	3.37	16.47	0.00
MW-3	18.90	2.80	16.10	0.00
MW-4	18.78	2.50	16.28	0.00
MW-5	19.36	3.05	16.31	0.00
MW-6	18.47	2.38	16.09	0.00
MW-7D	20.57	4.57	16.00	0.00

**TABLE 2A**  
**Monitoring Data - 5/19/94**

MAPCO #6170  
 9020 95th Street  
 Sebastian, Florida

Well	Casing Elevation	Depth to Water	Water Table Elevation	Liquid Phase Hydrocarbons
MW-1	19.93	4.65	15.28	0.00
MW-2	19.84	4.40	15.44	0.00
MW-3	18.90	3.80	15.10	0.00
MW-4	18.78	3.41	15.37	0.00
MW-5	19.36	4.13	15.23	0.00

TABLE 3  
Groundwater Quality Data

MAPCO #6170  
9020 95th Street  
Sebastian, Florida

Well	Temperature deg C	Conductivity mhos	CaCO3 mg/L	Iron mg/L	PH
MW-1	31.2	825	NT	NT	6.90
MW-2	32.4	931	NT	NT	6.70
MW-3	30.9	552	NT	NT	6.70
MW-4	30.7	807	NT	NT	6.70
MW-5	32.9	1302	NT	NT	7.20
MW-6	32.1	895	137	1.2	7.00
MW-7D	33.6	1244	120	5.6	6.50

\*NT - Not tested

TABLE 4

OVA Results Summary - PPM

MAPCC #6170  
9020 95th Street  
Sebastian, Florida

Depth (feet)

Sample ID	1'			2'			3'			4'			5'			6'			7'			8'		
	U	F	A	U	F	A	U	F	A	U	F	A	U	F	A	U	F	A	U	F	A	U	F	A
SB-1	0	0	0	1	1	0	10	2.5	7.5	10	2.5	7.5												
SB-2	6	1	5	20	4	16	180	10	170	200	70	130												
SB-3	0	0	0	10	0	10	0	0	0	50	20	30												
SB-4	0	0	0	0	0	0	0	0	0	0	0	0												
MW-6	0	0	0	0	0	0	1	0	0	1	0	0												
MW-7D	0	0	0	0	0	0	8	8	0	45	45	0												

NOTES:  
All Readings in PPM  
U - Unfiltered  
F - Filtered  
A - Difference

TABLE 5

Summary of Groundwater Analytical Results

MAPCO # 6170  
 9020 95th Street  
 Sebastian, Florida  
 Collected 4/4/94

Well ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Total BTEX	MTBE	
MW-1	BDL	BDL	BDL	BDL	BDL	BDL	
MW-2	BDL	BDL	BDL	BDL	BDL	BDL	
MW-3	BDL	BDL	BDL	BDL	BDL	11	
MW-4	BDL	BDL	BDL	BDL	BDL	BDL	
MW-5	96	5	3.4	7.1	111.5	24	
MW-6*	BDL	BDL	BDL	BDL	BDL	BDL	
MW-7D*	BDL	BDL	BDL	BDL	BDL	BDL	
WW*	BDL	BDL	BDL	BDL	BDL	BDL	
Well ID	EPA 601	EDB	Napths	PAH's	TRPH (mg/L)	Pb Unfiltered (mg/L)	Pb Filtered (mg/L)
MW-1	BDL	BDL	BDL	BDL	BDL	0.023	
MW-2	BDL	BDL	BDL	BDL	BDL	0.031	
MW-3	BDL	BDL	BDL	BDL	BDL	0.0054	
MW-4	BDL	BDL	BDL	BDL	BDL	0.0069	
MW-5	BDL	BDL	130	BDL	BDL	BDL	

\* Collected 5/25/94

**APPENDIX A**  
**BORING LOGS**  
**&**  
**MONITORING WELL DIAGRAMS**

## GEOLOGIC BORING LOG SB-1

DEPTH (feet)	OVA (ppm)	DESCRIPTION
0	0	Orange, Fine to Medium Quartz Sand
2	0	
	7.5	Grey, Silty, Clayey, Fine to Medium Quartz Sand
4	7.5	<u>    </u>
5		

Owner: MAPCO Petroleum Inc.	Casing: NA
Location: 9020 95th Street Sebastian, FL.	Screen: NA
Date Installed: 5-19-94	Total Well Depth: NA
Drilling Method: Hand Auger	Static Water Table: 4.5'
Sample Method: Hand Auger	Remarks: Above Background Readings



## GEOLOGIC BORING LOG SB-2

DEPTH (feet)	OVA (ppm)	DESCRIPTION
0	5	Orange, Fine to Medium Quartz Sand
-2	16	
-4	170	Grey, Silty, Clayey Fine to Medium Quartz Sand
-5	130	<u>∇</u>

Owner: MAPCO Petroleum Inc.	Casing: NA
Location: 9020 95th Street Sebastian, FL.	Screen: NA
Date Installed: 5-19-94	Total Well Depth: NA
Drilling Method: Hand Auger	Static Water Table: 4.5'
Sample Method: Hand Auger	Remarks: Above Background Readings

## GEOLOGIC BORING LOG SB-3

DEPTH (feet)	OVA (ppm)	DESCRIPTION
0	0	Orange, Fine to Medium Quartz Sand
2	10	
4	0	Brown, Silty, Fine to Medium Quartz Sand
5	30	with Trace Clay <u>  v  </u>

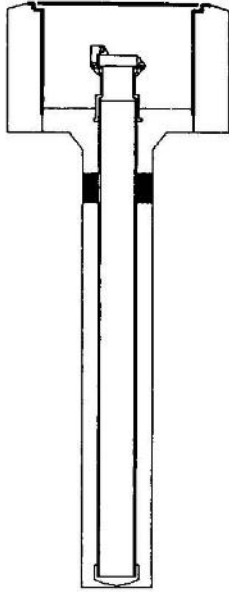
Owner: MAPCO Petroleum Inc.	Casing: NA
Location: 9020 95th Street Sebastian, FL.	Screen: NA
Date Installed: 6-14-94	Total Well Depth: NA
Drilling Method: Hand Auger	Static Water Table: 4.5'
Sample Method: Hand Auger	Remarks: Above Background Readings

## GEOLOGIC BORING LOG SB-4

DEPTH (feet)	OVA (ppm)	DESCRIPTION
0	0	Orange, Fine to Medium Quartz Sand
2	0	Brown, Silty, Clayey Fine to Medium Quartz Sand
4	0	<u>        </u>
5		

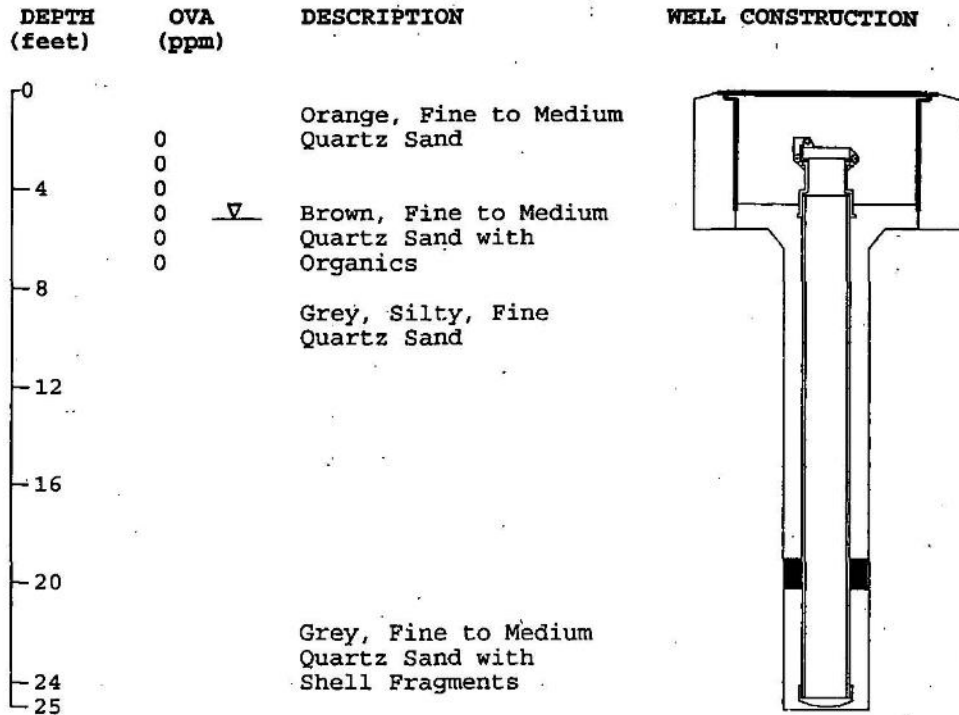
Owner: MAPCO Petroleum Inc.	Casing: NA
Location: 9020 95th Street Sebastian, FL.	Screen: NA
Date Installed: 6-14-94	Total Well Depth: NA
Drilling Method: Hand Auger	Static Water Table: 4.5'
Sample Method: Hand Auger	Remarks: Above Background Readings

## GEOLOGIC WELL LOG MW-6

DEPTH (feet)	OVA (ppm)	DESCRIPTION	WELL CONSTRUCTION
0	0		
-2	0	Orange, Fine to Medium Quartz Sand	
-4	1	Grey, Fine to Medium Quartz Sand	
-6	0	— ∇	
-8	0	Brown, Silty Sand with Organics	
-10	0	Grey, Silty, Clayey Quartz Sand	
-12			

Owner: MAPCO Petroleum Inc.	Casing: 2.0' of 2" Diameter Sch 40 PVC
Location: 9020 95th Street Sebastian, FL.	Screen: 10'-0.01" Slot 2" Diameter Sch 40 PVC
Date Installed: 5-19-94	Total Well Depth: 12.0'
Drilling Method: Hollow Stem Auger	Static Water Table: 4.5'
Sample Method: Hand Auger & Cuttings	Remarks: Above Background Readings

## GEOLOGIC WELL LOG MW-7D



Owner: MAPCO Petroleum Inc.	Casing: 20.0' of 2" Diameter Sch 40 PVC
Location: 9012 95th Street Sebastian, FL.	Screen: 5'-0.01" Slot 2" Diameter Sch 40 PVC
Date Installed: 5-19-94	Total Well Depth: 25.0'
Drilling Method: Hollow Stem Auger	Static Water Table: 4.5'
Sample Method: Hand Auger & Cuttings	Remarks: Above Background Readings



**APPENDIX B**  
**ANALYTICAL RESULTS**  
**&**  
**CHAIN OF CUSTODIES**

**SL SAVANNAH LABORATORIES**  
 & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D4-91357

Received: 04 MAY 94

Mr. Steve Dublin  
 Ardaman and Associates  
 3665 Park Central N. Blvd.  
 Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED				
91357-1	MW-1	05-04-94				
91357-2	MW-2	05-04-94				
91357-3	MW-3	05-04-94				
91357-4	MW-4	05-04-94				
91357-5	MW-5	05-04-94				
PARAMETER		91357-1	91357-2	91357-3	91357-4	91357-5
Purgeables (601/602)						
Bromodichloromethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform, ug/l		<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether, ug/l		<10J	<10J	<10J	<10J	<10J
Chloroform, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethylene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0

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LOG NO: D4-91357

Received: 04 MAY 94

Mr. Steve Dublin  
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Project: #94-808 (MAPCO #)  
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REPORT OF RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED				
91357-1	MW-1	05-04-94				
91357-2	MW-2	05-04-94				
91357-3	MW-3	05-04-94				
91357-4	MW-4	05-04-94				
91357-5	MW-5	05-04-94				
PARAMETER	91357-1	91357-2	91357-3	91357-4	91357-5	
Methylene chloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
1,1,2,2-Tetrachloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Trichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Vinyl chloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	96	
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	3.4	
Toluene, ug/l	<1.0	<1.0	<1.0	<1.0	5.0	
Xylenes, ug/l	<1.0	<1.0	<1.0	<1.0	7.1	
Methyl-tert-butyl ether (MTBE), ug/l	<10	<10	11	<10	24	
Date Analyzed	05.05.94	05.05.94	05.05.94	05.05.94	05.11.94	
Method Number	601/602	601/602	601/602	601/602	601/602	
Dilution factor	1	1	1	1	1	



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REPORT OF RESULTS

Page 3

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES					DATE SAMPLED
91357-1	MW-1					05-04-94
91357-2	MW-2					05-04-94
91357-3	MW-3					05-04-94
91357-4	MW-4					05-04-94
91357-5	MW-5					05-04-94
PARAMETER	91357-1	91357-2	91357-3	91357-4	91357-5	
Polynuclear Aromatic Hydrocarbons (610)						
Acenaphthene, ug/l	<10	<10	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10	<10	<10
Benzo(b,k)fluoranthene, ug/l	<10	<10	<10	<10	<10	<10
Chrysene + Benzo(a)anthracene, ug/l	<10	<10	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	<10	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10	<10	130
Phenanthrene + Anthracene, ug/l	<10	<10	<10	<10	<10	<10
Pyrene, ug/l	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene, ug/l	<10	<10	<10	<10	<10	<10
1-Methylnaphthalene, ug/l	<10	<10	<10	<10	<10	<10
Date Extracted	05.05.94	05.05.94	05.05.94	05.05.94	05.05.94	05.05.94
Date Analyzed	05.11.94	05.11.94	05.11.94	05.11.94	05.11.94	05.11.94
Method Number	EPA 610	EPA 610	EPA 610	EPA 610	EPA 610	EPA 610
Dilution factor	1	1	1	1	1	1

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Project: #94-808 (MAPCO #)  
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REPORT OF RESULTS

Page 4

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES					DATE SAMPLED
91357-1	MW-1					05-04-94
91357-2	MW-2					05-04-94
91357-3	MW-3					05-04-94
91357-4	MW-4					05-04-94
91357-5	MW-5					05-04-94
PARAMETER	91357-1	91357-2	91357-3	91357-4	91357-5	
Ethylene Dibromide						
1,2-Dibromoethane (EDB) , ug/l	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Date Analyzed	05.06.94	05.06.94	05.06.94	05.06.94	05.06.94	05.06.94
Method Number	EPA 504.1	EPA 504.1	EPA 504.1	EPA 504.1	EPA 504.1	EPA 504.1
Petroleum Hydrocarbons						
Petroleum Hydrocarbons, mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Date Extracted	05.09.94	05.09.94	05.09.94	05.09.94	05.09.94	05.09.94
Date Analyzed	05.09.94	05.09.94	05.09.94	05.09.94	05.09.94	05.09.94
Method Number	EPA 418.1	EPA 418.1	EPA 418.1	EPA 418.1	EPA 418.1	EPA 418.1
Lead						
Lead, mg/l	0.023	0.031	0.0054	0.0069	<0.0050	
Date Analyzed	05.09.94	05.09.94	05.09.94	05.09.94	05.10.94	
Method Number	EPA 239.2	EPA 239.2	EPA 239.2	EPA 239.2	EPA 239.2	

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REPORT OF RESULTS

Page 5

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
91357-6	Equipment Blank	05-04-94
PARAMETER	91357-6	
Purgeables (601/602)		
Bromodichloromethane, ug/l		<1.0
Bromoform, ug/l		<5.0
Bromomethane, ug/l		<1.0
Carbon tetrachloride, ug/l		<1.0
Chlorobenzene, ug/l		<1.0
Chloroethane, ug/l		<1.0
2-Chloroethylvinyl Ether, ug/l		<10J
Chloroform, ug/l		<1.0
Chloromethane, ug/l		<1.0
Dibromochloromethane, ug/l		<1.0
1,2-Dichlorobenzene, ug/l		<1.0
1,3-Dichlorobenzene, ug/l		<1.0
1,4-Dichlorobenzene, ug/l		<1.0
Dichlorodifluoromethane, ug/l		<1.0
1,1-Dichloroethane, ug/l		<1.0
1,2-Dichloroethane, ug/l		<1.0
1,1-Dichloroethene, ug/l		<1.0
trans-1,2-Dichloroethylene, ug/l		<1.0
1,2-Dichloropropane, ug/l		<1.0
cis-1,3-Dichloropropene, ug/l		<1.0
trans-1,3-Dichloropropene, ug/l		<1.0
Methylene chloride, ug/l		<1.0
1,1,2,2-Tetrachloroethane, ug/l		<1.0
Tetrachloroethene, ug/l		<1.0
1,1,1-Trichloroethane, ug/l		<1.0

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REPORT OF RESULTS

Page 6

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
91357-6	Equipment Blank	05-04-94
PARAMETER	91357-6	
1,1,2-Trichloroethane, ug/l	<1.0	
Trichloroethene, ug/l	<1.0	
Trichlorofluoromethane, ug/l	<1.0	
Vinyl chloride, ug/l	<1.0	
Benzene, ug/l	<1.0	
Ethylbenzene, ug/l	<1.0	
Toluene, ug/l	<1.0	
Xylenes, ug/l	<1.0	
Methyl-tert-butyl ether (MTBE), ug/l	<10	
Date Analyzed	05.05.94	
Method Number	601/602	
Dilution factor	1	

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REPORT OF RESULTS

Page 7

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
91357-6	Equipment Blank	05-04-94
PARAMETER		91357-6
Polynuclear Aromatic Hydrocarbons (610)		
Acenaphthene, ug/l		<10
Acenaphthylene, ug/l		<10
Benzo(a)pyrene, ug/l		<10
Benzo(g,h,i)perylene, ug/l		<10
Benzo(b,k)fluoranthene, ug/l		<10
Chrysene + Benzo(a)anthracene, ug/l		<10
Fluoranthene, ug/l		<10
Fluorene, ug/l		<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l		<10
Naphthalene, ug/l		<10
Phenanthrene + Anthracene, ug/l		<10
Pyrene, ug/l		<10
2-Methylnaphthalene, ug/l		<10
1-Methylnaphthalene, ug/l		<10
Date Extracted		05.05.94
Date Analyzed		05.11.94
Method Number		EPA 610
Dilution factor		1
Ethylene Dibromide		
1,2-Dibromoethane (EDB), ug/l		<0.020
Date Analyzed		05.06.94
Method Number		EPA 504.1
Petroleum Hydrocarbons		
Petroleum Hydrocarbons, mg/l		<1.0
Date Extracted		05.09.94
Date Analyzed		05.09.94
Method Number		EPA 418.1

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REPORT OF RESULTS

Page 8

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
91357-6	Equipment Blank	05-04-94
PARAMETER		91357-6
Lead		
Lead, mg/l		<0.0050
Date Analyzed		05.09.94
Method Number		EPA 239.2

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REPORT OF RESULTS

Page 9

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91357-7 Lab Blank  
 91357-8 Accuracy - % Recovery (Mean)  
 91357-9 Precision - Relative % Difference  
 91357-10 Detection Limit

PARAMETER	91357-7	91357-8	91357-9	91357-10
Purgeables (601/602)				
Bromodichloromethane, ug/l	<1.0	---	---	1.0
Bromoform, ug/l	<5.0	---	---	5.0
Bromomethane, ug/l	<1.0	---	---	1.0
Carbon tetrachloride, ug/l	<1.0	---	---	1.0
Chlorobenzene, ug/l	<1.0	87 %	14 %	1.0
Chloroethane, ug/l	<1.0	---	---	1.0
2-Chloroethylvinyl Ether, ug/l	<10J	---	---	10J
Chloroform, ug/l	<1.0	---	---	1.0
Chloromethane, ug/l	<1.0	---	---	1.0
Dibromochloromethane, ug/l	<1.0	---	---	1.0
1,2-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,3-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,4-Dichlorobenzene, ug/l	<1.0	---	---	1.0
Dichlorodifluoromethane, ug/l	<1.0	---	---	1.0
1,1-Dichloroethane, ug/l	<1.0	---	---	1.0
1,2-Dichloroethane, ug/l	<1.0	---	---	1.0
1,1-Dichloroethene, ug/l	<1.0	106 %	26 %	1.0
trans-1,2-Dichloroethylene, ug/l	<1.0	---	---	1.0
1,2-Dichloropropane, ug/l	<1.0	---	---	1.0
cis-1,3-Dichloropropene, ug/l	<1.0	---	---	1.0
trans-1,3-Dichloropropene, ug/l	<1.0	---	---	1.0
Methylene chloride, ug/l	<1.0	---	---	1.0

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REPORT OF RESULTS

Page 10

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91357-7 Lab Blank  
 91357-8 Accuracy - % Recovery (Mean)  
 91357-9 Precision - Relative % Difference  
 91357-10 Detection Limit

PARAMETER	91357-7	91357-8	91357-9	91357-10
1,1,2,2-Tetrachloroethane, ug/l	<1.0	---	---	1.0
Tetrachloroethene, ug/l	<1.0	---	---	1.0
1,1,1-Trichloroethane, ug/l	<1.0	---	---	1.0
1,1,2-Trichloroethane, ug/l	<1.0	---	---	1.0
Trichloroethene, ug/l	<1.0	103 %	17 %	1.0
Trichlorofluoromethane, ug/l	<1.0	---	---	1.0
Vinyl chloride, ug/l	<1.0	---	---	1.0
Benzene, ug/l	<1.0	83 %	7.2 %	1.0
Ethylbenzene, ug/l	<1.0	---	---	1.0
Toluene, ug/l	<1.0	93 %	8.6 %	1.0
Xylenes, ug/l	<1.0	---	---	1.0
Methyl-tert-butyl ether (MTBE), ug/l	<10	---	---	10
Date Analyzed	05.05.94	---	---	---
Method Number	601/602	---	---	---



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REPORT OF RESULTS

Page 11

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91357-7 Lab Blank  
 91357-8 Accuracy - % Recovery (Mean)  
 91357-9 Precision - Relative % Difference  
 91357-10 Detection Limit

PARAMETER	91357-7	91357-8	91357-9	91357-10
<b>Polynuclear Aromatic Hydrocarbons (610)</b>				
Acenaphthene, ug/l	<10	---	---	10
Acenaphthylene, ug/l	<10	76 %	2.6 %	10
Benzo(a)pyrene, ug/l	<10	---	---	10
Benzo(g,h,i)perylene, ug/l	<10	---	---	10
Benzo(b,k)fluoranthene, ug/l	<10	---	---	10
Chrysene + Benzo(a)anthracene, ug/l	<10	---	---	10
Fluoranthene, ug/l	<10	79 %	5.0 %	10
Fluorene, ug/l	<10	82 %	2.4 %	10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	---	---	10
Naphthalene, ug/l	<10	66 %	1.5 %	10
Phenanthrene + Anthracene, ug/l	<10	---	---	10
Pyrene, ug/l	<10	80 %	6.3 %	10
2-Methylnaphthalene, ug/l	<10	---	---	10
1-Methylnaphthalene, ug/l	<10	---	---	10
Date Extracted	05.05.94	---	---	---
Date Analyzed	05.11.94	---	---	---
Method Number	EPA 610	---	---	---
<b>Ethylene Dibromide</b>				
1,2-Dibromoethane (EDB) , ug/l	<0.020	90 %	0 %	0.020
Date Analyzed	05.06.94	---	---	---
Method Number	EPA 504.1	---	---	---

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REPORT OF RESULTS

Page 12

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91357-7 Lab Blank  
 91357-8 Accuracy - % Recovery (Mean)  
 91357-9 Precision - Relative % Difference  
 91357-10 Detection Limit

PARAMETER	91357-7	91357-8	91357-9	91357-10
<b>Petroleum Hydrocarbons</b>				
Petroleum Hydrocarbons, mg/l	<1.0	70 %	2.8 %	1.0
Date Extracted	05.09.94	---	---	---
Date Analyzed	05.09.94	---	---	---
Method Number	EPA 418.1	---	---	---
<b>Lead</b>				
Lead, mg/l	<0.0050	98 %	4.1 %	0.0050
Date Analyzed	05.09.94	---	---	---
Method Number	EPA 239.2	---	---	---

Method References: EPA 40 CFR Part 136, EPA 600/4-79-020 and EPA 600/4-88-039.  
 J - Estimated Value.

Paul Canevaro

Final Page Of Report

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LOG NO: D4-91548

Received: 25 MAY 94

Mr. Steve Dublin  
 Ardaman & Associates, Inc.  
 2608 West 84th. Street  
 Hialeah, FL 33016

Project: #94-808 (MAPCO)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED			
91548-1	MW-6	05-25-94			
91548-2	MW-7D	05-25-94			
91548-3	WW	05-25-94			
91548-4	Equipment	05-25-94			
PARAMETER	91548-1	91548-2	91548-3	91548-4	
Purgeable Aromatics (602)					
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	
Chlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
Toluene, ug/l	<1.0	<1.0	<1.0	<1.0	
Xylenes, ug/l	<1.0	<1.0	<1.0	<1.0	
Methyl-Tert-Butyl-Ether (MTBE), ug/l	<10	<10	<10	<10	
Date Analyzed	05.26.94	05.26.94	05.26.94	05.26.94	
Method Number	EPA 602	EPA 602	EPA 602	EPA 602	
Dilution factor	1	1	1	1	

**SL SAVANNAH LABORATORIES**  
 & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D4-91548

Received: 25 MAY 94

Mr. Steve Dublin  
 Ardaman & Associates, Inc.  
 2608 West 84th. Street  
 Hialeah, FL 33016

Project: #94-808 (MAPCO)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED			
91548-1	MW-6	05-25-94			
91548-2	MW-7D	05-25-94			
91548-3	WW	05-25-94			
91548-4	Equipment	05-25-94			
PARAMETER	91548-1	91548-2	91548-3	91548-4	
Polynuclear Aromatic Hydrocarbons (610)					
Acenaphthene, ug/l	<10	<10	<10	<10	
Acenaphthylene, ug/l	<10	<10	<10	<10	
Benzo(a)pyrene, ug/l	<10	<10	<10	<10	
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10	
Benzo(b,k)fluoranthene, ug/l	<10	<10	<10	<10	
Chrysene + Benzo(a)anthracene, ug/l	<10	<10	<10	<10	
Fluoranthene, ug/l	<10	<10	<10	<10	
Fluorene, ug/l	<10	<10	<10	<10	
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	<10	<10	<10	
Naphthalene, ug/l	<10	<10	<10	<10	
Phenanthrene + Anthracene, ug/l	<10	<10	<10	<10	
Pyrene, ug/l	<10	<10	<10	<10	
2-Methylnaphthalene, ug/l	<10	<10	<10	<10	
1-Methylnaphthalene, ug/l	<10	<10	<10	<10	
Date Extracted	05.25.94	05.25.94	05.25.94	05.25.94	
Date Analyzed	06.01.94	06.01.94	06.01.94	06.01.94	
Method Number	EPA 610	EPA 610	EPA 610	EPA 610	
Dilution factor	1	1	1	1	

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 & ENVIRONMENTAL SERVICES, INC.

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LOG NO: D4-91548

Received: 25 MAY 94

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Project: #94-808 (MAPCO)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 3

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91548-5 Lab Blank  
 91548-6 Accuracy - % Recovery (Mean)  
 91548-7 Precision - Relative % Difference  
 91548-8 Detection Limit

PARAMETER	91548-5	91548-6	91548-7	91548-8
Purgeable Aromatics (602)				
Benzene, ug/l	<1.0	112 %	5.3 %	1.0
Chlorobenzene, ug/l	<1.0	89 %	8.9 %	1.0
1,2-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,3-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,4-Dichlorobenzene, ug/l	<1.0	---	---	1.0
Ethylbenzene, ug/l	<1.0	---	---	1.0
Toluene, ug/l	<1.0	102 %	3.9 %	1.0
Xylenes, ug/l	<1.0	---	---	1.0
Methyl-Tert-Butyl-Ether (MTBE), ug/l	<10	---	---	10
Date Analyzed	05.26.94	---	---	---
Method Number	EPA 602	---	---	---

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 & ENVIRONMENTAL SERVICES, INC.

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LOG NO: D4-91548

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REPORT OF RESULTS


Page 4

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91548-5 Lab Blank  
 91548-6 Accuracy - % Recovery (Mean)  
 91548-7 Precision - Relative % Difference  
 91548-8 Detection Limit

PARAMETER	91548-5	91548-6	91548-7	91548-8
Polynuclear Aromatic Hydrocarbons (610)				
Acenaphthene, ug/l	<10	---	---	10
Acenaphthylene, ug/l	<10	80 %	11 %	10
Benzo(a)pyrene, ug/l	<10	---	---	10
Benzo(g,h,i)perylene, ug/l	<10	---	---	10
Benzo(b,k)fluoranthene, ug/l	<10	---	---	10
Chrysene + Benzo(a)anthracene, ug/l	<10	---	---	10
Fluoranthene, ug/l	<10	88 %	8.0 %	10
Fluorene, ug/l	<10	82 %	3.7 %	10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	---	---	10
Naphthalene, ug/l	<10	80 %	14 %	10
Phenanthrene + Anthracene, ug/l	<10	---	---	10
Pyrene, ug/l	<10	88 %	6.8 %	10
2-Methylnaphthalene, ug/l	<10	---	---	10
1-Methylnaphthalene, ug/l	<10	---	---	10
Date Extracted	05.25.94	---	---	---
Date Analyzed	06.01.94	---	---	---
Method Number	EPA 610	---	---	---

Method Reference: EPA 40 CFR Part 136.

  
 Paul Canevaro

Final Page Of Report

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

# SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

Phone: (813) 352-0165  
 Fax (912) 352-0165  
 Phone: (813) 354-7858  
 Fax (804) 878-9504  
 Phone: (904) 878-3994  
 Fax (904) 878-9504  
 Phone: (305) 421-7400  
 Fax (305) 421-2584  
 Phone: (205) 668-6633  
 Fax (205) 668-6896  
 Phone: (813) 885-7427  
 Fax (813) 885-7049

5102 LaRoche Avenue, Savannah, GA 31404  
 2846 Industrial Plaza Drive, Tallahassee, FL 32301  
 414 Southwold 12th Avenue, Deerfield Beach, FL 33442  
 900 Lakeside Drive, Mobile, AL 36693  
 6712 Benjamin Road, Suite 100, Tampa, FL 33634

## ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME	MATRIX TYPE	REQUIRED ANALYSES	PAGE	OF
	94-808	MARCO			1	1
CLIENT NAME: ARDMAN & ASSOCIATES CLIENT ADDRESS: 3465 PACEWALKER BLVD. N., POMPANO BEACH, FL 33069 SAMPLER(S) NAME(S): J. DUBOIS / D. BOURGEOIS / S. DUBOIS CLIENT PROJECT MANAGER: S. DUBOIS			TELEPHONE/FAX NO.: 904/949-8788 CITY, STATE, ZIP CODE: TAMPA, FL 33609			
SAMPLE IDENTIFICATION DATE TIME 5/24/94 13:00 MW-6 5/24/94 12:50 MW-7D 5/24/94 12:30 WW 5/24/94 13:15 EQUIPMENT			NUMBER OF CONTAINERS SUBMITTED 3 1 3 1 3 1 3 1			
RECEIVED BY: (SIGNATURE) C. W. ... DATE: 5/24/94 15:30 TIME: 15:30			RECEIVED BY: (SIGNATURE) ... DATE: 5/25/94 TIME: 16:00			
RECEIVED BY: (SIGNATURE) ... DATE: 5/25/94 TIME: 16:00			RECEIVED BY: (SIGNATURE) ... DATE: 5/25/94 TIME: 16:00			
FOR SAVANNAH LABORATORY USE ONLY: RECEIVED FOR LABORATORY BY: (SIGNATURE) DATE: 5/25/94 TIME: 16:00 CUSTODY INTACT: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> CUSTODY SEAL NO.: D491548						





**APPENDIX C**  
**AQUIFER CHARACTERISTICS**  
**&**  
**TESTING**

## SLUG TEST CALCULATIONS

### UNCONFINED AQUIFER WITH PARTIALLY PENETRATING WELL

File Number 94-808

Well Number MW-6

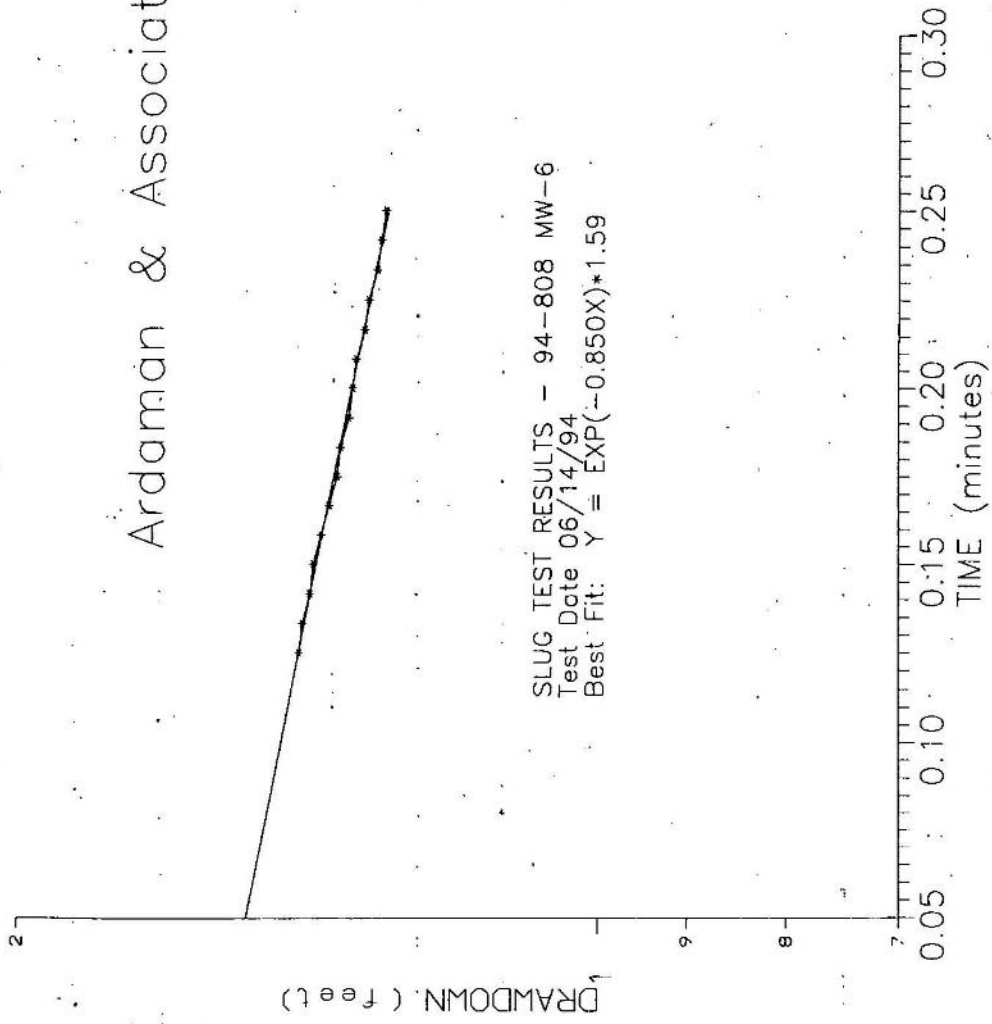
#### INPUT DATA

Static Water Table to Well Bottom (H) ft	9.12
Aquifer thickness (D) ft	100.00
Length of Well Screen in Water (L) ft	9.12
Radius of Casing (Rc) inches	2.00
Y Value @ t equals 0 (Yo) ft	1.59
Y Value @ Time t (Y) ft	1.34
Time (t) sec	12.00
Radius of borehole (Rw) inches	5.00
Dimensionless Coefficient (A)	1.85
Dimensionless Coefficient (B)	0.30
Estimated Porosity (n)	0.25

#### CALCULATIONS

L/Rw	21.89
$X = \ln(D-H)/Rw$	5.39
IF $X \geq 6$ use 6	5.39
$\ln(Rc/Rw) = (1.1/\ln(L/Rw) + (A+B*(X))/L/Rw)^{-1}$	1.94
$Y = (\ln(Yo/Y))/t$	0.01
$K = (Rc^2 * \ln(Rc/Rw) / 2L) * Y$	4.217E-05
K in gallons per day per square foot	27.25
T in square feet per day	364.37

Ardaman & Associates, Inc.



SE2000  
Environmental Logger  
06/15 08:14

Unit# TEST0HPP Test 0

Setups:           INPUT 1  
-----  
Type               Level (F)  
Mode               TOC  
I.D.               MW-6

Reference           0.000  
SG                   1.000  
Linearity           0.095  
Scale factor        20.056  
Offset               0.002  
Delay mSEC          50.000

Step 0 06/14 13:48:18

Elapsed Time       INPUT 1  
-----  
0.0000             5.270  
0.0083             4.147  
0.0166             1.569  
0.0250             0.724  
0.0333             1.200  
0.0416             1.677  
0.0500             1.759  
0.0583             1.620  
0.0666             1.486  
0.0750             1.448  
0.0833             1.473  
0.0916             1.492  
0.1000             1.486  
0.1083             1.461  
0.1166             1.442  
0.1250             1.429  
0.1333             1.423  
0.1416             1.410  
0.1500             1.404  
0.1583             1.391  
0.1666             1.378  
0.1750             1.365  
0.1833             1.359  
0.1916             1.346  
0.2000             1.340  
0.2083             1.334  
0.2166             1.321  
0.2250             1.315  
0.2333             1.302  
0.2416             1.296

0.2500	1.289
0.2583	1.270
0.2666	1.270
0.2750	1.257
0.2833	1.251
0.2916	1.245
0.3000	1.238
0.3083	1.226
0.3166	1.219
0.3250	1.219
0.3333	1.207
0.3500	1.194
0.3666	1.175
0.3833	1.162
0.4000	1.156
0.4166	1.137
0.4333	1.124
0.4500	1.111
0.4666	1.099
0.4833	1.086
0.5000	1.073
0.5166	1.054
0.5333	1.041
0.5500	1.029
0.5666	1.022
0.5833	1.003
0.6000	0.991
0.6166	0.978
0.6333	0.965
0.6500	0.959
0.6666	0.940
0.6833	0.933
0.7000	0.914
0.7166	0.908
0.7333	0.902
0.7500	0.889
0.7666	0.876
0.7833	0.870
0.8000	0.857
0.8166	0.851
0.8333	0.845
0.8500	0.825
0.8666	0.825
0.8833	0.819
0.9000	0.806
0.9166	0.794
0.9333	0.787
0.9500	0.781
0.9666	0.775
0.9833	0.768
1.0000	0.762
1.2000	0.686
1.4000	0.629
1.6000	0.571

## SLUG TEST CALCULATIONS

### UNCONFINED AQUIFER WITH PARTIALLY PENETRATING WELL

File Number 94-808

Well Number MW-7D

#### INPUT DATA

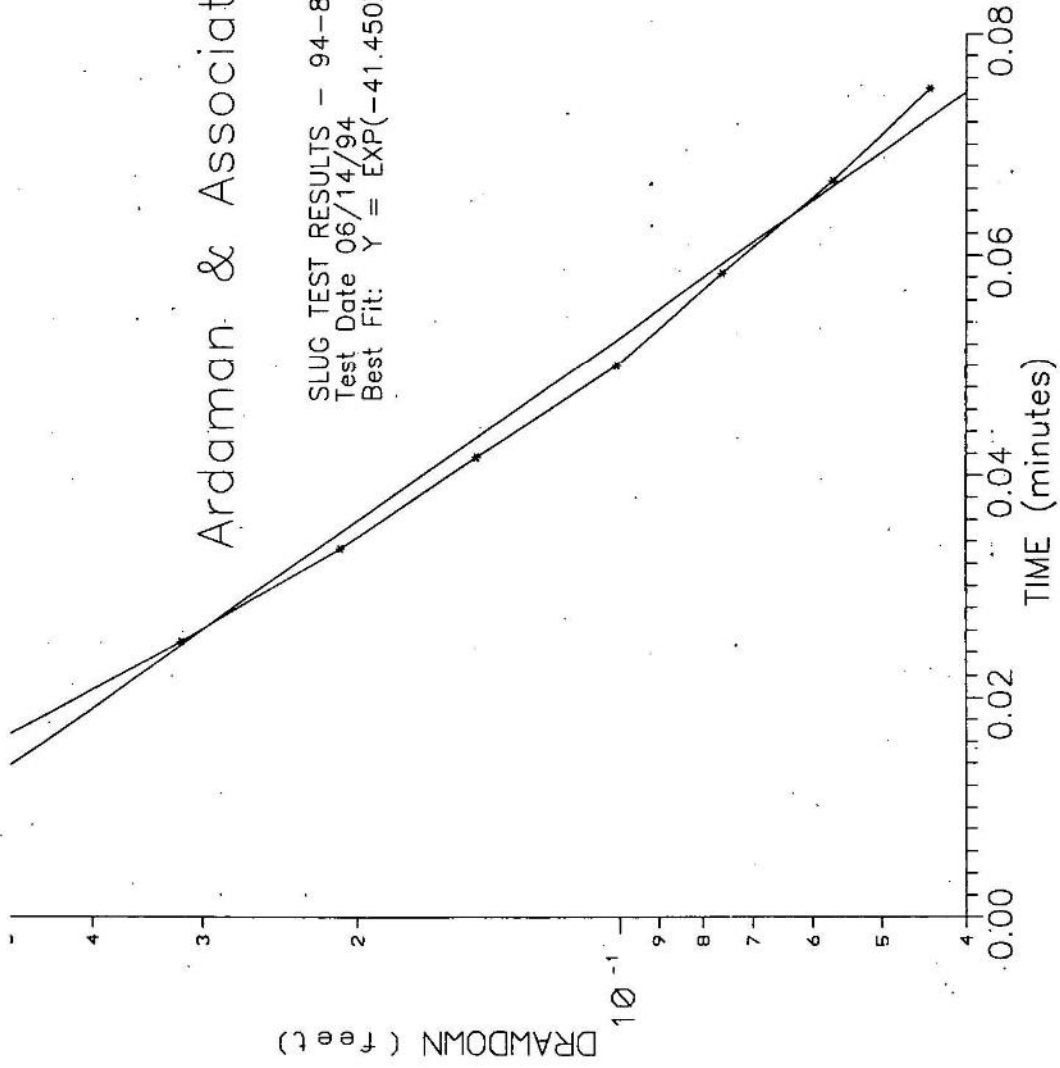
Static Water Table to Well Bottom (H) ft	19.68
Aquifer thickness (D) ft	100.00
Length of Well Screen in Water (L) ft	5.00
Radius of Casing (Rc) inches	2.00
Y Value @ t equals 0 (Yo) ft	0.88
Y Value @ Time t (Y) ft	0.11
Time (t) sec	3.00
Radius of borehole (Rw) inches	5.00
Dimensionless Coefficient (A)	1.85
Dimensionless Coefficient (B)	0.30
Estimated Porosity (n)	0.25

#### CALCULATIONS

L/Rw	12.00
$X = \ln(D-H)/Rw$	5.26
IF $X \geq 6$ use 6	5.26
$\ln(Rc/Rw) = (1.1/\ln(L/Rw) + (A+B*(X))/L/Rw)^{-1}$	1.37
$Y = (\ln(Yo/Y))/t$	0.69
$K = (Rc^2 * \ln(Rc/Rw) / 2L) * Y$	2.635E-03
K in gallons per day per square foot	1702.99
T in square feet per day	22767.29

Ardaman & Associates, Inc.

SLUG TEST RESULTS - 94-808 MW-7D  
Test Date 06/14/94  
Best Fit:  $Y = \text{EXP}(-41.450X) * 0.883$



SE2000  
Environmental Logger  
06/15 08:55

Unit# TEST0HPP Test 4

Setups: INPUT 1

-----  
Type Level (F)  
Mode TOC  
I.D. MW7D

Reference 0.000  
SG 1.000  
Linearity 0.095  
Scale factor 20.056  
Offset 0.002  
Delay mSEC 50.000

Step 0 06/14 14:28:52

Elapsed Time INPUT 1

-----  
0.0000 1.608  
0.0083 0.858  
0.0166 0.489  
0.0250 0.305  
0.0333 0.203  
0.0416 0.146  
0.0500 0.108  
0.0583 0.076  
0.0666 0.063  
0.0750 0.044  
0.0833 0.038  
0.0916 0.025  
0.1000 0.025  
0.1083 0.025  
0.1166 0.019  
0.1250 0.019  
0.1333 0.019  
0.1416 0.019  
0.1500 0.019  
0.1583 0.012  
0.1666 0.012  
0.1750 0.006  
0.1833 0.012  
0.1916 0.006  
0.2000 0.012  
0.2083 0.006  
0.2166 0.012  
0.2250 0.012  
0.2333 0.006  
0.2416 0.006



## SLUG TEST CALCULATIONS

### UNCONFINED AQUIFER WITH PARTIALLY PENETRATING WELL

File Number 94-808

Well Number MW-4

#### INPUT DATA

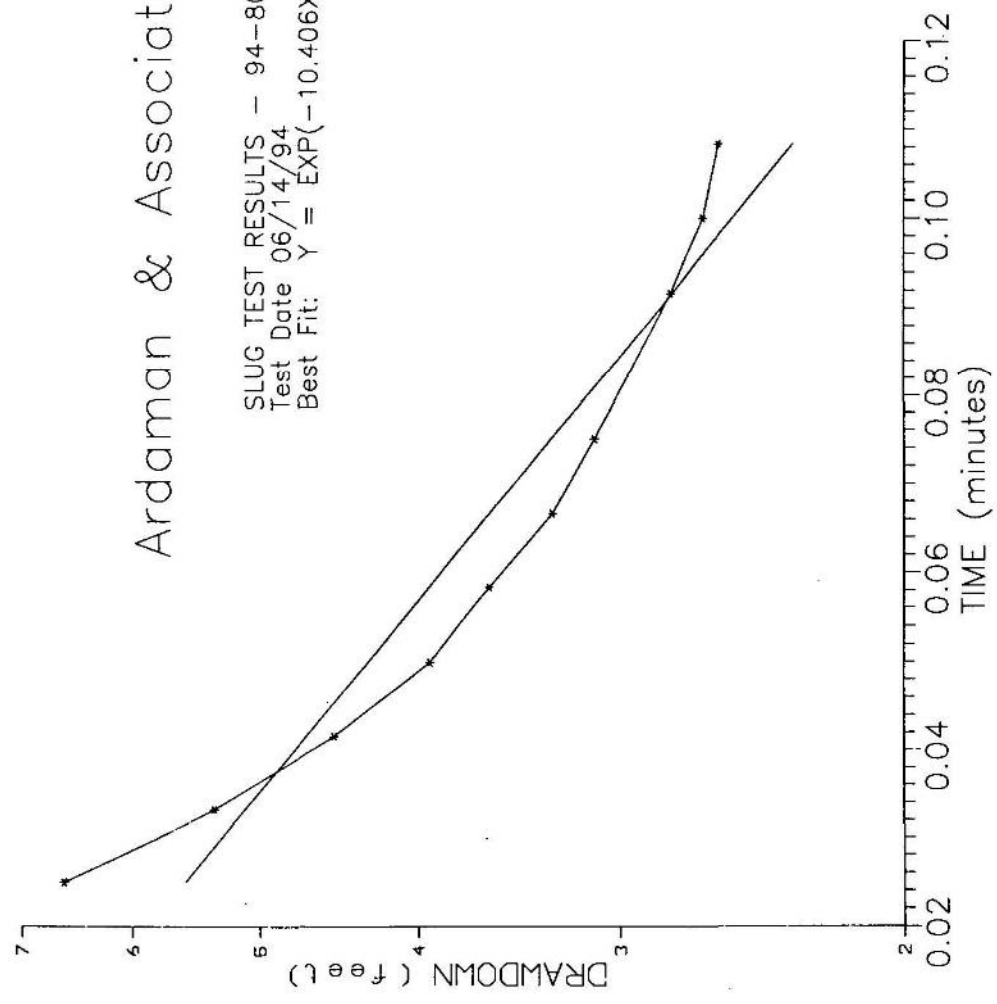
Static Water Table to Well Bottom (H) ft	6.27
Aquifer thickness (D) ft	100.00
Length of Well Screen in Water (L) ft	6.27
Radius of Casing (Rc) inches	2.00
Y Value @ t equals 0 (Yo) ft	0.72
Y Value @ Time t (Y) ft	0.26
Time (t) sec	6.00
Radius of borehole (Rw) inches	5.00
Dimensionless Coefficient (A)	1.85
Dimensionless Coefficient (B)	0.30
Estimated Porosity (n)	0.25

#### CALCULATIONS

L/Rw	15.05
$X = \ln(D-H)/Rw$	5.42
IF $X \geq 6$ use 6	5.42
$\ln(Rc/Rw) = (1.1/\ln(L/Rw) + (A+B*(X))/L/Rw)^{-1}$	1.57
$Y = (\ln(Yo/Y))/t$	0.17
$K = (Rc^2 * \ln(Rc/Rw) / 2L) * Y$	6.035E-04
K in gallons per day per square foot	390.06
T in square feet per day	5214.67

Ardaman & Associates, Inc.

SLUG TEST RESULTS - 94-808 MW-4  
Test Date 06/14/94  
Best Fit:  $Y = EXP(-10.406X)*0.722$



SE2000  
Environmental Logger  
06/15 08:20

Unit# TEST0HPP Test 1

-----  
Setups:           INPUT 1  
-----  
Type            Level (F)  
Mode            TOC  
I.D.            MW-4

Reference       0.000  
SG              1.000  
Linearity       0.095  
Scale factor    20.056  
Offset          0.002  
Delay mSEC     50.000

Step 0 06/14 14:06:34

-----  
Elapsed Time    INPUT 1  
-----  
0.0083         7.753  
0.0166         0.838  
0.0250         0.660  
0.0333         0.533  
0.0416         0.450  
0.0500         0.393  
0.0583         0.361  
0.0666         0.330  
0.0750         0.311  
0.0833         0.298  
0.0916         0.279  
0.1000         0.266  
0.1083         0.260  
0.1166         0.254  
0.1250         0.247  
0.1333         0.241  
0.1416         0.234  
0.1500         0.234  
0.1583         0.228  
0.1666         0.228  
0.1750         0.222  
0.1833         0.222  
0.1916         0.222  
0.2000         0.222  
0.2083         0.215  
0.2166         0.209  
0.2250         0.209  
0.2333         0.209  
0.2416         0.203  
0.2500         0.209

## GROUNDWATER FLOW VELOCITY

File Number 94-808

### INPUT DATA

Source of high level reading	MW-1
Source of low level reading	MW-6
High level reading (H)	16.4100
Low level Reading (L)	16.0900
Distance between MWs (D)	50.0000
Porosity (n)	0.2500
Average Hydraulic Conductivity (K) (feet per day)	3.6400

### CALCULATIONS

$I = (H-L)/D$  0.0064

$V = (K*I)/n$  (feet per day) 0.0932

Checked By: *ABJ*

**APPENDIX D**  
**CONTAMINATION ASSESSMENT**  
**SUMMARY SHEET**

CONTAMINATION ASSESSMENT REPORT SUMMARY SHEET

Facility Name: MAPCO SS #6170 Reburial Site   
 Location: 9020 95th Street, Sebastian, Florida State Contract Site   
 EDI #: 31-3108 FAC I.D. #: 318509326 Other:   
 Date Reviewed: \_\_\_\_\_ Local Government: \_\_\_\_\_

(1) Source of spill: Fueling Operations Date of spill: Unknown

(2) Type of product: gasoline group gallons lost \_\_\_\_\_ kerosene group gallons lost \_\_\_\_\_

<input type="checkbox"/> leaded	_____	<input type="checkbox"/> kerosene	_____
<input checked="" type="checkbox"/> unleaded regular	<u>Unk</u>	<input type="checkbox"/> diesel	_____
<input checked="" type="checkbox"/> unleaded premium	<u>Unk</u>	<input type="checkbox"/> JP-4 Jet fuel	_____
<input type="checkbox"/> gasohol	_____	<input type="checkbox"/> Jet A fuel	_____

(3) Description of IRA (if any): None  Free product removal: N/A (gals)  
 Soil removal: N/A (cubic yds)  
 Soil Incineration: N/A (cubic yds)

(4) Free product still present? (yes/no)  no Maximum apparent product thickness: N/A (ft)

(5) Maximum groundwater contaminant levels (ppb): Total VOCs: 111.5 benzene: 96 EDB: BDL  
 lead: .031 MTBE: 24 others: 130 Napths

(6) Brief lithologic description: Fine to medium grained unconsolidated clayey sand

(7) Areal and vertical extent of soils contamination defined? (yes/no)  no  
 Highest current soil concentration (OVA: 170 ppm) or (EPA Method 5030/8020: \_\_\_\_\_ ppm)

(8) Lower aquifer contaminated? (yes/no)  no Depth of vertical contamination: Less than 20 ft.

(9) Date of last complete round of groundwater sampling: 4/4/94 Date of last soil sampling: 6/14/94

(10) OAPP approved? (yes/no)  no Date: 1/22/92

(11) Direction (e.g. NINW) of surficial groundwater flow: East-Southeast (Figure 5&5A on page Figure Section)

(12) Average depth to groundwater: 3.5 (ft)

(13) Observed range of seasonal groundwater fluctuations: One (ft)

(14) Estimated rate of groundwater flow: 0.0932 (ft/day)

(15) Hydraulic gradient across site: 0.0064 (ft/ft)

(16) Aquifer characteristics:	Value	Units	Method
Hydraulic conductivity	<u>27.25</u>	<u>GPD/ft<sup>2</sup></u>	<u>Slug Test MW-6</u>
Storage coefficient	<u>.20</u>	<u>-</u>	<u>Researched</u>
Aquifer thickness	<u>100</u>	<u>ft</u>	<u>Researched</u>
Effective soil porosity	<u>25</u>	<u>%</u>	<u>Observations</u>
Transmissivity	<u>365</u>	<u>Ft<sup>2</sup>/day</u>	<u>Slug Test MW-6</u>

(17) Other remarks: Plume limited to Tank pad area.

**APPENDIX E**  
**TANK AND LINE RESULTS**



### LINE TEST LOG

S.O.# 6170

OWNER: MARCO EXPRESS DATE: 6.21-94

ADDRESS: 9026 95th N. STREET SEASATAN FL 32978 SITE #: 6170

Tank No.: 1A Line No.: 1A  Pres. Syst.  Suction Syst. Product: NP 89 OCT

Pipe Mtr  ST  FRP  ENV-FL Test Pressure 50 psi Calib. Multiplier .00549

Compression Zero Pres. Level 24.0 Test Pres. Level 19.6 Pump Mgr. GILBARCO

TEST Level Δ 4.4 Volume Δ .024156 Enviro-Flex Line ONLY

LINE TEST	Reading #	Mil. Time	Level	Level Δ	Volume Δ	Projected G.P.H. Δ	Cylinders Changed	Cylinders Recorded	Gain-Loss +/-
START		<u>08:55</u>	<u>19.6</u>						
TESTED FROM:	1	<u>09:05</u>	<u>19.4</u>	<u>.2</u>	<u>.001098</u>	<u>.006588</u>			
	2	<u>09:15</u>	<u>19.3</u>	<u>.1</u>	<u>.000549</u>	<u>.003294</u>			
<input type="checkbox"/> Sub-pump	3	<u>09:25</u>	<u>19.3</u>	<u>0</u>	<u>0</u>	<u>0</u>			
<input type="checkbox"/> Dispenser	4								
<input checked="" type="checkbox"/> Retro-"T"	5								
	6								

Exist. LD# - 291.3004 XLO  
New LD #

End Zero Pres. Level: 23.6 FINAL LINE TIGHTNESS RATE: 0 FAIL  or PASS

Tank No.: 2 Line No.: 2A  Pres. Syst.  Suction Syst. Product: PUN 93 OCT

Pipe Mtr  ST  FRP  ENV-FL Test Pressure 50 psi Calib. Multiplier .00549

Compression Zero Pres. Level 24.0 Test Pres. Level 19.2 Pump Mgr. GILBARCO

TEST Level Δ 4.8 Volume Δ .026352 Enviro-Flex Line ONLY

LINE TEST	Reading #	Mil. Time	Level	Level Δ	Volume Δ	Projected G.P.H. Δ	Cylinders Changed	Cylinders Recorded	Gain-Loss +/-
START		<u>09:35</u>	<u>19.2</u>						
TESTED FROM:	1	<u>09:45</u>	<u>18.9</u>	<u>.3</u>	<u>.00647</u>	<u>.00882</u>			
	2	<u>09:55</u>	<u>18.8</u>	<u>.1</u>	<u>.000549</u>	<u>.003294</u>			
<input type="checkbox"/> Sub-pump	3	<u>10:05</u>	<u>18.8</u>	<u>0</u>	<u>0</u>	<u>0</u>			
<input type="checkbox"/> Dispenser	4								
<input checked="" type="checkbox"/> Retro-"T"	5								
	6								

Exist LD# 208906761 DCO  
New LD#

End Zero Pres. Level: 23.5 FINAL LINE TIGHTNESS RATE: 0 FAIL  or PASS

Tank No.: 3 Line No.: 3A  Pres. Syst.  Suction Syst. Product: RUN 87 OCT

Pipe Mtr  ST  FRP  ENV-FL Test Pressure 50 psi Calib. Multiplier .00549

Compression Zero Pres. Level 24.0 Test Pres. Level 19.9 Pump Mgr. REG JACKET

TEST Level Δ 4.1 Volume Δ .022509 Enviro-Flex Line ONLY

LINE TEST	Reading #	Mil. Time	Level	Level Δ	Volume Δ	Projected G.P.H. Δ	Cylinders Changed	Cylinders Recorded	Gain-Loss +/-
START		<u>10:55</u>	<u>19.9</u>						
TESTED FROM:	1	<u>11:05</u>	<u>19.7</u>	<u>.2</u>	<u>.000698</u>	<u>.006588</u>			
<input checked="" type="checkbox"/> Sub-pump	2	<u>11:15</u>	<u>19.7</u>	<u>0</u>	<u>0</u>	<u>0</u>			
<input type="checkbox"/> Dispenser	3	<u>10:25</u>	<u>19.7</u>	<u>0</u>	<u>0</u>	<u>0</u>			
<input type="checkbox"/> Retro-"T"	4								
	5								
	6								

Exist LD# 11291-7676 XCO BAD  
New LD# 21194-7356 XCO Good

End Zero Pres. Level: 23.7 FINAL LINE TIGHTNESS RATE: 0 FAIL  or PASS

UNIT MRG. (PRINT) STEVEN E. HAWKINS Unit Mgr. signature: Steven E. Hawkins VacuTect Certi.#: #1483





# VacuTect™ TEST REPORT

SO # 45-767  
 Date 6-21-94  
 Phone 615-367-3125  
 Attn: JAMES DNEAL

Site # 6170

Owner MARCO PARTS&SERV  
 Invoice Name/Address 141 KEE MIT RD SUITE 800 NASHVILLE TN 37217  
 MAPCO EXPRESS 9030 95 TH STREET SEBRASTIAN FL 32978  
 Site Name/Address

Seq. No.	Tank Loc.	Tank Prod.	Tank Capacity	TANKS				LINES				Leak Det.		TANKS BOD LINES Tested to CFR-40 Para 280.281 & NFPA 309 SPECT. OTHER:				
				Time On & Off	Dipped Water Level	Dipped Product Level	Probe Water Level	Water Ingress Detected	Bubble Ingress Detected	Urege Air Ingress Detected	TANK Light On or Off	Line No.	Line No.		Line No.	Line No.	Final Leak Test	Leak Det.
1	NW 10K			Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Final Leak Test: PASS	Leak Det.: NONE	TANKS BOD LINES Tested to CFR-40 Para 280.281 & NFPA 309 SPECT. OTHER: YES
2	RUN 10K			Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Final Leak Test: PASS	Leak Det.: NONE	TANKS BOD LINES Tested to CFR-40 Para 280.281 & NFPA 309 SPECT. OTHER: YES
3	RUN 10K			Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Start Time: 08:35	End Time: 08:50	Final Leak Test: PASS	Leak Det.: NONE	TANKS BOD LINES Tested to CFR-40 Para 280.281 & NFPA 309 SPECT. OTHER: YES

TANKNOLOGY REGION: 99S SOUTHERN Unit # 90 State Lic. # 88061816 State: FL  
 Tanknoology Corporation International  
 5225 Hollister St., Houston, TX 77040  
 (800) 888-8563 • FAX (713) 690-2255

NOTE: Original VacuTect Data recordings are reviewed by Tanknoology's Audit Control Department and maintained on file.

SO# 115767

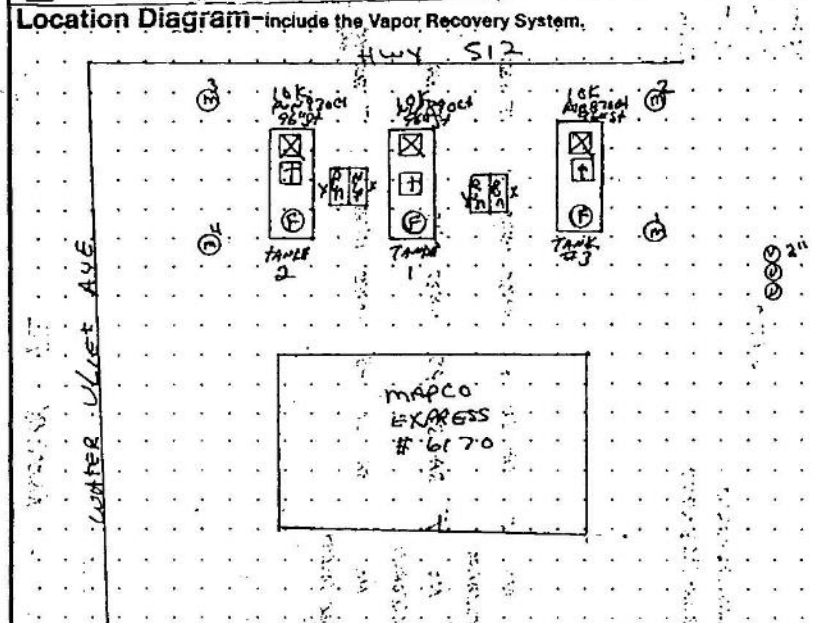
Owner: MAPCO EXPRESS

Site# 6170

MONITOR WELLS												
Well Number	1	2	3	4	5	6	7	8	9	10	11	12
Well Depth	116	LOCK	LOCK	LOCK								
Depth to Water	47	UP	UP	UP								
Product Detected												
AMOUNT In Inches	0											

Standard Symbols for diagram below:

- (V/B) V.R. w / Ball Float
- (B) Ball Float
- (M) Monitor Well (Outside Tank Bed Area)
- (G) Tank Gauge
- (I) Iron Cross
- (F) Fill
- (V) Vapor Recovery
- (A) Observation Well (Inside Tank Bed Area)
- (O) Vent
- (T) Turbine



Vapor Recovery System & Vents were tested with which tank?

Parts and Labor used 1 XLD WD RED JACKET 20' RUN 2" DUCT TANK #3 ALSO 3" 4" ALUM COAXIAL ADAPTER HAD TO CUT OFF EACH TANK TO REMOVE DRIP TUBES. / RUN HLP PUM

General Comments STANDARD TANKS + PRODUCT LINE + L.O'S + VENT LINES. FAIL. RUN L.O. REPLACED WITH NEW RED JACKET L.O. XLD. ALL TANKS + LINES + VENTS + L.O'S ARE TIGHT. HAD CUT OFF ALL 3 4" ALUM FILL COAXIAL ADAPTER TO REMOVE DRIP TUBES. PULLED TANK VALVES FROM TANK TOPS. CAPPED VENT LINES. TEST WITH TANK VACUUM.

When OWNER or local regulations require immediate reports of system failure—Complete the following:

REPORTED TO:	NAME	DATE	TIME
Phone#	OWNER or Regulatory Agency	FILE NUMBER	
Print Certified Testers Name		Vacutest <sup>SM</sup> Certification Number	
Certified Testers Signature		Date Testing Completed	

Signature: Steven E. Hawkins  
 Certification Number: #0083  
 Date Testing Completed: 6.21.94

605

0003

MAPCO

09/17/94 16:30

09/17/94 16:30

**TANKNOLOGY CORPORATION INTERNATIONAL**  
 6220 Fortwell, Houston, Texas 77060-0244 Phone (800) 888-0883 FAX (713) 890-8280

**Certificate of Tightness**      Service Order # 062819      Test Date 09/14/92

Underground storage tank system(s) tested and found tight for:

TANK OWNER:      MAPCO PETROLEUM  
 6170

TEST SITE ADDRESS:      STEP SAVER      9020 59TH ST.      SEBASTIAN, FL

**[ 3 ] TANK(S) ONLY, [ 3 ] LINE(S) ONLY, [ 3 ] LEAK DETECTOR(S) ONLY.**

TANK SIZES & PRODUCTS TESTED

1	10000	RU	2000
3	10000	SU	2000
2	10000	SR	2000

LINES TESTED 1A, 2A, 3A

LEAK DETECTORS TESTED 112917676, 312913004 XLD, 208906761 DLD

Unit Mgr. Certificate Number & Name 09B TOMMY KAINER 08/94

Valid only with Corporate Seal

US Patent #4482248, Canadian Patent #1102593, European Patent Appl. #162263  
 TANKNOLOGY & Vacu-Tek are trademarks of TANKNOLOGY CORPORATION INTERNATIONAL      Note: See Vacu-Tek Test Report for tank identification and site location drawings.

**SEAL**  
 TANKNOLOGY CORPORATION      DELAWARE

100-04



# VacuTect™ TEST REPORT

Owner: MAPCO PETROLEUM

Site # 6170

Invoice Name/Address: MAPCO PETROLEUM 1800 SOUTH BALTIMORE TULSA, OK 74119

Site Name/Address: STEP SAVER 9020 59TH ST. SEBASTIAN, FL

S.O. # 062819  
 Date 09/14/92  
 Phone (918) 681-1358  
 Alt: MARK SCHUTT

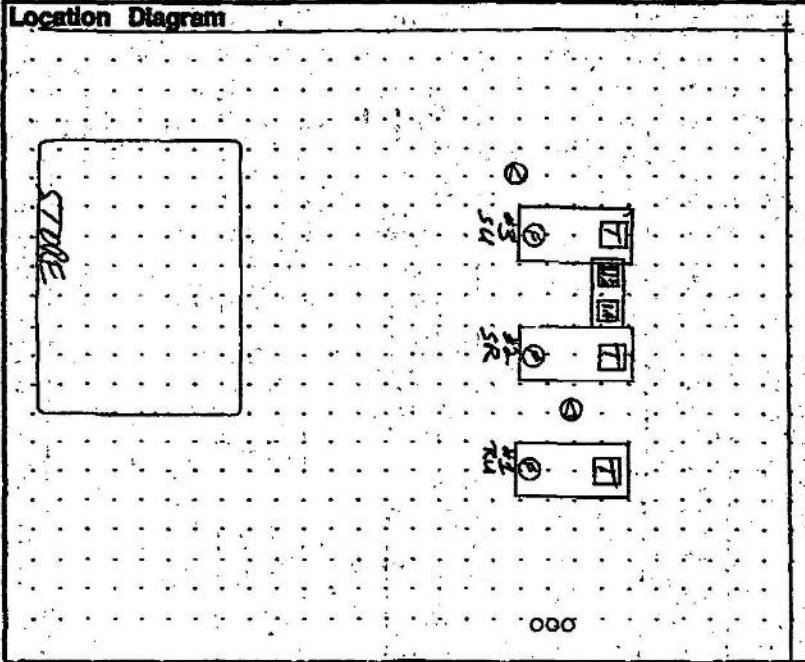
Seq. No.	Tank ID	Tank Capacity	Tank Material	Tank Type	TANKS				LINES				Leak Det.	Notes					
					Filled Level	Empty Level	Probe Level	Water Collected	Probe Discharged	Large In Tank	Line Material	Line Size			Line Test Start	Line Test End	Final Leak Rate		
1	RU 2000	10000	Steel	ST	00.180	074.00	00.170	N	N	N	RED JACKET	1 1/2	ST	PS	9756	10726	0.000	P	TANKS AND LINES TESTED TO CFR-163 PARTS 280.281 & NIPFA 328 SPEC'S. OTHER.
2	SR 2000	10000	Steel	ST	00.160	074.80	00.160	N	N	N	FILL	2	ST	PS	10130	11100	0.000	F	LEAK TEST PER 280.281 & NIPFA 328 SPEC'S. OTHER.
3	SU 2000	10000	Steel	ST	00.160	074.00	00.160	N	N	N	FILL	3	ST	PS	11148	12118	0.000	P	LEAK TEST PER 280.281 & NIPFA 328 SPEC'S. OTHER.

TANKNOLOGY Region: SOUTH EAST REGION Unit # 080 State Lic. # State: FL  
 TANKNOLOGY Corporation International  
 6225 Hollister St., Houston, TX 77040  
 (800) 868-8563 • FAX (713) 690-2255

NOTE: Original VacuTect Data recordings are reviewed by Tankology's Audit Control Department and maintained on file.

SO# 62819 Owner: MAPCO Site# 6170

MONITOR WELLS												
Well Number	1	2	3	4	5	6	7	8	9	10	11	12
Well Depth	17	LOCKED										
Depth to Water	16											
Product Detected												
AMOUNT in inches	0											



Parts and Labor used 1XLD installed on SR2000 Sub Pump  
 @ 285.00

**General Comments**  
 All Tanks & Lines Tested Tight

When OWNER or local regulations require immediate reporting of a system failure -  
 Complete the following:

REPORTED TO:	NAME	DATE	TIME
Phone#	OWNER or Regulatory Agency	FILE NUMBER	
Print Certified Tester Name	Certified Tester Signature	Vacuum Certification Number	Date Testing Completed
		98	8/14/92

## Site 2- Shark Mart Mobil

9490 90 Avenue

Facility ID: 9602448

Risk Rating: Medium



Photo 4: View of the site facing northeast



Photo 5: View of interior of site facing southwest

RECEIVED

SEP 16 2010

BREVARD COUNTY  
NATURAL RESOURCES MGMT



**LIMITED SOURCE REMOVAL REPORT**

**Shark-Mart  
9490 90th Avenue  
Vero Beach, Indian River County, Florida  
FDEP Facility I.D. No. 31/9602448**

*Submitted to:*  
**Mr. David S. Maher, P.G.  
Brevard County Government Center  
Natural Resources Management Department  
2725 Judge Fran Jamieson Way  
Building A, Suite 219  
Viera, Florida 32940**

*Prepared by:*  
**Advanced Environmental Technologies, LLC.  
4265 New Tampa Highway, Suite 1  
Lakeland, Florida 33815  
(863) 619-9708**

**September 15, 2010  
AET Project Number: 25740.00**



**P.G. Certification**

**Limited Source Removal Report** for the Shark-Mart facility located at 9490 90<sup>th</sup> Avenue, Vero Beach, Indian River County, Florida, **FDEP Facility I.D. No. 31/9602448.**

I hereby certify that in my professional judgment, the components of this **Limited Source Removal Report** satisfy the requirements in accordance with Chapter 62-770 Florida Administrative Code (FAC), and the conclusions in this document provide reasonable assurances that the objectives have been met.

\_\_\_\_\_ I personally completed this review

  X   This document was prepared by Angela Kurth working under my direct supervision

\_\_\_\_\_  
**Keith Townsel, P.G., PSSSC**  
Professional Geologist  
Florida License No. 0001420

Date \_\_\_\_\_







September 15, 2010

David S. Maher, P.G.  
Site Manager/RA Specialist  
Brevard and Indian River Counties  
Brevard County Government Center  
2725 Judge Fran Jamieson Way  
Building A, Room 219  
Viera, Florida 32940

**RE: Limited Source Removal Report**  
**Shark-Mart**  
**9490 90th Avenue**  
**Vero Beach, Indian River County, Florida**  
**FDEP Facility I.D. #31-9602448**  
**Discharge Date: August 12, 2010**  
**AET Project #25740.00**

Dear Mr. Maher:

Advanced Environmental Technologies, LLC (AET) is pleased to provide you with this report detailing the recent source soil removal activities conducted for the premium and regular spill containment buckets located at the referenced facility. As discussed with Charles Vogt of the Indian River Health Department, the closure assessment included soil sample screening for petroleum vapor concentrations, the collection of four soil samples (two from each spill bucket) and one groundwater sample for confirmation laboratory analyses, and submittal of this Limited Source Removal Report.

#### **Site Location**

The subject site is currently a gasoline storage and fueling facility located at 9490 90<sup>th</sup> Avenue, Vero Beach, Indian River County, Florida. The site is located on the corner of 90<sup>th</sup> Avenue and County Road (CR) 512 (Fellsmere Road). A Site Plan is included as **Figure 1**.

#### **Background**

On August 2, 2010, one soil sample was collected by Applied Science and Engineering, LLC during the spill bucket replacement activities. The spill buckets were replaced on the premium, regular and diesel underground storage tanks (USTs). The report documenting these activities was not available at the time of this AET report submittal.

4265 New Tampa Highway, Suite 1 • Lakeland, FL 33815 **Phone:** 863-619-9708 **Fax:** 863-619-7467

**CORPORATE HEADQUARTERS** 3124 West Main Street Suite 10 • Dothan, AL 36303 **Phone:** 334-699-2920 **Fax:** 800-692-0563

### **Field Activities**

On August 17, 2010, AET arrived at the site to perform limited source removal activities on the regular and premium underground storage tanks (USTs). The concrete surface was removed to expose the spill bucket and a 4 foot x 4 foot area surrounding each spill bucket.

Four soil samples, for Net Petroleum Hydrocarbon (NPH) analysis, were collected from each side of each spill bucket (SS-1 through SS-4 on the regular spill bucket and SS-5 through SS-8 on the premium spill bucket). The soil samples were screened for the presence of hydrocarbons using a Mini-Rae 2000. A portion of each soil sample was placed into pre-cleaned pint mason jars and covered with aluminum foil. After equilibrating for a minimum of five minutes, the soil samples were screened for the presence of organic vapors. The soil screening summary is included as **Table 1** and depicted on **Figure 2**. The field equipment calibration records are included in **Appendix A**.

Following the NPH analysis, approximately 2-3 yards of soil was removed, by vacuum truck, from each area surrounding the regular and premium spill buckets, for a total of approximately 5-6 yards removed (approximately 1000 gallons based on the vacuum truck measurements). All soil was removed in each of the 4 foot x 4 foot areas down to the top of the respective USTs. A copy of the Waste Manifest for disposal of the soil is included in **Appendix B**. Photo documentation of the limited source removal is included in **Appendix C**.

AET then collected confirmatory sidewall soil samples for NPH analysis. Each sidewall soil sample returned a NPH measurement of <1 ppm on each spill bucket. The soil screening summary is included as **Table 1** and depicted on **Figure 2**.

Upon completion of the source soil removal and NPH analysis, AET collected four soil samples for confirmation laboratory analysis. A North wall (NW) sample and a South wall (SW) sample were collected from the premium spill bucket and a West wall (WW) sample and a South wall (SW) sample were collected from the regular spill bucket.

The four soil samples were submitted under chain of custody to Environmental Testing Laboratories (ETL) to be analyzed using EPA Method 8260B for Volatile Organic Aromatics (VOAs), EPA Method 8270C for Polynuclear Aromatic Hydrocarbons (PAHs), and Total Recoverable Petroleum Hydrocarbons by the Florida Petroleum Residual Organic Method (FL-PRO).

The four soil samples did not report any constituents in excess of the FDEP Table II Chapter 62-770 Soil Cleanup Target Levels (SCTLs). The soil laboratory analytical results are reported in **Table 2** and depicted on **Figure 3**. A copy of the laboratory analytical report is provided in **Appendix D**.

One temporary groundwater monitoring well (TWP-1) was installed between the two spill buckets, directly west of the USTs in the grassy area. TWP-1 was installed to 12 feet below land

Brevard County / Mr. David S. Maher  
Limited Source Removal Report  
Shark-Mart / FDEP Facility ID# 31-9602448  
Discharge Date: August 12, 2010  
9490 90<sup>th</sup> Avenue, Vero Beach  
September 15, 2010  
Page 3 of 3

surface (bls) with 10 feet of 0.010 slotted screen. A 20/30 sand sand-pack was installed around TWP-1 to one foot above the screen. A copy of the Well Construction and Development Log is included in **Appendix A**.

The groundwater sample collected from TWP-1 did not report any constituents in excess of the FDEP Table I Chapter 62-770 Groundwater Cleanup Target Levels (GCTLs). The groundwater analytical results are reported in **Table 3** and depicted on **Figure 3**. A copy of the laboratory analytical report is included in **Appendix D**.

### Summary

A Limited Source Soil Removal was completed on August 17, 2010. Approximately 5-6 yards of soil was removed from the area surrounding the regular and premium spill buckets. A copy of the Waste Manifest for the removed soil is included in **Appendix B**. Photo documentation is included in **Appendix C**.

Four sidewall soil samples (two from each spill bucket) were collected from the walls of the excavated area for laboratory analysis. The soil analytical results did not report any petroleum constituents in excess of the FDEP's Table II SCTLs. A copy of the laboratory analytical results is provided in **Appendix D**.


One temporary groundwater monitoring well was installed between the two spill buckets, directly west of the USTs in the grassy area. TWP-1 was installed to 12 feet below land surface (bls) with 10 feet of 0.010 slotted screen and a 20/30 sand pack to one foot above the screen. A copy of the Well Construction and Development Log is included in **Appendix A**. The groundwater analytical results did not report any petroleum constituents in excess of the FDEP's Table I GCTLs.

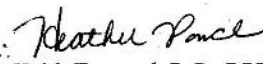
### Recommendation

Based on the laboratory analytical results from the August 2010 soil and groundwater sampling at the subject facility, AET submits that no further action is warranted at this time.

If you have any questions, comments or require any additional information please contact the undersigned at (863) 619-9708.

Sincerely,  
**Advanced Environmental Technologies, LLC.**

  
Angela Kurth  
Senior Project Manager

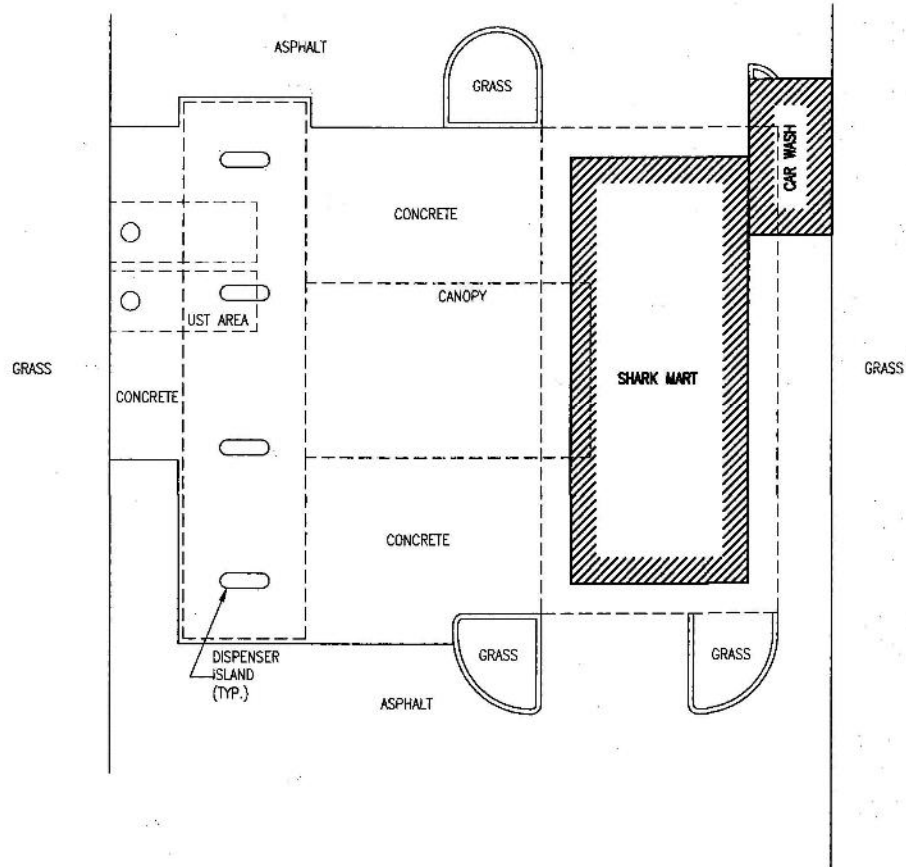
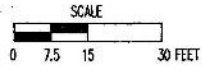
  
for Keith Townsel, P.G., PSSSC  
Chief Technical Officer

Attachments: Figures, Tables, Appendices A - D  
cc: Ms. Mary Vinson, Reliance Petroleum, 3501 SW Corporate Parkway, Palm City, Florida 34990

**FIGURES**

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C:\Documents and Settings\PCaulias.A\ET.000\Desktop\FIGURES SM.dwg, 1-SM (3), J. Territo, Lakeland, FL



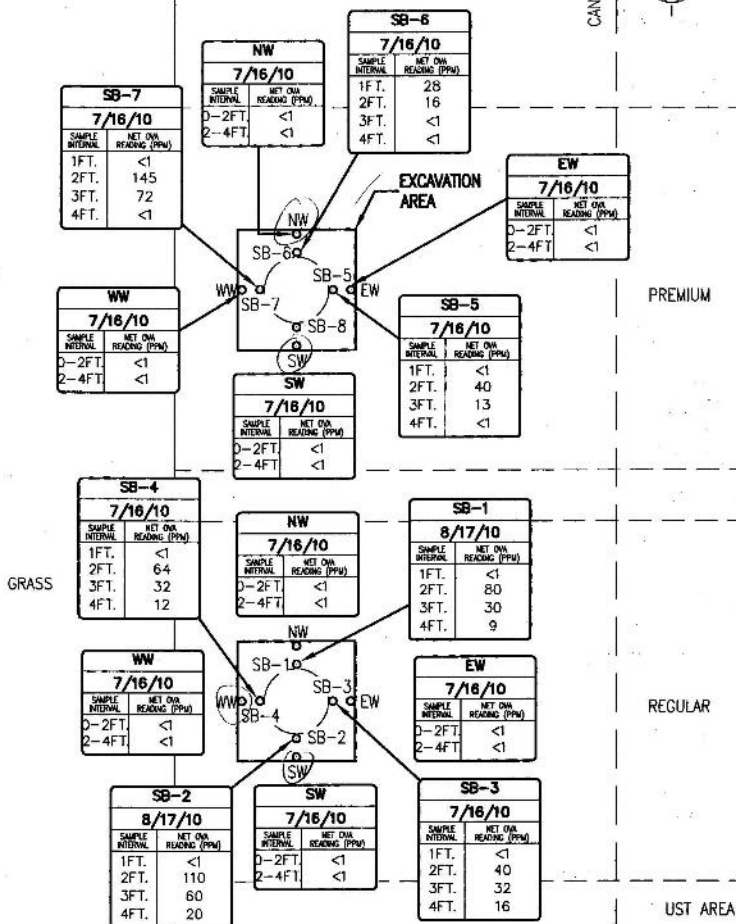
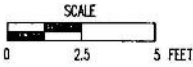
SHARK MART  
9492 90TH AVENUE  
VERO BEACH, FLORIDA INDIAN RIVER COUNTY  
FDEP FAC. ID NO.: 31 9602448

SITE MAP

FIGURE

1

PROJECT NO.  
25740.00



**LEGEND**

○ SOIL SAMPLE LOCATION

NW	
7/16/10	
SAMPLE INTERVAL	NET OVA READING (PPM)
D-2FT	<1
2-4FT	<1

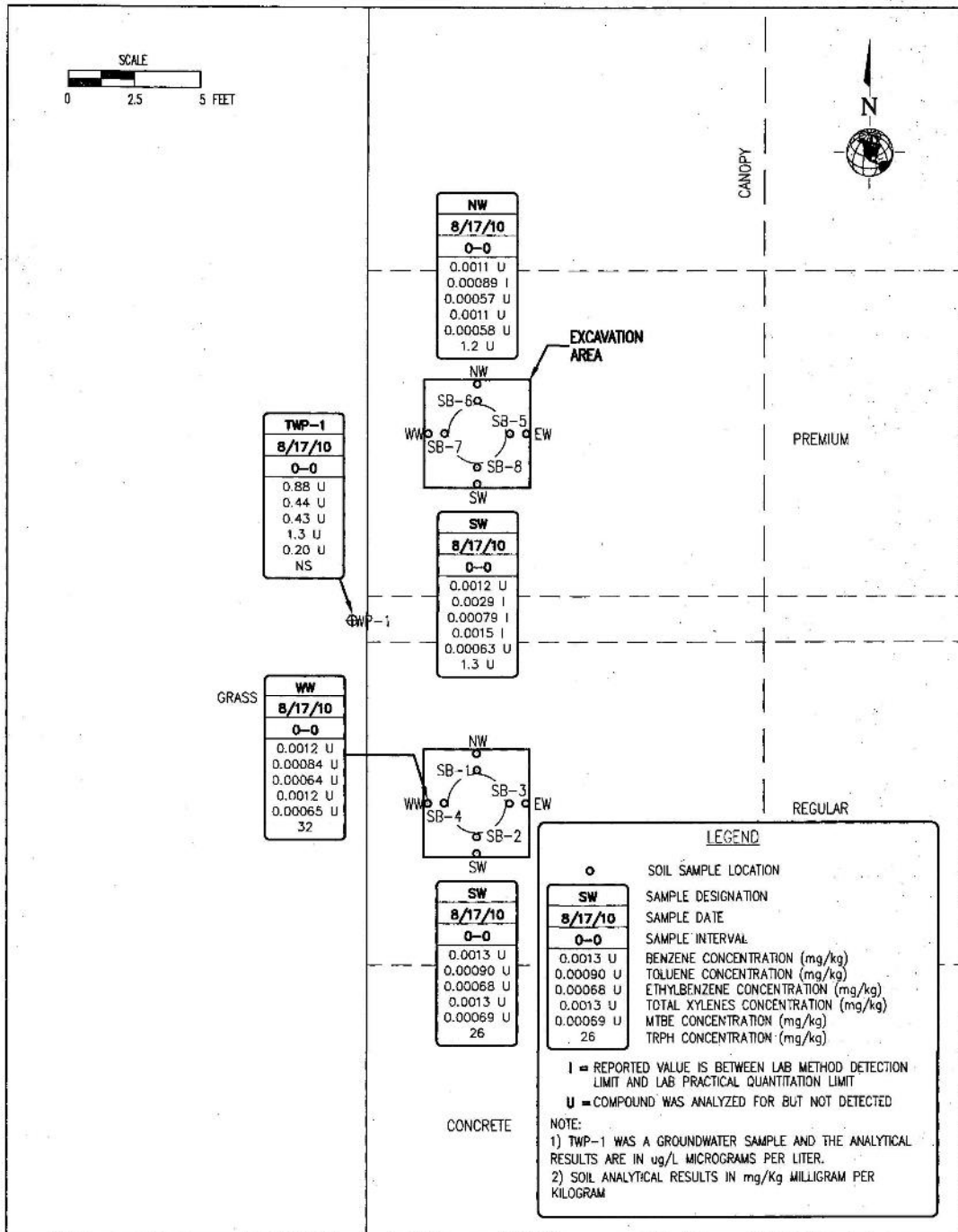
SAMPLE DESIGNATION  
SAMPLE DATE  
\* OVA/FID SCREENING RESULT (PPM)  
\* SAMPLE INTERVALS ARE IN FBLs  
PPM = PARTS PER MILLION  
FBLs = FEET BELOW LAND SURFACE



**SHARK MART**  
 9492 90TH AVENUE  
 VERO BEACH, FLORIDA INDIAN RIVER COUNTY  
 FDEP FAC. ID NO.: 31 9602448

SOIL SCREENING SUMMARY  
 (JULY 16 & AUGUST 17, 2010)

FIGURE  
**2**  
 PROJECT NO.  
 25740.00



**SHARK MART**  
 9492 90TH AVENUE  
 VERO BEACH, FLORIDA INDIAN RIVER COUNTY  
 FDEP FAC. ID NO.: 31 9602448  
**SOIL & GROUNDWATER ANALYTICAL MAP**  
 (AUGUST 17, 2010)

FIGURE  
**3**  
 PROJECT NO.  
 25740.00

## TABLES



**TABLE 1: SOIL SCREENING SUMMARY**

Facility ID#: 31-9602448

Facility Name: SHARK MART

SOIL BORING NUMBER	DATE OF BORING	SAMPLE INTERVAL (ft b/s)	OVA SCREENING RESULTS			Lithology/Comments
			Unfiltered Reading (ppm)	Filtered Reading (ppm)	Net Reading (ppm)	
Regular Spill Bucket (SS-1)	8/2/2010	unk			3193	soil sample collected by AFS
Premium Spill Bucket	8/2/2010	unk			75.8	
Diesel Spill Bucket	8/2/2010	unk			0	
SB-1	8/17/2010	1			<1	
		2			80	
		3			30	
		4			9	
SB-2	8/17/2010	1			<1	
		2			110	
		3			60	
		4			20	
SB-3	7/16/2010	1			<1	
		2			40	
		3			32	
		4			16	
SB-4	7/16/2010	1			<1	
		2			64	
		3			32	
		4			12	
SB-5	7/16/2010	1			<1	
		2			40	
		3			13	
		4			<1	
SB-6	7/16/2010	1			28	
		2			16	
		3			<1	
		4			<	
SB-7	7/16/2010	1			<1	
		2			145	
		3			72	
		4			<1	
Premium (North Wall)	7/16/2010	0-2			<1	
		2-4			<1	
Premium (South Wall)	7/16/2010	0-2			<1	
		2-4			<1	
Premium (East Wall)	7/16/2010	0-2			<1	
		2-4			<1	
Premium (West Wall)	7/16/2010	0-2			<1	
		2-4			<1	
Regular (North Wall)	7/16/2010	0-2			<1	
		2-4			<1	
Regular (South Wall)	7/16/2010	0-2			<1	
		2-4			<1	
Regular (East Wall)	7/16/2010	0-2			<1	
		2-4			<1	
Regular (West Wall)	7/16/2010	0-2			<1	
		2-4			<1	

**NOTES:**

ft b/s = Feet Below Land Surface  
 ppm = Part Per Million  
 NR = No Response, ND = Not Detected  
 -- = Not measured

**TABLE 2: SOIL ANALYTICAL SUMMARY - Carcinogenic PAHs**

Facility ID#: 31-9602448

Facility Name: SHARK MART

See notes at end of table.

Boring/ Well No.	Sample		OVA		Laboratory Analyses								Comments
	Date Collected	Depth to Water (ft)	Sample Interval (ft)	Net OVA Reading (ppm)	Benzo (a) pyrene (mg/kg)	Benzo (a) anthracene (mg/kg)	Benzo (b) fluoranthene (mg/kg)	Benzo (k) fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenz (a,h) anthracene (mg/kg)	Indeno (1,2,3-cd) pyrene (mg/kg)	Benzo (a) pyrene equivalent (mg/kg)	
REG / W WALL	8/17/2010	7.5	3	<1	0.010 U	0.015 U	0.014 U	0.011 U	0.024 U	0.018 U	0.022 U		
REG / S WALL	8/17/2010	7.5	3	<1	0.010 U	0.015 U	0.014 U	0.012 U	0.025 U	0.018 U	0.023 U		
PREM / N WALL	8/17/2010	7.5	3	<1	0.009 U	0.014 U	0.013 U	0.011 U	0.023 U	0.017 U	0.022 U		
PREM / S WALL	8/17/2010	7.5	3	<1	0.010 U	0.015 U	0.014 U	0.012 U	0.024 U	0.018 U	0.023 U		
Leachability Based on Groundwater Criteria (mg/kg)					6	0.8	2.4	24	77	0.7	6.6	**	
Direct Exposure Residential (mg/kg)					0.1*	#	#	#	#	#	#	0.1	

Notes:  
 NA = Not Available  
 NS = Not Sampled  
 \*\* = Leachability value not applicable  
 # = Direct Exposure value not applicable except as part of the Benzo(a)pyrene equivalent.

If analyte is not detected, report the method detection limit [i.e., 0.01 U or ND(0.01); BDL or <0.01 are not acceptable].

**TABLE 2: SOIL ANALYTICAL SUMMARY - Non-Carcinogenic PAHs**

Facility ID#: 31-9602448

Facility Name: SHARK MART

See notes at end of table.

Sample				OVA	Laboratory Analyses											Comments	
Boring/ Well No.	Date Collected	Depth to Water (ft)	Sample Interval (ft/in)	Net OVA Reading (ppm)	Naph- thalene (mg/kg)	1-Methyl- naph- thalene (mg/kg)	2-Methyl- naph- thalene (mg/kg)	Acen- aph- thene (mg/kg)	Acen- aph- thylene (mg/kg)	Anthra- cene (mg/kg)	Benzo (b,h,i) pety- lene (mg/kg)	Fluoran- thene (mg/kg)	Fluor- ene (mg/kg)	Phenan- threne (mg/kg)	Pyrene (mg/kg)		
Regular Spill Bucket (SS-1)	8/22/2010	unk	unk	3192	1.82	3.02	4.02	0.034 U	0.011 U	0.021 I	0.024 U	0.018 U	0.023 U	0.050 I	0.021 U		
REG / W WALL	8/17/2010	7.5	3	<1	0.020 I	0.19	0.12	0.029 U	0.016 U	0.019 I	0.015 U	0.018 I	0.044 I	0.052 I	0.020 I		
REG / S WALL	8/17/2010	7.5	3	<1	0.012 U	0.019 U	0.012 U	0.012 U	0.017 U	0.017 U	0.018 U	0.014 U	0.018 U	0.014 U	0.017 U		
PREM / N WALL	8/17/2010	7.5	3	<1	0.011 U	0.018 U	0.011 U	0.011 U	0.016 U	0.016 U	0.014 U	0.012 U	0.014 U	0.013 U	0.016 U		
PREM / S WALL	8/17/2010	7.5	3	<1	0.012 U	0.019 U	0.012 U	0.012 U	0.017 U	0.017 U	0.015 U	0.014 U	0.018 U	0.014 U	0.017 U		
Leachability Based on Groundwater Criteria (mg/kg)					1.2	3.1	8.8	2.1	27	2,350	32,000	1,200	150	250	890		
Direct Exposure Residential (mg/kg)					55	200	210	2,400	1,900	21,000	2,500	3,200	2,800	2,200	2,400		

Notes:  
 NA = Not Available.  
 NS = Not Sampled.

If analyte is not detected, report the method detection limit [i.e., 0.01 U or ND(0.01); BCL or <0.01 are not acceptable].

**TABLE 2: SOIL ANALYTICAL SUMMARY - VOAs, TRPHs and Metals**

Facility ID#: 31-9602448

Facility Name: SHARK MART

See notes at end of table.

Sample				OVA	Laboratory Analyses										Comments
Boring/ Well No.	Date Collected	Depth to Water (ft)	Sample Interval (ft)	Net OVA Reading (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TRPHs (mg/kg)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	
Regular Spill Bucket (SS-1)	9/2/2010	unk	unk	3193	0.768	8.30	3.98	41.8	0.052 U	255					
REG / W WALL	8/17/2010	7.5	3	<1	0.0012 U	0.00084 U	0.00064 U	0.0012 U	0.00066 U	32					
REG / S WALL	8/17/2010	7.5	3	<1	0.0013 U	0.00099 U	0.00098 U	0.0013 U	0.00089 U	26					
PREM / W WALL	8/17/2010	7.5	3	<1	0.0011 U	0.00083 U	0.00087 U	0.0011 U	0.00058 U	1.2 U					
PREM / S WALL	8/17/2010	7.5	3	<1	0.0012 U	0.00091 U	0.00079 U	0.0015 U	0.00083 U	1.3 U					
Leachability Based on Groundwater Criteria (mg/kg)					0.007	0.5	0.6	0.2	0.09	340		7.5	36		
Direct Exposure Residential (mg/kg)					1.2	7,500	1,500	130	4,400	460	2.1	82	210	400	

Notes:  
 NA = Not Available.  
 NS = Not Sampled.  
 \* = Leachability value may be determined using TCLP.

If an analyte is not detected, report the method detection limit [i.e., 0.01 U or ND(0.01); BDL or <0.01 are not acceptable].

**TABLE 3: GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY - VOCs and Metals**

Facility ID#: 31-9602448

Facility Name: SHARK MART

See notes at end of table.

Sample		Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	1,2-Dichloroethane	Total Arsenic	Total Cadmium	Total Chromium	Total Lead
Location	Date	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
TWP-1	8/17/2010	0.88 U	0.44 U	0.43 U	1.3 U	0.20 U						
GCTLs		1**	40**	30**	20**	20	0.02**	3**	10**	5**	100**	15**
NADCs		100	400	300	200	200	2	300	100	50	1,000	150

Notes: NA = Not Available,  
 NS = Not Sampled,  
 GCTLs = Groundwater Cleanup Target Levels specified in Table I of Chapter 62-777, F.A.C.  
 NADCs = Natural Attenuation Default Source Concentrations specified in Table V of Chapter 62-777, F.A.C.  
 \*\* = As provided in Chapter 62-550, F.A.C.

If an analyte is not detected, report the method detection limit (i.e., 0.01 U or ND(0.01)); BDL or <0.01 are not acceptable.  
 Freshwater Surface Water (FSW), Marine Surface Water (MSW) and Groundwater of Low Yield/Poor Quality (LY/PQ) CTLs should be added to the base of the table as applicable.

**TABLE 3: GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY - PAHs and TRPHs**

Facility ID#: 31-9502448      Facility Name: SHARK MART      See notes at end of table.

Sample Location	Date	TRPHs (µg/L)	Naphthalene (µg/L)	1-Methylnaphthalene (µg/L)	2-Methylnaphthalene (µg/L)	Acenaphthene (µg/L)	Acenaphthylene (µg/L)	Anthracene (µg/L)	Benzo (g,h,i) perylene (µg/L)	Fluoranthene (µg/L)	Fluorene (µg/L)	Phenanthrene (µg/L)	Pyrene (µg/L)	Benzo (k) pyrene (µg/L)	Benzo (a) anthracene (µg/L)	Benzo (b) fluoranthene (µg/L)	Benzo (k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz (a,h) anthracene (µg/L)	Indeno (1,2,3-cd) pyrene (µg/L)
TWP-1	8/17/2010	110 U	0.43 U	0.79 U	0.46 U	0.38 U	0.63 U	0.86 U	0.59 U	0.87 U	0.66 U	0.55 U	0.63 U	0.063 U	0.063 U	0.065 U	0.082 U	0.48 U	0.090 U	0.10 U
GCTLs																				
NADCLs																				

Notes: NA = Not Available.

NS = Not Sampled.

GCTLs = Groundwater Cleanup Target Levels specified in Table I of Chapter 62-777, F.A.C.

NADCLs = Natural Attenuation Default Source Concentrations specified in Table V of Chapter 62-777, F.A.C.

\*\* = As provided in Chapter 62-550, F.A.C.

\* = See the October 12, 2004 "Guidance for the Selection of Analytical Methods and for the Evaluation of Practical Quantitation Limits" to determine how to evaluate data when the CTL is lower than the PQL.

If an analyte is not detected, report the method detection limit (i.e., 0.01 U or ND(0.01); BDL or <0.01 are not acceptable).

Freshwater Surface Water (FSW), Marine Surface Water (MSW) and Groundwater of Low Yield/Poor Quality (LY/PQ) CTLs should be added to the base of the table as applicable.

**APPENDIX A**

**EQUIPMENT CALIBRATION RECORDS  
SOIL BORING LOG  
WELL CONSTRUCTION/DEVELOPMENT LOG**







DEP-SOP-001/01  
 FT 1000 General Field Testing and Measurement

Form FD 9000-8: FIELD INSTRUMENT CALIBRATION RECORDS

INSTRUMENT (MAKE/MODEL#) YSI INSTRUMENT # 556

PARAMETER: [check only one]

- TEMPERATURE     CONDUCTIVITY     SALINITY     pH     ORP  
 TURBIDITY     RESIDUAL Cl     DO     OTHER \_\_\_\_\_

STANDARDS: [Specify the type(s) of standards used for calibration, the origin of the standards, the standard values, and the date the standards were prepared or purchased]

Standard A 4.01

Standard B 7.01

Standard C 10.01

DATE (yy/mm/dd)	TIME (hr:min)	STD (A, B, C)	STD VALUE	INSTRUMENT RESPONSE	% DEV.	CALIBRATED (YES, NO)	TYPE (INT, CONT)	SAMPLER INITIALS
6-29-10	7:30	B	7.01	7.0	.1	Y	INT	TL
6-29-10	15:30	B	7.01	6.99	.1	Y	CONT	TL
7-1-10	8:00	B	7.01	6.98	.2	Y	INT	TL
7-1-10	15:00	B	7.01	7.0	.1	Y	CONT	TL
7-2-10	10:00	B	7.01	6.99	.2	Y	INT	TL
7-2-10	15:00	B	7.01	6.98	.3	Y	CONT	TL
8-17-10	8:00	B	7.01	6.99	.1	Y	INT	TL
8-17-10	15:00	B	7.01	6.97	.3	Y	CONT	TL



### BORING LOG

Boring/Well Number: <b>TWP-1</b>		Permit Number:		FDEP Facility Identification Number: <b>31-960244B</b>	
Site Name: <b>SHACK MACT</b>		Borehole Start Date: <b>8-17-10</b>		Borehole Start Time: <b>13:00</b> <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	
		End Date: <b>10</b>		End Time: <b>14:00</b> <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	
Environmental Contractor: <b>AET</b>		Geologist's Name:		Environmental Technician's Name: <b>Tony MATINE</b>	
Drilling Company:		Pavement Thickness (inches): <b>6.65</b>		Borehole Diameter (inches): <b>3"</b>	
				Borehole Depth (feet): <b>12'</b>	
Drilling Method(s): <b>Hand Auger</b>		Apparent Borehole DTW (in feet from soil moisture content): <b>8.5'</b>		Measured Well DTW (in feet after water recharges in well): <b>-</b>	
				OVA (list model and check type): <b>minRAE</b> <input type="checkbox"/> FID <input checked="" type="checkbox"/> FID	
Disposition of Drill Cuttings [check method(s)]: <input type="checkbox"/> Drum <input checked="" type="checkbox"/> Spread <input type="checkbox"/> Backfill <input type="checkbox"/> Stockpile <input type="checkbox"/> Other					
<i>(describe if other or multiple items are checked):</i>					
Borehole Completion (check one): <input checked="" type="checkbox"/> Well <input type="checkbox"/> Grout <input type="checkbox"/> Bentonite <input type="checkbox"/> Backfill <input type="checkbox"/> Other (describe)					

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
HA	2'	-	-	CI	-	-	1	0-6" GRASS			
HA	4'	-	-	CI	-	-	2	6" - 4' DARK Blown			
							3	in qtz SANDS			
HA	6'	-	-	CI	-	-	4	4' - 12' - LIGHT Tan			
							5	TS Blown in			
							6	qtz SANDS.			
							7	well SORTED			
							8				
							9				
							10				
							11				
							12				

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings  
 Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated

## WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA					
Well Number: <b>TWP-1</b>		Site Name: <b>SHARK MART</b>		FDEP Facility I.D. Number:	Well Install Date(s): <b>8-17-10</b>
Well Location and Type (check appropriate boxes): <input checked="" type="checkbox"/> On-Site <input type="checkbox"/> Right-of-Way <input type="checkbox"/> Off-Site Private Property <input type="checkbox"/> Above Grade (AG) <input type="checkbox"/> Flush-to-Grade		Well Purpose: <input type="checkbox"/> Perched Monitoring <input checked="" type="checkbox"/> Shallow (Water-Table) Monitoring <input type="checkbox"/> Intermediate or Deep Monitoring <input type="checkbox"/> Remediation or Other (describe)		Well Install Method: <b>Hand Auger</b>	
If AG, list feet of riser above land surface:				Surface Casing Install Method: <b>NA</b>	
Borehole Depth (feet): <b>12'</b>	Well Depth (feet): <b>12'</b>	Borehole Diameter (inches): <b>3"</b>	Manhole Diameter (inches): <b>NA</b>	Well Pad Size: <b>NA</b> feet by <b>NA</b> feet	
Riser Diameter and Material: <b>2" schedule 40</b>		Riser/Screen Connections: <input checked="" type="checkbox"/> Flush-Threaded <input type="checkbox"/> Other (describe)	Riser Length: <b>2</b> feet from <b>0</b> feet to <b>2</b> feet		
Screen Diameter and Material: <b>2" 0.10 slot PVC</b>		Screen Slot Size: <b>0.10</b>	Screen Length: <b>10</b> feet from <b>2</b> feet to <b>10</b> feet		
1 <sup>st</sup> Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary		1 <sup>st</sup> Surface Casing I.D. (inches): <b>NA</b>	1 <sup>st</sup> Surface Casing Length: <b>NA</b> feet from <b>0</b> feet to <b>NA</b> feet		
2 <sup>nd</sup> Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary		2 <sup>nd</sup> Surface Casing I.D. (inches): <b>NA</b>	2 <sup>nd</sup> Surface Casing Length: <b>NA</b> feet from <b>0</b> feet to <b>NA</b> feet		
3 <sup>rd</sup> Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary		3 <sup>rd</sup> Surface Casing I.D. (inches): <b>NA</b>	3 <sup>rd</sup> Surface Casing Length: <b>NA</b> feet from <b>0</b> feet to <b>NA</b> feet		
Filter Pack Material and Size: <b>20/30</b>	Prepacked Filter Around Screen (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No		Filter Pack Length: <b>11</b> feet from <b>1</b> feet to <b>11</b> feet		
Filter Pack Seal Material and Size: <b>NA</b>		Filter Pack Seal Length: <b>NA</b> feet from <b>NA</b> feet to <b>NA</b> feet			
Surface Seal Material: <b>NA</b>		Surface Seal Length: <b>NA</b> feet from <b>NA</b> feet to <b>NA</b> feet			

WELL DEVELOPMENT DATA			
Well Development Date: <b>8-17-10</b>		Well Development Method (check one): <input type="checkbox"/> Surge/Pump <input checked="" type="checkbox"/> Pump <input type="checkbox"/> Compressed Air <input type="checkbox"/> Other (describe)	
Development Pump Type (check): <input type="checkbox"/> Submersible <input type="checkbox"/> Other (describe)		Depth to Groundwater (before developing in feet): <b>7.5'</b>	
Pumping Rate (gallons per minute): <b>25</b>		Maximum Drawdown of Groundwater During Development (feet): <b>1'</b>	Well Purged Dry (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Pumping Condition (check one): <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Intermittent	Total Development Water Removed (gallons): <b>6 galls</b>	Development Duration (minutes): <b>8m</b>	Development Water Drummed (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Water Appearance (color and odor) At Start of Development: <b>Clear / no odor</b>		Water Appearance (color and odor) At End of Development: <b>Clear / no odor.</b>	

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

## GROUNDWATER SAMPLING LOG

SITE NAME: <b>SHACK MART</b>	SITE LOCATION: <b>SEBASTIAN, FL</b>
WELL NO: <b>TWP-1</b>	DATE: <b>8-17-10</b>

### PURGING DATA

WELL DIAMETER (inches): <b>2"</b>	TUBING DIAMETER (inches): <b>1.25</b>	WELL SCREEN INTERVAL DEPTH: <b>2</b> feet to <b>12</b> feet	STATIC DEPTH TO WATER (feet): <b>7.5</b>	PURGE PUMP TYPE OR BAILER: <b>Perist</b>
WELL VOLUME PURGE: $1 \text{ WELL VOLUME} = (\text{TOTAL WELL DEPTH} - \text{STATIC DEPTH TO WATER}) \times \text{WELL CAPACITY}$ (only fill out if applicable) = $(12' \text{ feet} - 7.5' \text{ feet}) \times 1.6 \text{ gallons/foot} = 0.72$				
EQUIPMENT VOLUME PURGE: $1 \text{ EQUIPMENT VOL.} = \text{PUMP VOLUME} + (\text{TUBING CAPACITY} \times \text{TUBING LENGTH}) + \text{FLOW CELL VOLUME}$ (only fill out if applicable) = $\text{gallons} + (\text{gallons/foot} \times \text{feet}) + \text{gallons} =$				

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): <b>9.5'</b>		FINAL PUMP OR TUBING DEPTH IN WELL (feet): <b>9.5'</b>		PURGING INITIATED AT: <b>16:32</b>	PURGING ENDED AT: <b>16:55</b>	TOTAL VOLUME PURGED (gallons):					
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) $\mu\text{mhos/cm}$ or $\mu\text{S/cm}$	DISSOLVED OXYGEN (circle units) (mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	O (det)
16:39	0.72	0.72	1.36	8.94	6.96	28.6	32.6	0.16	19.6	Clear	M
16:41	0.72	1.44	.36	8.99	6.96	28.6	30.4	0.14	19.7		
16:43	0.72	2.16	.36	8.94	6.95	28.6	30.4	0.14	12.2		
16:45	0.72	2.88	.36	8.94	6.95	28.6	30.4	0.12	8.5		

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88.  
 TUBING INSIDE DIA. CAPACITY (Gal./ft.): 1/8" = 0.0005; 3/16" = 0.0014; 1/4" = 0.0025; 5/16" = 0.004; 3/8" = 0.009; 1/2" = 0.010; 5/8" = 0.011

PURGING EQUIPMENT CODES: B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; Q = Other (Specify)

### SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: <b>Tony Matam</b>			SAMPLER(S) SIGNATURE(S): <b>T.M.</b>			SAMPLING INITIATED AT: <b>16:45</b>	SAMPLING ENDED AT: <b>17:00</b>		
PUMP OR TUBING DEPTH IN WELL (feet): <b>9.5'</b>			TUBING MATERIAL CODE: <b>PE</b>			FIELD-FILTERED: <b>Y</b> N	FILTER SIZE: _____		
FIELD DECONTAMINATION: PUMP <b>Y</b> N			TUBING <b>Y</b> N (replaced)			DUPLICATE: <b>Y</b> N			
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE FLOW R. (ml per ml)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
TWP-1	3	CG	40 ml	HCL			8021B	RBPP	50
	1	AG	1L	A2504			El-Pro	APP	500
	1	AG	1L	ICE			PAH	APP	500

REMARKS:

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)  
 SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); Q = Other (Specify)

- NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.  
 2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)  
 pH:  $\pm 0.2$  units Temperature:  $\pm 0.2$  °C Specific Conductance:  $\pm 5\%$  Dissolved Oxygen: all readings  $\leq 20\%$  saturation (see Table FS-22 optionally,  $\pm 0.2$  mg/L or  $\pm 10\%$  (whichever is greater) Turbidity: all readings  $\leq 20$  NTU; optionally  $\pm 5$  NTU or  $\pm 10\%$  (whichever is greater)

**APPENDIX B**  
**COPY OF WASTE MANIFEST**  
**(SOIL DISPOSAL 8/17/2010)**

IMAGE QUALITY

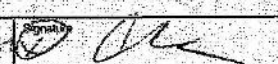
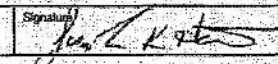
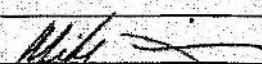
AS YOU VIEW THE FOLLOWING  
DOCUMENT, PLEASE NOTE THAT  
PORTIONS OF THE ORIGINAL WERE OF  
POOR QUALITY



# NON-HAZARDOUS WASTE MANIFEST

M4

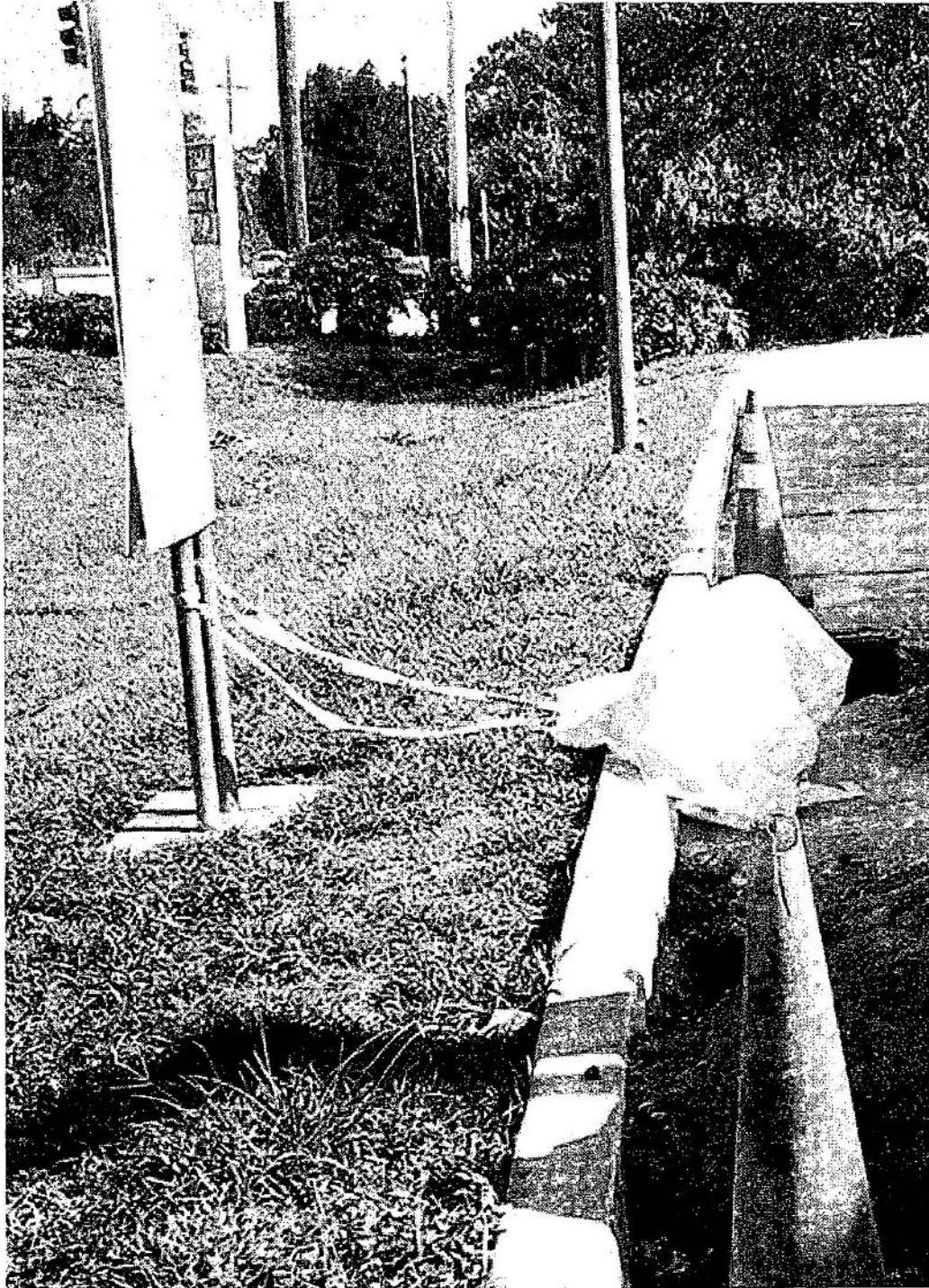
Please print or type (Form designed for use on 11x17 (12 pitch) typewriter)

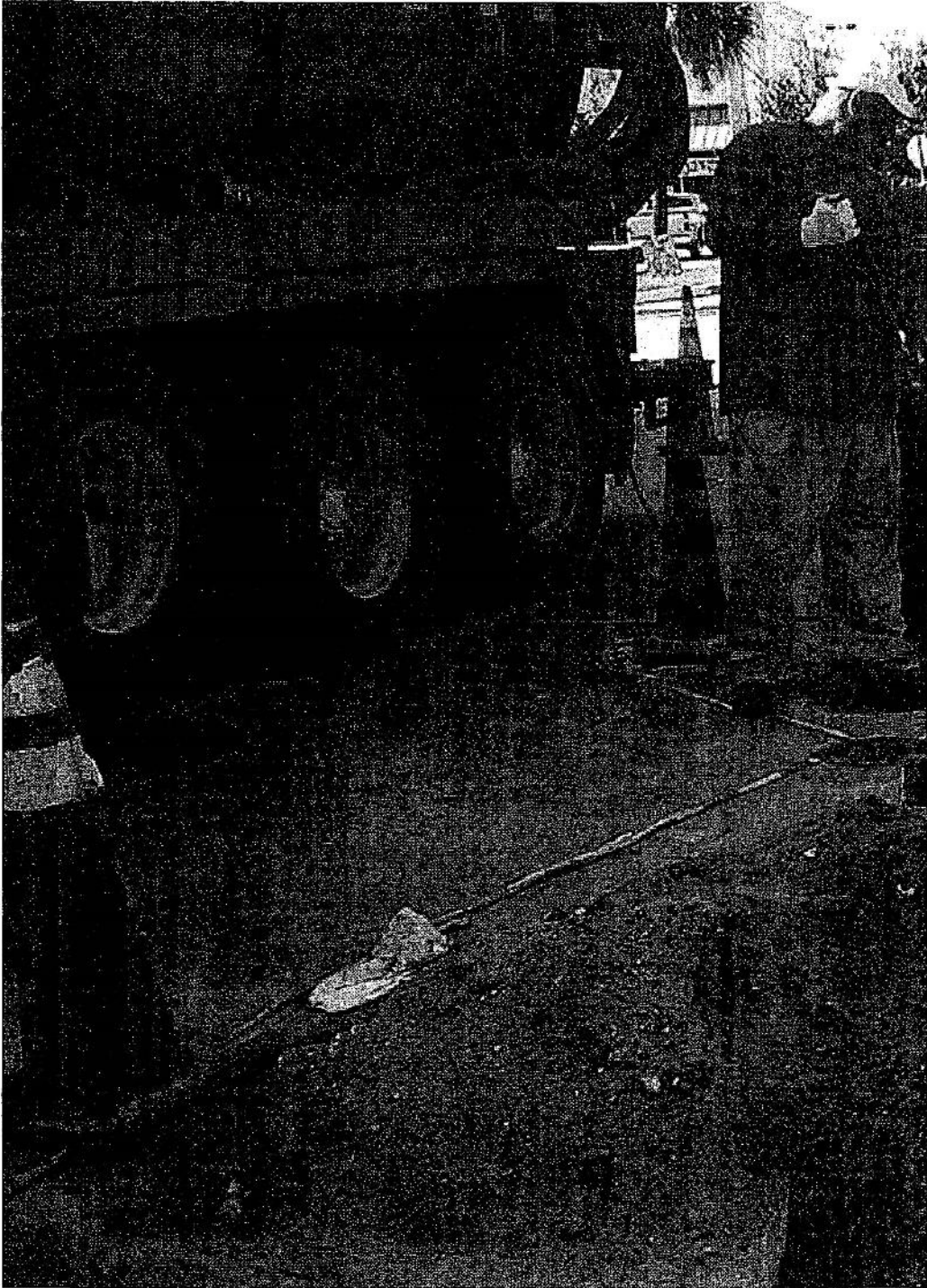
<b>NON-HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of	
3. Generator's Name and Mailing Address <b>SHARK MART 9490 90th Avenue SEBASTIAN FL</b>					
4. Generator's Phone ( )					
5. Transporter 1 Company Name <b>ALWA CLEAR</b>	6. US EPA ID Number <b>FLR000034033</b>	A. State Transporter's ID			
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter 1 Phone			
		C. State Transporter's ID			
		D. Transporter 2 Phone			
9. Designated Facility Name and Site Address <b>ALWA CLEAR 3210 WHITTEN RD LAKE PARK FL 33801</b>		10. US EPA ID Number <b>FLR000034033</b>	E. State Facility's ID		
		F. Facility's Phone <b>863-644-0665</b>			
11. WASTE DESCRIPTION		12. Containers	13. Total Quantity	14. Unit WL/Vol.	
		No.	Type		
		a. <b>NON HAZ NON REG WASTE material</b>		<b>2 PDS</b>	<b>1000 GALS</b>
		b.			
		c.			
d.					
G. Additional Descriptions for Materials Listed Above		H. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information					
<b>GENERATOR'S CERTIFICATION:</b> I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
17. Transporter 1 Acknowledgement of Receipt of Materials		Signature 		Date Month Day Year <b>8/17/10</b>	
17. Transporter 1 Acknowledgement of Receipt of Materials		Signature 		Date Month Day Year <b>8/17/10</b>	
18. Transporter 2 Acknowledgement of Receipt of Materials		Signature		Date Month Day Year	
19. Discrepancy Indication Space					
20. Facility Owner or Operator, Certification of receipt of the waste materials covered by this manifest, except as noted in Item 19.		Signature 		Date Month Day Year <b>8/17/10</b>	

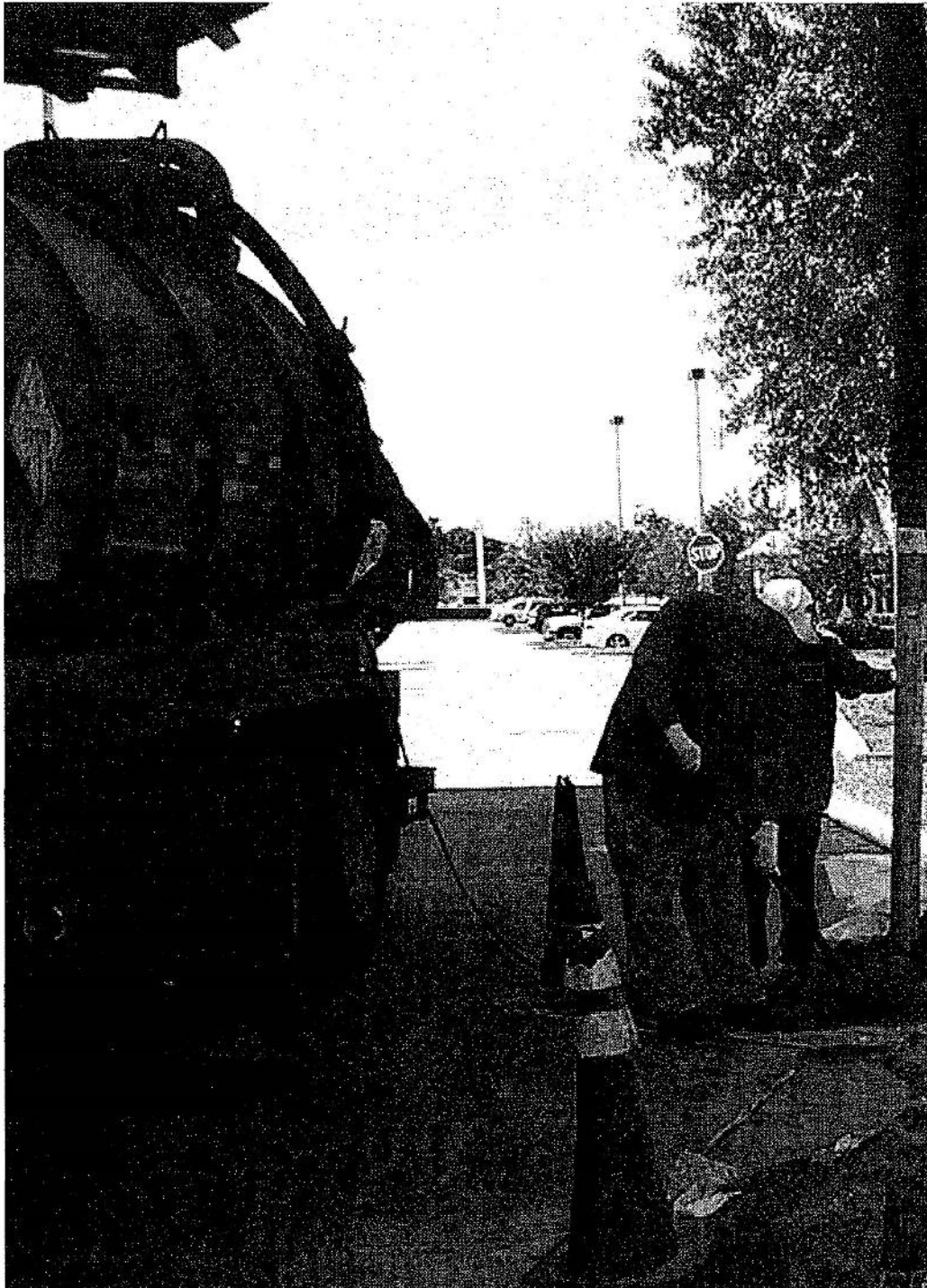
NON-HAZARDOUS WASTE



**APPENDIX C**  
**PHOTOGRAPHS**  
**(LTD SOURCE SOIL REMOVAL 8/17/2010)**















**APPENDIX D**

**LABORATORY ANALYTICAL REPORTS  
AND CHAIN OF CUSTODY RECORDS  
(SOIL AND GROUNDWATER)**



ENVIRONMENTAL TESTING LABORATORIES, INC.  
412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

DATE REPORTED: 8/24/2010

MR. JOHN MARKS  
ADVANCED ENVIRONMENTAL TECHNOLOGIES  
4265 NEW TAMPA HIGHWAY  
LAKELAND, FL 33815

**ETL PROJECT NUMBER: 10-2204**  
**CLIENT PROJECT ID: M-3986.00**  
**CLIENT FACILITY ID: 31-9602448**  
**CLIENT FACILITY NAME: SHARK MART**

DEAR MR. JOHN MARKS:

Enclosed are the analytical results for sample(s) received by Environmental Testing Laboratories on August 19, 2010. Results reported herein are reported on an as received basis and conform to current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Sample analyses performed by Environmental Testing Laboratories, Inc. (ETL) unless otherwise noted. ETL is accredited through NELAC and the Florida Department of Health, Certification #E87684. Scope of analyses: RCRA/CERCLA Metals, General Chemistry, Extractable Organics, and Volatile Organics. Effective Dates: February 14, 2002 through June 30, 2011.

If you have any questions concerning this report, please feel free to contact me.

Respectfully Submitted,

**Brad  
Williams**

Digitally signed by Brad Williams  
DN: cn=Brad Williams,  
o=Environmental Testing  
Laboratories, ou=ETL,  
email=bwilliams@etl-inc.com, c=US  
Date: 2010.08.24 10:14:01 -0400

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

**REPORT OF LABORATORY ANALYSIS**

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ENVIRONMENTAL TESTING LABORATORIES INC

Laboratory Project#: 10-2204

Client Project / Site Name SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.  
412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

## PROJECT NOTE SUMMARY

### GENERAL

#### GENERAL

- Solid samples are reported on a dry-weight basis unless otherwise noted.
- (S\$) Denotes an ETL Laboratory Surrogate Compound
- Environmental Testing Laboratories, Inc. is accredited through NELAC and the Florida Department of Health, Certification #E87684
- Refer to Section 4.0 of the ETL Quality Assurance Manual for measure of uncertainty
- All analyses performed using EPA or FL-DEP method and certified to meet NELAC requirements except as noted.

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

### METHOD SUMMARY

Laboratory Name: ENVIRONMENTAL TESTING LABORATORIES - THOMASVILLE, GA

Certification #: E87684

Analyte	Method	Description	Matrix
As Reported by ETL - 3510 / FL-PRO-DEP - Total Residual Petroleum Hydrocarbons			Ground Water
As Reported by ETL - 3510 / 8270C - Polycyclic Aromatic Hydrocarbons by GC/MS			Ground Water
As Reported by ETL - 5035 / 8021B - Volatiles by Gas Chromatography/PID/ECLD			Soil
As Reported by ETL - 5030 / 8021B - Volatiles by Gas Chromatography/PID/ECLD			Ground Water
As Reported by ETL - 3550 / 8270C - Polycyclic Aromatic Hydrocarbons by GC/MS			Soil
As Reported by ETL - 3550 / FL-PRO-DEP - Total Residual Petroleum Hydrocarbons			Soil

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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FL NEL AP #E87684



ENVIRONMENTAL TESTING LABORATORIES INC

Laboratory Project#: 10-2204

Client Project / Site Name: SHARK MART

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412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

### SAMPLE SUMMARY

Laboratory Sample ID	Client Sample ID / Location	Sample Matrix / Description	Grab / Composite	Date / Time Sampled	Date Received
106847	TWP-1	GW - Ground Water	G	08/17/2010 - 16:00	08/19/2010
106848	REG / W WALL	SO - Soil	G	08/17/2010 - 14:00	08/19/2010
106849	REG / S WALL	SO - Soil	G	08/17/2010 - 14:20	08/19/2010
106850	PREM / N WALL	SO - Soil	G	08/17/2010 - 13:10	08/19/2010
106851	PREM / S WALL	SO - Soil	G	08/17/2010 - 13:40	08/19/2010

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

EXECUTIVE SUMMARY

Analyte	CAS#	Result	Qualifier	PQL	Units	Method
<b>REG / W WALL - Laboratory ID# 106848</b>						
NAPHTHALENE	91-20-3	0.020	I	0.084	mg/kg*dw	8270C
ACENAPHTHENE	83-32-9	0.029	I	0.084	mg/kg*dw	8270C
FLUORENE	86-73-7	0.044	I	0.084	mg/kg*dw	8270C
PHENANTHRENE	85-01-8	0.052	I	0.084	mg/kg*dw	8270C
ANTHRACENE	120-12-7	0.019	I	0.084	mg/kg*dw	8270C
FLUORANTHENE	206-44-0	0.018	I	0.084	mg/kg*dw	8270C
1-METHYLNAPHTHALENE	90-12-0	0.19		0.084	mg/kg*dw	8270C
2-METHYLNAPHTHALENE	91-57-6	0.12		0.084	mg/kg*dw	8270C
PYRENE	129-00-0	0.020	I	0.084	mg/kg*dw	8270C
DRO (C10-C28)		18		4.1	mg/kg*dw	FL-PRO-DEP
TRO (C28-C40)		15		4.1	mg/kg*dw	FL-PRO-DEP
TOTAL PRO (C8-C40)		32		4.1	mg/kg*dw	FL-PRO-DEP
<b>REG / S WALL - Laboratory ID# 106849</b>						
DRO (C10-C28)		9.5		4.3	mg/kg*dw	FL-PRO-DEP
TRO (C28-C40)		17		4.3	mg/kg*dw	FL-PRO-DEP
TOTAL PRO (C8-C40)		26		4.3	mg/kg*dw	FL-PRO-DEP
<b>PREM / N WALL - Laboratory ID# 106850</b>						
TOLUENE	108-88-3	0.00089	I	0.0048	mg/kg*dw	8021B
<b>PREM / S WALL - Laboratory ID# 106851</b>						
TOLUENE	108-88-3	0.0029	I	0.0054	mg/kg*dw	8021B
ETHYLBENZENE	100-41-4	0.00079	I	0.0054	mg/kg*dw	8021B
TOTAL XYLENES	1330-20-7	0.0015	I	0.011	mg/kg*dw	8021B

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106847

Sample Time: 16:00

Grab or Composite: G

Client Sample ID: TWP-1

Sample Date: 8/17/2010

Matrix: GW

Client Sample Location:

Date Received: 08/19/2010

Volatiles by Gas Chromatography/PID/ECLD

Preparation Method / Date: NA

InstrumentID: GC101VPID\

Extraction Method / Date: 5030 - 08/19/2010

DataFile: PID-58755

Sample Volume (L): 0.0050

Analysis Method / Date: 8021B - 08/19/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include METHYL-TERT-BUTYL ETHER, BENZENE, TOLUENE, ETHYLBENZENE, TOTAL XYLENES, and A.A.A-TRIFLUOROTOLUENE (SS).

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA

InstrumentID: GC105IMS\

Extract Volume (mL): 0.50

Extraction Method / Date: 3510 - 08/23/2010

DataFile: 106847.D

Sample Volume (L): 0.50

Analysis Method / Date: 8270C - 08/23/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include NAPHTHALENE, ACENAPHTHYLENE, ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLUORANTHENE, 1-METHYLNAPHTHALENE, 2-METHYLNAPHTHALENE, PYRENE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLUORANTHENE, BENZO(K)FLUORANTHENE, BENZO(A)PYRENE, and INDENO(1,2,3-CD)PYRENE.

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

REPORT OF LABORATORY ANALYSIS

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FL NELAP #E87684



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412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106847

Sample Time: 16:00

Grab or Composite: G

Client Sample ID: TWP-1

Sample Date: 8/17/2010

Matrix: GW

Client Sample Location:

Date Received: 08/19/2010

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA

InstrumentID: GC105MS1

Extract Volume (mL): 0.50

Extraction Method / Date: 3510 - 08/23/2010

DataFile: 106847.D

Sample Volume (L): 0.50

Analysis Method / Date: 8270C - 08/23/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include DIBENZ(A,H)ANTHRACENE, BENZO(G,H,I)PERYLENE, NITROBENZENE-D5 (S\$), 2-FLUOROBIPHENYL (S\$), and P-TERPHENYL-D14 (S\$).

Total Residual Petroleum Hydrocarbons

Preparation Method / Date: NA

InstrumentID: GC103\FID1

Extract Volume (mL): 0.50

Extraction Method / Date: 3510 - 08/19/2010

DataFile: 41109

Sample Volume (L): 0.44

Analysis Method / Date: FL-PRO-DEP - 08/20/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include GRO (C8-C10), DRO (C10-C28), TRO (C28-C40), TOTAL PRO (C8-C40), O-TERPHENYL (S\$), and NONATRIACONTANE (S\$).

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

**ANALYTICAL DATA**

Laboratory Sample Number: 106848

Sample Time: 14:00

Grab or Composite: G

Client Sample ID: REG / W WALL

Sample Date: 8/17/2010

Matrix: SO

Client Sample Location:

Date Received: 08/19/2010

Percent Moisture: 20 %

**Volatiles by Gas Chromatography/PID/ECLD**

Preparation Method / Date: NA

InstrumentID: GC1081

Extraction Method / Date: 5035 - 08/19/2010

DataFile: 1H1912.D

Sample Weight (g): 5.71

Analysis Method / Date: 8021B - 08/19/2010

Analysis Time:

ANALYTE	CAS No.	RESULT	DF	MDL	PQL	UNITS	ANALYST
METHYL-TERT-BUTYL ETHER	1634-04-4	0.00065 U	1.0	0.00065	0.0055	mg/kg*dw	MTA
BENZENE	71-43-2	0.0012 U	1.0	0.0012	0.0022	mg/kg*dw	MTA
TOLUENE	108-88-3	0.00084 U	1.0	0.00084	0.0055	mg/kg*dw	MTA
ETHYLBENZENE	100-41-4	0.00064 U	1.0	0.00064	0.0055	mg/kg*dw	MTA
TOTAL XYLENES	1330-20-7	0.0012 U	1.0	0.0012	0.011	mg/kg*dw	MTA
A,A,A-TRIFLUOROTOLUENE (S\$)		79	1.0	NA	60% - 130%	%	MTA

**Polycyclic Aromatic Hydrocarbons by GC/MS**

Preparation Method / Date: NA

InstrumentID: GC105MS1

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 106848.D

Sample Weight (g): 30

Analysis Method / Date: 8270C - 08/21/2010

Analysis Time:

ANALYTE	CAS No.	RESULT	DF	MDL	PQL	UNITS	ANALYST
NAPHTHALENE	91-20-3	0.020 I	1.0	0.011	0.084	mg/kg*dw	BW
ACENAPHTHYLENE	208-96-8	0.016 U	1.0	0.016	0.084	mg/kg*dw	BW
ACENAPHTHENE	83-32-9	0.029 I	1.0	0.011	0.084	mg/kg*dw	BW
FLUORENE	86-73-7	0.044 I	1.0	0.015	0.084	mg/kg*dw	BW
PHENANTHRENE	85-01-8	0.052 I	1.0	0.014	0.084	mg/kg*dw	BW
ANTHRACENE	120-12-7	0.019 I	1.0	0.016	0.084	mg/kg*dw	BW
FLUORANTHENE	206-44-0	0.018 I	1.0	0.014	0.084	mg/kg*dw	BW
1-METHYLNAPHTHALENE	90-12-0	0.19	1.0	0.019	0.084	mg/kg*dw	BW
2-METHYLNAPHTHALENE	91-57-6	0.12	1.0	0.011	0.084	mg/kg*dw	BW
PYRENE	129-00-0	0.020 I	1.0	0.016	0.084	mg/kg*dw	BW
BENZO(A)ANTHRACENE	56-55-3	0.015 U	1.0	0.015	0.084	mg/kg*dw	BW
CHRYSENE	218-01-9	0.024 U	1.0	0.024	0.084	mg/kg*dw	BW
BENZO(B)FLUORANTHENE	205-99-2	0.014 U	1.0	0.014	0.084	mg/kg*dw	BW
BENZO(K)FLUORANTHENE	207-08-9	0.011 U	1.0	0.011	0.084	mg/kg*dw	BW
BENZO(A)PYRENE	50-32-8	0.010 U	1.0	0.010	0.084	mg/kg*dw	BW
INDENO(1,2,3-CD)PYRENE	193-39-5	0.022 U	1.0	0.022	0.084	mg/kg*dw	BW

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

**REPORT OF LABORATORY ANALYSIS**

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Laboratory Project#: 10-2204

Client Project / Site Name SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.
412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106848

Sample Time: 14:00

Grab or Composite: G

Client Sample ID: REG / W WALL

Sample Date: 8/17/2010

Matrix: SO

Client Sample Location:

Date Received: 08/19/2010

Percent Moisture: 20 %

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA

InstrumentID: GC105MS1

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 106848.D

Sample Weight (g): 30

Analysis Method / Date: 8270C - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include DIBENZ(A,H)ANTHRACENE, BENZO(G,H,I)PERYLENE, NITROBENZENE-D5 (S\$), 2-FLUOROBIPHENYL (S\$), and P-TERPHENYL-D14 (S\$).

Total Residual Petroleum Hydrocarbons

Preparation Method / Date: NA

InstrumentID: GC103\FIDA

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 41130

Sample Weight (g): 30

Analysis Method / Date: FL-PRO-DEP - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include GRO (C8-C10), DRO (C10-C28), TRO (C28-C40), TOTAL PRO (C8-C40), O-TERPHENYL (S\$), and NONATRIACONTANE (S\$).

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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FL NELAP #E87684



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Laboratory Project#: 10-2204

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412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106849

Sample Time: 14:20

Grab or Composite: G

Client Sample ID: REG / S WALL

Sample Date: 8/17/2010

Matrix: SO

Client Sample Location:

Date Received: 08/19/2010

Percent Moisture: 23 %

Volatiles by Gas Chromatography/PID/ECLD

Preparation Method / Date: NA

InstrumentID: GC1081

Extraction Method / Date: 5035 - 08/19/2010

DataFile: 1H1913.D

Sample Weight (g): 5.54

Analysis Method / Date: 8021B - 08/19/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include METHYL-TERT-BUTYL ETHER, BENZENE, TOLUENE, ETHYLBENZENE, TOTAL XYLENES, and A,A-A-TRIFLUOROTOLUENE (S\$).

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA

InstrumentID: GC105IMS1

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 106849.D

Sample Weight (g): 30

Analysis Method / Date: 8270C - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include NAPHTHALENE, ACENAPHTHYLENE, ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLUORANTHENE, 1-METHYLNAPHTHALENE, 2-METHYLNAPHTHALENE, PYRENE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLUORANTHENE, BENZO(K)FLUORANTHENE, BENZO(A)PYRENE, and INDENO(1,2,3-CD)PYRENE.

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106849

Sample Time: 14:20

Grab or Composite: G

Client Sample ID: REG / S WALL

Sample Date: 8/17/2010

Matrix: SO

Client Sample Location:

Date Received: 08/19/2010

Percent Moisture: 23 %

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA

InstrumentID: GC05MS1

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 106849.D

Sample Weight (g): 30

Analysis Method / Date: 8270C - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include DIBENZ(A,H)ANTHRACENE, BENZO(G,H,I)PERYLENE, NITROBENZENE-D6 (S\$), 2-FLUOROBIPHENYL (S\$), and P-TERPHENYL-D14 (S\$).

Total Residual Petroleum Hydrocarbons

Preparation Method / Date: NA

InstrumentID: GC03\FID1

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 41131

Sample Weight (g): 30

Analysis Method / Date: FL-PRO-DEP - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include GRO (C8-C10), DRO (C10-C28), TRO (C28-C40), TOTAL PRO (C8-C40), O-TERPHENYL (S\$), and NONATRIACONTANE (S\$).

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

REPORT OF LABORATORY ANALYSIS

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FL NELAP #E87684



ENVIRONMENTAL TESTING LABORATORIES INC

Laboratory Project#: 10-2204

Client Project / Site Name SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.
412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106850 Sample Time: 13:10 Grab or Composite: G
Client Sample ID: PREM / N WALL Sample Date: 8/17/2010 Matrix: SO
Client Sample Location: Date Received: 08/19/2010 Percent Moisture: 17 %

Volatiles by Gas Chromatography/PID/ECLD

Preparation Method / Date: NA InstrumentID: GC1081
Extraction Method / Date: 5035 - 08/19/2010 DataFile: 1H1914.D Sample Weight (g): 6.19
Analysis Method / Date: 8021B - 08/19/2010
Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include METHYL-TERT-BUTYL ETHER, BENZENE, TOLUENE, ETHYLBENZENE, TOTAL XYLENES, and A,A,A-TRIFLUOROTOLUENE (S\$).

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA InstrumentID: GC105MS1 Extract Volume (mL): 1.0
Extraction Method / Date: 3550 - 08/20/2010 DataFile: 106850.D Sample Weight (g): 30
Analysis Method / Date: 8270C - 08/21/2010
Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include NAPHTHALENE, ACENAPHTHYLENE, ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLUORANTHENE, 1-METHYLNAPHTHALENE, 2-METHYLNAPHTHALENE, PYRENE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLUORANTHENE, BENZO(K)FLUORANTHENE, BENZO(A)PYRENE, and INDENO(1,2,3-CD)PYRENE.

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor
Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

REPORT OF LABORATORY ANALYSIS

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Client Project / Site Name SHARK MART

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THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106850 Sample Time: 13:10 Grab or Composite: G
Client Sample ID: PREM / N WALL Sample Date: 8/17/2010 Matrix: SO
Client Sample Location: Date Received: 08/19/2010 Percent Moisture: 17 %

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA InstrumentID: GC105MS1 Extract Volume (mL): 1.0
Extraction Method / Date: 3550 - 08/20/2010 DataFile: 106850.D Sample Weight (g): 30
Analysis Method / Date: 8270C - 08/21/2010
Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include DIBENZ(A,H)ANTHRACENE, BENZO(G,H,I)PERYLENE, NITROBENZENE-D5 (S\$), 2-FLUOROBIPHENYL (S\$), and P-TERPHENYL-D14 (S\$).

Total Residual Petroleum Hydrocarbons

Preparation Method / Date: NA InstrumentID: GC103FID1 Extract Volume (mL): 1.0
Extraction Method / Date: 3550 - 08/20/2010 DataFile: 41133 Sample Weight (g): 30
Analysis Method / Date: FL-PRO-DEP - 08/21/2010
Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include GRO (C8-C10), DRO (C10-C28), TRO (C28-C40), TOTAL PRO (C8-C40), O-TERPHENYL (S\$), and NONATRIACONTANE (S\$).

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor
Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106851

Sample Time: 13:40

Grab or Composite: G

Client Sample ID: PREM / S WALL

Sample Date: 8/17/2010

Matrix: SO

Client Sample Location:

Date Received: 08/19/2010

Percent Moisture: 22 %

Volatiles by Gas Chromatography/PID/EGLD

Preparation Method / Date: NA

InstrumentID: GC1081

Extraction Method / Date: 5035 - 08/19/2010

DataFile: 1H1915.D

Sample Weight (g): 5.96

Analysis Method / Date: 8021B - 08/19/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include METHYL-TERT-BUTYL ETHER, BENZENE, TOLUENE, ETHYLBENZENE, TOTAL XYLENES, and A,A-A-TRIFLUOROTOLUENE (S\$).

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA

InstrumentID: GC105MS1

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 106851.D

Sample Weight (g): 30

Analysis Method / Date: 8270C - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include NAPHTHALENE, ACENAPHTHYLENE, ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLUORANTHENE, 1-METHYLNAPHTHALENE, 2-METHYLNAPHTHALENE, PYRENE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLUORANTHENE, BENZO(K)FLUORANTHENE, BENZO(A)PYRENE, and INDENO(1,2,3-CD)PYRENE.

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106851

Sample Time: 13:40

Grab or Composite: G

Client Sample ID: PREM / S WALL

Sample Date: 8/17/2010

Matrix: SO

Client Sample Location:

Date Received: 08/19/2010

Percent Moisture: 22 %

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA

InstrumentID: GC105MS1

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 106851.D

Sample Weight (g): 30

Analysis Method / Date: 8270C - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include DIBENZ(A,H)ANTHRACENE, BENZO(G,H,I)PERYLENE, NITROBENZENE-D5 (S\$), 2-FLUOROBIPHENYL (S\$), and P-TERPHENYL-D14 (S\$).

Total Residual Petroleum Hydrocarbons

Preparation Method / Date: NA

InstrumentID: GC103FID1

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 41134

Sample Weight (g): 30

Analysis Method / Date: FL-PRO-DEP - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include GRO (C8-C10), DRO (C10-C28), TRO (C28-C40), TOTAL PRO (C8-C40), O-TERPHENYL (S\$), and NONATRIACONTANE (S\$).

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

QUALITY CONTROL DATA

BatchID: LBTXA081910 Prep / Extraction / Analysis Method: SW-846-5030 / SW-846-8021B

ClockID: LBTXA081810 Associated Samples: 106780 106781 106782 106783 106784 106785 106786 106787 106788 106789 106790 106847

QCID: LBTXA081910MBLK	Blank Prep/Extraction Date: 08/19/2010			
QCDescription: METHOD BLANK	Blank Analysis Date: 08/19/2010			
Data File(s): PID-68744	InstrumentID: GC101(PID)			
Analyte	MDL	Blank Result	PQL	Units
METHYL-TERT-BUTYL ETHER	0.20	0.20 U	1.0	ug/L
BENZENE	0.88	0.88 U	1.0	ug/L
TOLUENE	0.44	0.44 U	1.0	ug/L
ETHYLBENZENE	0.43	0.43 U	1.0	ug/L
TOTAL XYLENES	1.3	1.3 U	2.0	ug/L

QCID: LBTXA081910LCS	LCS Prep/Extraction Date: 08/19/2010			LCSD Prep/Extraction Date: 08/19/2010			
QCDescription: LAB CONTROL STANDARD / DUPLICATE	LCS Analysis Date: 08/19/2010			LCSD Analysis Date: 08/19/2010			
Data File(s): PID-58741 / PID-58742	InstrumentID: GC101(PID)						
Analyte	Spike Amount	LCS Result	LCS %Recovery	LCSD Result	LCSD %Recovery	LCSD %RPD	%Rec. / %RPD Limit
METHYL-TERT-BUTYL ETHER	50.0ug/L / 50.0ug/L	45.5ug/L	91%	47.1ug/L	94%	3%	70-130% / 20%RPD
BENZENE	100ug/L / 100ug/L	98.5ug/L	100%	102ug/L	102%	2%	70-130% / 20%RPD
TOLUENE	50.0ug/L / 50.0ug/L	49.6ug/L	99%	51.1ug/L	102%	3%	70-130% / 20%RPD
ETHYLBENZENE	50.0ug/L / 50.0ug/L	47.3ug/L	95%	48.5ug/L	97%	3%	70-130% / 20%RPD
TOTAL XYLENES	150ug/L / 150ug/L	150ug/L	100%	154ug/L	103%	3%	70-130% / 20%RPD

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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 PHONE: (229)-228-2592  
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QUALITY CONTROL DATA

BatchID: LBTXA081910 Prep/Extraction/Analysis Method: SW-846.5030 / SW-846.8021B

ClockID: LBTXA081910 Associated Samples: 106780 106781 106782 106783 106784 106785 106786 106787 106788 106789 106790 106847

QCID: LBTXA081910MS	MS Prep/Extraction Date: 08/20/2010		MSD Prep/Extraction Date: 08/20/2010					
QCDescription: MATRIX SPIKE / DUPLICATE	MS Analysis Date: 08/20/2010		MSD Analysis Date: 08/20/2010					
Data File(s): PID-58790 / PID-58791	InstrumentID: GC101PID1							
Analyte	Native Result	Spike Amount	MS Result	MS %Recovery	MSD Result	MSD %Recovery	MSD %RPD	%Rec. / %RPD Limit
METHYL-TERT-BUTYL ETHER	0ug/L	25.0ug/L / 25.0ug/L	20.7ug/L	83%	20.3ug/L	81%	2 %	70-130% / 20%RPD
BENZENE	0ug/L	50.0ug/L / 50.0ug/L	46.4ug/L	93%	44.8ug/L	90%	4 %	70-130% / 20%RPD
TOLUENE	0ug/L	25.0ug/L / 25.0ug/L	23.3ug/L	93%	22.4ug/L	90%	4 %	70-130% / 20%RPD
ETHYLBENZENE	0ug/L	28.0ug/L / 28.0ug/L	18.3ug/L	73%	17.2ug/L	69% *J	6 %	70-130% / 20%RPD
TOTAL XYLENES	0ug/L	78ug/L / 75ug/L	70.8ug/L	84%	66.5ug/L	83%	6 %	70-130% / 20%RPD

Report Date: 9/24/2010 - Revision #: 0 - Revision Date:

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Laboratory Project#: 10-2204

Client Project / Site Name SHARK MART

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412 WEST WALCOTT STREET  
THOMASVILLE, GA 31702  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

QUALITY CONTROL DATA

BatchID: SBTXA081910 Prep/Extraction/Analysis Method: SW-846 5025 / SW-846 8260B

ClientID: SBTXAD81910 Associated Samples: 106846 106848 106849 106850 106861

QCID: SBTXA081910MBLK		Blank Prep/Extraction Date: 08/19/2010		
QCDescription: METHOD BLANK		Blank Analysis Date: 08/19/2010		
Data File(s): 1H1911.D		InstrumentID: GC1081		
Analyte	MDL	Blank Result	PQL	Units
METHYL-TERT-BUTYL ETHER	0.00099	0.00099 U	0.0050	mg/kg
BENZENE	0.0011	0.0011 U	0.0020	mg/kg
TOLUENE	0.00077	0.00077 U	0.0050	mg/kg
ETHYLBENZENE	0.00058	0.00058 U	0.0050	mg/kg
TOTAL XYLENES	0.0011	0.0011 U	0.010	mg/kg

QCID: SBTXA081910LCS		LCS Prep/Extraction Date: 08/19/2010			LCS Prep/Extraction Date: 08/19/2010		
QCDescription: LAB CONTROL STANDARD / DUPLICATE		LCS Analysis Date: 08/19/2010			LCS Analysis Date: 08/19/2010		
Data File(s): 1H1908.D / 1H1909.D		InstrumentID: GC1081					
Analyte	Spike Amount	LCS Result	LCS %Recovery	LCS/D Result	LCS/D %Recovery	LCS/D %RPD	%Rec. / %RPD Limit
METHYL-TERT-BUTYL ETHER	0.100mg/kg / 0.100mg/kg	0.103mg/kg	103%	0.101mg/kg	101%	2%	60-130% / 35%RPD
BENZENE	0.200mg/kg / 0.200mg/kg	0.199mg/kg	98%	0.192mg/kg	96%	2%	60-130% / 35%RPD
TOLUENE	0.100mg/kg / 0.100mg/kg	0.0987mg/kg	99%	0.087mg/kg	87%	2%	60-130% / 35%RPD
ETHYLBENZENE	0.100mg/kg / 0.100mg/kg	0.0991mg/kg	99%	0.0873mg/kg	87%	2%	60-130% / 35%RPD
TOTAL XYLENES	0.300mg/kg / 0.300mg/kg	0.297mg/kg	99%	0.292mg/kg	97%	2%	60-130% / 35%RPD

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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 412 WEST WALCOTT STREET  
 THOMASVILLE, GA 31792  
 PHONE: (229)-228-2592  
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QUALITY CONTROL DATA

BatchID: SPAHA082010 Prep/Extraction/Analysis Method: SW-846 3550 / SW-846 8270C

ClientID: SPAHA082010 Associated Samples: 106559 106580 106632 106633 106634 106635 106702 106703 106704 106705 106706 106738 106844 106845  
 106846 106848 106849 106850 106851

Analyte	MDL	Blank Result	PQL	Units
NAPHTHALENE	0.0090	0.0090 U	0.067	mg/kg
ACENAPHTHYLENE	0.013	0.013 U	0.067	mg/kg
ACENAPHTHENE	0.0090	0.0090 U	0.067	mg/kg
FLUORENE	0.012	0.012 U	0.067	mg/kg
PHENANTHRENE	0.011	0.011 U	0.067	mg/kg
ANTHRACENE	0.013	0.013 U	0.067	mg/kg
FLUORANTHENE	0.011	0.011 U	0.067	mg/kg
1-METHYLNAPHTHALENE	0.015	0.015 U	0.067	mg/kg
2-METHYLNAPHTHALENE	0.0090	0.0090 U	0.067	mg/kg
PYRENE	0.013	0.013 U	0.067	mg/kg
BENZO(A)ANTHRACENE	0.012	0.012 U	0.067	mg/kg
CHRYSENE	0.019	0.019 U	0.067	mg/kg
BENZO(B)FLUORANTHENE	0.011	0.011 U	0.067	mg/kg
BENZO(K)FLUORANTHENE	0.0080	0.0080 U	0.067	mg/kg
9ENZO(A)PYRENE	0.0080	0.0080 U	0.067	mg/kg
INDENO(1,2,3-CD)PYRENE	0.018	0.018 U	0.067	mg/kg
DIBENZO(A,H)ANTHRACENE	0.014	0.014 U	0.067	mg/kg
BENZO(G,H)PERYLENE	0.012	0.012 U	0.067	mg/kg

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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PHONE: (229)-228-2592
FAX: (229)-228-2594

QUALITY CONTROL DATA

Batch ID: SPAHA082010 Prep / Extraction / Analysis Method: SW-846.3550 / SW-846.8270C

ClockID: SPAHA082010 Associated Samples: 106559 106580 106632 106633 106634 106635 106702 106703 106704 106705 106706 106738 106844 106845
106846 106848 106849 106850 106861

Table with 7 columns: Analyte, Spike Amount, LCS Result, LCS %Recovery, LCS Result, LCS %Recovery, LCS %RPD, %Rec. / %RPD Limit. Rows include various polycyclic aromatic hydrocarbons like NAPHTHALENE, ACENAPHTHYLENE, etc.

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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FAX: (229)-228-2594

QUALITY CONTROL DATA

Batch ID: SPAHA082010 Prep/Extraction/Analysis Method: SW-846/3550/ SW-846/8270C

ClockID: SPAHA082010 Associated Samples: 106558 106560 106632 106633 106634 106635 106702 106703 106704 106705 106706 106738 106844 106845  
106846 106848 106849 106850 106851

QCID: SPAHA082010MS	MS Prep/Extraction Date: 08/20/2010				MSD Prep/Extraction Date: 08/20/2010			
QCDescription: MATRIX SPIKE / DUPLICATE	MS Analysis Date: 08/21/2010				MSD Analysis Date: 08/21/2010			
Data File(s): 106560MS.D / 106560MSD.D	InstrumentID: GC105VMS1							
Analyte	Native Result	Spike Amount	MS Result	MS %Recovery	MSD Result	MSD %Recovery	MS/D %RPD	%Rec. / %RPD Limit
NAPHTHALENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.28mg/kg	77%	1.28mg/kg	77%	1%	30-150% / 35%RPD
ACENAPHTHYLENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.53mg/kg	82%	1.54mg/kg	92%	1%	30-150% / 35%RPD
ACENAPHTHENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.39mg/kg	81%	1.34mg/kg	80%	1%	30-150% / 35%RPD
FLUORENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.64mg/kg	92%	1.68mg/kg	96%	3%	30-150% / 35%RPD
PHENANTHRENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.37mg/kg	82%	1.38mg/kg	83%	1%	30-150% / 35%RPD
ANTHRACENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.38mg/kg	83%	1.39mg/kg	83%	1%	30-150% / 35%RPD
FLUORANTHENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.62mg/kg	81%	1.68mg/kg	96%	4%	30-150% / 35%RPD
1-METHYLNAPHTHALENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.34mg/kg	80%	1.33mg/kg	80%	1%	30-150% / 35%RPD
2-METHYLNAPHTHALENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.34mg/kg	80%	1.33mg/kg	80%	1%	30-150% / 35%RPD
PYRENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.48mg/kg	87%	1.54mg/kg	92%	5%	30-150% / 35%RPD
BENZO(A)ANTHRACENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.50mg/kg	90%	1.58mg/kg	95%	5%	30-150% / 35%RPD
CHRYSENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.22mg/kg	73%	1.31mg/kg	78%	7%	30-150% / 35%RPD
BENZO(B)FLUORANTHENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.42mg/kg	85%	1.39mg/kg	83%	2%	30-150% / 35%RPD
BENZO(K)FLUORANTHENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.45mg/kg	87%	1.40mg/kg	84%	4%	30-150% / 35%RPD
BENZO(A)PYRENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.18mg/kg	71%	1.18mg/kg	71%	1%	30-150% / 35%RPD
INDENO(1,2,3-CD)PYRENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.18mg/kg	71%	1.18mg/kg	71%	1%	30-150% / 35%RPD
DIBENZO(A,H)ANTHRACENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.07mg/kg	80%	1.03mg/kg	62%	2%	30-150% / 35%RPD
BENZO(G,H)PERYLENE	0mg/kg	1.87mg/kg / 1.87mg/kg	1.07mg/kg	84%	1.10mg/kg	66%	3%	30-150% / 35%RPD

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

REPORT OF LABORATORY ANALYSIS

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Client Project / Site Name SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.
412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

QUALITY CONTROL DATA

BatchID: SPAHA082010 Prep / Extraction / Analysis Method: SW-846 3550 / SW-846 8270C

ClientID: SPAHA082010 Associated Samples: 106559 106560 106632 106633 106934 106635 106702 106703 106704 106705 106706 106738 106844 106845
106846 106848 106849 106850 106851

Table with 5 columns: Analyte, Native Result, Dup Result, Sample/Dup %RSD, %RPD Limit. Rows include NAPHTHALENE, ACENAPHTHYLENE, ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLUORANTHENE, 1-METHYLNAPHTHALENE, 2-METHYLNAPHTHALENE, PYRENE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLUORANTHENE, BENZO(K)FLUORANTHENE, BENZO(A)PYRENE, INDENO(1,2,3-CD)PYRENE, DIBENZO(A,H)ANTHRACENE, BENZO(G,H,I)PERYLENE.

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

REPORT OF LABORATORY ANALYSIS

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ENVIRONMENTAL TESTING LABORATORIES, INC.  
 Laboratory Project#: 10-2204  
 Client Project / Site Name SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.  
 412 WEST WALCOTT STREET  
 THOMASVILLE, GA 31792  
 PHONE: (229)-228-2592  
 FAX: (229)-228-2594

QUALITY CONTROL DATA

Batch ID: SPROA082010 Prep / Extraction / Analysis Method: SW 848.3550 (EDEP FL PRO)

ClockID: SPROA082010 Associated Samples: 106559 106560 106632 106633 106634 106635 106702 106703 106704 106705 106706 106736 106844 106845  
 106846 106848 106849 106850 106851

Analyte	MDL	Blank Result	PQL	Units
QCID: SPROA082010MBLK				
QCDescription: METHOD BLANK				
Data File(s): 41113				
Blank Prep/Extraction Date: 08/20/2010				
Blank Analysis Date: 08/21/2010				
InstrumentID: GC103\FID1				
GR0 (C6-C10)	1.0	1.0 U	3.3	mg/kg
DRO (C10-C28)	1.0	1.0 U	3.3	mg/kg
TRO (C28-C40)	1.0	1.0 U	3.3	mg/kg
TOTAL PRO (C6-C40)	1.0	1.0 U	3.3	mg/kg

Analyte	Spike Amount	LCS Result	LCS %Recovery	LCSD Result	LCSD %Recovery	LCS/D %RPD	%Rec. / %RPD Limit
QCID: SPROA082010LCS							
QCDescription: LAB CONTROL STANDARD / DUPLICATE							
Data File(s): 41111 / 41112							
LCS Prep/Extraction Date: 08/20/2010							
LCS Analysis Date: 08/21/2010							
InstrumentID: GC103\FID1							
LCS/D Prep/Extraction Date: 08/20/2010							
LCS/D Analysis Date: 08/21/2010							
TOTAL PRO (C6-C40)	28.3mg/kg / 28.3mg/kg	26.0mg/kg	92%	27.5mg/kg	99%	6%	50-150% / 35%RPD

Analyte	Native Result	Spike Amount	MS Result	MS %Recovery	MSD Result	MSD %Recovery	MS/D %RPD	%Rec. / %RPD Limit
QCID: SPROA082010MS								
QCDescription: MATRIX SPIKE / DUPLICATE								
Data File(s): 41136 / 41137								
MS Prep/Extraction Date: 08/20/2010								
MS Analysis Date: 08/21/2010								
InstrumentID: GC103\FID1								
MSD Prep/Extraction Date: 08/20/2010								
MSD Analysis Date: 08/21/2010								
TOTAL PRO (C6-C40)	0mg/kg	56.6mg/kg / NA	56.2mg/kg	103%	NA	NA	NA	50-150% / 35%RPD

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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ENVIRONMENTAL TESTING LABORATORIES, INC.

Laboratory Project#: 10-2204

Client Project / Site Name SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.  
412 WEST WALCOTT STREET  
THOMASVILLE, GA 31702  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

QUALITY CONTROL DATA

BatchID: SPROA082010 Prep / Extraction / Analysis Method: SW-846-3550 / FDEP-FL-PRO

ClientID: SPROA082010 Associated Samples: 106559 106580 106632 106633 106634 106635 106702 106703 106704 106705 106706 106738 106844 106845  
106846 106848 106849 106850 106851

QCID: SPROA082010DUP	DUP Prep/Extraction Date: 06/20/2010			
QCDescription: SAMPLE RESULT / DUPLICATE	DUP Analysis Date: 06/21/2010			
Data File(s): 41135	InstrumentID: GC03(FID)			
Analyte	Native Result	Dup Result	Sample/Dup %RSD	%RPD Limit
TOTAL PRO (C8-C40)	630mg/kg	828 mg/kg	27%	35%RPD

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

REPORT OF LABORATORY ANALYSIS

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ENVIRONMENTAL TESTING LABORATORIES, INC.

Laboratory Project#: 10-2204

Client Project / Site Name: SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.  
412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

QUALITY CONTROL DATA

Batch ID: WPAHA082310 Prep / Extraction / Analysis Method: SW-846-3510 / SW-846-8270C

Client ID: WPAHA082310 Associated Samples: 106847 106852 106863 106854 106855 106955 106856 106957 106958 106959 106960 106961 106962 106963  
106864 106965 106966 106967

QCID: WPAHA082310/BLK	Blank Prep/Extraction Date: 08/23/2010			
QC Description: METHOD BLANK	Blank Analysis Date: 08/23/2010			
Data File(s): MBLKWPAH1.D	Instrument ID: GC105WMS1			
Analyte	MDL	Blank Result	PQL	Units
NAPHTHALENE	0.43	0.43 U	2.0	ug/L
ACENAPHTHYLENE	0.63	0.63 U	2.0	ug/L
ACENAPHTHENE	0.38	0.38 U	2.0	ug/L
FLUORENE	0.68	0.68 U	2.0	ug/L
PHENANTHRENE	0.65	0.65 U	2.0	ug/L
ANTHRACENE	0.65	0.65 U	2.0	ug/L
FLUORANTHENE	0.57	0.57 U	2.0	ug/L
1-METHYLNAPHTHALENE	0.75	0.75 U	2.0	ug/L
2-METHYLNAPHTHALENE	0.45	0.45 U	2.0	ug/L
PYRENE	0.63	0.63 U	2.0	ug/L
BENZO(A)ANTHRACENE	0.083	0.083 U	0.20	ug/L
CHRYSENE	0.48	0.48 U	2.0	ug/L
BENZO(B)FLUORANTHENE	0.083	0.083 U	0.10	ug/L
BENZO(K)FLUORANTHENE	0.082	0.082 U	0.20	ug/L
BENZO(A)PYRENE	0.065	0.065 U	0.20	ug/L
INDENO(1,2,3-CD)PYRENE	0.10	0.10 U	0.20	ug/L
DIBENZ(A,H)ANTHRACENE	0.090	0.090 U	0.20	ug/L
BENZO(G,H,I)PERYLENE	0.59	0.59 U	2.0	ug/L

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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ENVIRONMENTAL TESTING LABORATORIES, INC.
412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

QUALITY CONTROL DATA

Batch ID: WPAHA082310 Prep/Extraction/Analysis Method: SW-846 3510 / SW-846 8270C

Client ID: WPAHA082310 Associated Samples: 108847 108852 108853 108854 108855 108856 108857 108858 108859 108860 108861 108862 108863
108864 108865 108866 108867

Table with columns: Analyte, Spike Amount, LCS Result, LCS %Recovery, LCSD Result, LCSD %Recovery, LCS/D %RPD, %Rec. / %RPD Limit. Rows include various polycyclic aromatic hydrocarbons like Naphthalene, Fluorene, Anthracene, etc.

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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Laboratory Project#: 10-2204

Client Project / Site Name: SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.  
412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2562  
FAX: (229)-228-2594

QUALITY CONTROL DATA

Batch ID: WPAHA082310 Prep/Extraction/Analysis Method: SW-846-3510 / SW-846-8270G

ClockID: WPAHA082310 Associated Samples: 106847 106852 106853 106854 106855 106955 106956 106957 106958 106959 106960 106961 106962 106963  
106964 106965 106966 106967

QCID: WPAHA082310MS		MS Prep/Extraction Date: 08/23/2010			MSD Prep/Extraction Date:			
QCDescription: MATRIX SPIKE / DUPLICATE		MS Analysis Date: 08/24/2010			MSD Analysis Date:			
Data File(s): 106853MS.D		InstrumentID: GC105/MS1						
Analyte	Native Result	Spike Amount	MS Result	MS %Recovery	MSD Result	MSD %Recovery	MSD %RPD	%Rec. / %RPD Limit
NAPHTHALENE	0ug/L	50.0ug/L / 50.0ug/L	29.1ug/L	58%	NA	NA	NA	30-150% / 30%RPD
ACENAPHTHYLENE	0ug/L	50.0ug/L / 50.0ug/L	37.5ug/L	75%	NA	NA	NA	30-150% / 30%RPD
ACENAPHTHENE	0ug/L	50.0ug/L / 50.0ug/L	32.8ug/L	66%	NA	NA	NA	30-150% / 30%RPD
FLUORENE	0ug/L	50.0ug/L / 50.0ug/L	38.5ug/L	77%	NA	NA	NA	30-150% / 30%RPD
PHENANTHRENE	0ug/L	50.0ug/L / 50.0ug/L	38.2ug/L	72%	NA	NA	NA	30-150% / 30%RPD
ANTHRACENE	0ug/L	50.0ug/L / 50.0ug/L	36.8ug/L	74%	NA	NA	NA	30-150% / 30%RPD
FLUORANTHENE	0ug/L	50.0ug/L / 50.0ug/L	44.2ug/L	88%	NA	NA	NA	30-150% / 30%RPD
1-METHYLNAPHTHALENE	0ug/L	50.0ug/L / 50.0ug/L	32.3ug/L	65%	NA	NA	NA	30-150% / 30%RPD
2-METHYLNAPHTHALENE	0ug/L	50.0ug/L / 50.0ug/L	31.3ug/L	63%	NA	NA	NA	30-150% / 30%RPD
PYRENE	0ug/L	50.0ug/L / 50.0ug/L	43.3ug/L	87%	NA	NA	NA	30-150% / 30%RPD
BENZO(A)ANTHRACENE	0ug/L	50.0ug/L / 50.0ug/L	45.2ug/L	90%	NA	NA	NA	30-150% / 30%RPD
CHRYSENE	0ug/L	50.0ug/L / 50.0ug/L	30.2ug/L	60%	NA	NA	NA	30-150% / 30%RPD
BENZO(B)FLUORANTHENE	0ug/L	50.0ug/L / 50.0ug/L	39.2ug/L	78%	NA	NA	NA	30-150% / 30%RPD
BENZO(K)FLUORANTHENE	0ug/L	50.0ug/L / 50.0ug/L	38.6ug/L	77%	NA	NA	NA	30-150% / 30%RPD
BENZO(A)PYRENE	0ug/L	50.0ug/L / 50.0ug/L	33.5ug/L	67%	NA	NA	NA	30-150% / 30%RPD
INDENO(1,2,3-CD)PYRENE	0ug/L	50.0ug/L / 50.0ug/L	33.5ug/L	67%	NA	NA	NA	30-150% / 30%RPD
DIBENZO(A,H)ANTHRACENE	0ug/L	50.0ug/L / 50.0ug/L	28.0ug/L	56%	NA	NA	NA	30-150% / 30%RPD
BENZO(G,H)PERYLENE	0ug/L	50.0ug/L / 50.0ug/L	31.0ug/L	62%	NA	NA	NA	30-150% / 30%RPD

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REPORT OF LABORATORY ANALYSIS

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ENVIRONMENTAL TESTING LABORATORIES INC.

Laboratory Project#: 10-2204

Client Project / Site Name SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.  
412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

QUALITY CONTROL DATA

BatchID: WPAHA082310 Prep / Extraction / Analysis Method: SW-846.3510 / SW-846.3270G

ClockID: WPAHA082310 Associated Samples: 106847 106852 106853 106854 106855 106856 106857 106858 106859 106860 106861 106862 106863  
106864 106865 106866 106867

Analyte	Native Result	Dup Result	Sample/Dup %RSD	%RPD Limit
NAPHTHALENE	0.76Ug/L	1.07 Ug/L	34%	30%RPD
ACENAPHTHYLENE	0.83Ug/L	0.830 Ug/L	NA	30%RPD
ACENAPHTHENE	0.38Ug/L	0.380 Ug/L	NA	30%RPD
FLUORENE	0.56Ug/L	0.560 Ug/L	NA	30%RPD
PHENANTHRENE	0.55Ug/L	0.550 Ug/L	NA	30%RPD
ANTHRACENE	0.64Ug/L	0.640 Ug/L	NA	30%RPD
FLUORANTHENE	0.57Ug/L	0.570 Ug/L	NA	30%RPD
1-METHYLNAPHTHALENE	0.75Ug/L	0.750 Ug/L	NA	30%RPD
2-METHYLNAPHTHALENE	0.45Ug/L	0.450 Ug/L	NA	30%RPD
PYRENE	0.63Ug/L	0.630 Ug/L	NA	30%RPD
BENZO(A)ANTHRACENE	0.093Ug/L	0.0930 Ug/L	NA	30%RPD
CHRYSENE	0.46Ug/L	0.460 Ug/L	NA	30%RPD
BENZO(B)FLUORANTHENE	0.083Ug/L	0.0830 Ug/L	NA	30%RPD
BENZO(K)FLUORANTHENE	0.082Ug/L	0.0820 Ug/L	NA	30%RPD
BENZO(A)PYRENE	0.065Ug/L	0.0650 Ug/L	NA	30%RPD
INDENO(1,2,3-CD)PYRENE	0.10Ug/L	0.100 Ug/L	NA	30%RPD
DIBENZ(A,H)ANTHRACENE	0.090Ug/L	0.0900 Ug/L	NA	30%RPD
BENZOG(K,H)PERYLENE	0.59Ug/L	0.590 Ug/L	NA	30%RPD

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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 Laboratory Project#: 10-2204  
 Client Project / Site Name SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.  
 412 WEST WALCOTT STREET  
 THOMASVILLE, GA 31792  
 PHONE: (229)-228-2592  
 FAX: (229)-228-2594

QUALITY CONTROL DATA

BatchID: WPROA081910 Prep / Extraction / Analysis Method: SW-846-3510 / FDEP FL-PRO

ClientID: WPROA081910 Associated Samples: 106768 106769 106774 106780 106781 106782 106783 106784 106785 106786 106787 106788 106789 106799 106847

QCID: WPROA081910/BLK		Blank Prep/Extraction Date: 08/19/2010		
QCDescription: METHOD BLANK		Blank Analysis Date: 08/20/2010		
Data File(s): 41091		InstrumentID: GC103\FID1		
Analyte	MDL	Blank Result	PQL	Units
GRO (C8-C10)	100	100 U	500	ug/L
DRO (C10-C28)	100	100 U	500	ug/L
TRO (C28-C40)	100	100 U	500	ug/L
TOTAL PRO (C8-C40)	100	100 U	500	ug/L

QCID: WPROA081910/LCS		LCS Prep/Extraction Date: 08/19/2010			LCSD Prep/Extraction Date: 08/19/2010		
QCDescription: LAB CONTROL STANDARD / DUPLICATE		LCS Analysis Date: 08/20/2010			LCSD Analysis Date: 08/20/2010		
Data File(s): 41089 / 41090		InstrumentID: GC103\FID1					
Analyte	Spike Amount	LCS Result	LCS %Recovery	LCSD Result	LCSD %Recovery	LCS/D %RPD	%Rec. / %RPD Limit
TOTAL PRO (C8-C40)	850ug/L / 850ug/L	865ug/L	102%	865ug/L	102%	3%	50-150% / 90%RPD

QCID: WPROA081910/MS		MS Prep/Extraction Date: 08/19/2010			MSD Prep/Extraction Date:			
QCDescription: MATRIX SPIKE / DUPLICATE		MS Analysis Date: 08/20/2010			MSD Analysis Date:			
Data File(s): 41092		InstrumentID: GC103\FID1						
Analyte	Native Result	Spike Amount	MS Result	MS %Recovery	MSD Result	MSD %Recovery	MS/D %RPD	%Rec. / %RPD Limit
TOTAL PRO (C8-C40)	0ug/L	850ug/L / 850ug/L	727ug/L	86%	NA	NA	NA	50-150% / 90%RPD

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412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

## DATA QUALIFIERS

- I Data deviate from historically established concentration ranges.
- # Surrogate compound inadvertently omitted.
- \$ Due to dilution, surrogate compound was not detected.
- Not reported due to interference
- ? Data are rejected as should not be used.
- A Value reported is the arithmetic mean (average) of two or more determinations.
- B Results based upon colony counts outside the acceptable range.
- D Measurement made in the field.
- E Extra samples were taken at composite stations.
- F When reporting species, F indicates the female sex.
- H Value based on field kit determination; results may not be accurate.
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J Estimated value.
- K Off-scale low. Actual value is known to be less than the value given.
- L Off-scale high. Actual value is known to be greater than the value given.
- M Presence of material is verified but not quantified; the actual value is less than the value given.
- N Presumptive evidence of presence of material.
- O Sampled, but analysis lost or not performed.
- Q Sample held beyond the accepted holding time.
- R Significant rain in the past 48 hours.
- T Value reported is less than the laboratory method detection limit.
- U Compound was analyzed for but not detected.
- V Indicates that the analyte was detected in both the sample and the associated method blank.
- Y Laboratory analysis was from an improperly preserved sample. Data may not be accurate.
- Z Too many colonies were present; numeric value represents the filtration volume.

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

### REPORT OF LABORATORY ANALYSIS

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### Chain of Custody Record

Company: <b>AET</b>		Environmental Testing Laboratories, Inc.		Page <b>1</b> of <b>1</b>																																																							
Address: <b>4265 NEW TAMPA HWY LAKE JARVIS</b>		412 W. Walcott Street Thomasville, GA 31792-4399 229/228-2592 (telephone) 229/228-2594 (telex) www.etl-inc.com		Project Name: <b>SHARK MARC</b>																																																							
Telephone Number: <b>813-439-9733</b> Telex Number:		www.etl-inc.com		Project Number: <b>11-3986-00</b>																																																							
Sampled by (Print Name(s)) / Affiliation: <b>Tom MATANI</b>		Analyses Requested:		Project Manager: <b>Saba MARKS</b>																																																							
Sampler(s) Signature(s): <i>Tom Matani</i>		<table border="1" style="width: 100%; text-align: center;"> <tr> <th>Item No.</th> <th>Field ID No.</th> <th>Sample</th> <th>Grab or Composite</th> <th>Matrix (See Codes)</th> <th>Number of Containers</th> <th>CPA</th> <th>8270C</th> <th>EL-PRO</th> </tr> <tr> <td>1</td> <td>TWP-1</td> <td>8/14/08 10:00</td> <td>G</td> <td>GW</td> <td>5</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>2</td> <td>RES/SW</td> <td>8/14/08 14:00</td> <td></td> <td>S</td> <td>4</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>3</td> <td>RES/SW</td> <td>8/14/08 14:20</td> <td></td> <td>S</td> <td>4</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>4</td> <td>PREN/SW</td> <td>8/14/08 13:10</td> <td></td> <td>S</td> <td>4</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>5</td> <td>PREN/SW</td> <td>8/14/08 13:40</td> <td></td> <td>S</td> <td>4</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> </table>		Item No.	Field ID No.	Sample	Grab or Composite	Matrix (See Codes)	Number of Containers	CPA	8270C	EL-PRO	1	TWP-1	8/14/08 10:00	G	GW	5	✓	✓	✓	2	RES/SW	8/14/08 14:00		S	4	✓	✓	✓	3	RES/SW	8/14/08 14:20		S	4	✓	✓	✓	4	PREN/SW	8/14/08 13:10		S	4	✓	✓	✓	5	PREN/SW	8/14/08 13:40		S	4	✓	✓	✓	Facility ID Number: <b>31-9602448</b>	
Item No.	Field ID No.			Sample	Grab or Composite	Matrix (See Codes)	Number of Containers	CPA	8270C	EL-PRO																																																	
1	TWP-1	8/14/08 10:00	G	GW	5	✓	✓	✓																																																			
2	RES/SW	8/14/08 14:00		S	4	✓	✓	✓																																																			
3	RES/SW	8/14/08 14:20		S	4	✓	✓	✓																																																			
4	PREN/SW	8/14/08 13:10		S	4	✓	✓	✓																																																			
5	PREN/SW	8/14/08 13:40		S	4	✓	✓	✓																																																			
				REQUESTED DUE DATE: <b>Standard</b>																																																							
				Remarks: _____ Lab Number: _____																																																							
Shipment Method:		Total Number of Containers: <b>21</b>		Preservatives (see Codes) (CE): <input type="checkbox"/> Yes <input type="checkbox"/> No																																																							
Out: <b>1</b> Via:	Item No.:	Relinquished by / Affiliation:	Date:	Time:	Accepted by / Affiliation:																																																						
Returned: <b>1</b> Via:		<b>Tom MATANI</b>	<b>8/16/08</b>		<b>FAB BK</b>																																																						
Additional Comments:		Cooler Number(s) / Temperature(s) (°C): <b>FAB BK 2°</b>		Sampling Kit Number:																																																							
		Received In Lab By: <i>[Signature]</i>		Date: <b>8/16/08</b>																																																							
MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water WW = Wastewater O = Other (specify)		PRESERVATIVE CODES: H = Hydrochloric acid S = Sulfuric acid N = Nitric Na = Sodium Hydroxide O = Other (specify)		PRESERVATIVE CODES: SOIL VOCs MS = Methanol / Sodium Bisulfite MD = Methanol / DI Water																																																							
		ETL-PROJECT NO. <b>10-2204</b>		Page 399 of 324 ETL PRINTS INC.																																																							



8738-2948-1025

ETL SAMPLE CUSTODY CHECKLIST

Assigned ETL Project Number: 10-2324

ETL Sample Custodian: JHO

Assigned ETL Lab ID Range: 106877 through 106881  
(start) (end)

Carrier: (Fed-Ex) UPS, DHL, Client, Etc.

Date Received: 8/19/10 0900

Cooler Temperatures	
Cooler #	Temperature °C
1	
2	2
3	
4	
5	
6	
7	
8	
9	
10	
Cooler temp. measured by (Circle one)	
Temperature Blank	
Other: <u>DR 162</u>	

Bottleware Received			
Bottleware Type	Preservative	Total Number of Containers	Properly Preserved?
40mL VOA Vial	HCl	2	YES/NO
40mL VOA Vial	None		N/A
40mL VOA Vial	DH <sub>2</sub> O	8	N/A
40mL VOA Vial	Sodium Bisulfate		YES/NO
40mL VOA Vial	MeOH	4	YES/NO
1-L Amber	None		N/A
1-L Amber	H <sub>2</sub> SO <sub>4</sub>		YES/NO
1-L Amber	HCl		YES/NO
HDPE Plastic	None		N/A
HDPE Plastic	HNO <sub>3</sub>		YES/NO
HDPE Plastic	H <sub>2</sub> SO <sub>4</sub>		YES/NO
4oz Soil Bulk Container	None		N/A
8oz Soil Bulk Container	None	4	N/A
18oz Soil Bulk Container	None		N/A

Was adequate sample volume submitted to perform all necessary project quality requirements (i.e. duplicate, MS/MSD, etc.) YES / NO

Additional Sample Volumes Submitted for Quality Control (Dup, MS, MSD)			
#	ETL Lab ID	Type	Parameters
1		DUP / MS / (MS/MSD)	VOC / SVOC / FL-PRO / Metals / GenChem
2		DUP / MS / (MS/MSD)	VOC / SVOC / FL-PRO / Metals / GenChem
3		DUP / MS / (MS/MSD)	VOC / SVOC / FL-PRO / Metals / GenChem
4		DUP / MS / (MS/MSD)	VOC / SVOC / FL-PRO / Metals / GenChem

Comments / Project Notes (i.e. Broken Bottleware, Temperature Discrepancies, Improper Preservation, etc.):  
One bottle sample for PRO on Twp-1 (106877) received broken. PAH  
sample was split and preserved for PRO. Sample to not used for  
PAH for other sample was received.  
Per John Mack: Sample date for all samples should be 8-17-10. RL

JUN 28 1994

Technical Review Section

RECEIVED  
D.E.R.

JUN 27 AM 11

STORAGE TANK  
REGULATION


ARDAMAN & ASSOCIATES, INC

CONTAMINATION ASSESSMENT REPORT  
MAPCO SS# 6170  
9020 95th STREET  
SEBASTIAN, FLORIDA  
FAC# 318509326  
EDI# 31-3108

Prepared For: Mr. James E. O'Neal, E.I.T  
Environmental Engineer  
MAPCO Petroleum Inc.  
1101 Kermit Drive  
Suite 800  
Nashville, TN 37217

June 23, 1994

Prepared By:



Kent B. Roberts,  
Project Manager

Reviewed By:



Steve Dublin, P.E.  
Vice President



318509326



Ardaman & Associates, Inc.

Geotechnical, Environmental and  
Materials Consultants

June 24, 1994

File # 94-808

Florida Department of Environmental Regulation  
Storage Tank Regulation Section  
2600 Blairstone Road  
Twin Towers Office Bldg.  
Tallahassee, FL. 32399-2400

Bureau of Waste Cleanup

JUN 28 1994

RE: Contamination Assessment Report  
MAPCO SS# 6170  
9020 95th Street, Sebastian, FL.

Technical Review Section

FAC # 318509326  
EDI

Dear Project Manager;

Please find enclosed two copies of a contamination assessment report for the above referenced site. If you have any questions or comments concerning the enclosed please feel free to contact us at (305) 969-8788.

Very Truly Yours  
Ardaman & Associates

  
Kent B. Roberts  
Project Manager

  
Steve Dublin, P.E.  
Vice President

TABLE OF CONTENTS

1.0 INTRODUCTION.....4

2.0 BACKGROUND.....4

    2.1 Site Location and Description.....4

3.0 ENVIRONMENTAL SETTING.....5

    3.1 Topography.....5

    3.2 Regional Geology.....6

    3.3 Regional Hydrology.....6

    3.4 Underground Utility Survey.....7

    3.5 Tank and Line Testing.....7

    3.6 Proximity to Public Water Supplies.....7

4.0 CONTAMINATION ASSESSMENT METHODOLOGIES.....8

    4.1 Soil Borings.....8

    4.2 Monitor Well Installations.....9

        4.2.1 Shallow Well Installations.....9

        4.2.2 Deeper Well Installations.....9

    4.3 Data Collection Procedures.....10

        4.3.1 Sample Collection and Analysis.....10

        4.3.2 Aquifer Characteristic.....10

5.0 CONTAMINATION ASSESSMENT RESULTS.....11

    5.1 Site Geology and Hydrogeology.....11

    5.2 Liquid Phase Hydrocarbons Assessment Results.....12

    5.3 Soil Assessment Results.....12

    5.4 Groundwater Assessment Results.....13

    5.5 Aquifer Characteristic Testing Results.....14

6.0 QUALITY ASSURANCE AND HEALTH AND SAFETY.....15

7.0 SUMMARY AND CONCLUSIONS.....15

8.0 RECOMMENDATIONS.....16

9.0 REFERENCES.....18

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## LIST OF FIGURES

<u>Figure</u>	<u>Description</u>
1	Index Map
2	Local Land Use Map
3	Site Plan
4	Well Construction Diagram
5	Hydraulic Gradient Map (5/04/94)
5A	Hydraulic Gradient Map (6/14/94)
6	Benzene Plume Map
7	BTEX Plume Map
8	Vadose Zone Plume Map

## LIST OF TABLES

<u>Table</u>	<u>Description</u>
1	Well Construction Summary
2	Monitor Well Data Summary
3	Field Test Groundwater Quality Data
4	OVA Test Results
5	Analytical Groundwater Quality Data
6	Private Well Data

## LIST OF APPENDICES

<u>Appendix</u>	<u>Description</u>
A	Boring Logs/Monitor Well Diagrams
B	Analytical Results & Chain of Custodies
C	Aquifer Characteristic Testing
D	Contamination Assessment Summary Sheet
E	Tank & Line Tests

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## 1.0 INTRODUCTION

Ardaman & Associates, Inc. (Ardaman) has prepared a Contamination Assessment Report (CAR) for the MAPCO convenience store #6170 located at 9020 95th Street, in Sebastian, Florida. The site is registered as facility # 318509326 with the Florida Department of Environmental Protection (DEP). The site became eligible for state cleanup under the Early Detection Incentive (EDI) Program on October 28, 1988. The principle objectives of the assessment are outlined below:

- 1) Determine the source of any hydrocarbon contamination.
- 2) Determine the type, degree and extent of any hydrocarbon contamination of the soil and groundwater.
- 3) Determine the factors controlling contaminant migration.
- 4) Evaluate the relationship between the contamination and any possible sensitive receptors.

Information from the CAR will be used to assess the need for site remediation. Should site remediation be deemed necessary, aquifer characteristics and other data developed, during the preparation of this CAR, will be used in the preparation of a Remedial Action Plan.

## 2.0 BACKGROUND

### 2.1 Site Location and Description

The MAPCO facility is located on the northwest corner of the intersection of State Road 512 (Fellsmere Road) and County Road 510 in the western outskirts of the town of Sebastian. Figure 1 is a portion of the United States Geological Survey (USGS), "Fellsmere, Florida," quadrangle map showing the relative location of the facility. The site is located in the SE quarter of Section 22, Township 31 S, Range 37 E of Indian River County (Figure 1). Properties immediately surrounding the facility are generally undeveloped pasture lands or citrus groves. The facility is bound to the north by an old cemetery, and to the South, East and West by open pastures or wooded tracts. Figure 2 is a Local Land Use Map of the area.

The site is rectangular in shape and covers approximately half an acre. The property is currently operating as a convenience store and retail fueling outlet dispensing three grades of unleaded petroleum products from three (3) underground storage tanks (USTs) located directly south of the building. These tanks have a 10,000 gallon capacity and are constructed of steel, with asphalt coating.

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Overspill protection was installed in May of 1987. The tanks have an impressed current type of cathodic protection.

Figure 3 is a site plan showing the location of the facility and pertinent site features. Ardaman personnel initially visited the site on April 28, 1994. At that time, five 2-inch diameter monitor wells were present. Four were located near the corners of the UST pad and one at the western end of the dispenser island. Since the dispenser island straddles the center tank, monitor well five (MW-5) actually penetrates the UST bed between two of the underground storage tanks.

A review of the Department of Environmental Protection's data base and file for the MAPCO facility indicated that there is no record of any Initial Remedial Action (IRA) having been undertaken at this site. No information is available with regard to the type, source, or quantity of the product discharged at this facility. No specific incident of discharge or inventory loss is on file.

### 3.0 ENVIRONMENTAL SETTING

#### 3.1 Topography

The site lies on the Pamlico Terrace in Indian River County between the Atlantic Coastal Ridge and the Ten-Mile Ridge. The Pamlico terrace is an ancient marine terrace which marked the ocean bottom at a time when the sea stood higher than it does now. Most of the terrace is less than 25 feet above sea level. The Atlantic Coastal Ridge, which reaches altitudes of more than 50 feet, is a remnant of an offshore bar that was formed in the Pamlico sea. West of the Coastal Ridge is a flat or shallow trough-shaped area that is analogous to the present Indian River. About 7 miles west of the Coastal Ridge is a less pronounced ridge named the "Ten Mile Ridge".

The area between the Atlantic Coastal Ridge and the Ten-mile Ridge was swampy and lacked prominent stream channels other than the South Prong of Sebastian Creek at the North. Drainage was generally northward although during periods of high water some water drained eastward through gaps in the Atlantic Coastal Ridge. Surface water drainage patterns have been altered by man made drainage systems.

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### 3.2 Regional Geology

The formations underlying Indian River County dip slightly southeastward. They differ somewhat in composition and character and are the result of marine deposition during earlier periods of the earth's history.

Deposits of Pleistocene age, extending from land surface to depths of 100 to 150 feet are represented by the Anastasia and Fort Thompson Formations. The Anastasia Formation is present along the coast and grades inland into the Fort Thompson formation in the vicinity of the Ten-mile Ridge. Both the Anastasia and the Fort Thompson are composed primarily of sand and shell fragments, the main differences being that the grains and fragments are finer in the Fort Thompson and that the Anastasia contains many cemented layers.

Below the Fort Thompson and Anastasia Formations are deposits of Miocene age whose thickness ranges from 200 to 300 feet. The upper part of the Miocene sediments is undifferentiated and may be the equivalent of the Tamiami Formation. They consist of a series of clays, sandy clays and shell with some well cemented zones.

Underlying these undifferentiated deposits is the Hawthorn Formation, also of Miocene age. This formation consists of green and brown clay, sandy clay, and some limestone beds. In general, the Miocene sediments are much finer-grained than the overlying Pleistocene deposits.

Underlying the Miocene deposits are several hundred feet of limestone and dolomite of the Oligocene and Eocene ages.

### 3.3 Regional Hydrology

Two aquifers are present in Indian River County: the shallow aquifer consisting of all the unconsolidated or partly consolidated permeable deposits of the Anastasia and Fort Thompson formations, which extend from the land surface to a depth of about 150 feet; and the Floridan aquifer which consists of limestone and dolomite of middle Eocene and Oligocene age underlying the Hawthorne Formation of Miocene age. The two aquifers are separated by confining beds consisting of clay and other fine grained materials of the Hawthorne and younger formations.

The porosity of the shallow aquifer may be as great as 25%. The porosity of the Floridan may be only a few percent. However, the voids in the Floridan are well interconnected so water moves readily through this aquifer. Therefore, although the shallow

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aquifer contains several times more water per unit volume than the Floridan aquifer, the Floridan will transmit several times more water per unit volume than the shallow aquifer. Yields of 300 to 500 gal/min are obtained from 10" wells in the shallow aquifer, but yields of as much as 3000 gal/min are obtained from 10-inch wells that tap the Floridan aquifer.

The shallow aquifer is recharged mostly by direct infiltration of rainfall. There is little interchange between water in the shallow aquifer and that in the Floridan aquifer because of the thick confining bed. However, within the irrigation districts an important quantity of water is added to the shallow aquifer by artificial recharge of water withdrawn from the Floridan wells for irrigation.

#### 3.4 Underground Utility Survey

On May 19, 1994, a survey of underground utilities directly connected with the site and located within the vicinity was completed. This survey was based on a markout of utilities coordinated through the Underground Notification Clearance Liaison for Excavation (UNCLE). Utilities which were located during the markout are shown on the Site Plan (Figure-3). There is no apparent correlation between the location and depths of subsurface utilities and the contaminant plume.

#### 3.5 Tank and Line Testing

The structural integrity of the underground storage tank and lines were tested on September 14, 1992 and again on June 21, 1994 by Tanknology Corporation International. All tanks and lines were determined to be tight. The results of these tests can be found in Appendix E.

#### 3.6 Proximity to Public Water Supplies

The proximity of the site to private wells, public well fields and surface water bodies was researched with the aid of published listings, maps and visual observations. There is a public potable water well on site to serve the convenience store. The location of this well can be found in figure 3. A review of the well completion reports and consumptive use permits on file at the St. Johns River Water Management District indicates that there are no other private wells within a quarter mile radius of the site or public wells within a half mile radius. The nearest surface water

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body is the Sebastian River South Prong located approximately one quarter of a mile to the East.

#### 4.0 CONTAMINATION ASSESSMENT METHODOLOGIES

##### 4.1 Soil Boring

A soil boring and field screening program was conducted to assess the potential horizontal and vertical extent of soil contamination in the UST and dispenser area. There is no record of diesel fuel ever having been stored or dispensed at this site. However, results from an initial round of monitor well sampling indicated that some naphthalenes were present in the groundwater. Therefore, an OVA reading of 50 ppm was used to define "excessively contaminated" soils. A total of 4 soil borings were drilled to assess the vadose zone. The approximate locations of these borings are shown on Figure 3.

All soil borings were continuously sampled to a depth of approximately four (4) feet below land surface (bls). Lithologic logs were prepared in the field for each boring. Upon completion, the boring holes were abandoned by grouting to the surface with neat cement.

Soil borings were completed utilizing a stainless steel hand-auger after a 4" diameter hole was cut through the concrete pavement with a rotary hammer drill. The hand auger was advanced manually. Soil samples were screened in the field with a Foxboro Model 128 Organic Vapor Analyzer (OVA) equipped with a flame ionization detector (FID). OVA responses were recorded using the headspace analysis method. Field headspace analyses were conducted by placing the composite soil sample, one-half full, into a 16-ounce jar. The mouth of the jar was then sealed with a layer of tin foil. After a 5-minute equilibration period, the OVA's probe was inserted through the tin foil and into the jar. The equipment was monitored and a peak reading obtained. The depth from which the sample was collected and the OVA response were noted. OVA responses were recorded first without and then with an activated charcoal filter. This was done in order to determine if natural methane gas contributed to the OVA response. The carbon filter absorbs the organic vapors, and allows the methane to pass through and be detected by the FID. The field screening results are summarized in Table 4.

##### 4.2 Monitor Well Installations

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#### 4.2.1 Shallow Monitor Well Installations

Ardaman personnel installed one (1) shallow monitor well in order to fully delineate the contaminant plume in the horizontal direction. Results from the gaging and sampling of the five (5) pre-existing wells MW-1 through 5 were used to determine the optimum location of this new well. The locations of all the wells are shown in Figure-3. The monitor well was installed using hollow stem auger drilling methods and is approximately 12.5 feet in total depth. The well was constructed with a two foot length of 2-inch diameter, flush threaded, Schedule 40 PVC casing coupled to a ten (10) foot length of 0.010-inch slotted PVC well screen. Approximately 1 foot of well screen was set above the water table with 9 feet extending into the water bearing zone. This was done in order to intercept the upper most fluctuations of the surficial aquifer.

The annular space between the screen and the borehole was packed with 20-30 grade silica sand to at least one foot above the screened interval. A one foot thick bentonite seal was placed on top of the sand pack. The remainder of the well's annulus was grouted to the surface with neat cement to prevent the migration of surface contaminants along the borehole. The monitor well was completed at the surface with an 8-inch diameter, cast iron, flush mounted, manhole type vault set in a concrete pads. The well was fitted with a locking cap and secured with a lock. A typical monitoring well detail is shown in Figure-4. Table 1 is a well construction summary listing pertinent information for each well. The monitor well was developed by surging and overpumping until the discharge water appeared sediment free.

#### 4.2.2 Deep Monitor Well Installation

In order to assess the maximum vertical extent of contamination, one "deep" monitor well was drilled. A 2-inch diameter, deep monitor well (MW-7D) was installed on the eastern side of the property. The positioning of the deep well was dictated, to a large extent, by the numerous underground utilities running in an East-West direction just South of the tank pad and by the overhead power lines running in a North-South direction just East of the tank pad. The general direction of groundwater flow is to the East towards the Sebastian River South Prong. The deep well was screened from a depth of 18.5 to 23.5 feet bls. The deep well was also installed by using a truck mounted hollow stem auger drill rig.

Monitor well MW-7D was generally constructed as described earlier in the shallow monitor well installation section. A one-foot thick

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bentonite seal was placed on top of the sand pack. The deep well location is shown in figure 3.

#### 4.3 Data Collection Procedures

##### 4.3.1 Sample Collection and Analysis

Soil samples were field screened for organic vapors by the headspace method, as discussed in Section 4.1.

Groundwater samples were collected from the five (5) existing compliance wells on May 4, 1994. Collected samples were analyzed for parameters included in EPA Methods 601 (Purgeable Halocarbons), EPA Method 602 with MTBE (Volatile Organic Aromatics), EPA Method 504, (Ethylene Dibromide (EDB)), EPA Method 610 (Polynuclear Aromatic Hydrocarbons), EPA 418.1 Total Petroleum Hydrocarbons and EPA 239.2 (Lead, Total). Cumulatively, these analyses are known as the Gasoline/Kerosine Analytical Group. All laboratory analysis was performed by Savannah Laboratories & Environmental Services, Inc., a State certified analytical laboratory (DHRS #890142G). The laboratory analytical reports, along with the chain of custody documentation, are included in Appendix B. On May 25, 1994, monitor wells MW-6, MW-7D and the potable water well were sampled for Purgeable Aromatics (EPA Method 602) and Polynuclear Aromatic Hydrocarbons (EPA Method 610). All monitoring wells were sampled following Ardaman & Associates standard sampling procedures, as outlined in our Generic Quality Assurance Plan #900305G, on file with and approved by the Florida Department of Environmental Protection (FDEP). Prior to sampling, the wells were purged of three (3) to five (5) well volumes, so that representative groundwater samples could be collected. The samples were collected from Teflon bailers and transferred to laboratory supplied bottles which contained the appropriate preservatives. The samples were packed in ice and hand delivered to the laboratory. Proper chain of custody documentation accompanied the samples.

##### 4.3.2 Aquifer Characteristic Testing

The top of casing elevations of the pre-existing monitor wells were surveyed with a level/transit on April 28, 1994. Casing head elevations were referenced to an arbitrary benchmark which was assigned an elevation of twenty feet. The top of casing of all monitor wells were surveyed on May 19, 1994. The May 19th survey results matched the April 28th survey results within one-one hundredth of a foot. It was not necessary to reposition the

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instrument during either surveying event. Depth to liquid phase hydrocarbons (LPH) and/or water was measured to the nearest one-one hundredth of a foot with a sonic interface probe. Depths were recorded on three separate occasions in order to assess the changes in water table elevation due to precipitation or possible draw down from the on-site water well.

Slug tests were performed on three (3) selected monitor wells (MW-6, MW-7D, and MW-4) using the slug out method. The selected wells were from areas believed to be most representative of the site's hydrogeology. With the slug test method, the hydraulic conductivity of a well is determined from the rate of rise of the water level in the well after a certain volume or "slug" is rapidly removed from the well. The slug consisted of a 3.5 foot length of 1 & 1/4 inch diameter, Schedule 40, PVC pipe that had been capped and filled with portland cement. First, a calibrated pressure transducer, rated at 20 psi, was lowered to within a foot of the bottom of the well. The pressure transducer's cable was connected to an electronic data logger. Then the slug was completely submerged. After the water level in the well had reached equilibrium, the slug was rapidly removed and water level versus time was recorded with the datalogger.

Groundwater quality parameters, such as temperature, conductivity, iron content, hardness and pH were measured from water samples taken from selected monitor wells. Table 3 is a summary of these field measurements. This data may be used to determine if a future remediation system will need a fouling prevention pre-treatment system.

## 5.0 CONTAMINATION ASSESSMENT RESULTS

### 5.1 Site Geology and Hydrogeology

The shallow subsurface geology was assessed through the examination of soil cuttings and cores generated during soil boring and monitor well installation activities. Lithologic descriptions for each boring and monitor well are included in Appendix A.

The shallow subsurface generally consisted of relatively thick deposits of unconsolidated, quartz sand. The quartz sand deposits, which ranged in color from orange to brown, were fine to medium grained, and contained some clay. Shell fragments were observed in the drill cuttings from below 15 feet. No significant hydraulic confining units were encountered during this assessment.

The depth to water measurements for the monitor wells were recorded on May 4, 1994, May 19, 1994 and June 14, 1994. The groundwater

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table lies at 3 to 5 feet bls. The range of groundwater fluctuation observed between the monitoring periods was an average of 1.0 foot.

Depth to water measurements taken on May 4, 1994 and June 14, 1994 were used to calculate relative water table elevations and are presented in Table-2. Areas of equal water table elevations were contoured to determine the local groundwater flow direction, as shown in Figures 5 and 5A. Groundwater flow is perpendicular to the contour lines from areas of higher to lower water table elevations. Groundwater flow appears to be slightly contorted in the area of the tank farm. However the gradient maps show the water table sloping to the East southeast in the general direction of the Sebastian River South Prong.

There was no apparent influence from the on-site potable water well on the depth to water measurements performed during this assessment. The water well pump operates on a very intermittent basis. It will turn on automatically when the pressure in the water storage tank, located on top of the pump shed, drops below a preset level. The water well's screened interval is below eighty (80) feet.

The local hydraulic gradient was determined from the difference in water table elevations between monitor wells MW-1 and MW-6. This difference was then divided by the distance between the two wells. Based on these results, the local hydraulic gradient is estimated to be 0.0064ft/ft.

#### 5.2 Liquid Phase Hydrocarbon Assessment Results

Liquid phase hydrocarbons, (or free floating product), was not observed in any of the monitor wells or anywhere else on site during the conduct of this assessment.

#### 5.3 Soil Assessment Results

Field screening results of the headspace analysis ranged from 0 to 170 parts per million (ppm) and are summarized in Table-4. The area of highest organic vapor responses was near the western edge of the UST pad at a depth of approximately 3 feet bls. All samples from each soil boring were screened for methane gas using a granulated activated carbon (GAC) filter in-line with the OVA. Methane was detected in several of the soil samples.

Historically, this facility has dispensed only gasoline products. However, Napthalenes were detected in the ground water.

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Therefore, a conservative 50 ppm OVA reading was used to define "excessively contaminated" soils. "Excessively contaminated" unsaturated soils were only encountered in boring SB-2. The volume of "excessively contaminated soils" was estimated at less than 70 cubic yards. An isoconcentration map for "excessively contaminated" soils in the vadose zone is shown on Figure-8. The vadose zone plume was delineated in the horizontal direction to the North by SB-1, to the East by SB-4, to the South by MW-6, and to the West by SB-3).

#### 5.4 Groundwater Assessment Results

Groundwater samples collected from monitor well MW-5 were the only samples containing VOA concentrations above the laboratory instrument's lower detection limits. Samples from this well had benzene concentrations of 96 parts per billion (ppb) and Total VOA concentrations (sum of benzene, ethyl benzene, toluene, and total xylenes) of 111.5 ppb. These dissolved petroleum constituents exceed Target Cleanup Levels, as defined in Chapter 17-770 FAC. Concentrations of total lead were detected in water samples obtained from wells MW-1 through MW-4. However, none of the lead concentrations exceeded the DEP cleanup target level of 0.05 mg/L. Detectable concentrations of Ethylene dibromide were not recorded during this assessment. The concentrations of total naphthalenes detected in MW-5 (130 ppb) also exceeded the DEP target level of 100 ppb.

The very limited dissolved hydrocarbon plume appears to be centered around monitor well MW-5 which penetrates the UST bed. Isoconcentration maps for Benzene and total VOAs are shown in figures 6 and 7 respectively. The Napthalene plume is expected to mirror the BTEX plume shown in figure 7. The dissolved hydrocarbon plumes are fully delineated in the horizontal direction to the North by MW-1 and MW-2, to the East by MW-2 and MW-3, to the South by MW-3, MW-6 and MW-4, and to the west by MW-4 and MW-1.

The dissolved hydrocarbon plumes are delineated in the vertical direction by the "deep" monitor well MW-7D, which was screened to a depth of 25 feet. No measurable levels of the tested parameters were detected in samples collected from MW-6, MW-7D or the on-site potable water well which was sampled as a precautionary measure. The laboratory analytical reports are included in Appendix B and summarized in Table 5.

#### 5.5 Aquifer Characteristic Testing Results

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On June 14, 1994, slug tests were completed in monitor wells MW-6, MW-7D, and MW-4. Data files were created from the water level measurements recorded by means of a Hermit 2000 electronic datalogger. The files were transferred to an IBM compatible computer and print-outs were generated with a word processing program. Drawdown versus time was then plotted on a semi-log scale using a graphics computer program. A best-fitting line was selected for that portion of the plot that was most representative of flow from the undisturbed aquifer. The print-outs, the plot, and the equation for the best fit exponential curve, for each test can be found in Appendix C. Values derived from the plots and other input parameters were then entered into a series of equations developed by Herman Bouwer and R.C. Rice (1976) for determining the hydraulic conductivity of unconfined aquifers with partially penetrating wells. The hydraulic conductivity equations, input parameters and results can also be found in Appendix C.

Assumptions made in calculating the aquifer characteristics include an effective porosity ( $n$ ) of 25%, (based on visual observations of the borings and drill cuttings) and an aquifer thickness of 100 feet. (based on USGS cross section map (Miller, 1987)) The Storativity Coefficient or Specific Yield of the unconfined aquifer was estimated to be 0.15.

The hydraulic conductivity ( $K$ ) at this site varies considerably with depth. This phenomena was observed during the purging of wells MW-6 and MW-7D prior to sampling. The deep well recharged almost immediately following the removal of a well volume of water. MW-6 took over 10 minutes to recharge. The slug test results confirm this change in hydraulic conductivity. It can be explained by the clay content observed in the sands from the shallow auger cuttings. The drill cuttings below 15 feet produced a much cleaner sand.

The ( $K$ ) value derived from the slug test performed on MW-4 fell in between the values obtained for MW-6 and MW-7D. MW-4 is a compliance well located on the southwest corner of the tank pad. The hydraulic conductivity value obtained from this well likely reflects the high permeability of the pea gravel bed used as a cushion for the underground storage tanks. Therefore, the  $K$  value of 27.5 gallons per day per square foot derived from the MW-6 slug test is most likely to represent the hydraulic conductivity of the shallow subsurface through which the hydrocarbon plume might migrate. This value, converted to feet per day, was used to calculate a ground water flow velocity of 0.0932 feet per day. The hydraulic conductivity and transmissivity values derived from all 3 tests may be found in Appendix C.

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#### 6.0 QUALITY ASSURANCE AND HEALTH & SAFETY

Ardaman & Associates, Inc.'s Comprehensive Quality Assurance Plan #900305G is on file with the FDEP. The Comprehensive QAP was prepared in accordance with FDEP's "Guidelines for Preparing Quality Assurance Plans" (DER-QA-001/85) and EPA's "Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual" (EPA Region IV, 1986). Savannah Laboratories & Environmental Services, Inc. Comprehensive QAP #890142G is on file with the FDEP as well.

All samples were analyzed within their applicable holding times. Results of the analyses of the equipment rinsate were below instrument detection limits for all tested parameters. All field work for this assessment was performed under Ardaman's Health and Safety plan. No accidents or excessive personal exposures were documented during site activities.

#### 7.0 SUMMARY AND CONCLUSIONS

On March 28, 1994, Ardaman & Associates, Inc., was retained by MAPCO Petroleum Inc., to conduct a Contamination Assessment for the MAPCO convenience store/service station #6170 (FAC #318509326). The station is located at 9020 95th Street, in Sebastian, Florida. There are three (3) 10,000-gallon steel underground storage tanks at this facility. The tanks contain three grades of unleaded gasoline. There is no record of any Initial Remedial Action (IRA) and no remedial action was taken during the Contamination Assessment Phase of this project. No information is available with regard to the type, source and quantity of the product lost at this facility. No specific incident of discharge or inventory loss has been documented. The tanks and lines tested tight on March 20, 1992 and again on June 21, 1994.

Based on the findings of this assessment, the subsurface, in the immediate vicinity of the UST farm has been affected by the storage and handling of petroleum products. Minor discharges during fueling operations are suspected of being the source of both the limited soil and groundwater contamination.

The horizontal and vertical extent of the hydrocarbons in the soil was studied during the installation of the monitoring wells and soil borings. Excessive soil contamination was assessed through soil head space readings for total organic vapors in the vadose zone. There is an estimated 70 cubic yards of "excessively contaminated" unsaturated soils around the western edge of the tank

Ardaman & Associates, Inc.

pad. Headspace analyses ranged from 0 to 130 parts per million. The highest organic vapor responses were recorded at a depth of approximately 3 feet bls.

Two (2) monitor wells were installed to help delineate the horizontal and vertical extent of the dissolved hydrocarbon plume at this facility. Calculations presented in this report indicates that the groundwater flow is East-Southeast under a hydraulic gradient of 0.0064 ft/ft.

Groundwater samples collected from monitor well MW-5 contained dissolved hydrocarbons above the laboratory instrument's lower detection limits. Benzene concentrations of 96 parts per billion (ppb), total VOA concentrations of 111.5 ppb total Napthalenes of 130 ppb and MTBE concentrations of 24 ppb were recorded in MW-5. These dissolved petroleum constituents exceed Target Cleanup Levels, as defined in Chapter 17-770 FAC.

The dissolved hydrocarbon plume is fully delineated in the horizontal direction to the North by MW-1 and MW-2, to the East by MW-2 and MW-3, to the South by MW-3, MW-6 and MW-4, and to the west by MW-4 and MW-1. The dissolved hydrocarbon plume is delineated in the vertical direction at a depth of 25 feet bls. A CAR Summary Sheet/Checklist is included in Appendix D.

#### 8.0 RECOMMENDATIONS

Ardaman & Associates, Inc. recommends that a Monitoring Only Plan (MOP) be implemented at this site for the following reasons:

1. Ardaman & Associates Generic Quality Assurance Plan #900305G has been approved by the DEP.
2. Free product is not present at this site.
3. Groundwater contamination is not widespread, does not extend off-site and is not migrating vertically.
4. Groundwater contamination falls well within the DEP monitoring only guidelines for source and perimeter wells at a site with a G-II aquifer and a potable well within a 1/4 mile radius.
5. The tanks & lines tested tight as recently as June 21, 1994.

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6. There is no record of diesel fuel ever having been sold at this site. If the Gasoline Analytical Group reading of 500 ppm is used to define "excessively contaminated soil", there is no excessively contaminated soil at this site. Even with the Kerosene Analytical Group level of 50 ppm, the amount of contaminated soil is very limited.

The following (existing) monitor wells have been selected to meet the monitoring only criteria set forth in 17-770.660 (3) F.A.C.:

	MONITOR WELL	DESIGNATION
1.	MW-5	Source Well
2.	MW-1	Upgradient Well
3.	MW-2	Upgradient Well
4.	MW-3	Downgradient Well
5.	MW-4	Downgradient Well

These wells will be monitored and sampled quarterly for a period of one year. The samples will be analyzed by EPA method 602. Quarterly status reports containing the analytical results will be forwarded to the Department. If, after one year, the hydrocarbon concentrations reflect a decreasing trend and/or meet the end point criteria specified in 17-770.730 (a), a Site Rehabilitation Completion Report (SRCR) will be prepared. If the hydrocarbon concentrations do not show a decreasing trend, a "Short Term Cleanup Strategy" will be proposed in a RAP as per the guidelines published by the DEP's Engineering Support Section dated October 10, 1994.

Ardaman & Associates, Inc.

## 9.0 REFERENCES

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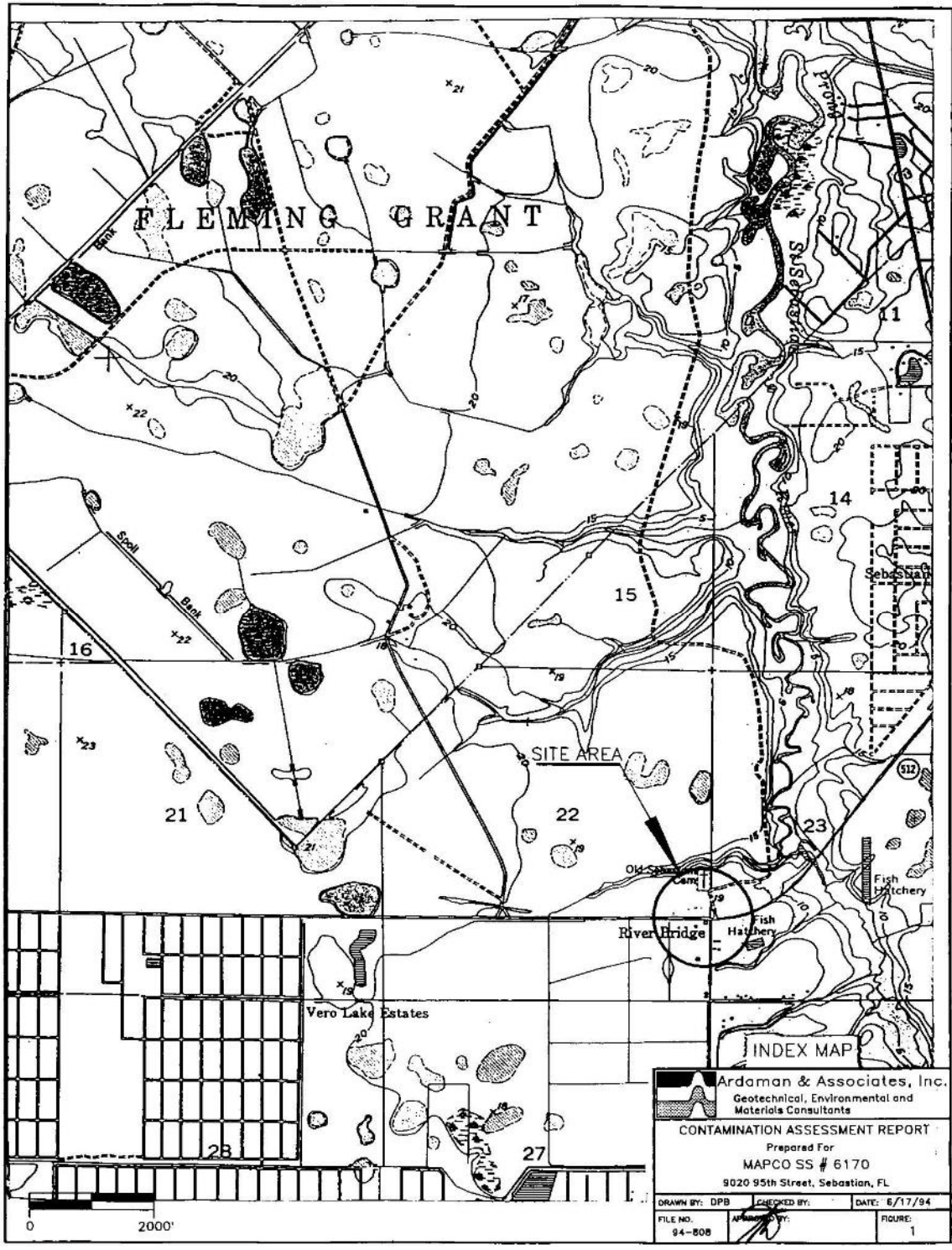
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Lehr, J., Hurlburt, S., Gallager, B., Vooytek J., "Design and Construction of Water Wells," The National Water Well Assn. Van Nostrand Reinhold, (1988)

Ardaman & Associates, Inc.



**FIGURES**

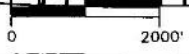


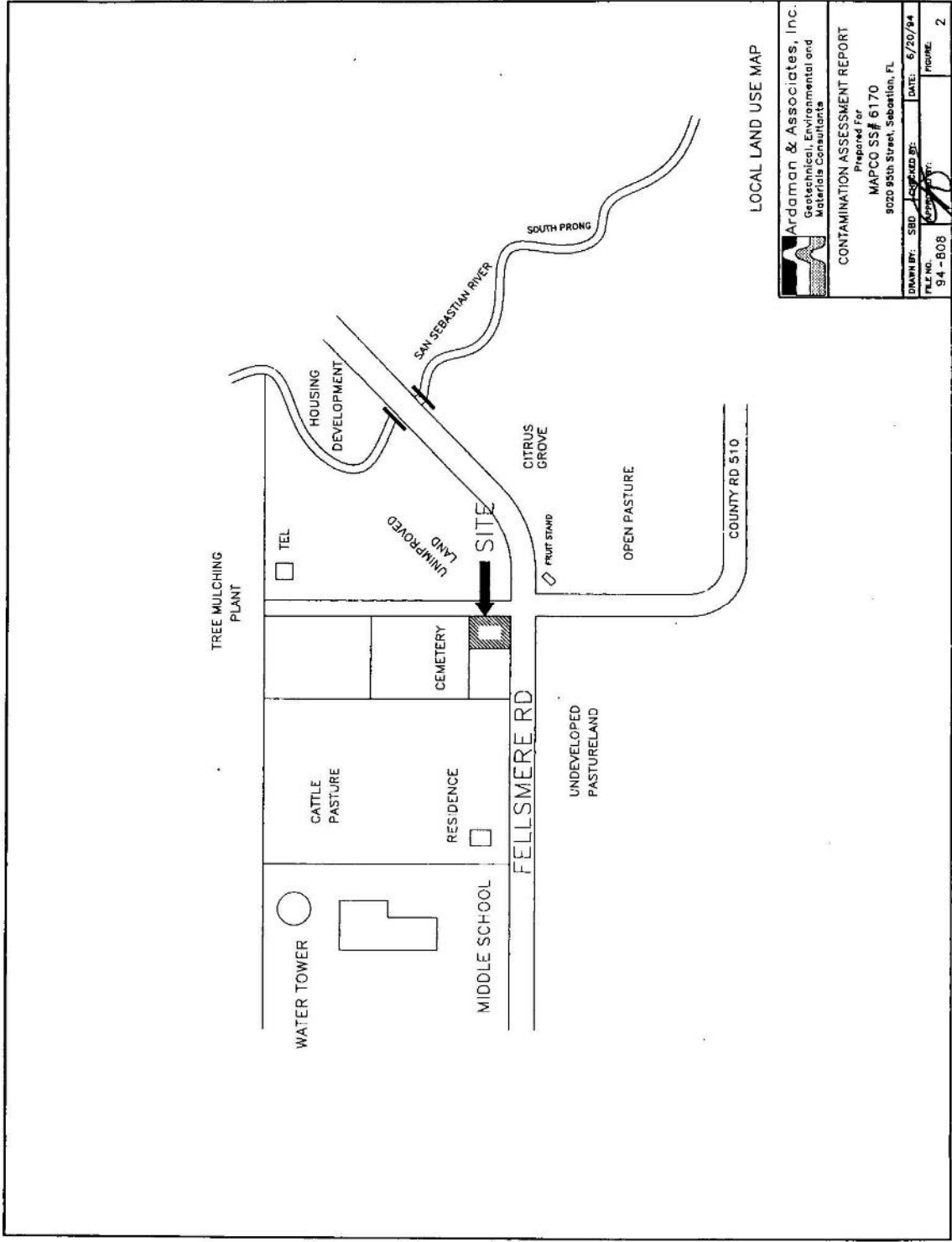
**INDEX MAP**

**Ardaman & Associates, Inc.**  
 Geotechnical, Environmental and  
 Materials Consultants

**CONTAMINATION ASSESSMENT REPORT**  
 Prepared For  
 MAPCO SS # 6170  
 9020 95th Street, Sebastian, FL

DRAWN BY: DPB	CHECKED BY:	DATE: 6/17/94
FILE NO: 94-808	APPROVED BY:	FIGURE: 1





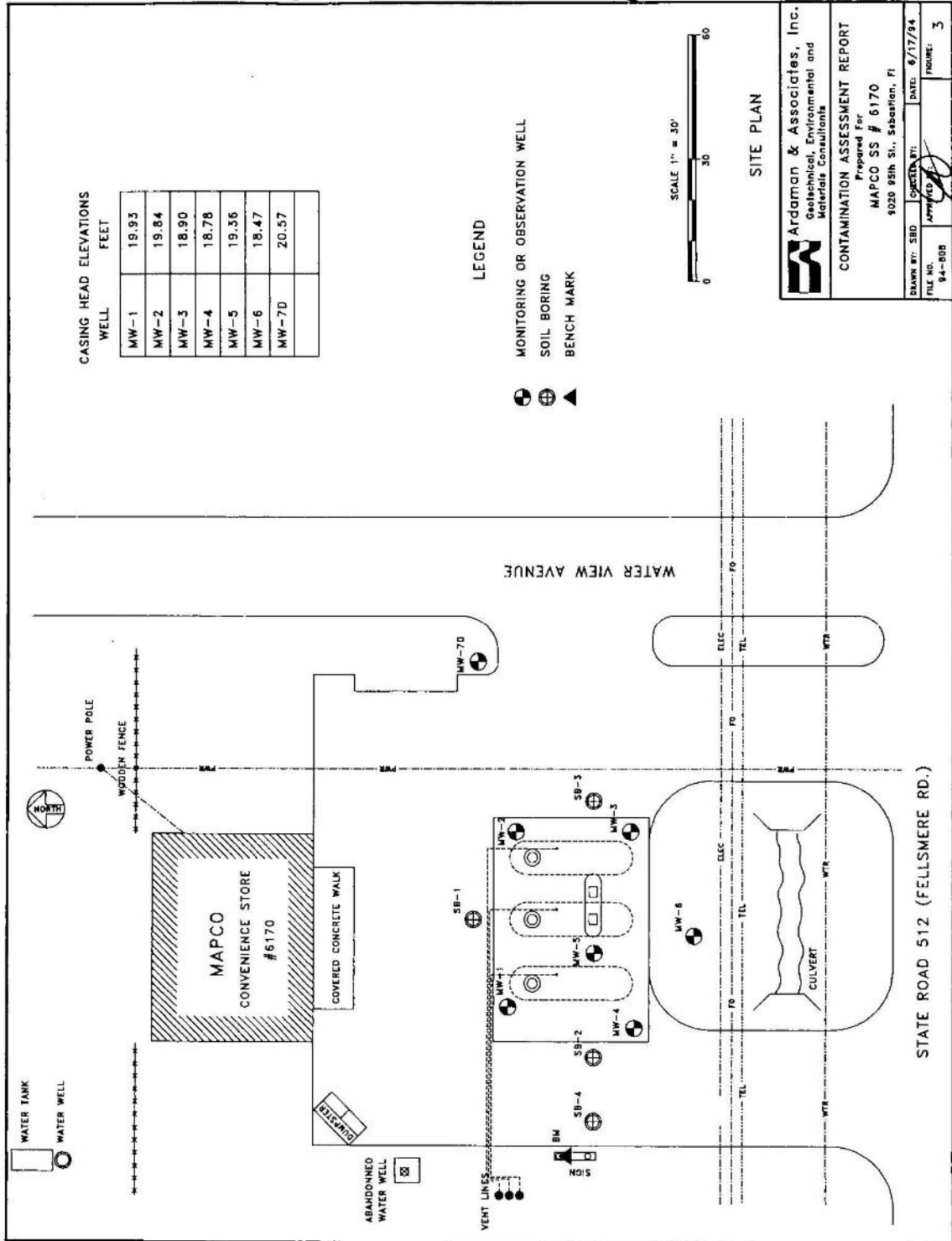
LOCAL LAND USE MAP

**Ardaman & Associates, Inc.**  
 Geotechnical, Environmental and  
 Materials Consultants

Prepared For  
**MAPCO SS# 6170**  
 9020 95th Street, Sebastian, FL

CONTAMINATION ASSESSMENT REPORT

DRAWN BY: SBD	CHECKED BY:	DATE: 6/20/94
FILE NO: 94-808	APPROVED BY:	PAGE: 2



**Ardaman & Associates, Inc.**  
 Geotechnical, Environmental and  
 Materials Consultants

**CONTAMINATION ASSESSMENT REPORT**  
 Prepared For  
 MAPCO SS # 6170  
 9020 95th St., Sebastian, FL

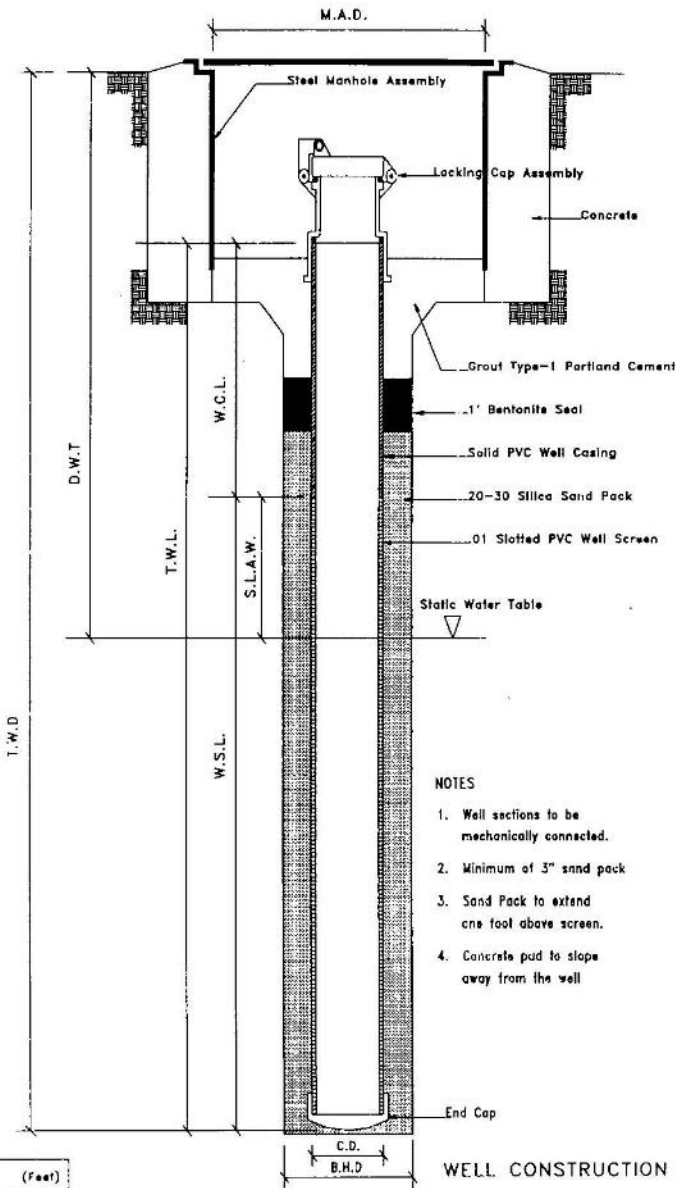
DATE: 6/17/94

DRAWN BY: SBD CHECKED BY: JPP

FILE NO.: 94-005 PROJECT: 3



SHALLOW MONITOR WELL - (TYPICAL)



NOTES

1. Well sections to be mechanically connected.
2. Minimum of 3" sand pack
3. Sand Pack to extend one foot above screen.
4. Concrete pad to slope away from the well

WELL CONSTRUCTION DIAGRAM

MONITOR WELL DATA	(Feet)
Depth to Water (D.T.W.)	3.0
Total Well Depth (T.W.D.)	12.5
Total Well Length (T.W.L.)	12.0
Screen Length Above Water (S.L.A.W.)	1.0
Well Screen Length (W.S.L.)	10.0
Well Casing Diameter (C.D.)	0.167
Well Borehole Diameter (B.H.D.)	0.833
Well Casing Length (W.C.L.)	2.0
Manhole Assembly Diameter (M.A.D.)	0.667

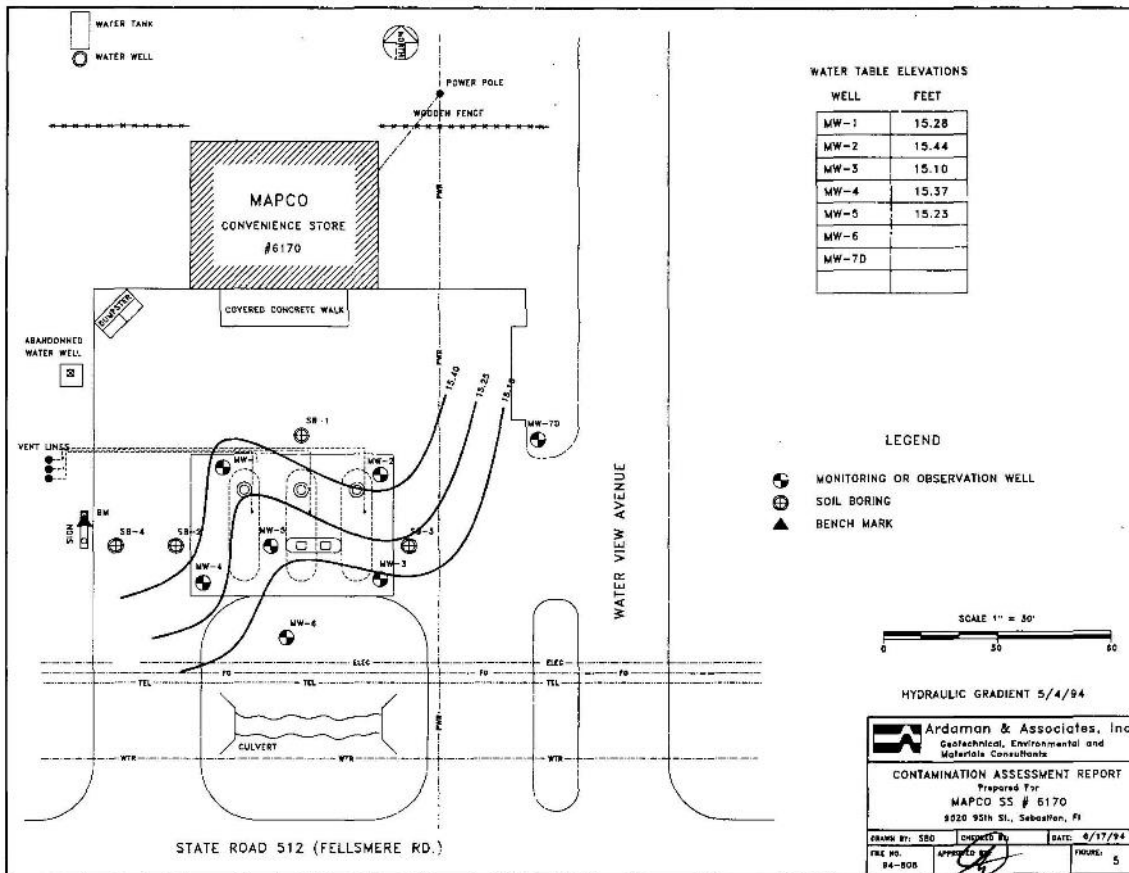
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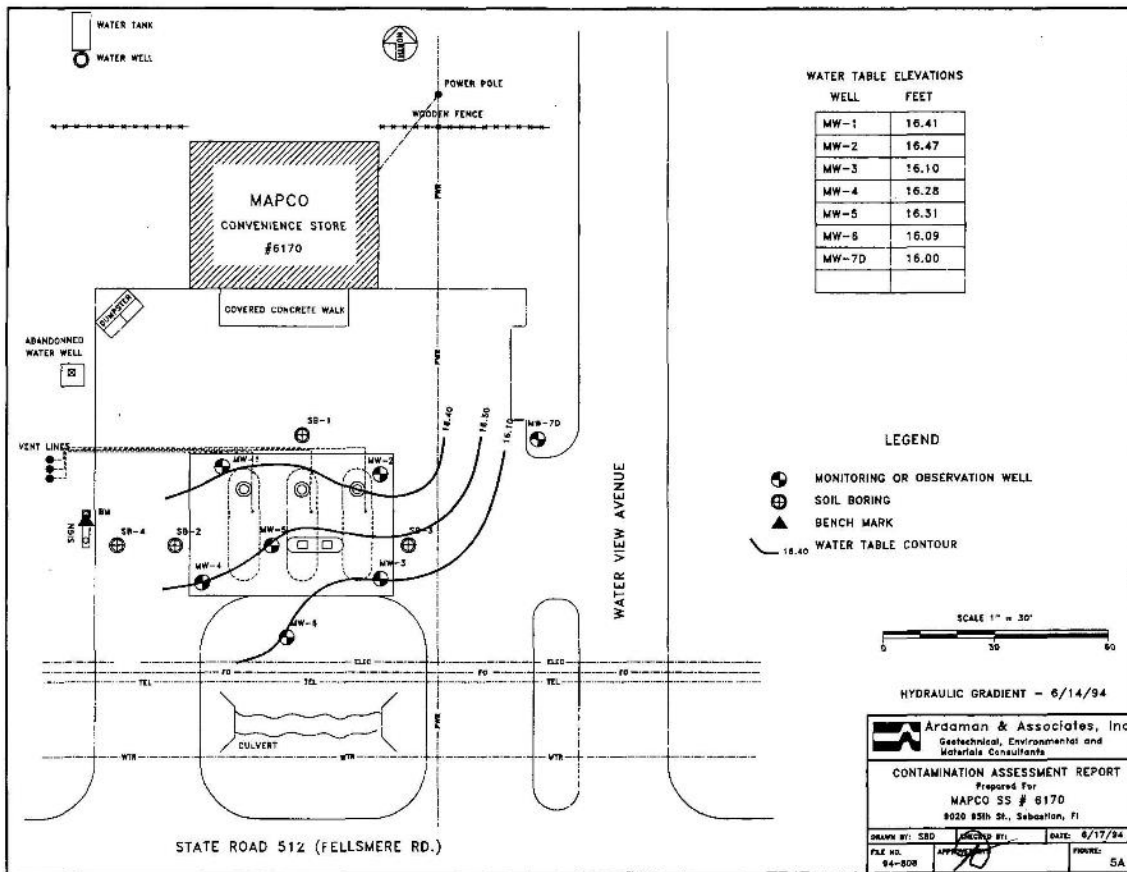
**Ardaman & Associates, Inc.**  
 Geotechnical, Environmental and  
 Materials Consultants

**CONTAMINATION ASSESSMENT REPORT**

Prepared For  
**MAPCO SS# 6170**  
 9020 85th St., Seabrook, FL

DRAWN BY: SBD	DESIGNED BY:	DATE: 8/17/94
FILE NO: 94-808	APPROVED BY: <i>[Signature]</i>	FIGURE: 4





WATER TABLE ELEVATIONS

WELL	FEET
MW-1	16.41
MW-2	16.47
MW-3	16.10
MW-4	16.28
MW-5	16.31
MW-6	16.09
MW-7D	16.00

LEGEND

- ⊕ MONITORING OR OBSERVATION WELL
- ⊕ SOIL BORING
- ▲ BENCH MARK
- 16.40 WATER TABLE CONTOUR

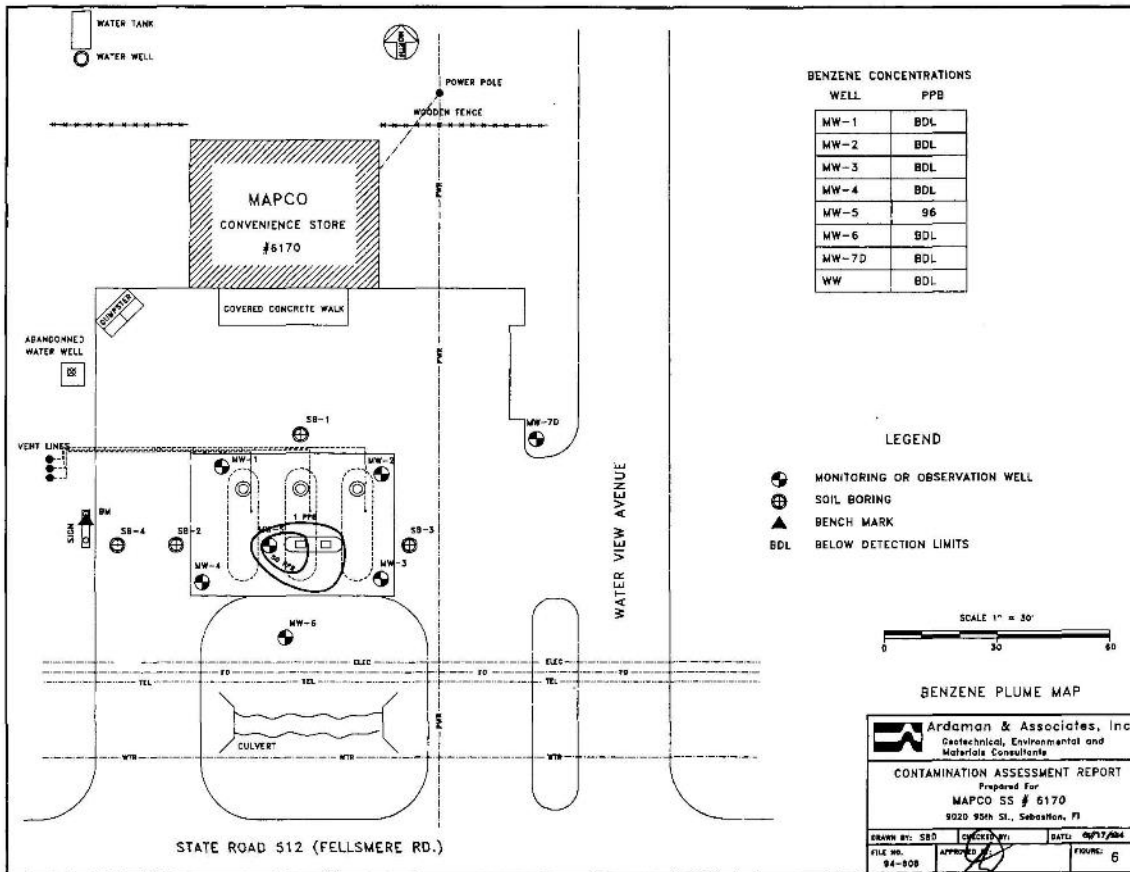


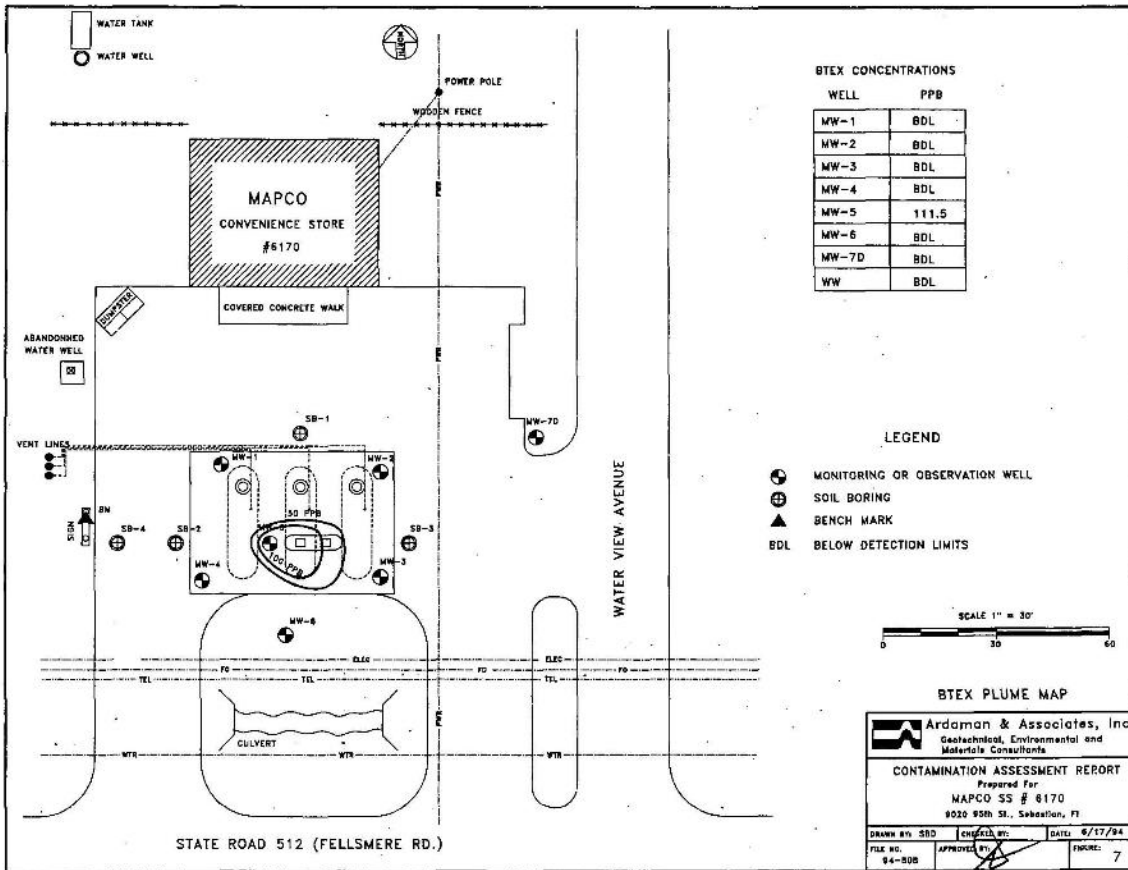
HYDRAULIC GRADIENT - 6/14/94

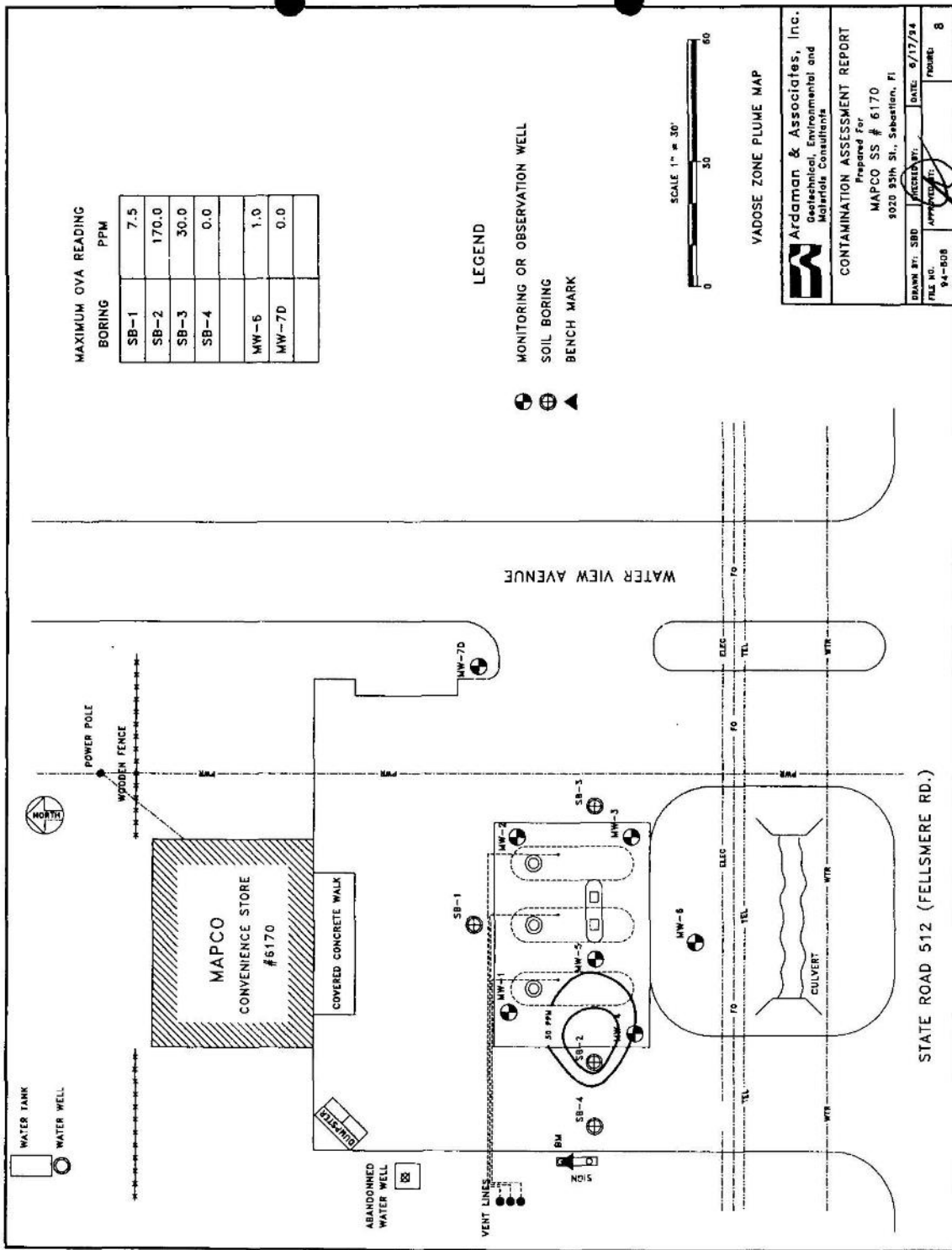
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**CONTAMINATION ASSESSMENT REPORT**  
Prepared For  
MAPCO SS # 6170  
8020 85th St., Sebastian, FL

DRAWN BY: SBD  
FILE NO. 94-808  
APPROVED BY: [Signature]  
DATE: 6/17/94  
FIGURE: 5A





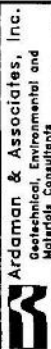


BORING	MAXIMUM OVA READING PPM
SB-1	7.5
SB-2	170.0
SB-3	30.0
SB-4	0.0
MW-6	1.0
MW-7D	0.0

**LEGEND**

- ⊕ MONITORING OR OBSERVATION WELL
- ⊕ SOIL BORING
- ▲ BENCH MARK

VADOSE ZONE PLUME MAP



**Ardaman & Associates, Inc.**  
 Geotechnical, Environmental and  
 Materials Consultants

**CONTAMINATION ASSESSMENT REPORT**  
 Prepared For:  
 MAPCO SS # 6170  
 9020 35th St., Sebastian, FL

DATE: 6/17/84  
 DRAWN BY: SBD  
 CHECKED BY: [Signature]  
 FILE NO: 84-508  
 SHEETS: 8



**TABLES**

**TABLE 1**  
**Monitoring Well Construction Details**

MAPCC # 6170  
9020 95th Street  
Sebastian, Florida

Well	Diameter	Casing		Screen		Total Depth	Sand Pack
		Material	Length	Material	Length		
MW-1*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-2*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-3*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-4*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-5*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-6	2.0"	Sch 40 PVC	2.00	0.01" Slotted PVC	10'	2.00-12.00	20/30 Silica Sand
MW-7D	2.0"	Sch 40 PVC	20.00	0.01" Slotted PVC	5'	20.00-25.00	20/30 Silica Sand

\*Wells installed by a previous contractor; therefore, well construction details are the result of physical measurements



**TABLE 2**  
**Monitoring Data - 6/14/94**

MAPCO #6170  
 9020 95th Street  
 Sebastian, Florida

Well	Casing Elevation	Depth to Water	Water Table Elevation	Liquid Phase Hydrocarbons
MW-1	19.93	3.52	16.41	0.00
MW-2	19.84	3.37	16.47	0.00
MW-3	18.90	2.80	16.10	0.00
MW-4	18.78	2.50	16.28	0.00
MW-5	19.36	3.05	16.31	0.00
MW-6	18.47	2.38	16.09	0.00
MW-7D	20.57	4.57	16.00	0.00

**TABLE 2A**  
**Monitoring Data - 5/19/94**

MAPCO #6170  
 9020 95th Street  
 Sebastian, Florida

Well	Casing Elevation	Depth to Water	Water Table Elevation	Liquid Phase Hydrocarbons
MW-1	19.93	4.65	15.28	0.00
MW-2	19.84	4.40	15.44	0.00
MW-3	18.90	3.80	15.10	0.00
MW-4	18.78	3.41	15.37	0.00
MW-5	19.36	4.13	15.23	0.00

TABLE 3  
Groundwater Quality Data

MAPCO #6170  
9020 95th Street  
Sebastian, Florida

Well	Temperature deg C	Conductivity mhos	CaCO3 mg/L	Iron mg/L	PH
MW-1	31.2	825	NT	NT	6.90
MW-2	32.4	931	NT	NT	6.70
MW-3	30.9	552	NT	NT	6.70
MW-4	30.7	807	NT	NT	6.70
MW-5	32.9	1302	NT	NT	7.20
MW-6	32.1	895	137	1.2	7.00
MW-7D	33.6	1244	120	5.6	6.50

\*NT - Not tested

TABLE 4

OVA Results Summary - PPM

MAPCC #6170  
9020 95th Street  
Sebastian, Florida

Depth (feet)

Sample ID	1'			2'			3'			4'			5'			6'			7'			8'			
	U	F	A	U	F	A	U	F	A	U	F	A	U	F	A	U	F	A	U	F	A	U	F	A	
SB-1	0	0	0	1	1	0	10	2.5	7.5	10	2.5	7.5													
SB-2	6	1	5	20	4	16	180	10	170	200	70	130													
SB-3	0	0	0	10	0	10	0	0	0	50	20	30													
SB-4	0	0	0	0	0	0	0	0	0	0	0	0													
MW-6	0	0	0	0	0	0	1	0	0	1	0	0													
MW-7D	0	0	0	0	0	0	8	8	0	45	45	0													

NOTES:  
All Readings in PPM  
U - Unfiltered  
F - Filtered  
A - Difference

TABLE 5

Summary of Groundwater Analytical Results

MAPCO # 6170  
 9020 95th Street  
 Sebastian, Florida  
 Collected 4/4/94

Well ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Total BTEX	MTBE	
MW-1	BDL	BDL	BDL	BDL	BDL	BDL	
MW-2	BDL	BDL	BDL	BDL	BDL	BDL	
MW-3	BDL	BDL	BDL	BDL	BDL	11	
MW-4	BDL	BDL	BDL	BDL	BDL	BDL	
MW-5	96	5	3.4	7.1	111.5	24	
MW-6*	BDL	BDL	BDL	BDL	BDL	BDL	
MW-7D*	BDL	BDL	BDL	BDL	BDL	BDL	
WW*	BDL	BDL	BDL	BDL	BDL	BDL	
Well ID	EPA 601	EDB	Napths	PAH's	TRPH (mg/L)	Pb Unfiltered (mg/L)	Pb Filtered (mg/L)
MW-1	BDL	BDL	BDL	BDL	BDL	0.023	
MW-2	BDL	BDL	BDL	BDL	BDL	0.031	
MW-3	BDL	BDL	BDL	BDL	BDL	0.0054	
MW-4	BDL	BDL	BDL	BDL	BDL	0.0069	
MW-5	BDL	BDL	130	BDL	BDL	BDL	

\* Collected 5/25/94

**APPENDIX A**  
**BORING LOGS**  
**&**  
**MONITORING WELL DIAGRAMS**

## GEOLOGIC BORING LOG SB-1

DEPTH (feet)	OVA (ppm)	DESCRIPTION
0	0	Orange, Fine to Medium Quartz Sand
2	0	
	7.5	Grey, Silty, Clayey, Fine to Medium Quartz Sand
4	7.5	<u>    </u>
5		

Owner: MAPCO Petroleum Inc.	Casing: NA
Location: 9020 95th Street Sebastian, FL.	Screen: NA
Date Installed: 5-19-94	Total Well Depth: NA
Drilling Method: Hand Auger	Static Water Table: 4.5'
Sample Method: Hand Auger	Remarks: Above Background Readings

## GEOLOGIC BORING LOG SB-2

DEPTH (feet)	OVA (ppm)	DESCRIPTION
0	5	Orange, Fine to Medium Quartz Sand
-2	16	
-4	170	Grey, Silty, Clayey Fine to Medium Quartz Sand
-5	130	<u>∇</u>

Owner: MAPCO Petroleum Inc.	Casing: NA
Location: 9020 95th Street Sebastian, FL.	Screen: NA
Date Installed: 5-19-94	Total Well Depth: NA
Drilling Method: Hand Auger	Static Water Table: 4.5'
Sample Method: Hand Auger	Remarks: Above Background Readings

## GEOLOGIC BORING LOG SB-3

DEPTH (feet)	OVA (ppm)	DESCRIPTION
0	0	Orange, Fine to Medium Quartz Sand
2	10	
4	0	Brown, Silty, Fine to Medium Quartz Sand
5	30	with Trace Clay <u>  v  </u>

Owner: MAPCO Petroleum Inc.	Casing: NA
Location: 9020 95th Street Sebastian, FL.	Screen: NA
Date Installed: 6-14-94	Total Well Depth: NA
Drilling Method: Hand Auger	Static Water Table: 4.5'
Sample Method: Hand Auger	Remarks: Above Background Readings

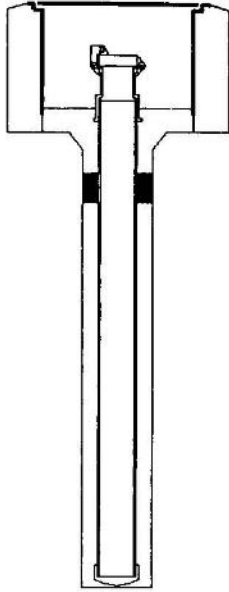


## GEOLOGIC BORING LOG SB-4

DEPTH (feet)	OVA (ppm)	DESCRIPTION
0	0	Orange, Fine to Medium Quartz Sand
2	0	Brown, Silty, Clayey Fine to Medium Quartz Sand
4	0	<u>        </u>
5		

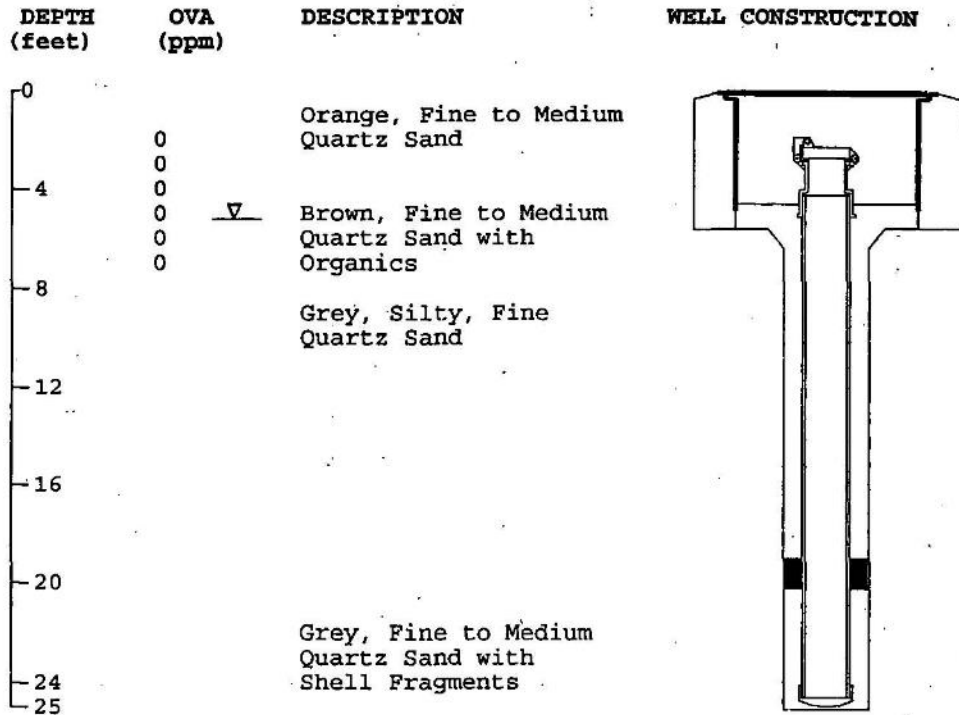
Owner: MAPCO Petroleum Inc.	Casing: NA
Location: 9020 95th Street Sebastian, FL.	Screen: NA
Date Installed: 6-14-94	Total Well Depth: NA
Drilling Method: Hand Auger	Static Water Table: 4.5'
Sample Method: Hand Auger	Remarks: Above Background Readings

## GEOLOGIC WELL LOG MW-6

DEPTH (feet)	OVA (ppm)	DESCRIPTION	WELL CONSTRUCTION
0	0		
-2	0	Orange, Fine to Medium Quartz Sand	
-4	1	Grey, Fine to Medium Quartz Sand	
-6	0	— ∇	
-8	0	Brown, Silty Sand with Organics	
-10	0	Grey, Silty, Clayey Quartz Sand	
-12			

Owner: MAPCO Petroleum Inc.	Casing: 2.0' of 2" Diameter Sch 40 PVC
Location: 9020 95th Street Sebastian, FL.	Screen: 10'-0.01" Slot 2" Diameter Sch 40 PVC
Date Installed: 5-19-94	Total Well Depth: 12.0'
Drilling Method: Hollow Stem Auger	Static Water Table: 4.5'
Sample Method: Hand Auger & Cuttings	Remarks: Above Background Readings

## GEOLOGIC WELL LOG MW-7D



Owner: MAPCO Petroleum Inc.	Casing: 20.0' of 2" Diameter Sch 40 PVC
Location: 9012 95th Street Sebastian, FL.	Screen: 5'-0.01" Slot 2" Diameter Sch 40 PVC
Date Installed: 5-19-94	Total Well Depth: 25.0'
Drilling Method: Hollow Stem Auger	Static Water Table: 4.5'
Sample Method: Hand Auger & Cuttings	Remarks: Above Background Readings



**APPENDIX B**  
**ANALYTICAL RESULTS**  
**&**  
**CHAIN OF CUSTODIES**

**SL SAVANNAH LABORATORIES**  
 & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D4-91357

Received: 04 MAY 94

Mr. Steve Dublin  
 Ardaman and Associates  
 3665 Park Central N. Blvd.  
 Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED				
91357-1	MW-1	05-04-94				
91357-2	MW-2	05-04-94				
91357-3	MW-3	05-04-94				
91357-4	MW-4	05-04-94				
91357-5	MW-5	05-04-94				
PARAMETER		91357-1	91357-2	91357-3	91357-4	91357-5
Purgeables (601/602)						
Bromodichloromethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform, ug/l		<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether, ug/l		<10J	<10J	<10J	<10J	<10J
Chloroform, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethylene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0

**SL SAVANNAH LABORATORIES**  
 & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D4-91357

Received: 04 MAY 94

Mr. Steve Dublin  
 Ardaman and Associates  
 3665 Park Central N. Blvd.  
 Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED				
91357-1	MW-1	05-04-94				
91357-2	MW-2	05-04-94				
91357-3	MW-3	05-04-94				
91357-4	MW-4	05-04-94				
91357-5	MW-5	05-04-94				
PARAMETER	91357-1	91357-2	91357-3	91357-4	91357-5	
Methylene chloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
1,1,2,2-Tetrachloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Trichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Vinyl chloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	96	
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	3.4	
Toluene, ug/l	<1.0	<1.0	<1.0	<1.0	5.0	
Xylenes, ug/l	<1.0	<1.0	<1.0	<1.0	7.1	
Methyl-tert-butyl ether (MTBE), ug/l	<10	<10	11	<10	24	
Date Analyzed	05.05.94	05.05.94	05.05.94	05.05.94	05.11.94	
Method Number	601/602	601/602	601/602	601/602	601/602	
Dilution factor	1	1	1	1	1	

**SL SAVANNAH LABORATORIES**  
& ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D4-91357

Received: 04 MAY 94

Mr. Steve Dublin  
Ardaman and Associates  
3665 Park Central N. Blvd.  
Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
Sampled By: SD/DB

REPORT OF RESULTS

Page 3

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES					DATE SAMPLED
91357-1	MW-1					05-04-94
91357-2	MW-2					05-04-94
91357-3	MW-3					05-04-94
91357-4	MW-4					05-04-94
91357-5	MW-5					05-04-94
PARAMETER	91357-1	91357-2	91357-3	91357-4	91357-5	
Polynuclear Aromatic Hydrocarbons (610)						
Acenaphthene, ug/l	<10	<10	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10	<10	<10
Benzo(b,k)fluoranthene, ug/l	<10	<10	<10	<10	<10	<10
Chrysene + Benzo(a)anthracene, ug/l	<10	<10	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	<10	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10	<10	130
Phenanthrene + Anthracene, ug/l	<10	<10	<10	<10	<10	<10
Pyrene, ug/l	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene, ug/l	<10	<10	<10	<10	<10	<10
1-Methylnaphthalene, ug/l	<10	<10	<10	<10	<10	<10
Date Extracted	05.05.94	05.05.94	05.05.94	05.05.94	05.05.94	05.05.94
Date Analyzed	05.11.94	05.11.94	05.11.94	05.11.94	05.11.94	05.11.94
Method Number	EPA 610	EPA 610	EPA 610	EPA 610	EPA 610	EPA 610
Dilution factor	1	1	1	1	1	1

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Received: 04 MAY 94

Mr. Steve Dublin  
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 Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 4

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES					DATE SAMPLED
91357-1	MW-1					05-04-94
91357-2	MW-2					05-04-94
91357-3	MW-3					05-04-94
91357-4	MW-4					05-04-94
91357-5	MW-5					05-04-94
PARAMETER	91357-1	91357-2	91357-3	91357-4	91357-5	
Ethylene Dibromide						
1,2-Dibromoethane (EDB) , ug/l	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Date Analyzed	05.06.94	05.06.94	05.06.94	05.06.94	05.06.94	05.06.94
Method Number	EPA 504.1	EPA 504.1	EPA 504.1	EPA 504.1	EPA 504.1	EPA 504.1
Petroleum Hydrocarbons						
Petroleum Hydrocarbons, mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Date Extracted	05.09.94	05.09.94	05.09.94	05.09.94	05.09.94	05.09.94
Date Analyzed	05.09.94	05.09.94	05.09.94	05.09.94	05.09.94	05.09.94
Method Number	EPA 418.1	EPA 418.1	EPA 418.1	EPA 418.1	EPA 418.1	EPA 418.1
Lead						
Lead, mg/l	0.023	0.031	0.0054	0.0069	<0.0050	
Date Analyzed	05.09.94	05.09.94	05.09.94	05.09.94	05.10.94	
Method Number	EPA 239.2	EPA 239.2	EPA 239.2	EPA 239.2	EPA 239.2	EPA 239.2



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LOG NO: D4-91357

Received: 04 MAY 94

Mr. Steve Dublin  
Ardaman and Associates  
3665 Park Central N. Blvd.  
Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
Sampled By: SD/DB

REPORT OF RESULTS

Page 5

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
91357-6	Equipment Blank	05-04-94
PARAMETER	91357-6	
Purgeables (601/602)		
Bromodichloromethane, ug/l		<1.0
Bromoform, ug/l		<5.0
Bromomethane, ug/l		<1.0
Carbon tetrachloride, ug/l		<1.0
Chlorobenzene, ug/l		<1.0
Chloroethane, ug/l		<1.0
2-Chloroethylvinyl Ether, ug/l		<10J
Chloroform, ug/l		<1.0
Chloromethane, ug/l		<1.0
Dibromochloromethane, ug/l		<1.0
1,2-Dichlorobenzene, ug/l		<1.0
1,3-Dichlorobenzene, ug/l		<1.0
1,4-Dichlorobenzene, ug/l		<1.0
Dichlorodifluoromethane, ug/l		<1.0
1,1-Dichloroethane, ug/l		<1.0
1,2-Dichloroethane, ug/l		<1.0
1,1-Dichloroethene, ug/l		<1.0
trans-1,2-Dichloroethylene, ug/l		<1.0
1,2-Dichloropropane, ug/l		<1.0
cis-1,3-Dichloropropene, ug/l		<1.0
trans-1,3-Dichloropropene, ug/l		<1.0
Methylene chloride, ug/l		<1.0
1,1,2,2-Tetrachloroethane, ug/l		<1.0
Tetrachloroethene, ug/l		<1.0
1,1,1-Trichloroethane, ug/l		<1.0

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LOG NO: D4-91357

Received: 04 MAY 94

Mr. Steve Dublin  
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Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
Sampled By: SD/DB

REPORT OF RESULTS

Page 6

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
91357-6	Equipment Blank	05-04-94
PARAMETER	91357-6	
1,1,2-Trichloroethane, ug/l	<1.0	
Trichloroethene, ug/l	<1.0	
Trichlorofluoromethane, ug/l	<1.0	
Vinyl chloride, ug/l	<1.0	
Benzene, ug/l	<1.0	
Ethylbenzene, ug/l	<1.0	
Toluene, ug/l	<1.0	
Xylenes, ug/l	<1.0	
Methyl-tert-butyl ether (MTBE), ug/l	<10	
Date Analyzed	05.05.94	
Method Number	601/602	
Dilution factor	1	

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LOG NO: D4-91357

Received: 04 MAY.94

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 Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 7

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
91357-6	Equipment Blank	05-04-94
PARAMETER		91357-6
Polynuclear Aromatic Hydrocarbons (610)		
Acenaphthene, ug/l		<10
Acenaphthylene, ug/l		<10
Benzo(a)pyrene, ug/l		<10
Benzo(g,h,i)perylene, ug/l		<10
Benzo(b,k)fluoranthene, ug/l		<10
Chrysene + Benzo(a)anthracene, ug/l		<10
Fluoranthene, ug/l		<10
Fluorene, ug/l		<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l		<10
Naphthalene, ug/l		<10
Phenanthrene + Anthracene, ug/l		<10
Pyrene, ug/l		<10
2-Methylnaphthalene, ug/l		<10
1-Methylnaphthalene, ug/l		<10
Date Extracted		05.05.94
Date Analyzed		05.11.94
Method Number		EPA 610
Dilution factor		1
Ethylene Dibromide		
1,2-Dibromoethane (EDB), ug/l		<0.020
Date Analyzed		05.06.94
Method Number		EPA 504.1
Petroleum Hydrocarbons		
Petroleum Hydrocarbons, mg/l		<1.0
Date Extracted		05.09.94
Date Analyzed		05.09.94
Method Number		EPA 418.1

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LOG NO: D4-91357

Received: 04 MAY 94

Mr. Steve Dublin  
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Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
Sampled By: SD/DB

REPORT OF RESULTS

Page 8

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
91357-6	Equipment Blank	05-04-94
PARAMETER		91357-6
Lead		
Lead, mg/l		<0.0050
Date Analyzed		05.09.94
Method Number		EPA 239.2

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 Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 9

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES			
91357-7	Lab Blank			
91357-8	Accuracy - % Recovery (Mean)			
91357-9	Precision - Relative % Difference			
91357-10	Detection Limit			
PARAMETER	91357-7	91357-8	91357-9	91357-10
Purgeables (601/602)				
Bromodichloromethane, ug/l	<1.0	---	---	1.0
Bromoform, ug/l	<5.0	---	---	5.0
Bromomethane, ug/l	<1.0	---	---	1.0
Carbon tetrachloride, ug/l	<1.0	---	---	1.0
Chlorobenzene, ug/l	<1.0	87 %	14 %	1.0
Chloroethane, ug/l	<1.0	---	---	1.0
2-Chloroethylvinyl Ether, ug/l	<10J	---	---	10J
Chloroform, ug/l	<1.0	---	---	1.0
Chloromethane, ug/l	<1.0	---	---	1.0
Dibromochloromethane, ug/l	<1.0	---	---	1.0
1,2-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,3-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,4-Dichlorobenzene, ug/l	<1.0	---	---	1.0
Dichlorodifluoromethane, ug/l	<1.0	---	---	1.0
1,1-Dichloroethane, ug/l	<1.0	---	---	1.0
1,2-Dichloroethane, ug/l	<1.0	---	---	1.0
1,1-Dichloroethene, ug/l	<1.0	106 %	26 %	1.0
trans-1,2-Dichloroethylene, ug/l	<1.0	---	---	1.0
1,2-Dichloropropane, ug/l	<1.0	---	---	1.0
cis-1,3-Dichloropropene, ug/l	<1.0	---	---	1.0
trans-1,3-Dichloropropene, ug/l	<1.0	---	---	1.0
Methylene chloride, ug/l	<1.0	---	---	1.0

**SL SAVANNAH LABORATORIES**  
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LOG NO: D4-91357

Received: 04 MAY 94

Mr. Steve Dublin  
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 3665 Park Central N. Blvd.  
 Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 10

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91357-7 Lab Blank  
 91357-8 Accuracy - % Recovery (Mean)  
 91357-9 Precision - Relative % Difference  
 91357-10 Detection Limit

PARAMETER	91357-7	91357-8	91357-9	91357-10
1,1,2,2-Tetrachloroethane, ug/l	<1.0	---	---	1.0
Tetrachloroethene, ug/l	<1.0	---	---	1.0
1,1,1-Trichloroethane, ug/l	<1.0	---	---	1.0
1,1,2-Trichloroethane, ug/l	<1.0	---	---	1.0
Trichloroethene, ug/l	<1.0	103 %	17 %	1.0
Trichlorofluoromethane, ug/l	<1.0	---	---	1.0
Vinyl chloride, ug/l	<1.0	---	---	1.0
Benzene, ug/l	<1.0	83 %	7.2 %	1.0
Ethylbenzene, ug/l	<1.0	---	---	1.0
Toluene, ug/l	<1.0	93 %	8.6 %	1.0
Xylenes, ug/l	<1.0	---	---	1.0
Methyl-tert-butyl ether (MTBE), ug/l	<10	---	---	10
Date Analyzed	05.05.94	---	---	---
Method Number	601/602	---	---	---

**SL SAVANNAH LABORATORIES**  
 & ENVIRONMENTAL SERVICES, INC.

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LOG NO: D4-91357

Received: 04 MAY 94

Mr. Steve Dublin  
 Ardaman and Associates  
 3665 Park Central N. Blvd.  
 Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 11

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91357-7 Lab Blank  
 91357-8 Accuracy - % Recovery (Mean)  
 91357-9 Precision - Relative % Difference  
 91357-10 Detection Limit

PARAMETER	91357-7	91357-8	91357-9	91357-10
<b>Polynuclear Aromatic Hydrocarbons (610)</b>				
Acenaphthene, ug/l	<10	---	---	10
Acenaphthylene, ug/l	<10	76 %	2.6 %	10
Benzo(a)pyrene, ug/l	<10	---	---	10
Benzo(g,h,i)perylene, ug/l	<10	---	---	10
Benzo(b,k)fluoranthene, ug/l	<10	---	---	10
Chrysene + Benzo(a)anthracene, ug/l	<10	---	---	10
Fluoranthene, ug/l	<10	79 %	5.0 %	10
Fluorene, ug/l	<10	82 %	2.4 %	10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	---	---	10
Naphthalene, ug/l	<10	66 %	1.5 %	10
Phenanthrene + Anthracene, ug/l	<10	---	---	10
Pyrene, ug/l	<10	80 %	6.3 %	10
2-Methylnaphthalene, ug/l	<10	---	---	10
1-Methylnaphthalene, ug/l	<10	---	---	10
Date Extracted	05.05.94	---	---	---
Date Analyzed	05.11.94	---	---	---
Method Number	EPA 610	---	---	---
<b>Ethylene Dibromide</b>				
1,2-Dibromoethane (EDB) , ug/l	<0.020	90 %	0 %	0.020
Date Analyzed	05.06.94	---	---	---
Method Number	EPA 504.1	---	---	---

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LOG NO: D4-91357

Received: 04 MAY 94

Mr. Steve Dublin  
Ardaman and Associates  
3665 Park Central N. Blvd.  
Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
Sampled By: SD/DB

REPORT OF RESULTS

Page 12

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91357-7 Lab Blank  
91357-8 Accuracy - % Recovery (Mean)  
91357-9 Precision - Relative % Difference  
91357-10 Detection Limit

PARAMETER	91357-7	91357-8	91357-9	91357-10
Petroleum Hydrocarbons				
Petroleum Hydrocarbons, mg/l	<1.0	70 %	2.8 %	1.0
Date Extracted	05.09.94	---	---	---
Date Analyzed	05.09.94	---	---	---
Method Number	EPA 418.1	---	---	---
Lead				
Lead, mg/l	<0.0050	98 %	4.1 %	0.0050
Date Analyzed	05.09.94	---	---	---
Method Number	EPA 239.2	---	---	---

Method References: EPA 40 CFR Part 136, EPA 600/4-79-020 and EPA 600/4-88-039.  
J - Estimated Value.

Paul Canevaro

Final Page Of Report

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL



# SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

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 900 Lakeside Drive, Mobile, AL 36683  
 Phone: (205) 666-6633  
 6712 Benjamin Road, Suite 100, Tampa, FL 33634  
 Phone: (813) 885-7427

## ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER		PROJECT NAME		MATRIX TYPE		REQUIRED ANALYSES		PAGE		OF	
94-808		MAPCO #		EPA 601/602		EPA 610		TRPH		STANDARD TAT	
IZDAMAN & ASSOCIATES		(305) 969-8788		AIR MATRIX		EPA 610		PB		EXPEDITED TAT	
3665 PARK CENTRAL BLVD. N. POMPANO FL		CITY, STATE, ZIP CODE		NON-AQUEOUS MATRIX		EPA 610		EPA 610		REPORT DUE DATE	
STEVE DUBLIN / DENNIS BOURBON		CLIENT PROJECT MANAGER		AQUEOUS MATRIX		EPA 610		EPA 610		* SUBJECT TO RUSH FEES	
SAMPLING		SAMPLE IDENTIFICATION		NUMBER OF CONTAINERS SUBMITTED		NUMBER OF CONTAINERS SUBMITTED		NUMBER OF CONTAINERS SUBMITTED		NUMBER OF CONTAINERS SUBMITTED	
DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME
5/19		MW-1		3	2	1	1				
5/19		MW-2		3	2	1	1				
5/19		MW-3		3	2	1	1				
5/19		MW-4		3	2	1	1				
5/19		MW-5		3	2	1	1				
5/19		EQUIPMENT BLANK		3	2	1	1				
RELINQUISHED BY: (SIGNATURE)		DATE		TIME		RECEIVED BY: (SIGNATURE)		DATE		TIME	
Carole Hendersh		5/15/94		15:00		W. B. Bunker		5/19/94		19:08	
RECEIVED BY: (SIGNATURE)		DATE		TIME		RELINQUISHED BY: (SIGNATURE)		DATE		TIME	
FOR SAVANNAH LABORATORY USE ONLY				CUSTOMER CONTACT				INDUSTRY SEALING			
RECEIVED FOR LABORATORY USE (SIGNATURE)				DATE				TIME			
Savannah Laboratories				5/19/94				19:08			
LOG IN				LOG OUT				LOG IN			
D91357											
LABORATORY REMARKS											

**SL SAVANNAH LABORATORIES**  
 & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D4-91548

Received: 25 MAY 94

Mr. Steve Dublin  
 Ardaman & Associates, Inc.  
 2608 West 84th. Street  
 Hialeah, FL 33016

Project: #94-808 (MAPCO)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED			
91548-1	MW-6	05-25-94			
91548-2	MW-7D	05-25-94			
91548-3	WW	05-25-94			
91548-4	Equipment	05-25-94			
PARAMETER	91548-1	91548-2	91548-3	91548-4	
Purgeable Aromatics (602)					
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	
Chlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
Toluene, ug/l	<1.0	<1.0	<1.0	<1.0	
Xylenes, ug/l	<1.0	<1.0	<1.0	<1.0	
Methyl-Tert-Butyl-Ether (MTBE), ug/l	<10	<10	<10	<10	
Date Analyzed	05.26.94	05.26.94	05.26.94	05.26.94	
Method Number	EPA 602	EPA 602	EPA 602	EPA 602	
Dilution factor	1	1	1	1	

**SL SAVANNAH LABORATORIES**  
 & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D4-91548

Received: 25 MAY 94

Mr. Steve Dublin  
 Ardaman & Associates, Inc.  
 2608 West 84th. Street  
 Hialeah, FL 33016

Project: #94-808 (MAPCO)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED			
91548-1	MW-6	05-25-94			
91548-2	MW-7D	05-25-94			
91548-3	WW	05-25-94			
91548-4	Equipment	05-25-94			
PARAMETER	91548-1	91548-2	91548-3	91548-4	
Polynuclear Aromatic Hydrocarbons (610)					
Acenaphthene, ug/l	<10	<10	<10	<10	
Acenaphthylene, ug/l	<10	<10	<10	<10	
Benzo(a)pyrene, ug/l	<10	<10	<10	<10	
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10	
Benzo(b,k)fluoranthene, ug/l	<10	<10	<10	<10	
Chrysene + Benzo(a)anthracene, ug/l	<10	<10	<10	<10	
Fluoranthene, ug/l	<10	<10	<10	<10	
Fluorene, ug/l	<10	<10	<10	<10	
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	<10	<10	<10	
Naphthalene, ug/l	<10	<10	<10	<10	
Phenanthrene + Anthracene, ug/l	<10	<10	<10	<10	
Pyrene, ug/l	<10	<10	<10	<10	
2-Methylnaphthalene, ug/l	<10	<10	<10	<10	
1-Methylnaphthalene, ug/l	<10	<10	<10	<10	
Date Extracted	05.25.94	05.25.94	05.25.94	05.25.94	
Date Analyzed	06.01.94	06.01.94	06.01.94	06.01.94	
Method Number	EPA 610	EPA 610	EPA 610	EPA 610	
Dilution factor	1	1	1	1	

**SL SAVANNAH LABORATORIES**  
 & ENVIRONMENTAL SERVICES, INC.

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LOG NO: D4-91548

Received: 25 MAY 94

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Project: #94-808 (MAPCO)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 3

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91548-5 Lab Blank  
 91548-6 Accuracy - % Recovery (Mean)  
 91548-7 Precision - Relative % Difference  
 91548-8 Detection Limit

PARAMETER	91548-5	91548-6	91548-7	91548-8
Purgeable Aromatics (602)				
Benzene, ug/l	<1.0	112 %	5.3 %	1.0
Chlorobenzene, ug/l	<1.0	89 %	8.9 %	1.0
1,2-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,3-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,4-Dichlorobenzene, ug/l	<1.0	---	---	1.0
Ethylbenzene, ug/l	<1.0	---	---	1.0
Toluene, ug/l	<1.0	102 %	3.9 %	1.0
Xylenes, ug/l	<1.0	---	---	1.0
Methyl-Tert-Butyl-Ether (MTBE), ug/l	<10	---	---	10
Date Analyzed	05.26.94	---	---	---
Method Number	EPA 602	---	---	---

**SL SAVANNAH LABORATORIES**  
 & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D4-91548

Received: 25 MAY 94

Mr. Steve Dublin  
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 2608 West 84th. Street  
 Hialeah, FL 33016

Project: #94-808 (MAPCO)  
 Sampled By: SD/DB

REPORT OF RESULTS


Page 4

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91548-5 Lab Blank  
 91548-6 Accuracy - % Recovery (Mean)  
 91548-7 Precision - Relative % Difference  
 91548-8 Detection Limit

PARAMETER	91548-5	91548-6	91548-7	91548-8
Polynuclear Aromatic Hydrocarbons (610)				
Acenaphthene, ug/l	<10	---	---	10
Acenaphthylene, ug/l	<10	80 %	11 %	10
Benzo(a)pyrene, ug/l	<10	---	---	10
Benzo(g,h,i)perylene, ug/l	<10	---	---	10
Benzo(b,k)fluoranthene, ug/l	<10	---	---	10
Chrysene + Benzo(a)anthracene, ug/l	<10	---	---	10
Fluoranthene, ug/l	<10	88 %	8.0 %	10
Fluorene, ug/l	<10	82 %	3.7 %	10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	---	---	10
Naphthalene, ug/l	<10	80 %	14 %	10
Phenanthrene + Anthracene, ug/l	<10	---	---	10
Pyrene, ug/l	<10	88 %	6.8 %	10
2-Methylnaphthalene, ug/l	<10	---	---	10
1-Methylnaphthalene, ug/l	<10	---	---	10
Date Extracted	05.25.94	---	---	---
Date Analyzed	06.01.94	---	---	---
Method Number	EPA 610	---	---	---

Method Reference: EPA 40 CFR Part 136.

  
 Paul Canevaro

Final Page Of Report

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

# SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

Phone: (813) 352-0165  
 Fax (912) 352-0165  
 Phone: (813) 354-7858  
 Fax (804) 878-9504  
 Phone: (904) 878-3994  
 Fax (904) 878-9504  
 Phone: (305) 421-7400  
 Fax (305) 421-2584  
 Phone: (205) 668-8633  
 Fax (205) 668-8696  
 Phone: (813) 885-7427  
 Fax (813) 885-7049

5102 LaRoche Avenue, Savannah, GA 31404  
 2846 Industrial Plaza Drive, Tallahassee, FL 32301  
 414 Southwold 12th Avenue, Deerfield Beach, FL 33442  
 900 Lakeside Drive, Mobile, AL 36693  
 6712 Benjamin Road, Suite 100, Tampa, FL 33634

## ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME	MATRIX TYPE	REQUIRED ANALYSES	PAGE	OF
	94-808	MARCO	AIR MATRIX		1	1
CLIENT NAME: ARDMAN & ASSOCIATES CLIENT ADDRESS: 3465 PACEWALKER BLVD. N., POMPANO BEACH, FL 33069 SAMPLER(S) NAME(S): J. DUBOIN / D. BOURGEOIS / S. DUBOIN TELEPHONE/FAX NO.: (305) 969-8788 / (305) 969-0335 (EXT) CITY, STATE, ZIP CODE: POMPANO BEACH, FL 33069			STANDARD TAT <input type="checkbox"/> EXPEDITED TAT* <input type="checkbox"/> REPORT DUE DATE: 6/2/94 * SUBJECT TO RUSH FEES			
SAMPLE IDENTIFICATION			NUMBER OF CONTAINERS SUBMITTED			
DATE	TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	
5/28/94	13:00	MW-6	✓		3	1
5/28/94	12:50	MW-7D	✓		3	1
5/29/94	12:30	WW	✓		3	1
5/29/94	13:15	EQUIPMENT	✓		3	1
RECEIVED BY: (SIGNATURE) <i>Chris Ch...</i> DATE: 5/28/94 TIME: 15:30			RECEIVED BY: (SIGNATURE) <i>[Signature]</i> DATE: 5/25/94 TIME: 16:00			

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED BY: (SIGNATURE) *[Signature]* DATE: 5/28/94 TIME: 16:00

CUSTODY INTACT: YES  NO

LABORATORY REMARKS: DATA 91548



**APPENDIX C**  
**AQUIFER CHARACTERISTICS**  
**&**  
**TESTING**

## SLUG TEST CALCULATIONS

### UNCONFINED AQUIFER WITH PARTIALLY PENETRATING WELL

File Number 94-808

Well Number MW-6

#### INPUT DATA

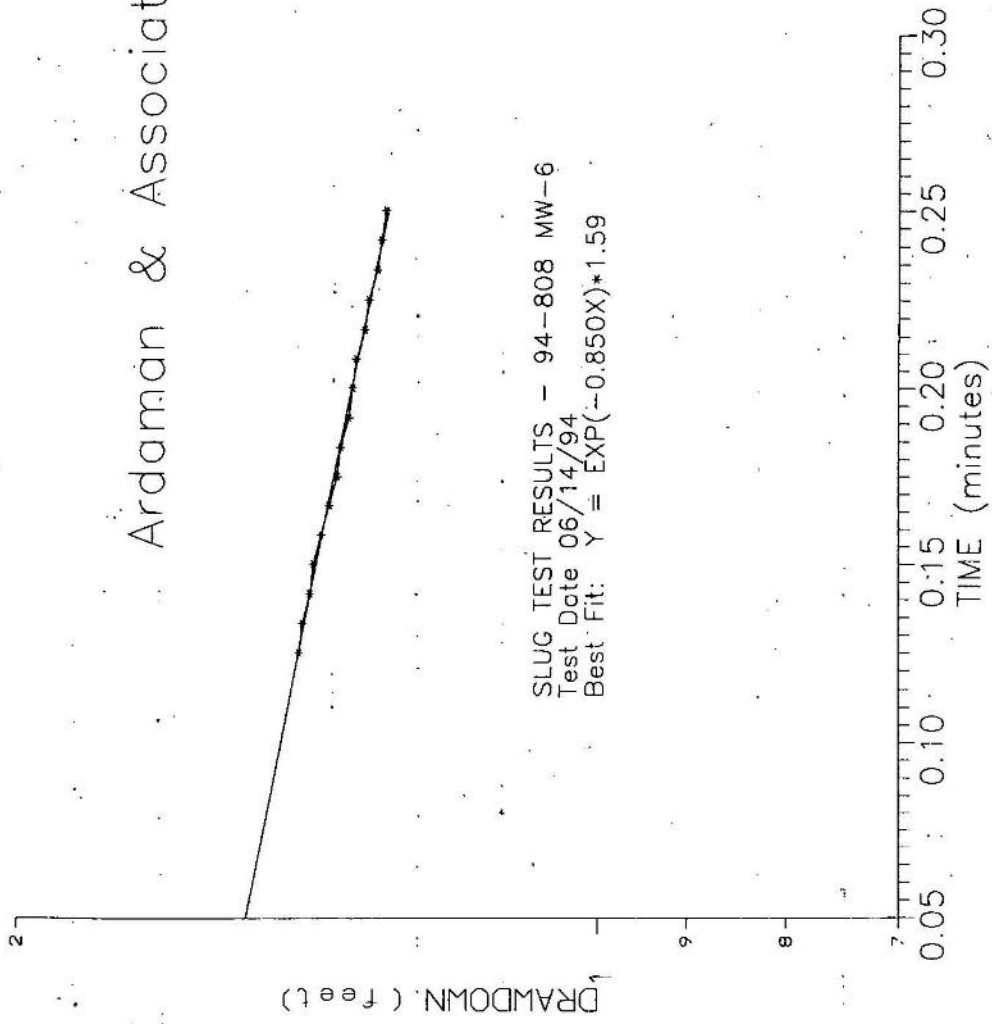
Static Water Table to Well Bottom (H) ft	9.12
Aquifer thickness (D) ft	100.00
Length of Well Screen in Water (L) ft	9.12
Radius of Casing (Rc) inches	2.00
Y Value @ t equals 0 (Yo) ft	1.59
Y Value @ Time t (Y) ft	1.34
Time (t) sec	12.00
Radius of borehole (Rw) inches	5.00
Dimensionless Coefficient (A)	1.85
Dimensionless Coefficient (B)	0.30
Estimated Porosity (n)	0.25

#### CALCULATIONS

L/Rw	21.89
$X = \ln(D-H)/Rw$	5.39
IF $X \geq 6$ use 6	5.39
$\ln(Rc/Rw) = (1.1/\ln(L/Rw) + (A+B*(X))/L/Rw)^{-1}$	1.94
$Y = (\ln(Yo/Y))/t$	0.01
$K = (Rc^2 * \ln(Rc/Rw) / 2L) * Y$	4.217E-05
K in gallons per day per square foot	27.25
T in square feet per day	364.37



Ardaman & Associates, Inc.



SE2000  
Environmental Logger  
06/15 08:14

Unit# TEST0HPP Test 0

Setups:           INPUT 1  
-----  
Type               Level (F)  
Mode               TOC  
I.D.               MW-6

Reference           0.000  
SG                   1.000  
Linearity           0.095  
Scale factor        20.056  
Offset               0.002  
Delay mSEC          50.000

Step 0 06/14 13:48:18

Elapsed Time       INPUT 1  
-----  
0.0000              5.270  
0.0083              4.147  
0.0166              1.569  
0.0250              0.724  
0.0333              1.200  
0.0416              1.677  
0.0500              1.759  
0.0583              1.620  
0.0666              1.486  
0.0750              1.448  
0.0833              1.473  
0.0916              1.492  
0.1000              1.486  
0.1083              1.461  
0.1166              1.442  
0.1250              1.429  
0.1333              1.423  
0.1416              1.410  
0.1500              1.404  
0.1583              1.391  
0.1666              1.378  
0.1750              1.365  
0.1833              1.359  
0.1916              1.346  
0.2000              1.340  
0.2083              1.334  
0.2166              1.321  
0.2250              1.315  
0.2333              1.302  
0.2416              1.296

0.2500	1.289
0.2583	1.270
0.2666	1.270
0.2750	1.257
0.2833	1.251
0.2916	1.245
0.3000	1.238
0.3083	1.226
0.3166	1.219
0.3250	1.219
0.3333	1.207
0.3500	1.194
0.3666	1.175
0.3833	1.162
0.4000	1.156
0.4166	1.137
0.4333	1.124
0.4500	1.111
0.4666	1.099
0.4833	1.086
0.5000	1.073
0.5166	1.054
0.5333	1.041
0.5500	1.029
0.5666	1.022
0.5833	1.003
0.6000	0.991
0.6166	0.978
0.6333	0.965
0.6500	0.959
0.6666	0.940
0.6833	0.933
0.7000	0.914
0.7166	0.908
0.7333	0.902
0.7500	0.889
0.7666	0.876
0.7833	0.870
0.8000	0.857
0.8166	0.851
0.8333	0.845
0.8500	0.825
0.8666	0.825
0.8833	0.819
0.9000	0.806
0.9166	0.794
0.9333	0.787
0.9500	0.781
0.9666	0.775
0.9833	0.768
1.0000	0.762
1.2000	0.686
1.4000	0.629
1.6000	0.571

## SLUG TEST CALCULATIONS

### UNCONFINED AQUIFER WITH PARTIALLY PENETRATING WELL

File Number 94-808

Well Number MW-7D

#### INPUT DATA

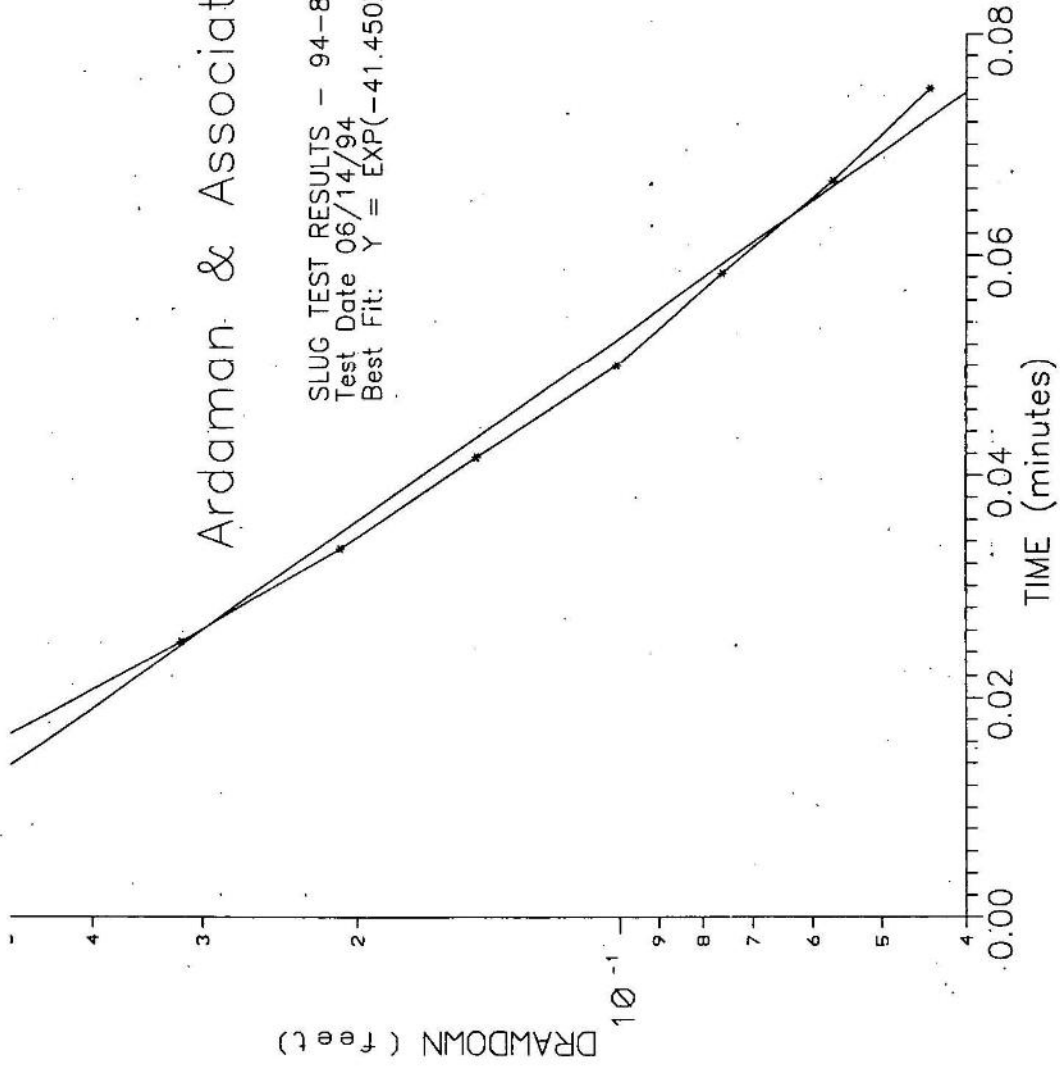
Static Water Table to Well Bottom (H) ft	19.68
Aquifer thickness (D) ft	100.00
Length of Well Screen in Water (L) ft	5.00
Radius of Casing (Rc) inches	2.00
Y Value @ t equals 0 (Yo) ft	0.88
Y Value @ Time t (Y) ft	0.11
Time (t) sec	3.00
Radius of borehole (Rw) inches	5.00
Dimensionless Coefficient (A)	1.85
Dimensionless Coefficient (B)	0.30
Estimated Porosity (n)	0.25

#### CALCULATIONS

L/Rw	12.00
$X = \ln(D-H)/Rw$	5.26
IF $X \geq 6$ use 6	5.26
$\ln(Rc/Rw) = (1.1/\ln(L/Rw) + (A+B*(X))/L/Rw)^{-1}$	1.37
$Y = (\ln(Yo/Y))/t$	0.69
$K = (Rc^2 * \ln(Rc/Rw) / 2L) * Y$	2.635E-03
K in gallons per day per square foot	1702.99
T in square feet per day	22767.29

Ardaman & Associates, Inc.

SLUG TEST RESULTS - 94-808 MW-7D  
Test Date 06/14/94  
Best Fit:  $Y = EXP(-41.450X) * 0.883$



SE2000  
Environmental Logger  
06/15 08:55

Unit# TEST0HPP Test 4

Setups: INPUT 1

-----  
Type Level (F)  
Mode TOC  
I.D. MW7D

Reference 0.000  
SG 1.000  
Linearity 0.095  
Scale factor 20.056  
Offset 0.002  
Delay mSEC 50.000

Step 0 06/14 14:28:52

Elapsed Time INPUT 1

-----  
0.0000 1.608  
0.0083 0.858  
0.0166 0.489  
0.0250 0.305  
0.0333 0.203  
0.0416 0.146  
0.0500 0.108  
0.0583 0.076  
0.0666 0.063  
0.0750 0.044  
0.0833 0.038  
0.0916 0.025  
0.1000 0.025  
0.1083 0.025  
0.1166 0.019  
0.1250 0.019  
0.1333 0.019  
0.1416 0.019  
0.1500 0.019  
0.1583 0.012  
0.1666 0.012  
0.1750 0.006  
0.1833 0.012  
0.1916 0.006  
0.2000 0.012  
0.2083 0.006  
0.2166 0.012  
0.2250 0.012  
0.2333 0.006  
0.2416 0.006

## SLUG TEST CALCULATIONS

### UNCONFINED AQUIFER WITH PARTIALLY PENETRATING WELL

File Number 94-808

Well Number MW-4

#### INPUT DATA

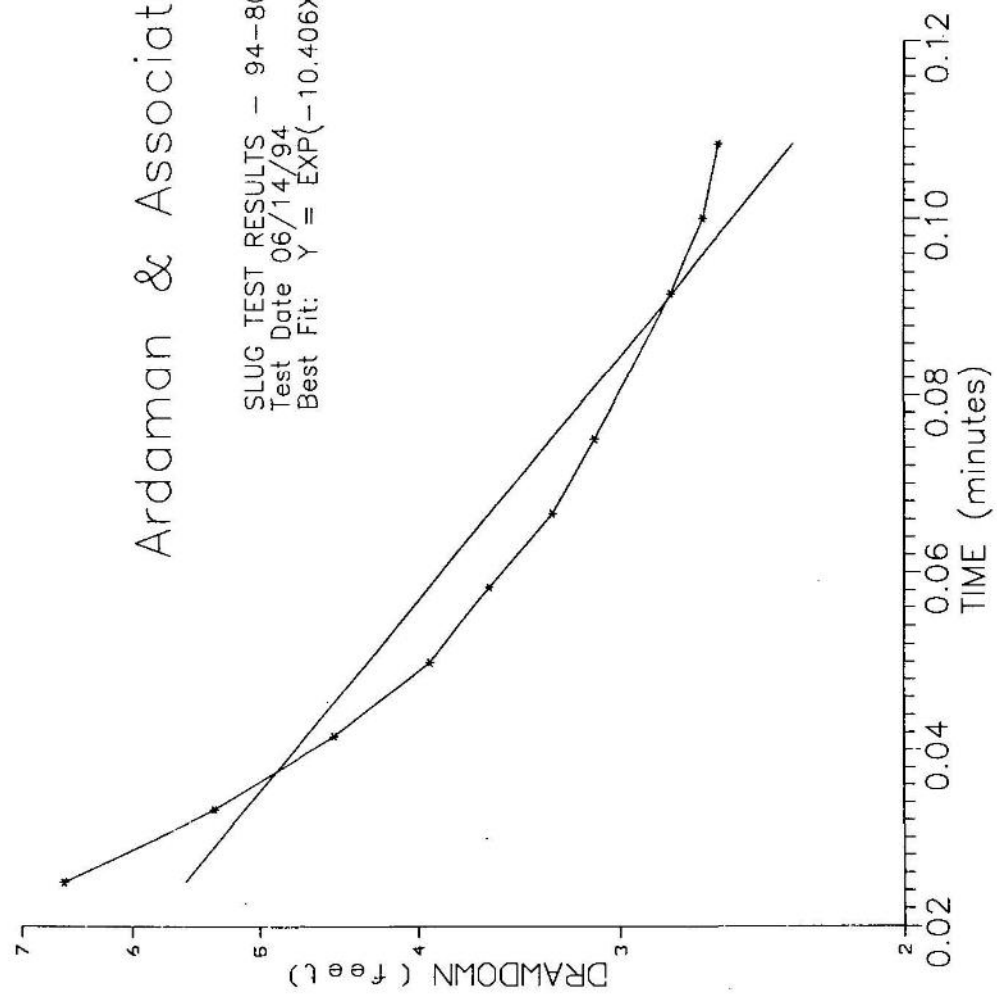
Static Water Table to Well Bottom (H) ft	6.27
Aquifer thickness (D) ft	100.00
Length of Well Screen in Water (L) ft	6.27
Radius of Casing (Rc) inches	2.00
Y Value @ t equals 0 (Yo) ft	0.72
Y Value @ Time t (Y) ft	0.26
Time (t) sec	6.00
Radius of borehole (Rw) inches	5.00
Dimensionless Coefficient (A)	1.85
Dimensionless Coefficient (B)	0.30
Estimated Porosity (n)	0.25

#### CALCULATIONS

L/Rw	15.05
$X = \ln(D-H)/Rw$	5.42
IF $X \geq 6$ use 6	5.42
$\ln(Rc/Rw) = (1.1/\ln(L/Rw) + (A+B*(X))/L/Rw)^{-1}$	1.57
$Y = (\ln(Yo/Y))/t$	0.17
$K = (Rc^2 * \ln(Rc/Rw) / 2L) * Y$	6.035E-04
K in gallons per day per square foot	390.06
T in square feet per day	5214.67

Ardaman & Associates, Inc.

SLUG TEST RESULTS - 94-808 MW-4  
Test Date 06/14/94  
Best Fit:  $Y = EXP(-10.406X)*0.722$





SE2000  
Environmental Logger  
06/15 08:20

Unit# TEST0HPP Test 1

-----  
Setups:           INPUT 1  
-----  
Type           Level (F)  
Mode           TOC  
I.D.           MW-4

Reference       0.000  
SG              1.000  
Linearity       0.095  
Scale factor    20.056  
Offset          0.002  
Delay mSEC     50.000

Step 0 06/14 14:06:34

-----  
Elapsed Time    INPUT 1  
-----  
0.0083         7.753  
0.0166         0.838  
0.0250         0.660  
0.0333         0.533  
0.0416         0.450  
0.0500         0.393  
0.0583         0.361  
0.0666         0.330  
0.0750         0.311  
0.0833         0.298  
0.0916         0.279  
0.1000         0.266  
0.1083         0.260  
0.1166         0.254  
0.1250         0.247  
0.1333         0.241  
0.1416         0.234  
0.1500         0.234  
0.1583         0.228  
0.1666         0.228  
0.1750         0.222  
0.1833         0.222  
0.1916         0.222  
0.2000         0.222  
0.2083         0.215  
0.2166         0.209  
0.2250         0.209  
0.2333         0.209  
0.2416         0.203  
0.2500         0.209

## GROUNDWATER FLOW VELOCITY

File Number 94-808

### INPUT DATA

Source of high level reading	MW-1
Source of low level reading	MW-6
High level reading (H)	16.4100
Low level Reading (L)	16.0900
Distance between MWs (D)	50.0000
Porosity (n)	0.2500
Average Hydraulic Conductivity (K) (feet per day)	3.6400

### CALCULATIONS

$I = (H-L)/D$  0.0064

$V = (K*I)/n$  (feet per day) 0.0932

Checked By: *ABJ*

**APPENDIX D**  
**CONTAMINATION ASSESSMENT**  
**SUMMARY SHEET**

CONTAMINATION ASSESSMENT REPORT SUMMARY SHEET

Facility Name: MAPCO SS #6170 Reburial Site   
 Location: 9020 95th Street, Sebastian, Florida State Contract Site   
 EDI #: 31-3108 FAC I.D. #: 318509326 Other:   
 Date Reviewed: \_\_\_\_\_ Local Government: \_\_\_\_\_

(1) Source of spill: Fueling Operations Date of spill: Unknown

(2) Type of product: gasoline group gallons lost \_\_\_\_\_ kerosene group gallons lost \_\_\_\_\_

<input type="checkbox"/> leaded	_____	<input type="checkbox"/> kerosene	_____
<input checked="" type="checkbox"/> unleaded regular	<u>Unk</u>	<input type="checkbox"/> diesel	_____
<input checked="" type="checkbox"/> unleaded premium	<u>Unk</u>	<input type="checkbox"/> JP-4 Jet fuel	_____
<input type="checkbox"/> gasohol	_____	<input type="checkbox"/> Jet A fuel	_____

(3) Description of IRA (if any): None  Free product removal: N/A (gals)  
 Soil removal: N/A (cubic yds)  
 Soil Incineration: N/A (cubic yds)

(4) Free product still present? (yes/no)  no Maximum apparent product thickness: N/A (ft)

(5) Maximum groundwater contaminant levels (ppb): Total VOCs: 111.5 benzene: 96 EDB: BDL  
 lead: .031 MTBE: 24 others: 130 Napths

(6) Brief lithologic description: Fine to medium grained unconsolidated clayey sand

(7) Areal and vertical extent of soils contamination defined? (yes/no)  no  
 Highest current soil concentration (OVA: 170 ppm) or (EPA Method 5030/8020: \_\_\_\_\_ ppm)

(8) Lower aquifer contaminated? (yes/no)  no Depth of vertical contamination: Less than 20 ft.

(9) Date of last complete round of groundwater sampling: 4/4/94 Date of last soil sampling: 6/14/94

(10) OAPP approved? (yes/no)  no Date: 1/22/92

(11) Direction (e.g. NINW) of surficial groundwater flow: East-Southeast (Figure 5&5A on page Figure Section)

(12) Average depth to groundwater: 3.5 (ft)

(13) Observed range of seasonal groundwater fluctuations: One (ft)

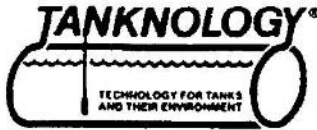
(14) Estimated rate of groundwater flow: 0.0932 (ft/day)

(15) Hydraulic gradient across site: 0.0064 (ft/ft)

(16) Aquifer characteristics:	Value	Units	Method
Hydraulic conductivity	<u>27.25</u>	<u>GPD/ft<sup>2</sup></u>	<u>Slug Test MW-6</u>
Storage coefficient	<u>.20</u>	<u>-</u>	<u>Researched</u>
Aquifer thickness	<u>100</u>	<u>ft</u>	<u>Researched</u>
Effective soil porosity	<u>25</u>	<u>%</u>	<u>Observations</u>
Transmissivity	<u>365</u>	<u>Ft<sup>2</sup>/day</u>	<u>Slug Test MW-6</u>

(17) Other remarks: Plume limited to Tank pad area.

**APPENDIX E**  
**TANK AND LINE RESULTS**



### LINE TEST LOG

S.O.# 6170

OWNER: MARCO EXPRESS DATE: 6.21-94  
 ADDRESS: 9026 95th N. STREET SEASATAN FL 32978 SITE #: 6170

Tank No.: 1 Line No.: 1A  Pres. Syst.  Suction Syst. Product: NP 89 OCT  
 Pipe Mtr  ST  FRP  ENV-FL Test Pressure 50 psi Calib. Multiplier .00549

Compression	Zero Pres. Level	<u>24.0</u>	Test Pres. Level	<u>19.6</u>	Pump Mgr.	<u>GILBARCO</u>
TEST	Level Δ	<u>4.4</u>	Volume Δ	<u>.024156</u>	Enviro-Flex Line ONLY	
LINE TEST	Reading #	Mil. Time	Level	Level Δ	Volume Δ	Projected G.P.H. Δ
	START	<u>08:55</u>	<u>19.6</u>			
TESTED	1	<u>09:05</u>	<u>19.4</u>	<u>.2</u>	<u>.001098</u>	<u>.006588</u>
FROM:	2	<u>09:15</u>	<u>19.3</u>	<u>.1</u>	<u>.000549</u>	<u>.002794</u>
<input type="checkbox"/> Sub-pump	3	<u>09:25</u>	<u>19.3</u>	<u>0</u>	<u>0</u>	<u>0</u>
<input type="checkbox"/> Dispenser	4					
<input checked="" type="checkbox"/> Retro-"T"	5					
	6					

Exist. LD# - 291.3004 XLO  
 New LD #

End Zero Pres. Level: 23.6 FINAL LINE TIGHTNESS RATE: 0 FAIL  or PASS

Tank No.: 2 Line No.: 2A  Pres. Syst.  Suction Syst. Product: PUN 93 OCT  
 Pipe Mtr  ST  FRP  ENV-FL Test Pressure 50 psi Calib. Multiplier .00549

Compression	Zero Pres. Level	<u>24.0</u>	Test Pres. Level	<u>19.2</u>	Pump Mgr.	<u>GILBARCO</u>
TEST	Level Δ	<u>4.8</u>	Volume Δ	<u>.026352</u>	Enviro-Flex Line ONLY	
LINE TEST	Reading #	Mil. Time	Level	Level Δ	Volume Δ	Projected G.P.H. Δ
	START	<u>09:35</u>	<u>19.2</u>			
TESTED	1	<u>09:45</u>	<u>18.9</u>	<u>.3</u>	<u>.00647</u>	<u>.00882</u>
FROM:	2	<u>09:55</u>	<u>18.8</u>	<u>.1</u>	<u>.000549</u>	<u>.002794</u>
<input type="checkbox"/> Sub-pump	3	<u>10:05</u>	<u>18.8</u>	<u>0</u>	<u>0</u>	<u>0</u>
<input type="checkbox"/> Dispenser	4					
<input checked="" type="checkbox"/> Retro-"T"	5					
	6					

Exist LD# 208906761 DCO  
 New LD#

End Zero Pres. Level: 23.5 FINAL LINE TIGHTNESS RATE: 0 FAIL  or PASS

Tank No.: 3 Line No.: 3A  Pres. Syst.  Suction Syst. Product: RUN 87 OCT  
 Pipe Mtr  ST  FRP  ENV-FL Test Pressure 50 psi Calib. Multiplier .00549

Compression	Zero Pres. Level	<u>24.0</u>	Test Pres. Level	<u>19.9</u>	Pump Mgr.	<u>REG JACKET</u>
TEST	Level Δ	<u>4.1</u>	Volume Δ	<u>.022509</u>	Enviro-Flex Line ONLY	
LINE TEST	Reading #	Mil. Time	Level	Level Δ	Volume Δ	Projected G.P.H. Δ
	START	<u>10:55</u>	<u>19.9</u>			
TESTED	1	<u>11:05</u>	<u>19.7</u>	<u>.2</u>	<u>.001098</u>	<u>.006588</u>
FROM:	2	<u>11:15</u>	<u>19.7</u>	<u>0</u>	<u>0</u>	<u>0</u>
<input checked="" type="checkbox"/> Sub-pump	3	<u>10:25</u>	<u>19.7</u>	<u>0</u>	<u>0</u>	<u>0</u>
<input type="checkbox"/> Dispenser	4					
<input type="checkbox"/> Retro-"T"	5					
	6					

Exist LD# 11291-7676 YCO BAD  
 New LD# 21194-7356 YCO Good

End Zero Pres. Level: 23.7 FINAL LINE TIGHTNESS RATE: 0 FAIL  or PASS

UNIT MRG. (PRINT) STEVEN E. HAWKINS Unit Mgr. signature: Steven E. Hawkins VacuTect Certi.#: #1483



SO# 115767

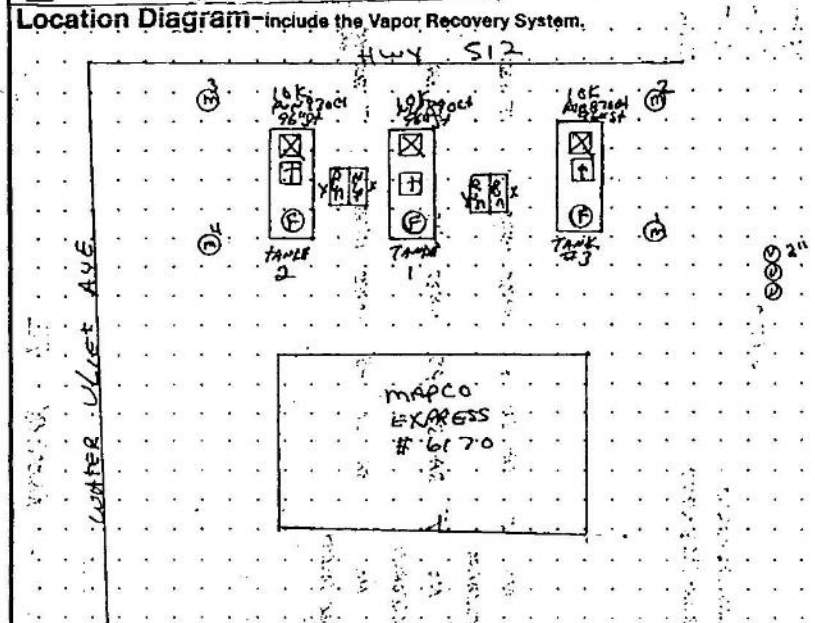
Owner: MAPCO EXPRESS

Site# 6170

MONITOR WELLS												
Well Number	1	2	3	4	5	6	7	8	9	10	11	12
Well Depth	116	LOCK	LOCK	LOCK								
Depth to Water	47	UP	UP	UP								
Product Detected												
AMOUNT In Inches	0											

Standard Symbols for diagram below:

- (V/B) V.R. w / Ball Float
- (B) Ball Float
- (M) Monitor Well (Outside Tank Bed Area)
- (G) Tank Gauge
- (I) Iron Cross
- (F) Fill
- (V) Vapor Recovery
- (A) Observation Well (Inside Tank Bed Area)
- (O) Vent
- (T) Turbine



Vapor Recovery System & Vents were tested with which tank?

Parts and Labor used 1 XLD WD RED JACKET 20' RUN 220CT TANK #3 ALSO 3" 4" ALUM COAXIAL ADAPTER HAD TO CUT OFF EACH TANK TO REMOVE DRIP TUBES. / RUN HLP PUM

General Comments STANDARD TANKS + PRODUCT LINE + L.O'S + VENT LINES. FAIL. RUN L.O. REPLACED WITH NEW RED JACKET L.O. XLD. ALL TANKS + LINES + VENTS + L.O'S ARE TIGHT. HAD CUT OFF ALL 3 4" ALUM FILL COAXIAL ADAPTER TO REMOVE DRIP TUBES. PULLED TANK VALVES FROM TANK TOPS. CAPPED VENT LINES. TEST WITH TANK VACUUM.

When OWNER or local regulations require immediate reports of system failure—Complete the following:

REPORTED TO:	NAME	DATE	TIME
Phone#	OWNER or Regulatory Agency	FILE NUMBER	
Print Certified Testers Name		Vacutest <sup>SM</sup> Certification Number	
Certified Testers Signature		Date Testing Completed	

Signature: Steven E. Hawkins  
 Certification Number: #0083  
 Date Testing Completed: 6.21.94



605

# TANKNOLOGY CORPORATION INTERNATIONAL

6220 Fortwell, Houston, Texas 77060-0244 Phone (800) 888-0883 FAX (713) 890-8280

Service Order # 062819 Test Date 09/14/92

## Certificate of Tightness

Underground storage tank system(s) tested and found tight for:

TANK OWNER: MAPCO PETROLEUM  
6170

TEST SITE ADDRESS: STEP SAVER 9020 59TH ST. SEBASTIAN, FL

[ 3 ] TANK(S) ONLY, [ 3 ] LINE(S) ONLY, [ 3 ] LEAK DETECTOR(S) ONLY.

TANK SIZES & PRODUCTS TESTED

1	10000	RU	2000
3	10000	SU	2000
2	10000	SR	2000

LINES TESTED 1A, 2A, 3A

LEAK DETECTORS TESTED 112917676, 312913004 XLD, 208906761 DLD

Unit Mgr. Certificate Number & Name 09B TOMMY KAINER 08/94

Valid only with  
Corporate Seal



US Patent #4482248, Canadian Patent #1102593, European Patent Appl. #182263  
TANKNOLOGY & Vacu-Tek are trademarks of TANKNOLOGY CORPORATION INTERNATIONAL. Note: See Vacu-Tek Test Report for tank identification and site location drawings.



# VacuTect™ TEST REPORT

Owner: MAPCO PETROLEUM

Site # 6170

Invoice Name/Address: MAPCO PETROLEUM 1800 SOUTH BALTIMORE TULSA, OK 74119

Site Name/Address: STEP SAVER 9020 59TH ST. SEBASTIAN, FL

S.O. # 062819  
 Date 09/14/92  
 Phone (918) 681-1358  
 Alt: MARK SCHUTT

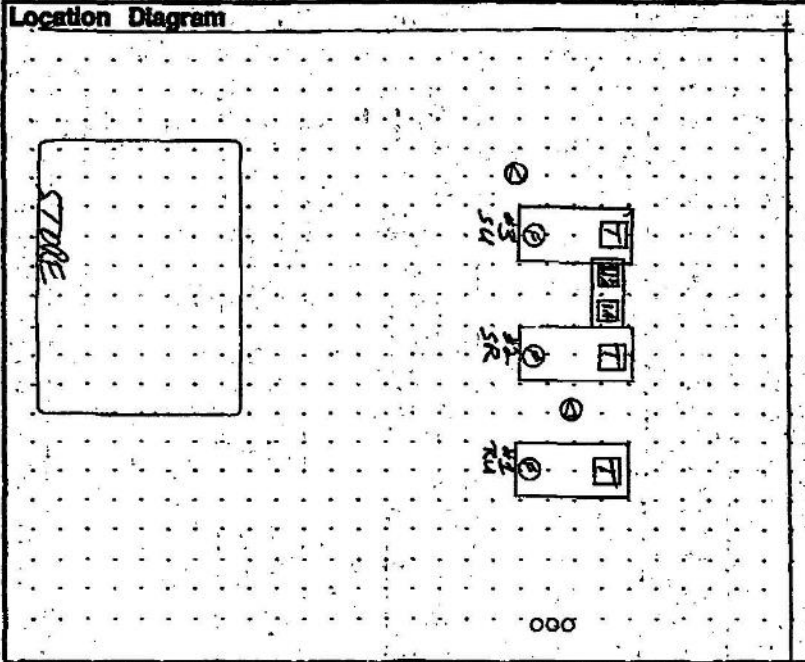
Seq. No.	Tank ID	Tank Capacity	Tank Material	Tank Type	TANKS				LINES				Leak Det.	Remarks					
					Filled Level	Empty Level	Probe Level	Water Collected	Bubble Discharged	Large In Tank	Line Material	Line Size			Line Test Start	Line Test End	Final Leak Rate		
1	RU 2000	10000	Steel	ST	00.180	074.00	00.170	N	N	N	RED JACKET	1 1/2"	ST	PS	9756	10726	0.000	Y	TANKS AND LINES TESTED TO CFR-160 PARTS 280.281 & NIPFA 328 SPEC'S. OTHER.
2	SR 2000	10000	Steel	ST	00.160	074.80	00.160	N	N	N	FILL	2"	ST	PS	10130	11100	0.000	Y	TANKS AND LINES TESTED TO CFR-160 PARTS 280.281 & NIPFA 328 SPEC'S. OTHER.
3	SU 2000	10000	Steel	ST	00.160	074.80	00.160	N	N	N	FILL	3"	ST	PS	11148	12118	0.000	Y	TANKS AND LINES TESTED TO CFR-160 PARTS 280.281 & NIPFA 328 SPEC'S. OTHER.

TANKNOLOGY Region: SOUTH EAST REGION    Unit # 080    State Lic. #    State: FL  
 TANKNOLOGY Corporation International  
 6225 Hollister St., Houston, TX 77040  
 (800) 868-8563 • FAX (713) 690-2255

NOTE: Original VacuTect Data recordings are reviewed by Tankology's Audit Control Department and maintained on file.

SO# 62819 Owner: MAPCO Site# 6170

MONITOR WELLS												
Well Number	1	2	3	4	5	6	7	8	9	10	11	12
Well Depth	17	LOCKED										
Depth to Water	16											
Product Detected												
AMOUNT in inches	0											



Parts and Labor used 1XLD installed on SR2000 Sub Pump  
 @ 285.00

**General Comments**  
 All Tanks & Lines Tested Tight

When OWNER or local regulations require immediate reporting of a system failure -  
 Complete the following:

REPORTED TO:	NAME	DATE	TIME
Phone#	OWNER or Regulatory Agency	FILE NUMBER	
Print Certified Tester Name	Vacuumed Certification Number		
Certified Testers Signature	Date Testing Completed		

*James V. Kainer* 98  
*[Signature]* 8/14/92

## Site 8 Ryall Groves Inc.

6815 85 Street

Facility ID: None

Risk Rating: Medium



Photo 6: Aerial image of Ryall Groves Inc.



Photo 7: Close up of storage tank and containment, facing northeast



Photo 8: Fuel tank at Ryall Groves Inc., facing north

## Site 9- Bethel Service Station

6375 85 Street  
Facility ID: 9100095  
Risk Rating: Medium



Photo 9: View of the site facing east



Photo 10: View of site facing southwest



Photo 11: View of site facing southeast



Photo 12: View of site facing south



OI67771

282

**SITE CHARACTERIZATION**  
**SCREENING REPORT**

Conducted at:

**BETHEL SERVICE STATION**  
**6375 85TH STREET**  
**WABASSO, INDIAN RIVER COUNTY, FLORIDA**  
**FDEP FACILITY ID # 31/910095**

RECEIVED  
DEPARTMENT OF  
ENVIRONMENTAL PROTECTION  
2013 APR 30 PM 12:52  
DIVISION OF PETROLEUM  
STORAGE SYSTEMS  
ACCOUNTING OFFICE

Conducted by:

**Environmental Assessments + Consulting**  
**3926 Coral Ridge Drive**  
**Coral Springs, Florida 33065**



**Environmental Assessments + Consulting, Inc.**

EAC is a registered service mark of Environmental Assessments + Consulting, Inc.

April 26, 2013

**Florida Department of Environmental Protection**  
Petroleum Cleanup Section 6  
Ms. Elizabeth Rogers  
2600 Blair Stone Road  
Mail Station 4590  
Tallahassee, Florida 32399-2400

**RE: SITE CHARACTERIZATION SCREENING (SCS) REPORT - BETHEL SERVICE STATION  
- 6375 85TH STREET - WABASSO - INDIAN RIVER COUNTY - FLORIDA  
FDEP FACILITY ID # 31/9100095 / SCS WO # 2013-96-W5134A**

Dear Ms. Rogers:

Environmental Assessments + Consulting (EAC) has completed Site Characterization Screening (SCS) activities at the above-captioned site located in Indian River County, Florida. All work was performed in accordance with the FDEP Procedural and Technical Guidance for Site Characterization Screening, effective July 1, 2012 and FDEP SCS Work Order 2013-96-W5134A. A copy of the Work Order is included as **Appendix I**.

**Background / Prior Assessment Activities**

The subject property is approximately 0.70 acres in size and generally rectangular in shape. The site is currently developed with a one-story structure that is approximately 2,000 square feet in size and is located in the central portion of the site. The building is utilized as a convenience store. The area immediately north of the on-site structure consists of asphalt and shell gravel parking. The northwestern portion of the site (former tank area) consists of an area of soil and grass. The southern half of the property consists of grass and wooded areas. The former potable well and septic system are located immediately south of the on-site structure. Access to the site is via 85<sup>th</sup> Street (Wabasso Road) from the north and 64<sup>th</sup> Avenue from the west. A General Site Plan is included in **Appendix II**.

No regulated tanks are currently utilized at the site. Based on FDEP database records, one (1) 1,000-gallon UST containing gasoline and one (1) 550-gallon UST containing unleaded gasoline were removed from the site in 1990. The FDEP Closure Inspection indicated that the tanks were installed in the late 1950s or early 1960s and contained unleaded gasoline (1,000-gallon UST) and leaded gasoline (550-gallon UST). Please note that the Closure Assessment Form dated December 18, 1990 indicates the type of products stored at the site as unleaded gasoline and diesel fuel. Closure assessment activities noted visible sheen on the groundwater, as well as soil

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**Ft. Lauderdale**  
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FAX 954.345.1407

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vapor response using an Organic Vapor Analyzer (OVA) of greater than 1,000 parts per million (ppm) throughout the excavation. Site sketches reviewed indicated that the two (2) tanks were located in the northwestern portion of the site and were aligned in an east-west direction with the fuel dispenser situated between them. Laboratory analysis of the soil and water in the tank excavation indicated high levels of BTEX/MTBE. A Discharge Reporting Form (DRF) was submitted to the FDEP on October 7, 1990 and the discharge was determined to be eligible for state funds for cleanup under the Abandoned Tank Restoration Program (ATRP) on March 6, 1991.

A Template Site Assessment Report (TSAR) dated October 7, 2005 was completed by EAC. Soil borings with OVA soil screening identified an area of contaminated soil in the former UST area. Vadose and smear zone soil impacts were estimated to be 50' long by 30' and extended in a westerly direction. One (1) deep and ten (10) shallow groundwater monitoring wells were installed at the site. The groundwater contaminant plumes of BTEX and Polynuclear Aromatic Hydrocarbons (PAHs) extended off-site to the west, across 64<sup>th</sup> Avenue and onto the adjacent property to the west. Groundwater flow direction was determined to be in a southwesterly direction. The TSAR recommended that a Remedial Action Plan (RAP) / Pilot Test Plan be prepared to address the contamination. The TSAR was approved on November 7, 2005.

A Pilot Test Plan dated August 17, 2006 and addendum dated October 4, 2006 were submitted and approved. An updated round of sampling (Groundwater Sampling Report dated August 24, 2007) was completed and included groundwater sampling of seven (7) monitoring wells. These results indicated that the BTEX and PAH plumes were restricted to the subject site (centered around MW-2) and groundwater flow direction was westerly. Based on the high water table, EAC recommended that the Pilot Test be temporarily postponed. The Groundwater Sampling Report was approved on September 10, 2007.

Based on high site water table elevations and 2007 groundwater data, a proposal to conduct additional sampling and prepare a Limited Scope Remedial Action Plan (LSRAP) was submitted in 2008. Correspondence from the FDEP dated June 14, 2008 indicated the site funding was discontinued due to changes to the minimum priority score. No other assessment activities have been conducted at the site.

## **SCS Soil and Groundwater Sampling Activities**

### **Soil Sampling Activities**

On April 10, 2013, EAC representatives installed two (2) soil borings on the subject site. Soil boring SB-1c corresponds to the area of former SB-1 and SB-2c to the area of former SB-2. Soil samples were obtained by advancing a 3-inch, stainless-steel, hand auger into the soil, and then withdrawing the auger to enable classification and sampling of the soil. Soils samples were collected at two (2) foot intervals starting at land surface down to a depth of 5-feet below land surface (BLS). The water table was encountered in soil borings at between 4 and 5 feet BLS.

Chapter 62-770, Florida Administrative Code (F.A.C.), indicates that an OVA can be utilized as a screening tool to identify petroleum impacted soils for soil delineation purposes. However, this data needs to be correlated by the collection of soil samples for laboratory analysis.

"Excessively Contaminated Soil" is defined in Chapter 62-770, F.A.C., as soils that are saturated with petroleum or petroleum products, or those that cause a total hydrocarbon reading of 50 parts per million (ppm) for the Kerosene Analytical Group upon sampling the headspace of a half-filled sixteen (16) ounce soil jar. A MiniRAE 2000 OVA equipped with a Photoionization Detector (PID) was utilized for the headspace analyses.

Based on the results of soil screening activities conducted at the site, OVA readings in the vadose zone soils ranged from 14 ppm to 6,120 ppm. Olfactory signs of contamination were generally observed from 2 feet BLS to the terminal depth of the borings. A Soil Screening Summary Table is provided in **Appendix II** and a Soil Boring / Soil Sample Location Map is included in **Appendix II**. The OVA calibration log has been included as **Appendix VI**.

One (1) vadose zone soil sample was collected from each soil boring location at approximately 3-feet below land surface. The soil samples were collected directly from the decontaminated hand auger into laboratory-provided containers, then capped, labeled, packed on ice, and transported to Jupiter Environmental Laboratories, Inc. for laboratory analysis. Soil samples SS-1c and SS-2c were analyzed in the laboratory for BTEX/MTBE by EPA Method 8260, PAHs by EPA Method 8270c and Total Petroleum Hydrocarbons (TPH) by the FL-PRO Method.

### **Soil Laboratory Analytical Results**

Laboratory analytical results indicate the following: At SS-1c (corresponding OVA reading of 6,120 ppm) and SS-2 (corresponding OVA reading of 4,275 ppm), concentrations of Ethylbenzene, Total

Xylenes, Naphthalene, 1-Methylnaphthalene, and 2-Methylnaphthalene were detected in excess of their respective Soil Cleanup Target Levels (SCTLs) for Leachability to Groundwater. No other compounds were identified in the soil samples above SCTLs. Additionally, Direct Exposure SCTLs were not exceeded in the soil samples collected at the site. A Soil Sample Analytical Summary Table is included in **Appendix II**. The complete laboratory report and chain-of-custody from Jupiter Environmental Laboratories, Inc. are included in **Appendix VII**.

As Benzo(a)anthracene was detected above laboratory detection limits at SS-2c, a Benzo(a)Pyrene (BaP) equivalency conversion table was completed. The conversion table indicates that soil sample SS-2c does not exceed the Residential or Commercial SCTL for BaP. A copy of the BaP conversion table is included in **Appendix III**. As no PAHs were detected in soil sample SS-1c, no BaP form was completed for this sample.

#### **Groundwater Sampling Activities**

Groundwater purging and sampling conducted by EAC was performed in accordance with FDEP-SOP-001/01 (FS 2200 Groundwater Sampling Revised 2/04). On April 10, 2013, groundwater samples were collected from monitor wells DMW-1, MW-2, MW-3, MW-4, MW-7, MW-8, MW-9, MW-10 and MW-11 in accordance with the FDEP approved Work Order. Monitor well MW-5 could not be located and MW-6 was verified as destroyed (the upside-down pad and manhole still remain on the ground next to the dumpster). The locations of the monitor wells can be found in **Appendix II**.

Prior to purging, the volume of each well was calculated. Groundwater purging was accomplished utilizing a portable low flow Masterflex L/S Peristaltic Pump and a dedicated section of silicon tubing through the pump head and polyethylene tubing set to within the top two feet (2') of the water column. The purge rate was calculated and upon achieving at least one (1) well volume, temperature, pH, conductivity, dissolved oxygen, turbidity, and depth to groundwater readings were obtained and recorded. Additional readings were collected and recorded at 3 minute intervals.

Upon achieving stable groundwater readings, groundwater samples were collected from the wells using the peristaltic pump. Groundwater samples to be analyzed for PAHs and TRPH (and Lead at MW-2, MW-3 and MW-10) were collected through the pump head and a rate no faster than 500 milliliters (mL) per minute. Groundwater samples to be analyzed for BTEX/MTBE (and EDB at MW-2, MW-3 and MW-10) were collected by using the pump to fill the drop tubing, removing the drop tubing from the well, and reversing the flow direction to allow collection into the sample vials.

Sample collection for BTEX/MTBE was achieved at a rate no faster than 100 mL per minute. The groundwater sampling logs for this project and meter calibration logs have been included as **Appendix VI**.

The groundwater samples were collected into laboratory-provided containers, then capped, labeled, packed on ice, and transported to Jupiter Environmental Laboratories, Inc. for laboratory analysis. The groundwater samples collected from all monitor wells were analyzed in the laboratory for BTEX/MTBE by EPA Method 8260, PAHs by EPA Method 8270c, and TPH by the FL-PRO Method. Additionally, MW-2, MW-3 and MW-10 were analyzed in the laboratory for EDB by EPA Method 8260 and Lead by EPA Method 6010.

#### **Groundwater Laboratory Analytical Results**

Laboratory analytical results indicate the following:

At MW-3, Benzene, Ethylbenzene, TPH, Naphthalene, 1-Methylnaphthalene, and 2-Methylnaphthalene were detected in excess of their respective Groundwater Cleanup Target Levels (GCTLs). Additionally, Ethylbenzene and Naphthalene were detected in excess of their Natural Attenuation Default Concentrations (NADCs).

At MW-9, Naphthalene was detected above the GCTL.

No other compounds were detected above GCTLs in the groundwater samples collected at the subject site. A Groundwater Analytical Summary Table is included in **Appendix IV** of this report and Groundwater Plume Maps are included in **Appendix II**. The complete laboratory report and chain-of-custody from Jupiter Environmental Laboratories, Inc. are included in **Appendix VII**.

#### **Groundwater Flow Direction Verification**

Elevations of the monitor wells were established relative to a benchmark using a survey rod and level during prior assessment activities. Fluid levels in the monitor wells were determined using an interface probe which allows measurement of the depth to the water table to within 0.01'. By applying the gauging data to the survey data, groundwater elevations of on-site groundwater monitor wells were obtained. Groundwater elevation data from the monitor wells were then plotted on the site plan and contoured. Data indicate that groundwater flow at the site is in a southerly to southwesterly direction. This appears to be a shift from a historically more westerly groundwater flow direction. A Groundwater Elevation Contour Map is included in **Appendix II** and a

Groundwater Elevation Table is included in **Appendix IV** of this report.

**Conclusions/Discussion**


Soil results indicate that contaminated vadose zone soils were identified in the former UST area at the site.

Groundwater results indicate that Benzene, Ethylbenzene, TPH, Naphthalene, 1-Methylnaphthalene, and 2-Methylnaphthalene were detected in excess of their respective GCTLs at MW-3 (located near the site's western property boundary line) with Ethylbenzene and Naphthalene in excess of NADCs. Based on the proximal distance, it is presumed that impacts extend under 64th Avenue, but not apparently onto the west adjacent property. Additionally, Naphthalene was detected at MW-9 (located approximately 40 feet south of MW-3) above its GCTL. This is the first GCTL exceedence at this well location, however, it is possible that the detection was due to a more southerly shift in local groundwater direction.

**Based on the data from this SCS Report, EAC has concluded that the above site meets criteria only for Screening Endpoint Category 3: Await Cleanup in Priority Score Order.**

**Statement of Professional Review**

The discussions and conclusions contained in this report have been reviewed by William H. Goulet, P.G. with EAC. The report is found to conform to standard geological practices pursuant to Chapter 492 of the Florida Statutes. The professional services discussed herein have been performed using that degree of care and skill ordinarily exercised under similar circumstances by other geologists and engineers practicing in this field. No other warranty is expressed or implied as to the conclusions contained in this report. This report was prepared by Environmental Assessments + Consulting.



William H. Goulet, M.S., P.G.  
Florida License # 1455  
2/26/83  
Date

**Attachments:**

- Appendix I - SCS Work Order # 2013-96-W5134A
- Appendix II - Figures
- Appendix III - Soil Screening Summary Table / Soil Sample Analytical Summary Table / BaP Conversion Table
- Appendix IV - Groundwater Analytical Summary Table
- Appendix V - Groundwater Elevation Table
- Appendix VI - Groundwater Sampling Logs / Meter Calibration Logs
- Appendix VII - Laboratory Analytical Reports / Chain-of-Custody Forms
- Appendix VIII - SCS Worksheets



**Appendix I**

**SCS Work Order # 2013-96-W5134A**

**Site Characterization Screening Work Order**

**Work Order Number:** 2013-96-W5134A      **Cost Center #:** 37450404555      **Category:** 087888/FY 12-13/JQ  
**FDEP Facility Id #:** 31/9100095      **Score:** 31      **Contract #:** N/A  
**Site Name:** BETHEL SERVICE STATION      **Eligibility:** SCS  
**Address (Street, City):** 6375 85TH ST. WABASSO      **County:** Indian River  
**Contractor Name:** FOURTUNE 4, INC D/B/A ENVIRONMENTAL ASSESSMENTS & CONSULTING      **CID #:** 01317  
**Contractor Address:** 1882 Porter Lake Drive, # 105, Sarasota, FL 34240      **FEID #:** 27-1153638  
**Contractor Representative:** Robert G. Perkins      **Phone #:** 954/345-1406  
**FDEP Site Manager:** Elizabeth Rogers      **Phone #:** 850/877-1133 ext 3706  
**Cleanup Phase:** Site Assessment  
**Cleanup Activity:** SITE CHARACTERIZATION SCREENING  
**Work Order Description:**

In accordance with section 376.30711(1)(b), F.S., all work, including verbal change orders (VCOs), must be preapproved by the Department prior to the work being performed or the costs being incurred.

Pursuant to the Proposal dated March 8, 2013 (rec'd March 8, 2013), conduct Site Characterization Screening activities as outlined:  
**EVENT 1:** Advance a total of two soil borings to a minimum depth of 1-2' into the water table with continued OVA screening at two-foot intervals via a hand auger at the historical locations of SB-1 and SB-3. Collect two soil lab samples from the depth intervals having the highest OVA readings in the vadose zone. If the OVA readings are less than background concentrations, collect one vadose soil lab sample from each soil boring for confirmation. Analyze the soil lab samples per the attached sampling parameter table. If the soil lab samples exceed the soil CTLs, contact the FDEP upon receipt of the lab data to determine whether to analyze the contingency samples using SPLP or TRPH fractionation. Collect groundwater samples from all existing monitoring wells and analyze per the attached sampling parameter table. Contact the FDEP while in the field to discuss if any additional fieldwork is needed. Submit an interim deliverable consisting of boring logs, groundwater sampling logs, field notes, tables and figures, and the lab reports for FDEP's review. Upon FDEP written approval of the interim deliverable and Event 1, prepare and submit a Site Characterization Screening Report as the final deliverable.

Deliverable 1:	<u>Boring Logs, Map And/Or Table, Groundwater Sampling Logs, Laboratory Report</u>	Due Date 1:	<u>May 17, 2013</u> ✓
Deliverable 2:		Due Date 2:	
Deliverable 3:		Due Date 3:	
Deliverable 4:		Due Date 4:	
Deliverable 5:		Due Date 5:	
Deliverable 6:		Due Date 6:	
<b>Final Deliverable:</b>	<u>SITE CHARACTERIZATION SCREENING REPORT</u>	<b>Final Due Date:</b>	<u>Jun 17, 2013</u> ✓

Period of Service: Contractor Representative Signature Date To December 14, 2013 ✓

Amount (incl. retainage): \$12,744.45 Retainage (10%): \$1,274.44 *mer 3-13*

This WORK ORDER is not in effect until signed by all parties. The FDEP will not pay any amount of this WORK ORDER until the original signed copy has been returned to the FDEP. The FDEP will not pay for any portion of the scope of work that has not been performed as of the date of invoice.

--Additional Terms And Conditions On Following Pages--

FDEP Site Manager:	<u>Elizabeth Rogers</u>	Date	<u>3/13/2013</u>
FDEP Manager:	<u>[Signature]</u>		<u>3/13/13</u>
Cost Center Administrator:	<u>[Signature]</u>		<u>3-13-13</u>
Contractor Representative:	<u>[Signature]</u>		<u>3-18-13</u>
Contractor Representative:	_____		_____

(second contractor signature is optional)

FDEP Use Only:	Technical review:	Initials: <u>ck</u>	Date: <u>3/13/13</u>
	Fiscal Review:	Initials: <u>mer</u>	Date: <u>3-13-13</u>

*ck #P*

## Petroleum Cleanup Preapproval Program Work Order

Work Order # 2013-96-W5134A

### NOTICE

ALL PRIME CONTRACTORS, SUBCONTRACTORS AND VENDORS ARE STRONGLY ENCOURAGED TO REVIEW THE TERMS AND CONDITIONS OF THIS CONTRACT

### WORK ORDER TERMS & CONDITIONS

#### 1. Certification of Performance

- a. The PRIME CONTRACTOR signing this Work Order agrees to be bound by the terms and conditions contained herein.
- b. The PRIME CONTRACTOR signing this Work Order agrees to perform the approved scope of work at the approved cost. Any changes to the scope of work or cost must be approved in writing by the Florida Department of Environmental Protection (DEPARTMENT).
- c. The PRIME CONTRACTOR agrees that it is responsible for the professional quality, technical accuracy, timely completion and coordination of all designs, drawings, specifications, reports, other services and installations furnished under this Work Order.
- d. The PRIME CONTRACTOR represents that its services and installations shall be performed in a manner consistent with that level of care and skill ordinarily exercised by other professional consultants under similar circumstances at the time the services are performed.
- e. The PRIME CONTRACTOR certifies that it currently meets all of the qualifications for participation in the Petroleum Cleanup Preapproval Program as required by Sections 376.30711(2)(b)-(c), Florida Statutes (F.S.), and any other appropriate Florida laws and as outlined in Section 2.2 of the Preapproval SOP. The PRIME CONTRACTOR further certifies that it will not knowingly permit any of these qualifications to lapse during the duration of this Work Order. The PRIME CONTRACTOR agrees that if any of the qualifications do lapse, it will immediately notify the DEPARTMENT and will suspend the performance of this Work Order until all the qualifications are met.
- f. The PRIME CONTRACTOR certifies that it has read, understands and will perform all work in accordance with these terms and conditions, applicable statutes, and any rules and guidance issued by the DEPARTMENT and the standards of performance therein.

#### 2. Additional Terms and Conditions

a. This Work Order is issued to the listed PRIME CONTRACTOR and is not transferable or assignable. However, pursuant to Section 376.30711(5)(a), F.S., invoices submitted pursuant to this Work Order are assignable. Persons wishing to exercise this option should refer to section 6.7.10 of the Preapproval SOP and/or contact the DEPARTMENT for assistance. The PRIME CONTRACTOR or the PRIME CONTRACTOR'S in-house services, subsidiaries or affiliates, shall not subcontract, assign, or transfer any work under this Work Order that:

- (1) Costs \$2,500 or more and is not covered by a Preapproval fixed cost template or maximum compensation schedule without the prior written consent of the DEPARTMENT using the verbal authorization form. No first tier subcontractor or vendor awarded work under this Work Order shall further subcontract, assign, or transfer any work that costs \$2,500 or more without the prior written consent of the DEPARTMENT using the verbal authorization form. All requests from first tier subcontractors or vendors to the DEPARTMENT for prior written approval must be made through the PRIME CONTRACTOR. Violations of this provision shall result in forfeiture of payment for the associated work;

## Petroleum Cleanup Preapproval Program Work Order

Work Order # 2013-96-W5134A

(2) Costs \$2,500 or more and is covered by a Preapproval fixed cost template or maximum compensation schedule without providing prior written notice to the DEPARTMENT before the work is performed. No first tier subcontractor or vendor awarded work under this Work Order shall further subcontract, assign, or transfer any work that costs \$2,500 or more without providing prior written notice to the DEPARTMENT before the work is performed. All such notices from first tier subcontractors or vendors to the DEPARTMENT must be made through the PRIME CONTRACTOR. Violations of this provision shall result in forfeiture of payment for the associated work.

b. The PRIME CONTRACTOR shall provide a copy of this Work Order, including the terms and conditions, to each and every subcontractor and vendor regardless of value.

c. The PRIME CONTRACTOR agrees to be responsible for the fulfillment of all work elements included in any subcontract consented to by the DEPARTMENT and agrees to be responsible for the payment of all monies due under any subcontract in accordance with Subsection 287.0585(1) and Subsections 376.30711(5)(d) and (e), F.S., and paragraphs 2. j and 2. l of this agreement. It is understood and agreed by the PRIME CONTRACTOR that the DEPARTMENT shall not be liable to any subcontractor or vendor for any expenses or liabilities incurred under the subcontract and that the PRIME CONTRACTOR shall be solely liable to the subcontractor or vendor for all expenses and liabilities incurred under the subcontract.

d. The issuance of this Work Order does not constitute an approval, certification, or endorsement of the PRIME CONTRACTOR by the DEPARTMENT. The DEPARTMENT hereby gives its written consent to use the subcontractors and vendors designated in the proposal for the work as designated in the proposal.

e. The issuance of this Work Order does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This Work Order is not a waiver of, or approval of, any other DEPARTMENT permit or approval that may be required for other aspects of the total project which are not addressed in this Work Order.

f. This Work Order does not relieve the PRIME CONTRACTOR from liability for harm or injury to human health or welfare, animal or plant life, or property, caused by its activities or from penalties therefore; nor does it allow the PRIME CONTRACTOR to cause or contribute to pollution in contravention of Florida Statutes and DEPARTMENT rules.

g. All documents, reports correspondence, invoices, billings and any other written or electronic records related to this Work Order are considered to be public records. The DEPARTMENT may unilaterally cancel this Work Order, remove the PRIME CONTRACTOR as the designated cleanup contractor for the subject site, or cancel the PRIME CONTRACTOR's participation in the Preapproval Program for failure of the PRIME CONTRACTOR to maintain such public records and allow unrestricted access to such public records as specified by Chapter 119, F.S.

h. The PRIME CONTRACTOR, by accepting this Work Order, specifically agrees to allow authorized DEPARTMENT personnel, and personnel of a contracted Local Program or Team, to observe and inspect the work being performed under this Work Order, including:

- (1) Access to any public records that must be kept under conditions of the Work Order;
- (2) Inspection of the facility, equipment, practices, or operations required under this Work Order; and
- (3) Sampling or monitoring of any substances or parameters at any location reasonable or necessary to assure compliance with this Work Order or DEPARTMENT rules.

i. The PRIME CONTRACTOR agrees that this Work Order is subject to the applicable provisions of Section 287.058, F.S., Section 287.0582, F.S., Section 287.0585, and Subsection 376.30711(5), F.S..

## Petroleum Cleanup Preapproval Program Work Order

Work Order # 2013-96-W5134A

j. Pursuant to Subsection 287.0585(1) and Subsection 376.30711(5), F.S., the PRIME CONTRACTOR, or persons to which the PRIME CONTRACTOR has assigned its right to payment, is responsible for prompt payment of all subcontractors and vendors under this Work Order within 7 working days from the date of receipt of payment from the DEPARTMENT, and the provisions of Subsection 287.0585(2), F.S., do not apply. If the PRIME CONTRACTOR receives less than full payment from the DEPARTMENT for the services or goods of the subcontractors or vendors, then the PRIME CONTRACTOR shall be required to disburse only the funds to the subcontractors and vendors in the same proportion as paid by the DEPARTMENT.

k. In accordance with Section 287.0585, F.S., the DEPARTMENT is not responsible for ensuring that the PRIME CONTRACTOR provides payment to all subcontractors and vendors. Section 287.0585, F.S., authorizes the Department of Legal Affairs (DLA) in the Attorney General's Office to provide legal assistance to subcontractors and vendors in proceedings brought against Contractors for non-compliance with the prompt payment provisions of that section, as well as the payment of penalties and restitution for attorney's fees and related expenses of the aggrieved party or the DLA.

l. For final invoices, all subcontractors and vendors must be paid by the PRIME CONTRACTOR prior to submittal of the final invoice for this Work Order for all of their costs included in all of the PRIME CONTRACTOR's invoices submitted for this Work Order prior to the final invoice in proportion to the amount approved for payment by the DEPARTMENT. The PRIME CONTRACTOR shall also be required to submit a properly completed Contractor Release of Claim Form stating that it acknowledges these requirements, that prompt payment of all subcontractors and vendors for all of their costs included in the final invoice is required as outlined in paragraph 2. j. above, that penalties for non-compliance and provisions for legal assistance from the Department of Legal Affairs are included in Subsection 287.0585(1), F.S., that the work was completed in accordance with this Work Order, and that upon receipt of the final payment it releases the property owner and the DEPARTMENT from any claims arising from this Work Order.

m. If this Work Order has been issued pursuant to a Preapproved Advanced Cleanup (PAC) or Petroleum Cleanup Participation Program (PCPP) contract, then the termination of that contract may result in the immediate termination of this Work Order.

n. The State of Florida's performance and obligation to pay for services under this Work Order is contingent upon appropriations by the Legislature in effect at the time of execution. Authorization for continuation and completion of this Work Order and payment associated therewith may be rescinded with proper notice at the discretion of the DEPARTMENT if Legislative appropriations are reduced.

o. In accordance with Subsection 376.30711(5)(b), F.S., the PRIME CONTRACTOR shall submit invoices to the DEPARTMENT within 30 days after the date of the DEPARTMENT's written acceptance of each interim deliverable and written approval of the final deliverable specified in the Work Order. It is understood and agreed by the PRIME CONTRACTOR that failure to submit interim invoices within this timeframe may result in forfeiture of retainage and failure to submit the final invoice within this timeframe may result in the automatic closure of the Work Order and forfeiture of the unpaid balance of the Work Order.

p. The purchase of non-expendable equipment costing \$1,000.00 or more under this Work Order shall remain the property of the DEPARTMENT and be subject to the provisions of Section 7.4 of the Preapproval Program SOP. The PRIME CONTRACTOR shall have the use of the equipment for authorized purposes under the Work Order until the required work has been completed provided adequate maintenance procedures are implemented. When no longer needed, the PRIME CONTRACTOR shall return all non-expendable equipment purchased under this Work Order to the DEPARTMENT. However, if the responsible party or property owner wish to acquire the equipment, the DEPARTMENT, at its discretion, may elect to transfer ownership of the equipment to the responsible party or property owner in exchange for payment or trade based on its fair market value as of the date of title transfer. All such ownership transfers are subject to approval of the DEPARTMENT's Surplus Property Review Board and must be documented in a formal agreement executed by both parties in a format approved by the DEPARTMENT such as a Funding Transition Agreement or Site Rehabilitation Funding Allocation Agreement.

q. The PRIME CONTRACTOR acknowledges that the total amount of this Work Order is not considered to be a fixed price contract or a lump sum contract.

## Petroleum Cleanup Preapproval Program Work Order

Work Order # 2013-96-W5134A

r. The PRIME CONTRACTOR represents that if it (or any entity that it has an ownership interest in or has an ownership interest in it) has a financial or ownership interest in the cleanup site that is the subject of this Work Order, that written notice has already been provided to the Site Manager stating the specific nature of the interest in the property and who holds that interest.

s. In addition to any other remedies available at law, failure to implement any of the terms and conditions of this Work Order shall be considered a breach of contract and shall subject the PRIME CONTRACTOR to cancellation of this Work Order, loss of payment, or removal as the designated PRIME CONTRACTOR. Individual contract terms may also have other specific remedies for violations.

### 3. Retainage and Forfeiture of Retainage

a. The PRIME CONTRACTOR agrees that the retainage withheld on this Work Order shall not be paid until the full scope of work has been completed to the satisfaction of the DEPARTMENT.

b. If the PRIME CONTRACTOR fails to perform the required scope of work, fails to perform the work in a satisfactory manner, or makes misrepresentations to the DEPARTMENT, then payment for that work will be forfeited and retainage for the entire Work Order will be forfeited. Failure to perform includes, but is not limited to, failure to submit the required deliverable or failure to provide adequate documentation that the work was actually performed. In accordance with Section 376.30711(5)(h), F.S., PRIME CONTRACTORS who fail to perform the terms of a Preapproval Work Order may be barred from further participation in the Preapproval Program.

c. If a deliverable required by this Work Order is submitted after the due date for the deliverable then the DEPARTMENT reserves the right to withhold payment of the retainage for the entire Work Order.

### 4. Audit - Access to Records & Purpose

a. The PRIME CONTRACTOR shall maintain organized and cataloged books, records, documents and all subcontractor and vendor invoices directly or indirectly pertinent to performance under this Work Order in accordance with generally accepted accounting principles consistently applied. All such records shall be kept at one of the PRIME CONTRACTOR'S offices located within the legal boundaries of the State of Florida per Chapter 6, F.S. or made available at such office within five business days of receipt of a request from the DEPARTMENT. The DEPARTMENT, the State or their authorized representatives shall have access to such records without charge for audit or investigation purposes during the term of the Work Order and for three years following Work Order completion. Failure to maintain such required records shall constitute a breach of contract and could result in forfeiture of remaining payments on this Work Order, removal as the designated PRIME CONTRACTOR for the subject site or dismissal of the PRIME CONTRACTOR from participation in the Preapproval Program.

b. The PRIME CONTRACTOR acknowledges that there are several purposes of a DEPARTMENT audit:

1) To confirm the actual level of effort and costs for comparison with the Preapproval Fixed Cost Templates, Fixed Price Schedule and Level of Effort guidelines. Such information is not intended for cost recovery, but will be used to support future adjustments in these fixed costs program wide; and

2) To confirm compliance with the terms and conditions of the Work Order, the Preapproval standard operating procedures, applicable DEPARTMENT rules and guidance, and to investigate instances of criminal violations pursuant to Section 376.302, F.S., any of which may result cost recovery or other appropriate action.

### 5. Dispute Resolution - Suspension or Cancellation of Work

a. The DEPARTMENT may order a suspension or cessation of work in order to resolve disputes regarding a PRIME CONTRACTOR'S performance or the performance of their subcontractor. If this is necessary, the DEPARTMENT will notify the PRIME CONTRACTOR either verbally and/or in writing by either express or certified USPS mail or private express mail with a copy of the notification sent to the property owner. The PRIME CONTRACTOR or its subcontractors will not be paid for any work performed or idle time during such suspension or cancellation until the DEPARTMENT determines what, if any payments should be made.

## Petroleum Cleanup Preapproval Program Work Order

Work Order # 2013-96-W5134A

b. The DEPARTMENT may initiate a suspension or cancellation of work. The DEPARTMENT reserves the right to suspend or cancel work for good cause. Good cause includes, but is not limited to, failure to comply with the provisions of this Work Order, failure to acquire proper state, federal or local permits, any audit or report indicating that any phase of actual work completed was inconsistent with the approved scope or cost, or failure of a PRIME CONTRACTOR to maintain its required qualifications.

c. A written notice of intent to suspend or cancel work shall give the PRIME CONTRACTOR a minimum of fifteen (15) working days to respond and to correct the deficiencies unless the DEPARTMENT'S initial findings are so egregious that no remedies are acceptable. In cases where the findings are egregious, the DEPARTMENT reserves the right to remove the PRIME CONTRACTOR from the site and take whatever actions may be necessary.

d. If the PRIME CONTRACTOR does not remedy the deficiency within the timeframe allotted, the Work Order shall be deemed suspended or canceled at the discretion of the DEPARTMENT.

e. In the event the DEPARTMENT determines, in its sole discretion, that the PRIME CONTRACTOR or any of its subcontractors is in breach of the terms and conditions of this Work Order, the DEPARTMENT reserves the right to exercise all remedies at law and equity.

### (FOR PRIME CONTRACTOR, SUBCONTRACTOR & VENDOR REFERENCE)

\*Note: Effective July 1, 2008, Subsection 376.30711(5)(e), F.S. stipulates that Subsection 287.0585(2), F.S., shall not apply to payments associated with preapproved site rehabilitation agreements. Therefore, payment agreements between preapproval contractors and their subcontractors and suppliers will not affect the statutory requirement in Subsection 287.0585(1), F.S., for preapproval contractors to make prompt payment to subcontractors and suppliers within seven (7) days of receipt of payment from the Department. Penalties for non-compliance and provisions for legal assistance are included in Subsection 287.0585(1), F.S. (see applicable statutory citations below):

#### Subsection 376.30711(5)(d) & (e), F.S. (2008)

376.30711 Preapproved site rehabilitation,

(5)(d) Contractors or persons to which the contractor has assigned its right to payment pursuant to paragraph (a) shall make prompt payment to subcontractors and suppliers for their costs associated with a preapproved site rehabilitation agreement pursuant to s. 287.0585(1).

(5)(e) The exemption in s. 287.0585(2) shall not apply to payments associated with a preapproved site rehabilitation agreement.

#### Section 287.0585, Florida Statutes (2004)

287.0585 Late payments by contractors to sub-contractors and suppliers; penalty.

(1) When a contractor receives from a state agency any payment for contractual services, commodities, supplies, or construction contracts, except those construction contracts subject to the provisions of chapter 339, the contractor shall pay such money's received to each subcontractor and supplier in proportion to the percentage of work completed by each subcontractor and supplier at the time of receipt of the payment. If the contractor receives less than full payment, then the contractor shall be required to disburse only the funds received on a pro rata basis with the contractor, sub-contractors, and suppliers, each receiving a prorated portion based on the amount due on the payment. If the contractor without reasonable cause fails to make payments required by this section to subcontractors and suppliers within 7 working days after the receipt by the contractor of full or partial payment, the contractors shall pay to the subcontractors and suppliers a penalty in the amount of one-half of 1 percent of the amount due, per day, from the expiration of the period allowed herein for payment. Such penalty shall be in addition to actual payments owed and shall not exceed 15 percent of the outstanding balance due. In addition to other fines or penalties, a person found not in compliance with any provision of this subsection may be ordered by the court to make restitution for attorney's fees and all related costs to the aggrieved party or the Department of Legal Affairs when it provides legal assistance pursuant to this section. The Department of Legal Affairs may provide legal assistance to subcontractors or vendors in proceedings brought against contractors under the provisions of this section.

(2) This section shall not apply when the contract between the contractor and subcontractors or subvendors provides otherwise.

Petroleum Cleanup Preapproval Program Work Order Template

First Event

Work Order #: 2013-96-W6134A  
 Facility Id #: 318160095  
 Contractor #: 01317  
 Date: 03/13/13

FDEP/LP Site Mgr: ELIZABETH ROGERS  
 Site Name: BETHEL SERVICE STATION  
 Contractor Name: FORTUNE 4, INC D/B/A ENVIRONMENTAL /  
 FDEP Contract #: NA

Cost Share Information  
 FDEP Share: 100.00%  
 Applicant/Owner Share: 0.00%  
 Total: 100.00%

Work Description:

Template	Comments / Notes	Allowed Cost	Original		Change		Template Total Cost
			Number of Items	Item Cost	Change Amount	Change Costs	
<b>Section A: Packaged Work Scopes</b>							
1	Pumping Test or Multi-phase Pilot Test (using in-house personnel)	\$2,681.26		\$0.00		\$0.00	\$0.00
2	Vapor Extraction and/or Air Sparging Pilot Test (using in-house personnel)	\$2,491.81		\$0.00		\$0.00	\$0.00
3	Monthly O&M Visit	\$929.04		\$0.00		\$0.00	\$0.00
4	Monthly Telemetry Allowance (Non RAI)	\$60.00		\$0.00		\$0.00	\$0.00
5	RAI Monthly O&M Allowance - Small System	\$3,029.90		\$0.00		\$0.00	\$0.00
6	RAI Monthly O&M Allowance - Medium System	\$3,550.80		\$0.00		\$0.00	\$0.00
7	RAI Monthly O&M Allowance - Large System	\$4,180.81		\$0.00		\$0.00	\$0.00
8	RAI Supplemental O&M Monthly Allowance - Thermo/Catox Treatment	\$519.40		\$0.00		\$0.00	\$0.00
	<b>Section A Subtotals:</b>			<b>\$0.00</b>		<b>\$0.00</b>	<b>\$0.00</b>
<b>Section B: Office Activities, Part I</b>							
1	Proposal Preparation	\$584.88	1	\$584.88		\$0.00	\$584.88
2	File Review	\$636.20	1	\$636.20		\$0.00	\$636.20
3	Permits	\$798.95		\$0.00		\$0.00	\$0.00
4	Site Health & Safety Plan	\$372.81		\$0.00		\$0.00	\$0.00
5	Notice of Discovery of Contamination Package (Initial or TPOC)	\$295.27		\$0.00		\$0.00	\$0.00
	<b>Section B Subtotals:</b>			<b>\$1,221.88</b>		<b>\$0.00</b>	<b>\$1,221.88</b>
<b>Section C: Field Activities</b>							
1	Mobilization (2 person)	\$884.62	1,0	\$884.62		\$0.00	\$884.62
2	Mobilization (1 person)	\$494.33		\$0.00		\$0.00	\$0.00
3	Drilling Setup (2 person)	\$264.19		\$0.00		\$0.00	\$0.00
4	Drilling Setup (1 person)	\$160.79		\$0.00		\$0.00	\$0.00
5	SB for Soil Screening or Piezometer Install (<= 10 ft) (2 person)	\$258.21	2	\$516.42		\$0.00	\$516.42
6	SB for Soil Screening or Piezometer Install (<= 10 ft) (1 person)	\$154.82		\$0.00		\$0.00	\$0.00
7	SB for Soil Screening or Piezometer Install (> 10 ft to <= 30 ft) (2 person)	\$387.32		\$0.00		\$0.00	\$0.00
8	SB for Soil Screening or Piezometer Install (> 10 ft to <= 30 ft) (1 person)	\$232.23		\$0.00		\$0.00	\$0.00
9	SB for Soil Screening or Piezometer Install (> 30 ft) (2 person)	\$516.42		\$0.00		\$0.00	\$0.00
10	SB for Soil Screening or Piezometer Install (> 30 ft) (1 person)	\$309.64		\$0.00		\$0.00	\$0.00
11	Well Install (<= 20 ft) (2 person)	\$628.38		\$0.00		\$0.00	\$0.00
12	Well Install (<= 20 ft) (1 person)	\$321.59		\$0.00		\$0.00	\$0.00
13	Well Install (> 20 ft to <= 40 ft) (2 person)	\$792.58		\$0.00		\$0.00	\$0.00
14	Well Install (> 20 ft to <= 40 ft) (1 person)	\$482.38		\$0.00		\$0.00	\$0.00
15	Well Install, double cased (<= 40 ft) (2 person)	\$1,585.13		\$0.00		\$0.00	\$0.00
16	Well Install, double cased (<= 40 ft) (1 person)	\$964.76		\$0.00		\$0.00	\$0.00
17	Recovery or Multi-Phase Well Install (<= 40 ft) (2 person)	\$1,040.08		\$0.00		\$0.00	\$0.00
18	Recovery or Multi-Phase Well Install (<= 40 ft) (1 person)	\$626.51		\$0.00		\$0.00	\$0.00
19	Air Sparging/Injection Well Install (<= 40 ft) (2 person)	\$390.03		\$0.00		\$0.00	\$0.00
20	Air Sparging/Injection Well Install (<= 40 ft) (1 person)	\$234.94		\$0.00		\$0.00	\$0.00
21	Soil VE Well Install (<= 40 ft) (2 person)	\$258.21		\$0.00		\$0.00	\$0.00
22	Soil VE Well Install (<= 40 ft) (1 person)	\$154.82		\$0.00		\$0.00	\$0.00
23	Well or Piezometer Abandonment (1 person)	\$107.75		\$0.00		\$0.00	\$0.00
24	Recovery or Multi-phase Well Abandonment (1 person)	\$236.75		\$0.00		\$0.00	\$0.00
25	Well Sampling with Water Level (2 person)	\$263.77	11	\$2,901.47		\$0.00	\$2,901.47
26	Well Sampling with Water Level (1 person)	\$160.38		\$0.00		\$0.00	\$0.00
27	Water Level or Free Product Gauging (1 person)	\$24.39		\$0.00		\$0.00	\$0.00
28	Free Product Gauging & Bailing (per well) (1 person)	\$126.72		\$0.00		\$0.00	\$0.00
29	Area Survey (2 person)	\$1,056.75		\$0.00		\$0.00	\$0.00
30	Area Survey (1 person)	\$643.17		\$0.00		\$0.00	\$0.00
31	Whole Day Oversight (1 or 2 person)	\$975.73		\$0.00		\$0.00	\$0.00
32	Oversight Kit (with equipment) (1 or 2 person)	\$373.23		\$0.00		\$0.00	\$0.00
33	Oversight Allowance (no equipment) (1 or 2 person)	\$120.13		\$0.00		\$0.00	\$0.00
34	Per Diem	\$128.71		\$0.00		\$0.00	\$0.00
	<b>Section C Subtotals:</b>			<b>\$4,302.61</b>		<b>\$0.00</b>	<b>\$4,302.61</b>
<b>Section D: Other Field Work</b>							
1	Other Field Work			\$0.00		\$0.00	\$0.00
2	Other Field Work			\$0.00		\$0.00	\$0.00
	<b>Section D Subtotals:</b>			<b>\$0.00</b>		<b>\$0.00</b>	<b>\$0.00</b>
<b>Section E: Other Equip, Rental Cost(s)</b>							
1	Other Equipment			\$0.00		\$0.00	\$0.00
2	Other Equipment			\$0.00		\$0.00	\$0.00
	<b>Section E Subtotals:</b>			<b>\$0.00</b>		<b>\$0.00</b>	<b>\$0.00</b>



Petroleum Cleanup Preapproval Program Work Order Template

First Event

Work Order #: 2013-06-W8124A Facility Id #: 319100095 Site Name: BETHEL SERVICE STATION Date: 03/13/13

Template	Comments / Notes	Allowed Cost	Original		Change		Template Total Cost
			Number of Items	Item Cost	Change Amount	Change Costs	
<b>Section F: In-house Service Cost(s)</b>							
1	Laboratory			\$0.00		\$0.00	\$0.00
2	Drilling			\$0.00		\$0.00	\$0.00
3	Direct Push			\$0.00		\$0.00	\$0.00
4	Construction			\$0.00		\$0.00	\$0.00
5	Other			\$0.00		\$0.00	\$0.00
Section F Subtotals:				\$0.00		\$0.00	\$0.00
<b>Section G: Subcontractor Cost(s)</b>							
Sub Markup = 10.00%		Unit Cost			Do not include markup		
1	Laboratory (from worksheet)	Jupiter Env. Lab.	\$4,809.94	\$5,290.93		\$0.00	\$5,290.93
2				\$0.00		\$0.00	\$0.00
3				\$0.00		\$0.00	\$0.00
4				\$0.00		\$0.00	\$0.00
5				\$0.00		\$0.00	\$0.00
6				\$0.00		\$0.00	\$0.00
7				\$0.00		\$0.00	\$0.00
8				\$0.00		\$0.00	\$0.00
9				\$0.00		\$0.00	\$0.00
10				\$0.00		\$0.00	\$0.00
Section G Subtotals:				\$5,290.93		\$0.00	\$5,290.93
<b>Section G1: Remedial System Purchase</b>							
1	Remedial System Costs			\$0.00	Do not include markup	\$0.00	\$0.00
2	PAC Remedial System Costs			\$0.00		\$0.00	\$0.00
Remedial System Subtotals:				\$0.00		\$0.00	\$0.00
<b>Section H: Office Activities, Part II</b>							
1 General / SA Report		Field Work			x Multiplier		
Field Work Costs (Secs C & D) =		\$4,302.51			20%	\$0.00	
2	Letter / NPDES Report		\$880.50	\$0.00		\$0.00	\$0.00
3	O&M Quarterly Report		\$308.00	\$0.00		\$0.00	\$0.00
4	O&M Annual Report		\$1,795.41	\$0.00		\$0.00	\$0.00
5	Pilot Test Plan		\$3,312.85	\$0.00		\$0.00	\$0.00
6	Pilot Test Report		\$796.67	\$0.00		\$0.00	\$0.00
7	Level 1 LSRAP or RAP Modification		\$1,391.37	\$0.00		\$0.00	\$0.00
8	Level 2 LSRAP or RAP Modification		\$1,528.63	\$0.00		\$0.00	\$0.00
9	Level 3 LSRAP or RAP Modification		\$2,992.72	\$0.00		\$0.00	\$0.00
10	Level 4 LSRAP or RAP Modification		\$5,308.45	\$0.00		\$0.00	\$0.00
11	Level 1 Remedial Action Plan		\$8,770.31	\$0.00		\$0.00	\$0.00
12	Level 2 Remedial Action Plan		\$13,171.60	\$0.00		\$0.00	\$0.00
13	As-built Drawings (P.E. red lined)		\$17,540.62	\$0.00		\$0.00	\$0.00
14	Construction Drawings and Specs		\$674.13	\$0.00		\$0.00	\$0.00
15	RAC Bid Package Solicitation/Evaluation		\$3,707.61	\$0.00		\$0.00	\$0.00
16	RA Startup Report		\$2,091.24	\$0.00		\$0.00	\$0.00
17	Soil Source Removal or Site Characterization Screening Report		\$2,604.07	\$0.00		\$0.00	\$0.00
18	Natural Attenuation Plan		\$1,926.93	\$1,926.93		\$0.00	\$1,926.93
19	Long Term Natural Attenuation Plan		\$1,178.28	\$0.00		\$0.00	\$0.00
20	Remedial Action Interim Report		\$306.00	\$0.00		\$0.00	\$0.00
21	General Remedial Action Report		\$578.39	\$0.00		\$0.00	\$0.00
22	NA or Post RA Monitoring Quarterly Report		\$1,178.26	\$0.00		\$0.00	\$0.00
23	NA or Post RA Monitoring Annual Report		\$578.38	\$0.00		\$0.00	\$0.00
24	Well Abandonment Report		\$1,445.04	\$0.00		\$0.00	\$0.00
25	Initial Map & Table Generation		\$266.78	\$0.00		\$0.00	\$0.00
26	Other Report Type (backup spreadsheet)		\$2,032.95	\$0.00		\$0.00	\$0.00
Section H Subtotals:				\$1,926.93		\$0.00	\$1,926.93

Deliverables

Due Date	Deliverable / Documentation
05/17/13	Interim Deliverable
Final Deliverable Information (Specify only if selected for this event)	
17	Deliverable #
06/17/13	Deliverable Due
12/14/13	Period of Service to:

This Event Template Totals

	Original	Change	Total
Event Total:	\$12,744.45	\$0.00	\$12,744.45
Subtotal (less retainage):	\$11,470.01	\$0.00	\$11,470.01
Retainage: 10%	\$1,274.44	\$0.00	\$1,274.44

Cumulative Work Order Totals (less Retainage)

Invoice	Previous	This Event	Total
# 1-6 Events	n/a	\$9,733.07	\$9,733.07
# 7 Remedial Systems	n/a	\$0.00	\$0.00
# 8 Final Deliverable	n/a	\$1,736.94	\$1,736.94
# 9 Retainage	n/a	\$1,274.44	\$1,274.44
Work Order Total		\$12,744.45	\$12,744.45

This Event Template Invoice Totals (less Retainage)

Invoice	Original	Change	Total
# 1 1st Event	\$9,733.07	\$0.00	\$9,733.07
# 7 Remedial Systems	\$0.00	\$0.00	\$0.00
# 8 Final Deliverable	\$1,736.94	\$0.00	\$1,736.94
# 9 Retainage	\$1,274.44	\$0.00	\$1,274.44
Event Template Total	\$12,744.45	\$0.00	\$12,744.45

Template-080112-Standard.xlt

**Preapproval Sampling Parameter Table**

Work Order # 2013-96-W5134A Facility ID # 319100095 Site Name: BETHEL SERVICE STATION

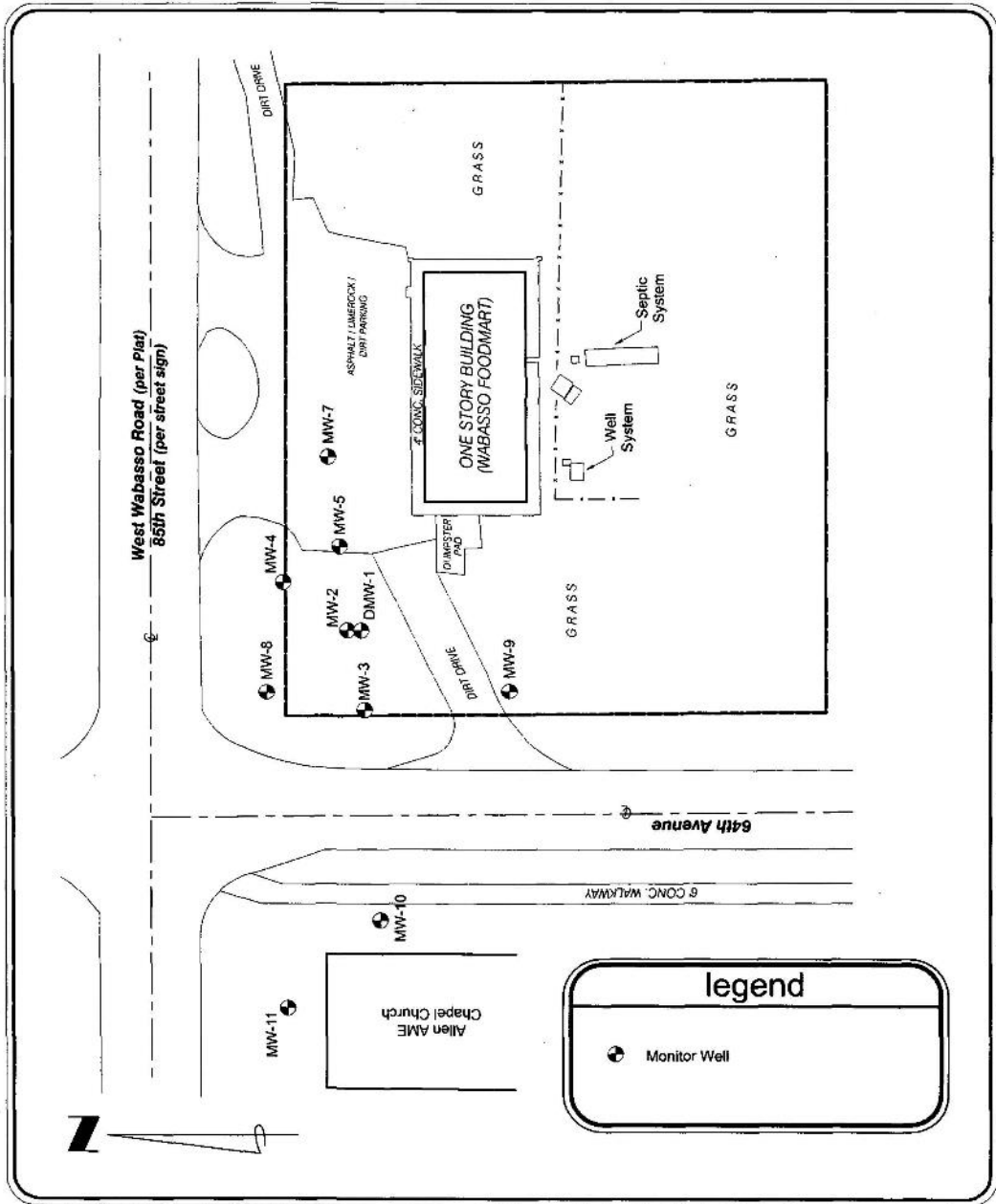
EVENT 1		Analytical Parameters (enter number of samples for each method)										Chapter	
Groundwater Sample Locations	Number of Events	BTEX + MTBE EPA 8021	BTEX + MTBE EPA 8260	PAHs EPA 8270	PAHs EPA 8310	TRPHs FL-PRO	Lead EPA 6010	VOAs & VOHs EPA 8021	VOAs & VOHs EPA 8260	EDB EPA 604.1	EDB EPA 8011	62-770 Table B	
1	DW-1	1	1	1		1							
2	MW-2	1	1	1		1	1						
3	MW-3	1	1	1		1	1						
4	MW-4	1	1	1		1							
5	MW-5	1	1	1		1							
6	MW-6	1	1	1		1							
7	MW-7	1	1	1		1							
8	MW-8	1	1	1		1							
9	MW-9	1	1	1		1							
10	MW-10	1	1	1		1	1						
11	MW-11	1	1	1		1							
12	Leachate analyses (soilingent)	1	2	2									
13													
14													
15													
16													
17													
18													
19													
20													
<b>No. Samples</b>		0	13	13	0	11	3	0	0	3	0	0	
<b>Cost per Sample</b>		\$54.60	\$54.60	\$116.00	\$116.00	\$86.45	\$13.64	\$116.00	\$116.00	\$50.05	\$50.05	\$351.57	
<b>Subtotal</b>		\$3,359.82	\$709.80	\$1,508.00	\$0.00	\$950.95	\$40.92	\$0.00	\$0.00	\$150.15	\$0.00	\$0.00	
Soil /Air Sample Locations		Number of Events	BTEX + MTBE EPA 8021	BTEX + MTBE EPA 8260	PAHs EPA 8270	PAHs EPA 8310	TRPHs FL-PRO	VOHs EPA 8021	VOHs EPA 8260	As, Cd, Cr, Pb EPA 6010	SPLP Extraction EPA 1312	MADEP	Encore Sampler
1	SS-1	1	1	1		1					1	1	1
2	SS-2	1	1	1		1					1	1	1
3													
4													
5													
6													
7													
<b>No. Samples</b>		0	2	2	0	2	0	0	0	2	2	2	2
<b>Cost per Sample</b>		\$60.61	\$60.61	\$122.84	\$122.84	\$88.72	\$72.80	\$72.80	\$72.80	\$83.68	\$80.89	\$350.00	\$12.00
<b>Subtotal</b>		\$1,450.12	\$0.00	\$121.02	\$245.68	\$0.00	\$177.44	\$0.00	\$0.00	\$167.36	\$700.00	\$24.00	\$0.00

Event 1 Total Lab Cost: \$4,809.94

EVENT 2		Analytical Parameters (enter number of samples for each method)										Chapter	
Groundwater Sample Locations	Number of Events	BTEX + MTBE EPA 8021	BTEX + MTBE EPA 8260	PAHs EPA 8270	PAHs EPA 8310	TRPHs FL-PRO	Lead EPA 6010	VOAs & VOHs EPA 8021	VOAs & VOHs EPA 8260	EDB EPA 604.1	EDB EPA 8011	62-770 Table B	
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
<b>No. Samples</b>		0	0	0	0	0	0	0	0	0	0	0	
<b>Cost per Sample</b>		\$54.60	\$54.60	\$116.00	\$116.00	\$86.45	\$13.64	\$116.00	\$116.00	\$50.05	\$50.05	\$351.57	
<b>Subtotal</b>		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Soil /Air Sample Locations		Number of Events	BTEX + MTBE EPA 8021	BTEX + MTBE EPA 8260	PAHs EPA 8270	PAHs EPA 8310	TRPHs FL-PRO	VOHs EPA 8021	VOHs EPA 8260	As, Cd, Cr, Pb EPA 6010	SPLP Extraction EPA 1312	Modified EPA 18	EPA TO-3
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
<b>No. Samples</b>		0	0	0	0	0	0	0	0	0	0	0	0
<b>Cost per Sample</b>		\$60.61	\$60.61	\$122.84	\$122.84	\$88.72	\$72.80	\$72.80	\$72.80	\$83.68	\$80.89	\$113.73	\$113.73
<b>Subtotal</b>		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Event 2 Total Lab Cost: \$0.00 **WO TOTAL LAB COST \$4,809.94**

**Appendix II**  
**Figures**



Project No.: FL13-1025



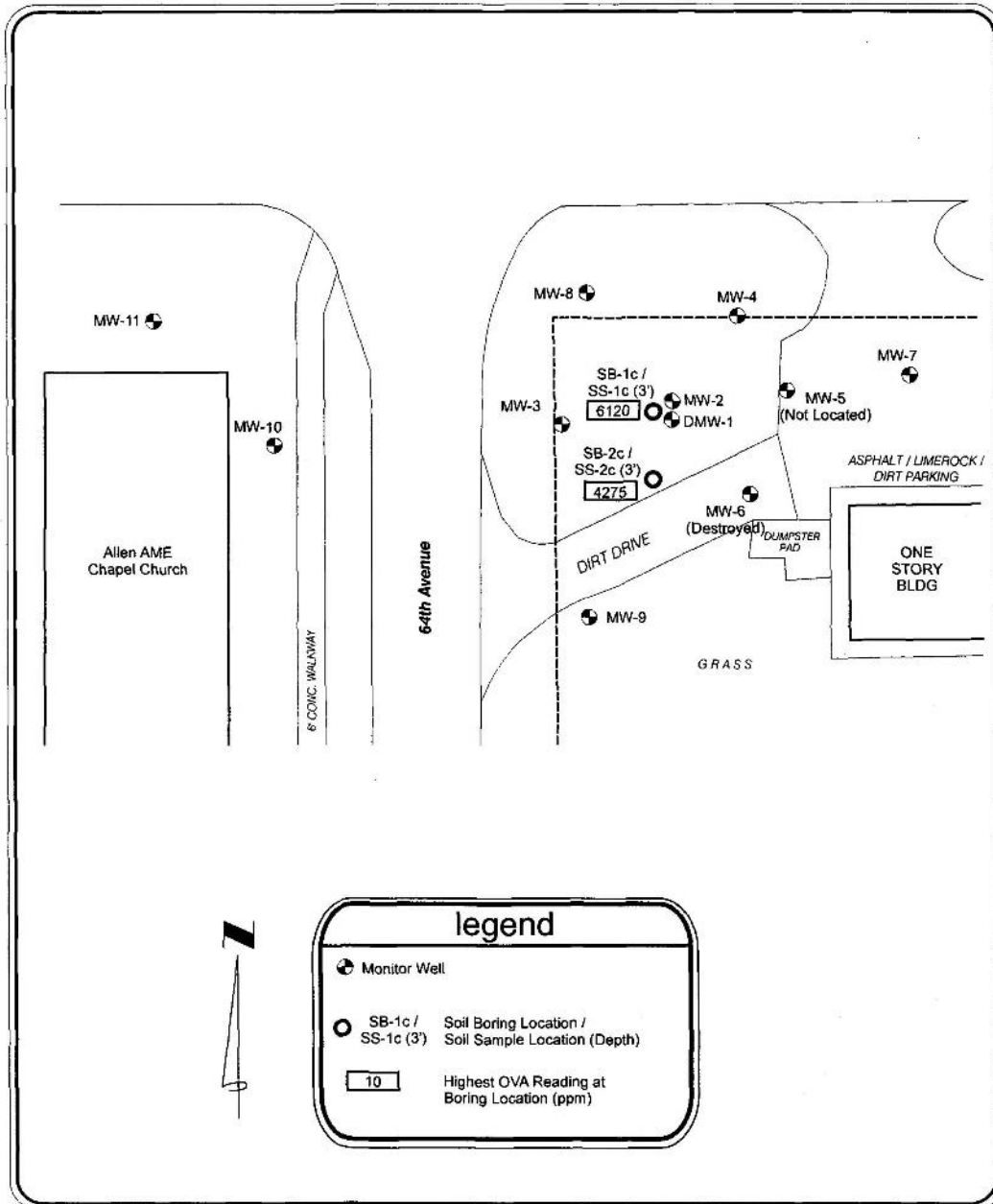
Scale: 1" = 40'

**GENERAL SITE PLAN**

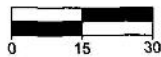
Bethel Service Station  
6375 85th Street  
Wabasso, Indian River County, Florida

**legend**

⊕ Monitor Well



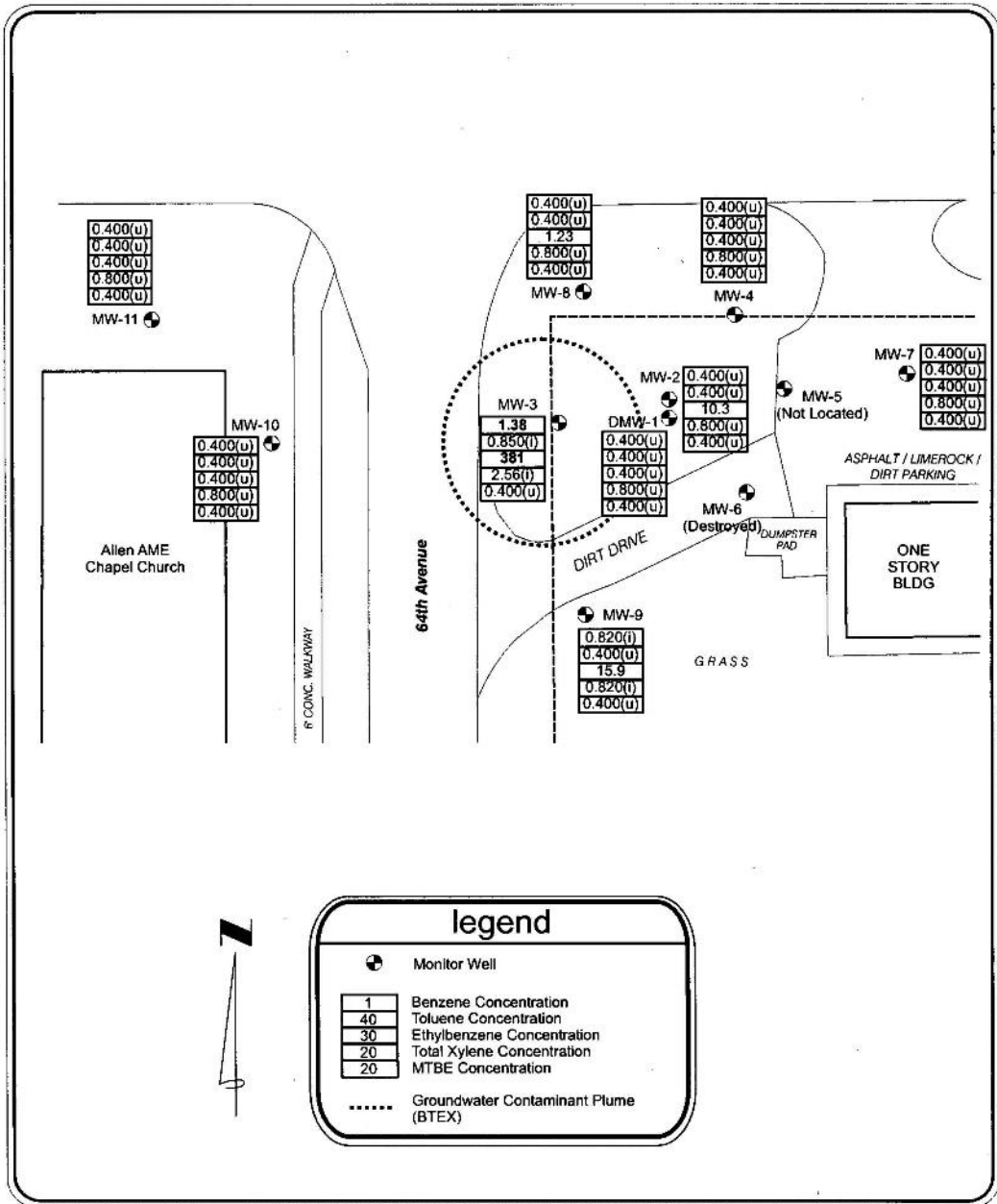
Project No.: FL13-1025



Scale: 1" = 30'

### SOIL BORING / SOIL SAMPLE LOCATION MAP

Bethel Service Station  
6375 85th Street  
Wabasso, Indian River County, Florida

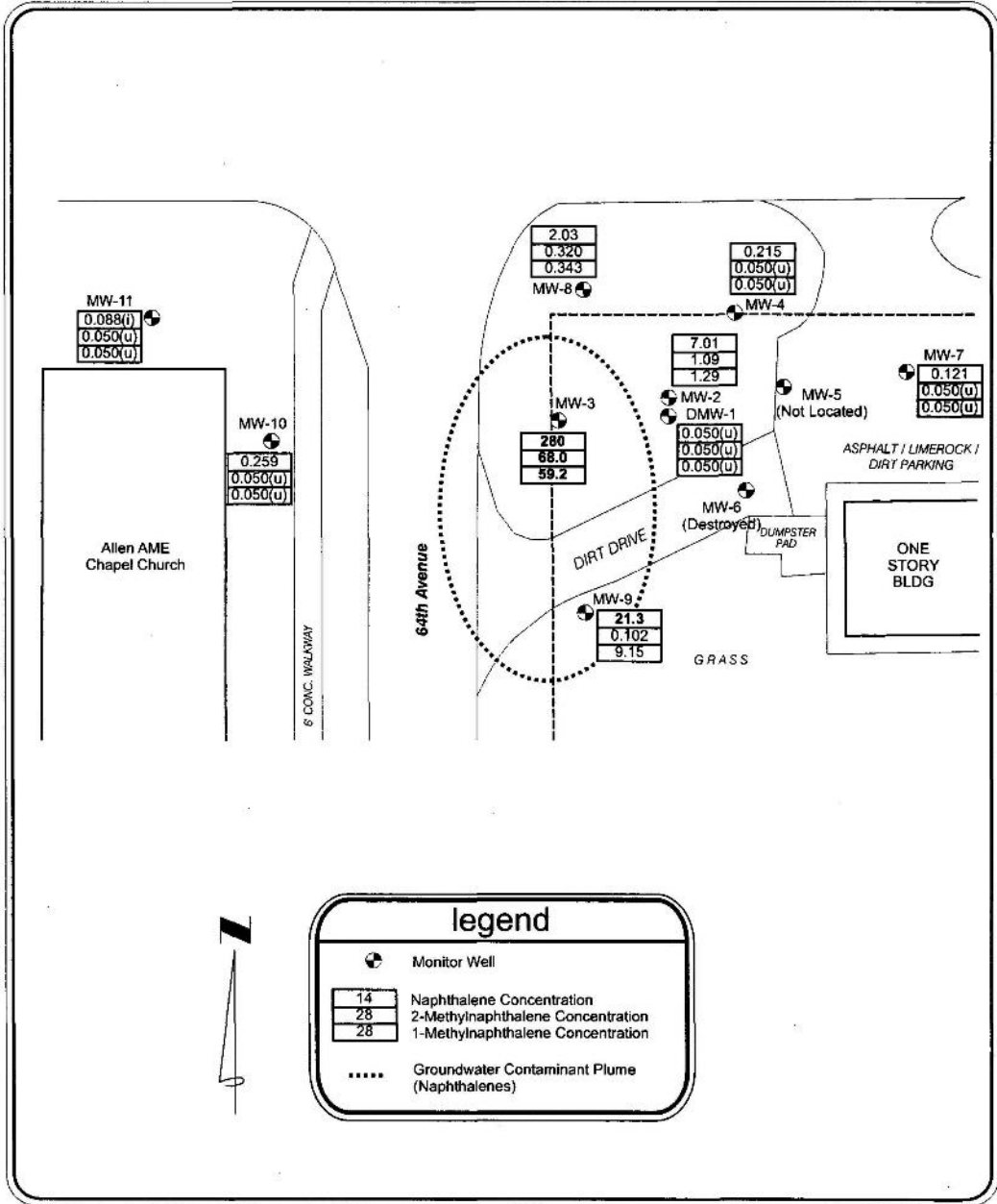


**Project No.:** FL13-1025

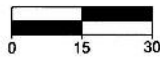
**GROUNDWATER CONTAMINANT CONCENTRATIONS (BTEX + MTBE / 4-10-2013)**

Bethel Service Station  
6375 85th Street  
Wabasso, Indian River County, Florida

Scale: 1" = 30'



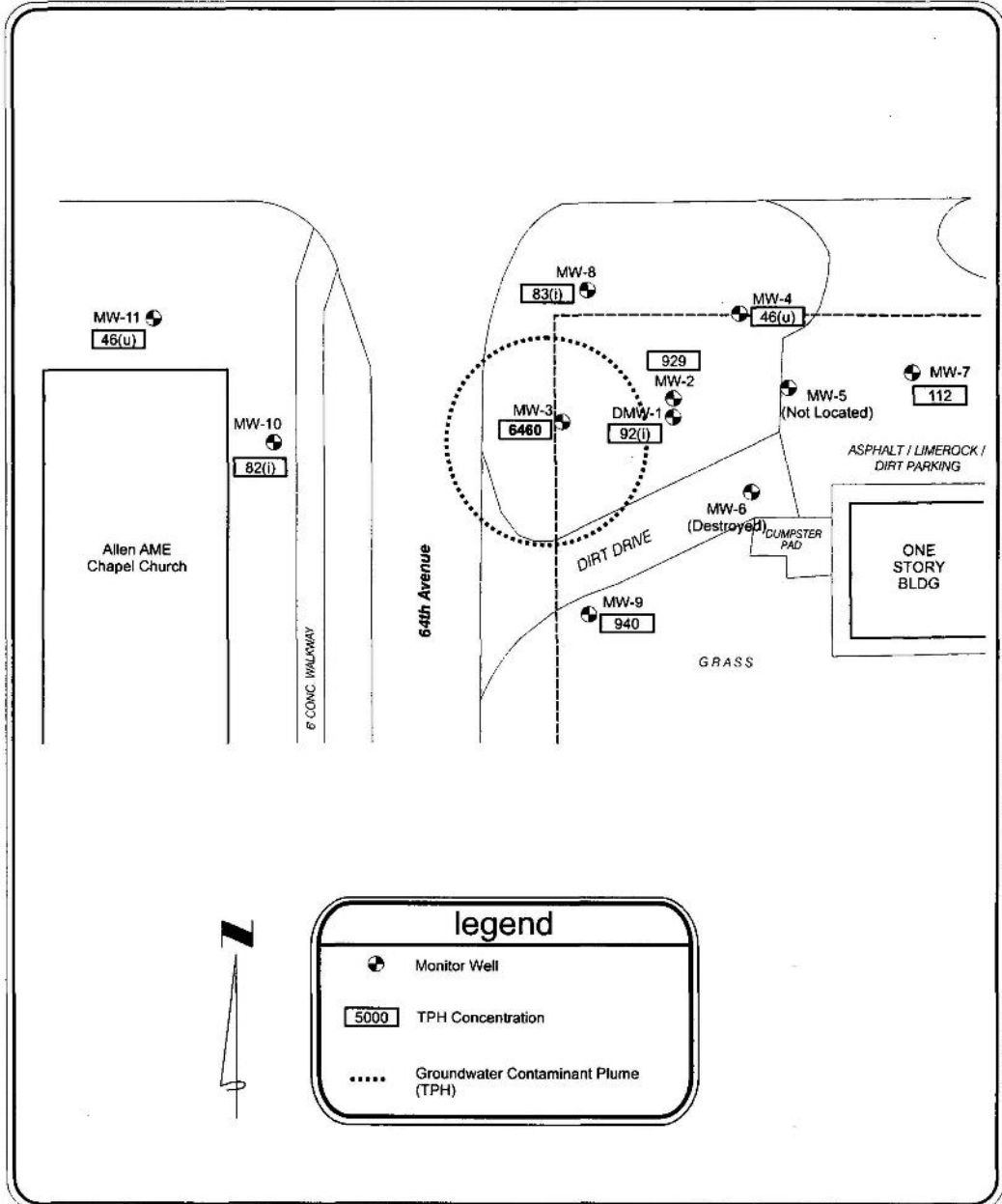
Project No.: FL13-1025



Scale: 1" = 30'

**GROUNDWATER CONTAMINANT CONCENTRATIONS  
(NAPHTHALENES / 4-10-2013)**

Bethel Service Station  
6375 85th Street  
Wabasso, Indian River County, Florida



Project No.: FL13-1025

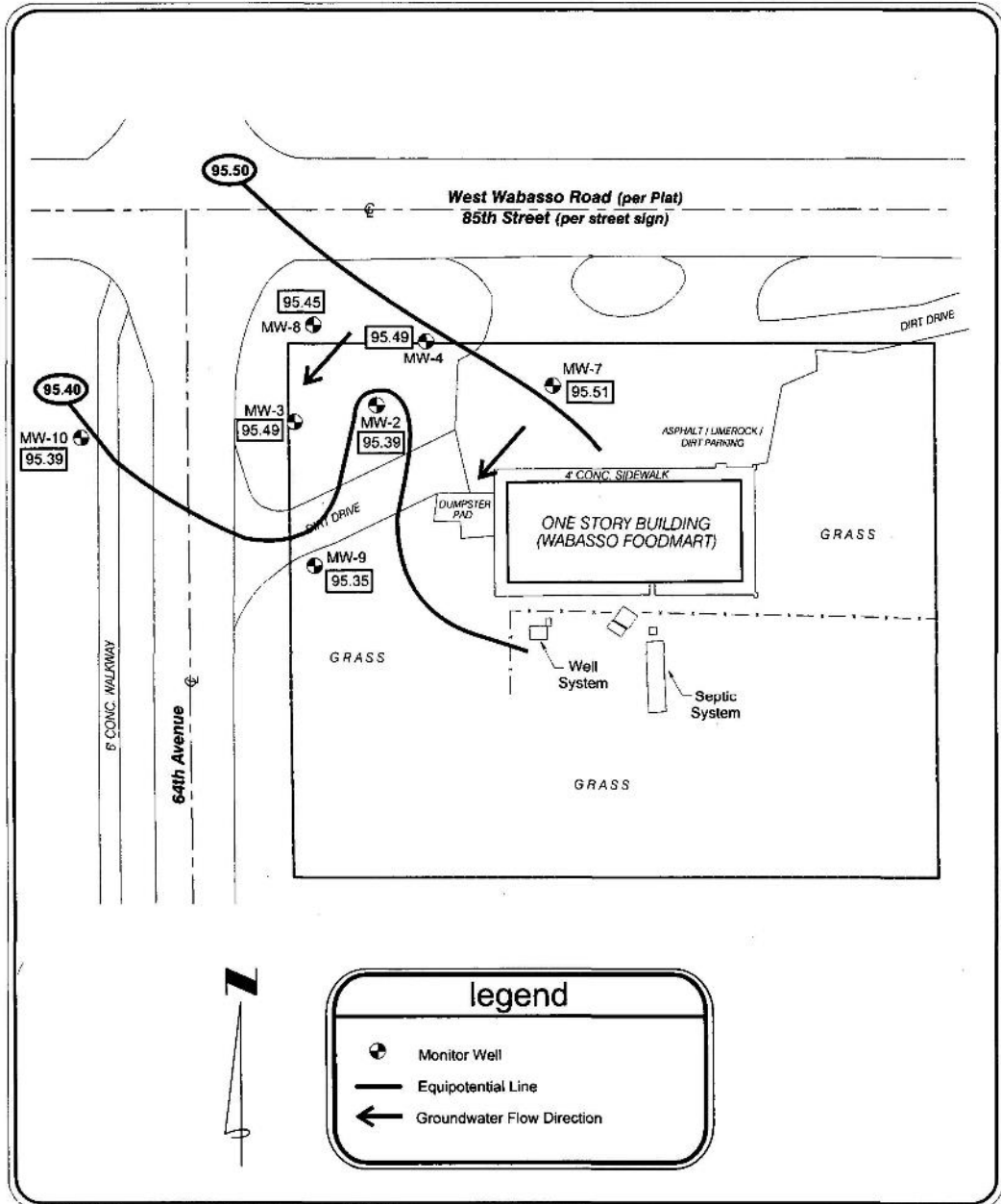


Scale: 1" = 30'

**GROUNDWATER CONTAMINANT CONCENTRATIONS (TPH / 4-10-2013)**

Bethel Service Station  
6375 85th Street  
Wabasso, Indian River County, Florida





Project No.: FL13-1025



Scale: 1" = 40'

**GROUNDWATER ELEVATION CONTOUR  
MAP (4-10-2013)**

Bethel Service Station  
6375 85th Street  
Wabasso, Indian River County, Florida

**Appendix III**

**Soil Screening Summary Table / Soil Sample Analytical Summary  
Table / BaP Conversion Table**

### SOIL SCREENING SUMMARY

Facility Name: Bethel Service Station  
 Facility ID #: 31/9100095

SAMPLE				OVA Screening Result	LITHOLOGY / COMMENTS
BORING	DATE	DEPTH TO WATER	SAMPLE INTERVAL (FBLs)	TOTAL READING (ppm)	
SB-1c	4/10/2013	5'	1'	23	Light Brown Medium Grain Sand
			3'	6120	Gray Medium Grain Sand / Strong Odor (SS-1c Collected)
			5'	5803	Reddish Brown Medium Grain Sand / Strong Odor / Saturated
SB-2c	4/10/2013	5'	1'	14	Light Brown Medium Grain Sand
			3'	4275	Gray Medium Grain Sand / Strong Odor (SS-2c Collected)
			5'	1676	Reddish Brown Medium Grain Sand / Strong Odor / Saturated

## SOIL SAMPLE ANALYTICAL SUMMARY

Facility Name: Bethel Service Station  
 Facility ID#: 31/910095

Analytical Results = mg / Kg  
 SCTL = Soil Cleanup Target Levels (DER / DECI / L)  
 (I) denotes result between MDL and PQL  
 (u) denotes result below MDL

Sample				SCTL	SCTL	SCTL	SCTL	SCTL
Location	Depth (ft)	OVA (ppm)	Date	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
SS-1c (@ SB-1c)	3	6120	4/10/2013	0.024 (u)	0.021 (I)	19.7	1.65	0.059 (u)
SS-2c (@ SB-2c)	3	4275	4/10/2013	0.024 (u)	0.021 (u)	19.6	6.51	0.058 (u)

Sample				SCTL	SCTL	SCTL	SCTL	SCTL
Location	Depth (ft)	OVA (ppm)	Date	Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene
SS-1c (@ SB-1c)	3	6120	4/10/2013	44	28.5	52.1	0.106	0.027 (u)
SS-2c (@ SB-2c)	3	4275	4/10/2013	38.2	32.9	49.7	0.122	0.026 (u)

Sample				SCTL	SCTL	SCTL	SCTL	SCTL
Location	Depth (ft)	OVA (ppm)	Date	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene
SS-1c (@ SB-1c)	3	6120	4/10/2013	0.078 (I)	0.020 (u)	0.017 (u)	0.057 (u)	0.017 (u)
SS-2c (@ SB-2c)	3	4275	4/10/2013	0.078 (I)	0.027 (I)	0.017 (u)	0.058 (u)	0.017 (u)

Sample				SCTL	SCTL	SCTL	SCTL	SCTL
Location	Depth (ft)	OVA (ppm)	Date	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene
SS-1c (@ SB-1c)	3	6120	4/10/2013	0.024 (u)	0.024 (u)	0.013 (u)	0.023 (u)	0.350
SS-2c (@ SB-2c)	3	4275	4/10/2013	0.023 (u)	0.024 (u)	0.013 (u)	0.063 (I)	0.275

Sample				SCTL	SCTL	SCTL	SCTL	SCTL
Location	Depth (ft)	OVA (ppm)	Date	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	TPH	BAP Equivalent
SS-1c (@ SB-1c)	3	6120	4/10/2013	0.013 (u)	0.328	0.026 (I)	1130	Pass
SS-2c (@ SB-2c)	3	4275	4/10/2013	0.013 (u)	0.270	0.046 (I)	2300	Pass

### Benzo(a)pyrene Conversion Table

For Direct Exposure Soil Cleanup Target Levels

Facility/Site Name: Bethel Service Station  
 Location: 6375 85th Street, Wabasso  
 Facility/Site ID No.: 31/9100095

Soil Sample No. SS-2c  
 Sample Date 4/10/2013  
 Location: @SB-2c  
 Depth (ft): 3

**INSTRUCTIONS:** Calculate Total Benzo(a)pyrene Equivalents if at least one of the carcinogenic PAHs is detected in the sample at a concentration equal to or higher than the Method Detection Limit (MDL), whether quantified with certainty (the concentration reported has no qualifier) or estimated (the concentration reported has a "J", "T" or "I" qualifier). Enter the contaminant concentrations (in mg/kg) for all seven carcinogenic PAHs in the yellow boxes using the following criteria (and see table below):

1. If quantified with certainty, or estimated and has the "J" qualifier, enter the reported value;
2. If not detected at the MDL (the concentration reported is the MDL followed by the "U" qualifier) enter 1/2 of the reported value;
3. If detected at a concentration lower than the MDL and the concentration is estimated (has the "T" qualifier) enter the estimated value;
4. If detected at a concentration equal to or higher than the MDL but lower than the Practical Quantitation Limit (PQL) and the concentration is estimated (has the "I" qualifier) enter the estimated value;
5. If detected at a concentration equal to or higher than the MDL but lower than the PQL and it is not estimated (the concentration reported is the PQL followed by the "M" qualifier) enter 1/2 of the reported value.

Contaminant	Concentration (mg/kg)	Toxic Equivalency Factor	Benzo(a)pyrene Equivalents
Benzo(a)pyrene	0.009	1.0	0.0085
Benzo(a)anthracene	0.027	0.1	0.0027
Benzo(b)fluoranthene	0.028	0.1	0.0028
Benzo(k)fluoranthene	0.012	0.01	0.0001
Chrysene	0.012	0.001	0.0000
Dibenz(a,h)anthracene	0.007	1.0	0.0065
Indeno(1,2,3-cd)pyrene	0.007	0.1	0.0007

DE Residential = 0.1 mg/kg; DE Industrial = 0.7 mg/kg

Total Benzo(a)pyrene Equivalents = 0.0

The concentration shown does not exceed the Residential Direct Exposure SCTL of 0.1 mg/kg.

The concentration shown does not exceed the Industrial Direct Exposure SCTL of 0.7 mg/kg.

Summary Criteria for Table Entries			
Detection	Concentration Reported	Data Qualifier	Enter
Various	Quantified with certainty	None	reported value
Various	Estimated	J	reported (estimated) value
ND at MDL	MDL	U	1/2 reported value
< MDL	Estimated	T	reported (estimated) value
≥ MDL but < PQL	Estimated	I	reported (estimated) value
≥ MDL but < PQL	PQL	M	1/2 reported value

**Appendix IV**

**Groundwater Analytical Summary Table**

**GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY**

Facility Name: Bethel Service Station  
Facility ID#: 31910695

NS denotes Not Sampled  
Analytical Results = ug / L  
GCTL = Groundwater Cleanup Target Levels (ug / L)  
(i) denotes result between MDL and PQL  
(u) denotes result below MDL

Well	Sample Date	GCTL	GCTL	GCTL	GCTL	GCTL	GCTL	GCTL	GCTL
		1	40	30	20	20	9000	16	0.82
		Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	TPH	Lead	EDB
DMW-1	2/10/2005	<1	<1	1.2	<2	<5	<690	<0.0250	<0.02
	4/10/2013	0.400 (u)	0.400 (u)	0.400 (u)	0.800 (u)	0.400 (u)	92 (i)	NS	NS
MW-2	2/10/2005	NS	NS	NS	NS	NS	9100	<0.0250	NS
	2/22/2006	37	<10	376	482	<50	NS	NS	<0.02
	8/2/2007	18.3	<0.470	446	34.3	<0.440	NS	NS	NS
	4/10/2013	0.400 (u)	0.400 (u)	10.3	0.800 (u)	0.400 (u)	929	0.12 (u)	0.018 (u)
MW-3	2/10/2005	51	17	978	240	<5	3000	NS	NS
	8/2/2007	<0.350	<0.470	<0.520	<0.980	<0.440	NS	NS	NS
	4/10/2013	1.26	0.800 (i)	381	2.56 (i)	0.400 (u)	649	0.12 (u)	0.010 (u)
MW-4	2/10/2005	<1	<1	<1	<2	<5	<690	NS	NS
	4/10/2013	0.400 (u)	0.400 (u)	0.400 (u)	0.800 (u)	0.400 (u)	46 (u)	NS	NS
MW-5	2/10/2005	<1	<1	<1	<2	<5	<720	NS	NS
	8/2/2007	<0.380	<0.470	<0.520	<0.980	<0.440	NS	NS	NS
	4/10/2013				Well Not Located				
MW-6	2/10/2005	<1	<1	<2	<2	<5	<690	NS	NS
	4/10/2013				Well Destroyed				
MW-7	2/10/2005	<1	<1	<1	<2	<5	<690	NS	NS
	4/10/2013	0.400 (u)	0.400 (u)	0.400 (u)	0.800 (u)	0.400 (u)	112	NS	NS
MW-8	2/10/2005	<1	<1	<1	<2	<5	<690	NS	NS
	8/2/2007	<0.350	<0.470	<0.520	<0.980	<0.440	NS	NS	NS
	4/10/2013	0.800 (i)	0.400 (u)	1.23	0.800 (u)	0.400 (u)	83 (i)	NS	NS
MW-9	2/10/2005	<1	<1	<1	<2	<5	3500	NS	NS
	8/2/2007	<0.350	<0.470	<0.520	<0.980	<0.440	NS	NS	NS
	4/10/2013	0.800 (i)	0.400 (u)	15.9	0.800 (i)	0.400 (u)	940	NS	NS
MW-10	2/10/2005	22	<10	420	<20	<50	<690	NS	NS
	8/2/2007	<0.350	<0.470	<0.520	<0.980	<0.440	NS	NS	NS
	4/10/2013	0.400 (u)	0.400 (u)	0.400 (u)	0.800 (u)	0.400 (u)	82 (i)	0.12 (u)	0.018 (u)
MW-11	2/10/2005	<0.13	<0.13	6.4	<0.37	<0.35	150	NS	NS
	8/2/2007	<0.350	<0.470	<0.520	<0.980	<0.440	NS	NS	NS
	4/10/2013	0.400 (u)	0.400 (u)	0.400 (u)	0.800 (u)	0.400 (u)	46 (u)	NS	NS

**GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY**

Facility Name: Bethel Service Station  
Facility ID#: 31916088

NS denotes Not Sampled  
Analytical Results = ug / L  
GCTL = Groundwater Cleanup Target Levels (ug / L)  
(j) denotes result between MDL and PQL  
(u) denotes result below MDL

Well	Sample Date	GCTL	GCTL	GCTL	GCTL	GCTL	GCTL	GCTL	
		14	28	28	20	280	280	210	
		Naphthalene	1-Methylnaphthalene	1-Methylphenanthrene	Acenaphthene	Fluorene	Fluoranthene	Phenanthrene	Pyrene
DMW-1	2/10/2005	<1	<1	<1	<1	<1	<1	<1	<1
	4/10/2013	0.030 (u)	0.050 (u)	0.050 (u)	0.025 (u)	0.025 (u)	0.025 (u)	0.025 (u)	0.025 (u)
MW-2	2/10/2005	128	42	21	<1	<1	<1	<1	<1
	2/22/2005	NS	NS	NS	NS	NS	NS	NS	NS
	8/2/2007	85.2	21.0	12.4	<0.029	<0.011	<0.010	<0.010	<0.014
	4/10/2013	7.01	1.88	1.28	0.025 (u)	0.025 (u)	0.025 (u)	0.025 (u)	0.025 (u)
MW-3	2/10/2005	140	39	29	1.8	<1	<1	<1	<1
	8/2/2007	0.16	0.135	0.505	0.050	0.048	<0.010	0.018(j)	<0.014
	4/10/2013	280	88.0	89.2	1.87	0.822	0.025 (u)	0.232	0.025 (u)
MW-4	2/10/2005	<1	<1	<1	<1	<1	<1	<1	<1
	4/10/2013	0.215	0.050 (u)	0.050 (u)	0.077	0.025 (u)	0.025 (u)	0.025 (u)	0.025 (u)
MW-5	2/10/2005	<1	<1	<1	<1	<1	<1	<1	<1
	8/2/2007	0.035	<0.011	<0.015	<0.008	<0.011	<0.010	<0.010	<0.014
	4/10/2013				Well Not Located				
MW-6	2/10/2005	<1	<1	<1	<1	<1	<1	<1	<1
	4/10/2013				Well Destroyed				
MW-7	2/10/2005	<1	<1	<1	<1	<1	<1	<1	<1
	4/10/2013	0.121	0.050 (u)	0.050 (u)	0.025 (u)	0.025 (u)	0.025 (u)	0.025 (u)	0.025 (u)
MW-8	5/18/2005	<1	<1	<1	<1	<1	<1	<1	<1
	8/2/2007	0.028	0.013(j)	<0.015	<0.008	<0.011	<0.010	<0.010	<0.014
	4/10/2013	2.03	0.320	0.343	0.025 (u)	0.025 (u)	0.025 (u)	0.025 (u)	0.025 (u)
MW-9	5/18/2005	<1	<1	<1	<1	<1	<1	<1	<1
	8/2/2007	0.018(j)	<0.011	<0.015	<0.009	<0.011	<0.010	<0.010	<0.014
	4/10/2013	21.2	0.192	0.15	0.034 (j)	0.030 (j)	0.025 (u)	0.025 (u)	0.025 (u)
MW-10	5/18/2005	41	<1	2.89	<1	<1	<1	<1	<1
	8/2/2007	0.025	<0.011	<0.015	<0.008	<0.011	<0.010	<0.010	<0.014
	4/10/2013	0.259	0.050 (u)	0.050 (u)	0.025 (u)	0.025 (u)	0.025 (u)	0.025 (u)	0.025 (u)
MW-11	9/12/2005	0.13	<0.077	<0.044	<0.028	<0.031	<0.047	<0.032	<0.041
	8/2/2007	<0.010	<0.011	<0.015	<0.006	<0.011	<0.010	<0.010	<0.014
	4/10/2013	0.088 (j)	0.050 (u)	0.050 (u)	0.025 (u)	0.025 (u)	0.025 (u)	0.025 (u)	0.025 (u)



**Appendix V**

**Groundwater Elevation Summary Table**

## GROUNDWATER ELEVATION TABLE

Facility Name: Bethel Service Station  
 Facility ID#: 31/9100095

All Measurements = Feet  
 No Data = Blank  
 TOC: Top of Casing

WELL NO.	DMW-1			MW-2			MW-3			MW-4			MW-5			MW-6			MW-7		
DIAMETER	2"			2"			2"			2"			2"			2"			2"		
WELL DEPTH	30'			12'			12'			12'			12'			12'			12'		
SCREEN INTERVAL	25 - 30			2 to 12'			2 to 12'			2 to 12'			2 to 12'			2 to 12'			2 to 12'		
TOC ELEVATION	100.56			100.30			100.38			99.89			100.06			100.19			99.98		
DATE	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP
8/2/2007				98.56	1.74	0.00	98.55	1.83	0.00				98.59	1.47	0.00						
4/10/2013	94.15	6.41	0.00	95.39	4.91	0.00	95.49	4.89	0.00	95.49	4.40	0.00	Not Located			Destroyed			95.51	4.47	0.00

WELL NO.	MW-8			MW-9			MW-10			MW-11		
DIAMETER	2"			2"			2"			2"		
WELL DEPTH	11'			11'			11'			11'		
SCREEN INTERVAL	1 - 11			1 - 11			1 - 11			1 - 11		
TOC ELEVATION	98.82			98.00			99.91					
DATE	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP
8/2/2007	98.51	1.31	0.00	98.55	0.45	0.00	98.47	1.44	0.00		1.55	0.00
4/10/2013	95.45	4.37	0.00	95.35	3.65	0.00	95.39	4.52	0.00		4.49	0.00

**Appendix VI**

**Groundwater Sampling Logs / Meter Calibration Logs**

Form FD 9000-24  
GROUNDWATER SAMPLING LOG

SITE NAME: Bethel Service Station		SITE LOCATION: 6375 85 <sup>th</sup> Street - Wabasso - Indian River County - Florida	
WELL NO: DMW-1	SAMPLE ID: DMW-1	DATE: 4/10/2013	

**PURGING DATA**

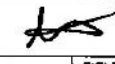
WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4"	WELL SCREEN INTERVAL DEPTH: 25 feet to 30 feet	STATIC DEPTH TO WATER (feet): 6.91	PURGE PUMP TYPE OR BAILER: PP
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable)				
= ( 30 feet - 6.91 feet ) X 0.16 gallons/foot = 3.79 gallons				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable)				
= 0 gallons + ( 0.0026 gallons/foot X feet ) + 0.20 gallons = gallons				
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): ~ 9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): ~ 9	PURGING INITIATED AT: 1034	PURGING ENDED AT: 1110	TOTAL VOLUME PURGED (gallons): ~ 7.75

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) $\mu\text{mhos/cm}$ <u>650</u>	DISSOLVED OXYGEN (circle units) mg/L or % saturation <u>19.1</u>	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1104	-6.25	-6.25	-0.25	6.58	5.45	24.40	1168	19.1	7.97	clear	sulphur
1107	-0.75	-7.0	-0.25	6.58	5.43	24.38	1163	11.1	6.21	"	"
1110	-0.75	-7.75	-0.25	6.59	5.42	24.36	1161	10.1	5.89	"	"

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88  
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0008; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

PURGING EQUIPMENT CODES: B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

**SAMPLING DATA**

SAMPLED BY (PRINT) / AFFILIATION: Robert Perkins & Monty Watson / EAC		SAMPLER(S) SIGNATURE(S): 		SAMPLING INITIATED AT: 1112	SAMPLING ENDED AT: 1116
PUMP OR TUBING DEPTH IN WELL (feet): ~ 9	TUBING MATERIAL CODE: PE	FIELD-FILTERED: Y <input checked="" type="checkbox"/>	FILTER SIZE: ___ $\mu\text{m}$		
FIELD DECONTAMINATION: PUMP <input checked="" type="checkbox"/> N	TUBING Y <input checked="" type="checkbox"/> (replaced)	DUPLICATE: Y <input checked="" type="checkbox"/>			

SAMPLE ID CODE	# CONTAINERS	SAMPLE CONTAINER SPECIFICATION		SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
		MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
DMW-1	2	CG	40 mL	---	---	---	8260	RFPP	-100
	1	AG	1 L	H2SO4	---	---	FL PRO	APP	-500
	1	AG	1 L	---	---	---	8270c	APP	-500

REMARKS:

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravily Drain); O = Other (Specify)

- NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.  
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)  
pH:  $\pm 0.2$  units Temperature:  $\pm 0.2$  °C Specific Conductance:  $\pm 5\%$  Dissolved Oxygen: all readings  $\leq 20\%$  saturation (see Table FS 2200-2); optionally,  $\pm 0.2$  mg/L or  $\pm 10\%$  (whichever is greater) Turbidity: all readings  $\leq 20$  NTU; optionally  $\pm 5$  NTU or  $\pm 10\%$  (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24  
GROUNDWATER SAMPLING LOG

SITE NAME: Bethel Service Station		SITE LOCATION: 6375 85 <sup>th</sup> Street - Webasso - Indian River County - Florida	
WELL NO: MW-2	SAMPLE ID: MW-2	DATE: 4/10/2013	

**PURGING DATA**

WELL DIAMETER (Inches): 2	TUBING DIAMETER (Inches): 1/4"	WELL SCREEN INTERVAL DEPTH: 2 feet to 12 feet	STATIC DEPTH TO WATER (feet): 4.91	PURGE PUMP TYPE OR BAILER: PP							
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable)											
= ( 12 feet - 4.91 feet ) X 0.16 gallons/foot = 1.13 gallons											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable)											
= 0 gallons + ( 0.0026 gallons/foot X feet ) + 0.25 gallons = gallons											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 7	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 7	PURGING INITIATED AT: 1006	PURGING ENDED AT: 1029	TOTAL VOLUME PURGED (gallons): 4.60							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle units) (mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1023	~3.40	~3.40	~0.20	5.02	5.86	23.50	888	17.7	1.28	clear	sulfur
1026	~0.60	~4.0	~0.20	5.02	5.86	23.51	886	15.6	1.34	"	"
1027	~0.60	~4.60	~0.20	5.02	5.87	23.53	882	13.8	1.15	"	"
WELL CAPACITY (Gallons Per Foot): 0.76" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.68 TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016											
PURGING EQUIPMENT CODES: B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)											

**SAMPLING DATA**

SAMPLED BY (PRINT) / AFFILIATION: Robert Perkins & Monty Watson / EAC		SAMPLER(S) SIGNATURE(S): 		SAMPLING INITIATED AT: 1031	SAMPLING ENDED AT: 1038						
PUMP OR TUBING DEPTH IN WELL (feet): 7	TUBING MATERIAL CODE: PE	FIELD-FILTERED: Y <input checked="" type="checkbox"/>	Filteration Equipment Type:	FILTER SIZE: ___ µm							
FIELD DECONTAMINATION: PUMP <input checked="" type="checkbox"/> N	TUBING Y <input checked="" type="checkbox"/> (replaced)	DUPLICATE: Y <input checked="" type="checkbox"/>									
SAMPLE CONTAINER SPECIFICATION		SAMPLE PRESERVATION		INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH					
MW-2	2	CG	40 mL	---	---	---	8260	RFPP	~100		
	2	CG	40 mL	---	---	---	EDB	RFPP	~100		
	1	AG	1 L	H2SO4	---	---	FL PRO	APP	~500		
	1	AG	1 L	---	---	---	8270c	APP	~500		
	1	PE	250 mL	HNO3	---	---	6010	APP	~500		
REMARKS:											
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)											
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)											

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.  
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)  
pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24  
GROUNDWATER SAMPLING LOG

SITE NAME: Bethel Service Station		SITE LOCATION: 6375 85 <sup>th</sup> Street - Wabasso - Indian River County - Florida	
WELL NO: MW-3	SAMPLE ID: MW-3	DATE: 4/10/2013	

**PURGING DATA**

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4"	WELL SCREEN INTERVAL DEPTH: 2 feet to 12 feet	STATIC DEPTH TO WATER (feet): 4.89	PURGE PUMP TYPE OR BAILER: PP
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable)				
= ( 12 feet - 4.89 feet ) X 0.16 gallons/foot = 1.14 gallons				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable)				
= 0 gallons + ( 0.0026 gallons/foot X feet ) + 0.25 gallons = gallons				

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 7	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 7	PURGING INITIATED AT: 1120	PURGING ENDED AT: 1138	TOTAL VOLUME PURGED (gallons): 3.60
--	--	----------------------------	------------------------	-------------------------------------

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) $\mu\text{mhos/cm}$ or $\mu\text{S/cm}$	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1132	-2.40	-2.40	-0.20	5.06	6.28	23.2	465	17.7	3.58	clear	sl. petn
1135	-0.60	-3.0	-0.20	5.06	6.25	23.22	470	12.2	3.23	"	"
1138	-0.60	-3.60	-0.20	5.06	6.26	23.21	468	11.4	2.96	"	"

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88  
 TUBING INSIDE DIA. CAPACITY (Gal./ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.008; 1/2" = 0.010; 5/8" = 0.018  
 PURGING EQUIPMENT CODES: B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)

**SAMPLING DATA**

SAMPLED BY (PRINT) / AFFILIATION: Robert Perkins & Monty Watson / EAC	SAMPLER(S) SIGNATURE(S): 	SAMPLING INITIATED AT: 1140	SAMPLING ENDED AT:
--	------------------------------	-----------------------------	--------------------

PUMP OR TUBING DEPTH IN WELL (feet): 7	TUBING MATERIAL CODE: PE	FIELD-FILTERED: Y <input checked="" type="checkbox"/> Filtration Equipment Type:	FILTER SIZE: _____ $\mu\text{m}$
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FIELD DECONTAMINATION: PUMP <input checked="" type="checkbox"/> N	TUBING Y <input checked="" type="checkbox"/> (replaced)	DUPLICATE: Y <input checked="" type="checkbox"/> N
---	---	--

SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
				PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
MW-3	2	CG	40 mL	---	---	---	8260	RFPP	-100
	2	CG	40 mL	---	---	---	EDB	RFPP	-100
	1	AG	1 L	H2SO4	---	---	FL PRO	APP	-500
	1	AG	1 L	---	---	---	8270c	APP	-500
	1	PE	250 mL	HNO3	---	---	6010	APP	-500

REMARKS:

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)  
 SAMPLING EQUIPMENT CODES: APP = A-ster Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.  
 2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)  
 pH:  $\pm 0.2$  units Temperature:  $\pm 0.2$  °C Specific Conductance:  $\pm 5\%$  Dissolved Oxygen: all readings  $\leq 20\%$  saturation (see Table FS 2200-2); optionally,  $\pm 0.2$  mg/L or  $\pm 10\%$  (whichever is greater) Turbidity: all readings  $\leq 20$  NTU; optionally  $\pm 5$  NTU or  $\pm 10\%$  (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24  
GROUNDWATER SAMPLING LOG

SITE NAME: Bethel Service Station		SITE LOCATION: 6375 85 <sup>th</sup> Street - Wabasso - Indian River County - Florida	
WELL NO: MW#4	SAMPLE ID: MW#4	DATE: 4/10/2013	

**PURGING DATA**

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4"	WELL SCREEN INTERVAL DEPTH: 7 feet to 12 feet	STATIC DEPTH TO WATER (feet): 4.40	PURGE PUMP TYPE OR BAILER: PP							
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) = (12 feet - 4.40 feet) X 0.16 gallons/foot = 1.22 gallons											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) = 0 gallons + (0.0026 gallons/foot X feet) + 0.25 gallons = gallons											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): ~ 7	FINAL PUMP OR TUBING DEPTH IN WELL (feet): ~ 7	PURGING INITIATED AT: 1206	PURGING ENDED AT: 1221	TOTAL VOLUME PURGED (gallons): ~ 3.0							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) $\mu\text{mhos/cm}$	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1215	~ 1.80	- 1.80	- 0.20	4.70	5.40	23.16	1026	11.9	5.21	clear	sulphur
1218	~ 0.60	- 2.40	- 0.20	4.71	5.45	23.16	1028	11.2	4.89	"	"
1221	~ 0.60	- 3.0	- 0.20	4.71	5.49	23.15	1027	14.8	4.46	"	"
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88 TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016											
PURGING EQUIPMENT CODES: B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)											

**SAMPLING DATA**

SAMPLED BY (PRINT) / AFFILIATION: Robert Perkins & Monty Watson / EAC			SAMPLER(S) SIGNATURE(S):			SAMPLING INITIATED AT: 1223	SAMPLING ENDED AT: 1227		
PUMP OR TUBING DEPTH IN WELL (feet): ~ 7			TUBING MATERIAL CODE: PE		FIELD-FILTERED: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Filtration Equipment Type: _____ $\mu\text{m}$			
FIELD DECONTAMINATION: PUMP <input checked="" type="checkbox"/> N			TUBING Y <input checked="" type="checkbox"/> (replaced)		DUPLICATE: Y <input checked="" type="checkbox"/>				
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
MW#4	2	CG	40 mL	---	---	---	8260	RFPP	-100
	1	AG	1 L	H2SO4	---	---	FL PRO	APP	-500
	1	AG	1 L	---	---	---	8270c	APP	-500
REMARKS:									
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)									
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)									

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.  
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)  
pH:  $\pm 0.2$  units Temperature:  $\pm 0.2$  °C Specific Conductance:  $\pm 5\%$  Dissolved Oxygen: all readings  $\leq 20\%$  saturation (see Table FS 2200-2); optionally,  $\pm 0.2$  mg/L or  $\pm 10\%$  (whichever is greater) Turbidity: all readings  $\leq 20$  NTU; optionally  $\pm 5$  NTU or  $\pm 10\%$  (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24  
**GROUNDWATER SAMPLING LOG**

SITE NAME: Bethel Service Station		SITE LOCATION: 6375 85 <sup>th</sup> Street - Wabasso - Indian River County - Florida	
WELL NO: MW-7	SAMPLE ID: MW-7	DATE: 4/10/2013	

**PURGING DATA**

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4"	WELL SCREEN INTERVAL DEPTH: 2 feet to 12 feet	STATIC DEPTH TO WATER (feet): 4.47	PURGE PUMP TYPE OR BAILER: PP							
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) = ( 12 feet - 4.47 feet ) X 0.16 gallons/foot = 1.20 gallons											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME - (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) = 0 gallons + ( 0.0026 gallons/foot X feet ) + 0.25 gallons = gallons											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 7	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 7	PURGING INITIATED AT: 1231	PURGING ENDED AT: 1247	TOTAL VOLUME PURGED (gallons): 3.20							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1241	~0.20	~2.0	~0.20	4.59	5.89	23.83	662	13.3	3.66	clear	none
1244	~0.60	~2.60	~0.20	4.59	5.95	23.82	659	11.5	2.84	"	"
1247	~0.60	~3.20	~0.20	4.59	5.95	23.86	657	11.4	1.65	"	"
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88 TUBING INSIDE DIA. CAPACITY (Gal/Ft): 1/8" = 0.0008; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016											
PURGING EQUIPMENT CODES: B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)											

**SAMPLING DATA**

SAMPLED BY (PRINT) / AFFILIATION: Robert Perkins & Monty Watson / EAC		SAMPLER(S) SIGNATURE(S): 		SAMPLING INITIATED AT: 1249	SAMPLING ENDED AT: 1253				
PUMP OR TUBING DEPTH IN WELL (feet): 7	TUBING MATERIAL CODE: PE	FIELD-FILTERED: Y <input checked="" type="checkbox"/>	Filteration Equipment Type:	FILTER SIZE: ___ µm					
FIELD DECONTAMINATION: PUMP <input checked="" type="checkbox"/> N	TUBING Y <input checked="" type="checkbox"/> (Replaced)	DUPLICATE: Y <input checked="" type="checkbox"/>							
SAMPLE CONTAINER SPECIFICATION		SAMPLE PRESERVATION		INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)			
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
MW-7	2	CG	40 mL	---	---	---	8260	RFPP	~100
	1	AG	1 L	H2SO4	---	---	FL PRO	APP	~500
	1	AG	1 L	---	---	---	8270c	APP	~500
REMARKS:									
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)									
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)									

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.  
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)  
pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Revision Date: February 12, 2009



Form FD 9000-24  
**GROUNDWATER SAMPLING LOG**

SITE NAME: Bethel Service Station		SITE LOCATION: 6375 85 <sup>th</sup> Street - Wabasso - Indian River County - Florida	
WELL NO: MW-8	SAMPLE ID: MW-8	DATE: 4/10/2013	

**PURGING DATA**

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4"	WELL SCREEN INTERVAL DEPTH: 3 feet to 11 feet	STATIC DEPTH TO WATER (feet): 4.99	PURGE PUMP TYPE OR BAILER: PP							
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) = (11 feet - 4.99 feet) X 0.16 gallons/foot = 1.00 gallons											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) = 0 gallons + (0.0026 gallons/foot X feet) + 0.25 gallons = gallons											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 7	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 7	PURGING INITIATED AT: 1143	PURGING ENDED AT: 1201	TOTAL VOLUME PURGED (gallons): 3.60							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1155	-2.40	-2.40	-0.20	4.62	6.43	22.14	397	12.9	2.49	clear	sulphur
1158	-0.60	-3.0	-0.20	4.62	6.43	22.15	398	10.4	1.96	"	"
1201	-0.60	-3.60	-0.20	4.62	6.42	22.14	400	9.9	1.27	"	"
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88 TUBING INSIDE DIA. CAPACITY (Gal./ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016											
PURGING EQUIPMENT CODES: B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)											

**SAMPLING DATA**

SAMPLED BY (PRINT)/AFFILIATION: Robert Perkins & Monty Watson / EAC		SAMPLER(S) SIGNATURE(S): 		SAMPLING INITIATED AT: 1203	SAMPLING ENDED AT: 1207			
PUMP OR TUBING DEPTH IN WELL (feet): 7	TUBING MATERIAL CODE: PE	FIELD-FILTERED: Y <input checked="" type="checkbox"/>	FILTRATION EQUIPMENT TYPE:	FIELD-FILTERED: Y <input checked="" type="checkbox"/>	FILTER SIZE: ___ µm			
FIELD DECONTAMINATION: PUMP <input checked="" type="checkbox"/> N	TUBING Y <input checked="" type="checkbox"/> (replaced)	DUPLICATE: Y <input checked="" type="checkbox"/>						
SAMPLE CONTAINER SPECIFICATION			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
MW-8	2	CG	40 mL	--	--	--	8260	RFPP -100
	1	AG	1L	H2SO4	--	--	FL PRO	APP -500
	1	AG	1L	--	--	--	8270c	APP -500
REMARKS:								
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)								
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravitly Drain); O = Other (Specify)								

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.  
 2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)  
 pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24  
**GROUNDWATER SAMPLING LOG**

SITE NAME: Bethel Service Station		SITE LOCATION: 6375 85 <sup>th</sup> Street - Wabasso - Indian River County - Florida	
WELL NO: MW-9	SAMPLE ID: MW-9	DATE: 4/10/2013	

**PURGING DATA**

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4"	WELL SCREEN INTERVAL DEPTH: 1 foot to 11 feet	STATIC DEPTH TO WATER (feet): 3.65	PURGE PUMP TYPE OR BAILER: PP							
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable)											
= ( 11 feet - 3.65 feet ) X 0.16 gallons/foot = 1.18 gallons											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable)											
= 0 gallons + ( 0.0026 gallons/foot X feet ) + 0.25 gallons = gallons											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): ~ 6	FINAL PUMP OR TUBING DEPTH IN WELL (feet): ~ 6	PURGING INITIATED AT: 1251	PURGING ENDED AT: 1309	TOTAL VOLUME PURGED (gallons): ~3.60							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) umhos/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTU)	COLOR (describe)	ODOR (describe)
1303	-2.40	-2.40	-0.20	3.86	6.15	23.63	905	16.8	2.33	clear	sulfur
1306	-0.60	-3.0	-0.20	3.86	6.15	23.65	908	14.2	2.29	"	"
1309	-0.60	-3.60	-0.20	3.86	6.15	23.66	909	11.6	1.84	"	"
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88 TUBING INSIDE DIA. CAPACITY (Gal./ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016											
PURGING EQUIPMENT CODES: B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)											

**SAMPLING DATA**

SAMPLED BY (PRINT)/ AFFILIATION: Robert Perkins & Monly Watson / EAC		SAMPLER(S) SIGNATURE(S): 		SAMPLING INITIATED AT: 1310	SAMPLING ENDED AT: 1313				
PUMP OR TUBING DEPTH IN WELL (feet): ~ 6	TUBING MATERIAL CODE: PE	FIELD-FILTERED: Y <input checked="" type="checkbox"/>	Filteration Equipment Type:	FILTER SIZE: _____ µm					
FIELD DECONTAMINATION: PUMP <input checked="" type="checkbox"/> N	TUBING Y <input checked="" type="checkbox"/> (replaced)	DUPLICATE: Y <input checked="" type="checkbox"/>							
SAMPLE CONTAINER SPECIFICATION			SAMPLE PRESERVATION						
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW-9	2	CG	40 mL	---	---	---	8260	RFPP	-100
	1	AG	1 L	H2SO4	---	---	FL PRO	APP	-500
	1	AG	1 L	---	---	---	8270c	APP	-500
REMARKS:									
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)									
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)									

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.  
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)  
pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24  
GROUNDWATER SAMPLING LOG

SITE NAME: Bethel Service Station		SITE LOCATION: 6375 85 <sup>th</sup> Street - Wabasso - Indian River County - Florida	
WELL NO: MW-10	SAMPLE ID: MW-10	DATE: 4/10/2013	

**PURGING DATA**

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4"	WELL SCREEN INTERVAL DEPTH: 1 feet to 11 feet	STATIC DEPTH TO WATER (feet): 4.52	PURGE PUMP TYPE OR BAILER: PP							
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable)											
= ( 11 feet - 4.52 feet ) X 0.16 gallons/foot = 1.04 gallons											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable)											
= 0 gallons + ( 0.0026 gallons/foot X feet ) + 0.25 gallons = gallons											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): ~ 7	FINAL PUMP OR TUBING DEPTH IN WELL (feet): ~ 7	PURGING INITIATED AT: 1318	PURGING ENDED AT: 1333	TOTAL VOLUME PURGED (gallons): ~							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (micro units) umhos/cm or µS/cm	DISSOLVED OXYGEN (micro units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1327	0.20	0.20	0.20	4.76	6.09	22.84	279	16.0	6.16	clear	sulphur
1330	0.60	2.40	0.20	4.76	6.08	22.82	281	14.2	5.82	"	"
1333	0.60	3.0	0.20	4.76	6.08	22.84	284	12.1	3.19	"	"
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.68 TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0008; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.008; 1/2" = 0.010; 5/8" = 0.018											
PURGING EQUIPMENT CODES: B = Bailer, BP = Bladder Pump, ESP = Electric Submersible Pump, PP = Peristaltic Pump, O = Other (Specify)											

**SAMPLING DATA**

SAMPLED BY (PRINT) / AFFILIATION: Robert Perkins & Monty Watson / EAC		SAMPLER(S) SIGNATURE(S): 		SAMPLING INITIATED AT: 1335	SAMPLING ENDED AT:					
PUMP OR TUBING DEPTH IN WELL (feet): ~ 7	TUBING MATERIAL CODE: PE	FIELD-FILTERED: Y <input checked="" type="checkbox"/> N	Filtration Equipment Type:	FIELD-FILTERED: Y <input checked="" type="checkbox"/> N	FILTER SIZE: _____ µm					
FIELD DECONTAMINATION: PUMP <input checked="" type="checkbox"/> N	TUBING Y <input checked="" type="checkbox"/> N (replaced)	DUPLICATE: Y <input checked="" type="checkbox"/> N								
SAMPLE CONTAINER SPECIFICATION		SAMPLE PRESERVATION		INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH				
MW-10	2	CG	40 mL	---	---	---	8260	RFPP	---	-100
	2	CG	40 mL	---	---	---	EDB	RFPP	---	-100
	1	AG	1 L	H2SO4	---	---	FL PRO	APP	---	-500
	1	AG	1 L	---	---	---	8270c	APP	---	-500
	1	PE	250 mL	HNO3	---	---	6010	APP	---	-500
REMARKS:										
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)										
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Sirew Method (Tubing Gravity Drain); O = Other (Specify)										

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.  
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)  
pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Revision Date: February 12, 2009

Form FD 9000-24  
GROUNDWATER SAMPLING LOG

SITE NAME: Bethel Service Station		SITE LOCATION: 8375 85 <sup>th</sup> Street - Wabasso - Indian River County - Florida	
WELL NO: MW-11	SAMPLE ID: MW-11	DATE: 4/10/2013	

**PURGING DATA**

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 1/4"	WELL SCREEN INTERVAL DEPTH: 1 feet to 11 feet	STATIC DEPTH TO WATER (feet): 4.49	PURGE PUMP TYPE OR BAILER: PP							
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) = ( 11 feet - 4.49 feet ) X 0.16 gallons/foot = 1.04 gallons											
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) = 0 gallons + ( 0.0026 gallons/foot X feet ) + 0.25 gallons = gallons											
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): ~ 7	FINAL PUMP OR TUBING DEPTH IN WELL (feet): ~ 7	PURGING INITIATED AT: 1342	PURGING ENDED AT: 1357	TOTAL VOLUME PURGED (gallons): ~ 3.0							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) $\mu\text{mhos/cm}$ or $\mu\text{S/cm}$	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1351	~1.80	~1.80	~0.20	4.71	6.13	21.25	270	18.8	2.93	clear	none
1354	~0.60	~2.40	~0.20	4.71	6.11	21.20	287	15.7	2.13	"	"
1357	~0.60	~3.0	~0.20	4.71	6.07	21.22	286	14.0	2.37	"	"
WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 6" = 1.02; 8" = 1.47; 12" = 5.88 TUBING INSIDE DIA. CAPACITY (Gal./ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.008; 1/2" = 0.010; 5/8" = 0.016											
PURGING EQUIPMENT CODES: B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; O = Other (Specify)											

**SAMPLING DATA**


SAMPLED BY (PRINT) / AFFILIATION: Robert Perkins & Monty Watson / EAC			SAMPLER(S) SIGNATURE(S):			SAMPLING INITIATED AT: 1400	SAMPLING ENDED AT: 1405		
PUMP OR TUBING DEPTH IN WELL (feet): ~ 7			TUBING MATERIAL CODE: PE		FIELD-FILTERED: Y <input checked="" type="checkbox"/> NO	FILTER SIZE: ___ $\mu\text{m}$			
FIELD DECONTAMINATION: PUMP <input checked="" type="checkbox"/> N			TUBING Y <input checked="" type="checkbox"/> (replaced)		DUPLICATE: Y <input checked="" type="checkbox"/>				
SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (ml. per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
MW-11	2	CG	40 mL	---	---	---	8260	RFPP	-100
	1	AG	1 L	H2SO4	---	---	FL PRO	APP	-500
	1	AG	1 L	---	---	---	8270c	APP	-500
REMARKS:									
MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)									
SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); O = Other (Specify)									

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.  
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)  
pH:  $\pm 0.2$  units Temperature:  $\pm 0.2$  °C Specific Conductance:  $\pm 5\%$  Dissolved Oxygen: all readings  $\leq 20\%$  saturation (see Table FS 2200-2); optionally,  $\pm 0.2$  mg/L or  $\pm 10\%$  (whichever is greater) Turbidity: all readings  $\leq 20$  NTU; optionally  $\pm 5$  NTU or  $\pm 10\%$  (whichever is greater)

Revision Date: February 12, 2009

# Certificate of Calibration PID



<b>Equipment Type:</b>	MiniRae 2000	
<b>Date</b>	04/09/2013	
<b>Serial #</b>	110-014737	
<b>Calibration Gas # 1</b>	Zero Air	
<b>Calibration Gas # 2</b>	100ppm Isobutylene	
<b>Lot # (s)</b>	Isobut.: FAM-248-100-19	Zero Air:
<b>Expiration Date(s)</b>	Isobut.: 05/24/2016	
<b>Ambient Temperature</b>	23°C (73.4°F)	
<b>Instrument Reading: Ambient Air</b>	0.0ppm Isobutylene	
<b>Instrument Reading: Calibration Gas</b>	101.5ppm Isobutylene	
<b>Calibrated By:</b>	Steve Kozar	
<b>Signature:</b>		
<b>NOTES:</b>		

Peterson Environmental, LLC  
2917 W. Cypress Street  
Tampa, FL 33609  
Phone: 813-871-2626 | Fax 813-871-1366

# Certificate of Calibration Multi-Parameter Water Quality

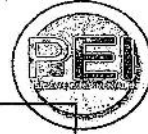


Equipment Type:	YSI 556				
Date:	4/09/2013				
Serial #:	08C100352				
Calibration Standard # 1:	pH 4.01				
Calibration Standard # 2:	pH 7.00				
Calibration Standard # 3:	10000S Conductivity				
Calibration Standard # 4:	100% D.O Saturation				
Calibration Standard # 5:					
Calibration Standard # 6:					
Calibration Standard # 7:					
Calibration Standard # 8:					
Calibration Standard # 9:					
Lot # (s):	pH 4.01: 2L374	10000S Cond.: 2D080	pH10.00:		
	pH7.00: 3A017	Zobell:			
Expiration Date(s):	pH 4.01: 07/2014	10000S Cond.: 01/2014	pH10.00:		
	pH7.00: 08/2014	Zobell:			
Ambient Temperature:	23°C (73.4°F)				
Instrument Reading: Calibrated	pH 4.01	pH 7.00		Cond. 10000S	
		8.72 mg/L D.O.			
Calibrated By:	Steve Kozar <i>Signature</i>				

NOTES: 8.70 mg/L D.O. 100.0%

Peterson Environmental, LLC  
2917 W. Cypress Street  
Tampa, FL 33609  
Phone: 813-871-2626 | Fax 813-871-1366

# Certificate of Calibration Turbidity Meters



Equipment Type:	LaMotte 3020		
Date	4/05/2013	NOTES:	
Serial #	5074-2004		
Calibration Standard # 1	1NTU		
Calibration Standard # 2	10NTU		
Calibration Standard # 3			
Calibration Standard # 4			
Lot # (s)	1NTU: C147979	10NTU: c252142	<input type="text"/>
Expiration Date(s)	1NTU: Aug 2013	10NTU: Aug 2013	<input type="text"/>
Ambient Temperature	23°C (73.4°F)		
Instrument Reading: Calibrated	1.00 NTU	<input type="text"/>	10.00 NTU <input type="text"/>
Calibrated By:	Steve Kozar		Signature: <i>Steve Kozar</i>

Peterson Environmental, LLC  
 2917 W. Cypress Street  
 Tampa, FL 33609  
 Phone: 813-871-2626, Fax 813-871-1365

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**Appendix VII**

**Laboratory Analytical Reports / Chain-of-Custody Forms**

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Jupiter Environmental Laboratories, Inc.  
 150 S. Old Dixie Highway  
 Jupiter, FL 33458  
 Phone: (561)575-0030  
 Fax: (561)575-4118  
 www.jupiterlabs.com  
 clientservices@jupiterlabs.com

April 23, 2013

Bob Perkins  
 EAC  
 3926 Coral Ridge Drive  
 Coral Springs, FL 33065

RE: LOG# 1332074  
 Project ID: BETHEL  
 COC# 332074

Dear Bob Perkins:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, April 10, 2013. Results reported herein conform to the most current NELAC standards, where applicable, unless indicated by \* in the body of the report. The enclosed Chain of Custody is a component of this package and should be retained with the package and incorporated therein.

Results for all solid matrices are reported in dry weight unless otherwise noted. Results for all liquid matrices are reported as received in the laboratory unless otherwise noted. Results relate only to the samples received. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

Samples are disposed of after 30 days of their receipt by the laboratory unless extended storage is requested in writing. The laboratory maintains the right to charge storage fees for archived samples. This report will be archived for 5 years after which time it will be destroyed without further notice, unless prior arrangements have been made.

Certain analyses are subcontracted to outside NELAC certified laboratories, please see the Project Summary section of this report for NELAC certification numbers of laboratories used. A Statement of Qualifiers is available upon request.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ann McKewin for  
 Kacia Baldwin  
 V.P. of Operations

Report ID: 1332074 - 1112031  
 4/23/2013

Page 1 of 44

FDOH# E86546

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**SAMPLE ANALYTE COUNT**

Workorder 1332074  
Project ID: BETHEL

Lab ID	Sample ID	Method	Analytes Reported
1332074001	DMW-1	EPA 8260B	10
		EPA 8270/PAH SIM	21
		FL-PRO (GC)	3
1332074002	MW-2	EPA 200.8 (Total)	1
		EPA 8260B	10
		EPA 8260B (EDB List)	2
		EPA 8270/PAH SIM	21
		FL-PRO (GC)	3
1332074003	MW-3	EPA 200.8 (Total)	1
		EPA 8260B	10
		EPA 8260B (EDB List)	2
		EPA 8270/PAH SIM	21
		FL-PRO (GC)	3
1332074004	MW-4	EPA 8260B	10
		EPA 8270/PAH SIM	21
		FL-PRO (GC)	3
1332074005	MW-7	EPA 8260B	10
		EPA 8270/PAH SIM	21
		FL-PRO (GC)	3
1332074006	MW-8	EPA 8260B	10
		EPA 8270/PAH SIM	21
		FL-PRO (GC)	3
1332074007	MW-9	EPA 8260B	10
		EPA 8270/PAH SIM	21
		FL-PRO (GC)	3
1332074008	MW-10	EPA 200.8 (Total)	1
		EPA 8260B	10
		EPA 8260B (EDB List)	2
		EPA 8270/PAH SIM	21
		FL-PRO (GC)	3
1332074009	MW-11	EPA 8260B	10
		EPA 8270/PAH SIM	21
		FL-PRO (GC)	3
1332074010	SS-1C	EPA 8260B	10

Report ID: 1332074 - 1112031  
4/23/2013

Page 2 of 44

**FD0H# E86546**  
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**SAMPLE ANALYTE COUNT**

Workorder 1332074

Project ID: BETHEL

Lab ID	Sample ID	Method	Analytes Reported
1332074010	SS-1C	EPA 8310 List by 8270C	21
		FL-PRO (GC)	3
		SM 2540G	1
1332074011	SS-2C	EPA 8260B	10
		EPA 8310 List by 8270C	21
		FL-PRO (GC)	3
		SM 2540G	1

**FDOH# E86546**

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Jupiter Environmental Laboratories, Inc.  
150 S. Old Dixie Highway  
Jupiter, FL 33468  
Phone: (561)575-0030  
Fax: (561)575-4118

**SAMPLE SUMMARY**

Workorder 1332074

Project ID: BETHEL

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1332074001	DMW-1	Aqueous Liquid	4/10/2013 11:12	4/10/2013 16:00
1332074002	MW-2	Aqueous Liquid	4/10/2013 10:31	4/10/2013 16:00
1332074003	MW-3	Aqueous Liquid	4/10/2013 11:40	4/10/2013 16:00
1332074004	MW-4	Aqueous Liquid	4/10/2013 12:23	4/10/2013 16:00
1332074005	MW-7	Aqueous Liquid	4/10/2013 12:47	4/10/2013 16:00
1332074006	MW-8	Aqueous Liquid	4/10/2013 12:03	4/10/2013 16:00
1332074007	MW-9	Aqueous Liquid	4/10/2013 13:10	4/10/2013 16:00
1332074008	MW-10	Aqueous Liquid	4/10/2013 13:35	4/10/2013 16:00
1332074009	MW-11	Aqueous Liquid	4/10/2013 14:00	4/10/2013 16:00
1332074010	SS-1C	Soil/Solid	4/10/2013 11:07	4/10/2013 16:00
1332074011	SS-2C	Soil/Solid	4/10/2013 11:45	4/10/2013 16:00

Report ID: 1332074 - 1112031  
4/23/2013

Page 4 of 44

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**ANALYTICAL RESULTS**

Workorder 1332074

Project ID: BETHEL

Lab ID: 1332074001 Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: DMW-1 Date Collected: 4/10/2013 11:12

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
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**Volatiles by GC/MS**

Analysis Desc: BTEX/MTBE by 8260B (W)

Preparation Method: EPA 5030B

Analytical Method: EPA 8260B

Benzene	U	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 13:56	SO	
Ethylbenzene	U	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 13:56	SO	
Toluene	U	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 13:56	SO	
Xylenes- Total	U	ug/L	3.00	0.800	1	4/11/2013 09:00	SO	4/11/2013 13:56	SO	
m & p-xylene	U	ug/L	2.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 13:56	SO	
o-Xylene	U	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 13:56	SO	
tert-Butyl methyl ether (MTBE)	U	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 13:56	SO	
Dibromofluoromethane (S)	98 %		70-130		1	4/11/2013 09:00	SO	4/11/2013 13:56	SO	
Toluene d8 (S)	98 %		70-130		1	4/11/2013 09:00	SO	4/11/2013 13:56	SO	
4-Bromofluorobenzene (S)	100 %		70-130		1	4/11/2013 09:00	SO	4/11/2013 13:56	SO	

**Semivolatiles by EPA 8270C**

Analysis Desc: PAH List by 8270C SIM (W)

Preparation Method: EPA 3510C SIM

Analytical Method: EPA 8270/PAH SIM

1-Methylnaphthalene	U	ug/L	0.100	0.050	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
2-Methylnaphthalene	U	ug/L	0.100	0.050	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Acenaphthene	U	ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Acenaphthylene	U	ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Anthracene	U	ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Benzo(a)anthracene	U	ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Benzo(a)pyrene	U	ug/L	0.050	0.015	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Benzo(b)fluoranthene	U	ug/L	0.050	0.015	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Benzo(g,h,i)perylene	U	ug/L	0.050	0.015	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Benzo(k)fluoranthene	U	ug/L	0.050	0.015	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Chrysene	U	ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Dibenzo(a,h)anthracene	U	ug/L	0.050	0.00510	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Fluoranthene	U	ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Fluorene	U	ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Indeno(1,2,3-cd)pyrene	U	ug/L	0.050	0.015	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Naphthalene	U	ug/L	0.100	0.050	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Phenanthrene	U	ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Pyrene	U	ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
Nitrobenzene-d5 (S)	53 %		30-110		1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
2-Fluorobiphenyl (S)	62 %		30-110		1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	
p-Terphenyl-d14 (S)	86 %		30-140		1	4/12/2013 10:27	BFM	4/12/2013 15:35	SS	

**Semivolatiles by GC**

Report ID: 1332074 - 1112031  
4/23/2013

Page 5 of 44

FDOH# E86546

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**ANALYTICAL RESULTS**

Workorder: 1332074  
Project ID: BETHEL

Lab ID: 1332074001 Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: DMW-1 Date Collected: 4/10/2013 11:12

Parameters	Results Units	PQL	MDL	DF Prepared	By	Analyzed	By	Qual
Analysis Desc: Florida PRO by GC (W)				Preparation Method: EPA 3510C				
				Analytical Method: FL-PRO (GC)				
Florida Pro Total	0.0921 mg/L	0.100	0.046	1	4/11/2013 16:07	BH	4/12/2013 13:37	SS
o-Terphenyl (S)	81 %	50-150		1	4/11/2013 16:07	BH	4/12/2013 13:37	SS
n-Triacontane-d62 (S)	108 %	50-150		1	4/11/2013 16:07	BH	4/12/2013 13:37	SS

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**ANALYTICAL RESULTS**

Workorder 1332074  
Project ID: BETHEL

Lab ID: 1332074002 Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: MW-2 Date Collected: 4/10/2013 10:31

Parameters	Results Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
<b>Volatiles by GC/MS</b>									
Analysis Desc: BTEX/MTBE by 8260B (W)					Preparation Method: EPA 5030B				
					Analytical Method: EPA 8260B				
Benzene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 14:47	SO	
Ethylbenzene	10.3 ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 14:47	SO	
Toluene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 14:47	SO	
Xylenes- Total	U ug/L	3.00	0.800	1	4/11/2013 09:00	SO	4/11/2013 14:47	SO	
m & p-xylene	U ug/L	2.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 14:47	SO	
o-Xylene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 14:47	SO	
tert-Butyl methyl ether (MTBE)	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 14:47	SO	
Dibromofluoromethane (S)	98 %	70-130			1 4/11/2013 09:00	SO	4/11/2013 14:47	SO	
Toluene d8 (S)	98 %	70-130			1 4/11/2013 09:00	SO	4/11/2013 14:47	SO	
4-Bromofluorobenzene (S)	101 %	70-130			1 4/11/2013 09:00	SO	4/11/2013 14:47	SO	
<b>Semivolatiles by EPA 8270C</b>									
Analysis Desc: PAH List by 8270C SIM (W)					Preparation Method: EPA 3510C SIM				
					Analytical Method: EPA 8270/PAH-SIM				
1-Methylnaphthalene	1.29 ug/L	0.100	0.050	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
2-Methylnaphthalene	1.09 ug/L	0.100	0.050	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Acenaphthene	U ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Acenaphthylene	U ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Anthracene	U ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Benzo(a)anthracene	U ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Benzo(a)pyrene	U ug/L	0.050	0.015	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Benzo(b)fluoranthene	U ug/L	0.050	0.015	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Benzo(g,h,i)perylene	U ug/L	0.050	0.015	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Benzo(k)fluoranthene	U ug/L	0.050	0.015	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Chrysene	U ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Dibenzo(a,h)anthracene	U ug/L	0.050	0.00510	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Fluoranthene	U ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Fluorene	U ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Indeno(1,2,3-cd)pyrene	U ug/L	0.050	0.015	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Naphthalene	7.01 ug/L	0.100	0.050	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Phenanthrene	U ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Pyrene	U ug/L	0.050	0.025	1	4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
Nitrobenzene-d5 (S)	46 %	30-110			1 4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
2-Fluorobiphenyl (S)	67 %	30-110			1 4/12/2013 10:27	BFM	4/12/2013 16:03	SS	
p-Terphenyl-d14 (S)	73 %	30-140			1 4/12/2013 10:27	BFM	4/12/2013 16:03	SS	

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**ANALYTICAL RESULTS**

Workorder 1332074  
Project ID: BETHEL

Lab ID: **1332074002** Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: **MW-2** Date Collected: 4/10/2013 10:31

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
<b>Analysis Desc: EPA 8260B EDB Scan (W)</b>						<b>Preparation Method: EPA 5030B</b>				
<b>1,2-Dibromoethane (EDB)</b>						<b>Analytical Method: EPA 8260B (EDB List)</b>				
		U ug/L	0.020	0.010	1	4/11/2013 15:00	SO	4/11/2013 20:33	SO	
<b>4-Bromofluorobenzene (S)</b>										
		88 %	60-140		1	4/11/2013 15:00	SO	4/11/2013 20:33	SO	
<b>Semivolatiles by GC</b>										
<b>Analysis Desc: Florida PRO by GC (W)</b>						<b>Preparation Method: EPA 3510C</b>				
<b>Florida Pro Total</b>						<b>Analytical Method: FL-PRO (GC)</b>				
		0.929 mg/L	0.100	0.046	1	4/11/2013 16:07	BH	4/12/2013 14:06	SS	
<b>o-Terphenyl (S)</b>										
		84 %	50-150		1	4/11/2013 16:07	BH	4/12/2013 14:06	SS	
<b>n-Triacontane-d62 (S)</b>										
		112 %	50-150		1	4/11/2013 16:07	BH	4/12/2013 14:06	SS	
<b>Analysis Desc: EPA 200.8 Metals (W)</b>						<b>Preparation Method: EPA 200.2 mod.</b>				
<b>Lead</b>						<b>Analytical Method: EPA 200.8 (Total)</b>				
		U ug/L	8.0	0.12	4	4/10/2013 16:22	ZS	4/11/2013 13:40	ZS	

**FDOH# E86546**  
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**ANALYTICAL RESULTS**

Workorder 1332074  
Project ID: BETHEL

Lab ID: 1332074003 Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: MW-3 Date Collected: 4/10/2013 11:40

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
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**Volatiles by GC/MS**

Analysis Desc: BTEX/MTBE by 8260B (W)

Preparation Method: EPA 5030B

Analytical Method: EPA 8260B

Benzene	1.38	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 15:13	SO	
Ethylbenzene	381	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 15:13	SO	L
Toluene	0.850i	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 15:13	SO	
Xylenes- Total	2.56i	ug/L	3.00	0.800	1	4/11/2013 09:00	SO	4/11/2013 15:13	SO	
m & p-xylene	1.47i	ug/L	2.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 15:13	SO	
o-Xylene	1.09	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 15:13	SO	
tert-Butyl methyl ether (MTBE)	U	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 15:13	SO	
Dibromofluoromethane (S)	97 %		70-130		1	4/11/2013 09:00	SO	4/11/2013 15:13	SO	
Toluene d8 (S)	100 %		70-130		1	4/11/2013 09:00	SO	4/11/2013 15:13	SO	
4-Bromofluorobenzene (S)	100 %		70-130		1	4/11/2013 09:00	SO	4/11/2013 15:13	SO	

**Semivolatiles by EPA 8270C**

Analysis Desc: PAH List by 8270C SIM (W)

Preparation Method: EPA 3510C SIM

Analytical Method: EPA 8270/PAH-SIM

1-Methylnaphthalene	59.2	ug/L	1.00	0.500	10	4/12/2013 11:09	BFM	4/15/2013 11:11	SS	
2-Methylnaphthalene	68.0	ug/L	1.00	0.500	10	4/12/2013 11:09	BFM	4/15/2013 11:11	SS	
Acenaphthene	1.87	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Acenaphthylene	U	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Anthracene	0.033i	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Benzo(a)anthracene	U	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Benzo(a)pyrene	U	ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Benzo(b)fluoranthene	U	ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Benzo(g,h,i)perylene	U	ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Benzo(k)fluoranthene	U	ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Chrysene	U	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Dibenzo(a,h)anthracene	U	ug/L	0.050	0.00510	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Fluoranthene	U	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Fluorene	0.822	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Indeno(1,2,3-cd)pyrene	U	ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Naphthalene	280	ug/L	1.00	0.500	10	4/12/2013 11:09	BFM	4/15/2013 11:11	SS	
Phenanthrene	0.232	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Pyrene	U	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
Nitrobenzene-d5 (S)	61 %		30-110		1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
2-Fluorobiphenyl (S)	73 %		30-110		1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	
p-Terphenyl-d14 (S)	82 %		30-140		1	4/12/2013 11:09	BFM	4/12/2013 16:31	SS	



**ANALYTICAL RESULTS**

Workorder 1332074  
Project ID: BETHEL

Lab ID: 1332074003 Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: MW-3 Date Collected: 4/10/2013 11:40

Parameters	Results Units	PQL	MDL	DF Prepared	By	Analyzed	By	Qual
Analysis Desc: EPA 8260B EDB Scan (W)				Preparation Method: EPA 5030B				
				Analytical Method: EPA 8260B (EDB List)				
1,2-Dibromoethane (EDB)	U ug/L	0.020	0.010	1	4/11/2013 15:00	SO	4/11/2013 21:25	SO
4-Bromofluorobenzene (S)	106 %	60-140		1	4/11/2013 15:00	SO	4/11/2013 21:25	SO
<b>Semivolatiles by GC</b>								
Analysis Desc: Florida PRO by GC (W)				Preparation Method: EPA 3510C				
				Analytical Method: FL-PRO (GC)				
Florida Pro Total	6.46 mg/L	0.100	0.046	1	4/11/2013 16:07	BH	4/12/2013 14:40	SS
o-Terphenyl (S)	87 %	50-150		1	4/11/2013 16:07	BH	4/12/2013 14:40	SS
n-Triacontane-d62 (S)	113 %	50-150		1	4/11/2013 16:07	BH	4/12/2013 14:40	SS
Analysis Desc: EPA 200.8 Metals (W)				Preparation Method: EPA 200.2 mod.				
				Analytical Method: EPA 200.8 (Total)				
Lead	U ug/L	8.0	0.12	4	4/10/2013 16:22	ZS	4/11/2013 13:40	ZS

**FDOH# E86546**  
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**ANALYTICAL RESULTS**

Workorder 1332074  
Project ID: BETHEL

Lab ID: 1332074004 Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: MW-4 Date Collected: 4/10/2013 12:23

Parameters	Results Units	PQL	MDL	DF Prepared	By	Analyzed	By	Qual
<b>Volatiles by GC/MS</b>								
Analysis Desc: BTEX/MTBE by 8260B (W)				Preparation Method: EPA 5030B				
				Analytical Method: EPA 8260B				
Benzene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 15:39	SO
Ethylbenzene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 15:39	SO
Toluene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 15:39	SO
Xylenes- Total	U ug/L	3.00	0.800	1	4/11/2013 09:00	SO	4/11/2013 15:39	SO
m & p-xylene	U ug/L	2.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 15:39	SO
o-Xylene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 15:39	SO
tert-Butyl methyl ether (MTBE)	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 15:39	SO
Dibromofluoromethane (S)	96 %	70-130		1	4/11/2013 09:00	SO	4/11/2013 15:39	SO
Toluene d8 (S)	97 %	70-130		1	4/11/2013 09:00	SO	4/11/2013 15:39	SO
4-Bromofluorobenzene (S)	98 %	70-130		1	4/11/2013 09:00	SO	4/11/2013 15:39	SO
<b>Semivolatiles by EPA 8270C</b>								
Analysis Desc: PAH List by 8270C SIM (W)				Preparation Method: EPA 3510C SIM				
				Analytical Method: EPA 8270/PAH SIM				
1-Methylnaphthalene	U ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
2-Methylnaphthalene	U ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Acenaphthene	0.077 ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Acenaphthylene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Anthracene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Benzo(a)anthracene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Benzo(a)pyrene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Benzo(b)fluoranthene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Benzo(g,h,i)perylene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Benzo(k)fluoranthene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Chrysene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Dibenzo(a,h)anthracene	U ug/L	0.050	0.00510	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Fluoranthene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Fluorene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Indeno(1,2,3-cd)pyrene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Naphthalene	0.215 ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Phenanthrene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Pyrene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
Nitrobenzene-d5 (S)	48 %	30-110		1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
2-Fluorobiphenyl (S)	55 %	30-110		1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
p-Terphenyl-d14 (S)	71 %	30-140		1	4/12/2013 11:09	BFM	4/12/2013 17:55	SS
<b>Semivolatiles by GC</b>								

**FDOH# E86546**  
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**ANALYTICAL RESULTS**

Workorder 1332074  
Project ID: BETHEL

Lab ID: **1332074004** Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: **MW-4** Date Collected: 4/10/2013 12:23

Parameters	Results Units	PQL	MDL	DF Prepared	By	Analyzed	By	Qual
Analysis Desc: Florida PRO by GC (W)		Preparation Method: EPA 3510C						
		Analytical Method: FL-PRO (GC)						
Florida Pro Total	U mg/L	0.100	0.046	1	4/11/2013 16:07	BH	4/12/2013 15:08	SS
o-Terphenyl (S)	84 %	50-150		1	4/11/2013 16:07	BH	4/12/2013 15:08	SS
n-Triacontane-d62 (S)	112 %	50-150		1	4/11/2013 16:07	BH	4/12/2013 15:08	SS



**ANALYTICAL RESULTS**

Workorder 1332074  
Project ID: BETHEL

Lab ID: 1332074005 Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: MW-7 Date Collected: 4/10/2013 12:47

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
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**Volatiles by GC/MS**

Analysis Desc: BTEX/MTBE by 8260B (W)

Preparation Method: EPA 5030B

Analytical Method: EPA 8260B

Benzene	U	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:05	SO	
Ethylbenzene	U	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:05	SO	
Toluene	U	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:05	SO	
Xylenes- Total	U	ug/L	3.00	0.800	1	4/11/2013 09:00	SO	4/11/2013 16:05	SO	
m & p-xylene	U	ug/L	2.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:05	SO	
o-Xylene	U	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:05	SO	
tert-Butyl methyl ether (MTBE)	U	ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:05	SO	
Dibromofluoromethane (S)	100 %		70-130		1	4/11/2013 09:00	SO	4/11/2013 16:05	SO	
Toluene d8 (S)	100 %		70-130		1	4/11/2013 09:00	SO	4/11/2013 16:05	SO	
4-Bromofluorobenzene (S)	98 %		70-130		1	4/11/2013 09:00	SO	4/11/2013 16:05	SO	

**Semivolatiles by EPA 8270C**

Analysis Desc: PAH List by 8270C SIM (W)

Preparation Method: EPA 3510C SIM

Analytical Method: EPA 8270/PAH-SIM

1-Methylnaphthalene	U	ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
2-Methylnaphthalene	U	ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Acenaphthene	U	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Acenaphthylene	U	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Anthracene	U	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Benzo(a)anthracene	U	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Benzo(a)pyrene	U	ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Benzo(b)fluoranthene	U	ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Benzo(g,h,i)perylene	U	ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Benzo(k)fluoranthene	U	ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Chrysene	U	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Dibenzo(a,h)anthracene	U	ug/L	0.050	0.00510	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Fluoranthene	U	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Fluorene	U	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Indeno(1,2,3-cd)pyrene	U	ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Naphthalene	0.121	ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Phenanthrene	U	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Pyrene	U	ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
Nitrobenzene-d5 (S)	52 %		30-110		1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
2-Fluorobiphenyl (S)	56 %		30-110		1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	
p-Terphenyl-d14 (S)	75 %		30-140		1	4/12/2013 11:09	BFM	4/12/2013 17:27	SS	

**Semivolatiles by GC**

Report ID: 1332074 - 1112031  
4/23/2013

Page 13 of 44

FDOH# E86546

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**ANALYTICAL RESULTS**

Workorder 1332074

Project ID: BETHEL

Lab ID: **1332074005** Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: **MW-7** Date Collected: 4/10/2013 12:47

Parameters	Results	Units	PQL	MDL	DF Prepared	By	Analyzed	By	Qual
Analysis Desc: Florida PRO by GC (W)					Preparation Method: EPA 3510C				
					Analytical Method: FL-PRO (GC)				
Florida Pro Total	0.112	mg/L	0.100	0.046	1	4/11/2013 16:07	BH	4/12/2013 15:35	SS
o-Terphenyl (S)	76	%	50-150		1	4/11/2013 16:07	BH	4/12/2013 15:35	SS
n-Triacontane-d62 (S)	101	%	50-150		1	4/11/2013 16:07	BH	4/12/2013 15:35	SS

**FDOH# E86546**  
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**ANALYTICAL RESULTS**

Workorder 1332074

Project ID: BETHEL

Lab ID: **1332074006** Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: **MW-8** Date Collected: 4/10/2013 12:03

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
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**Volatiles by GC/MS**

Analysis Desc: BTEX/MTBE by 8260B (W)

Preparation Method: EPA 5030B

Analytical Method: EPA 8260B

Benzene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:31	SO
Ethylbenzene	1.23 ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:31	SO
Toluene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:31	SO
Xylenes- Total	U ug/L	3.00	0.800	1	4/11/2013 09:00	SO	4/11/2013 16:31	SO
m & p-xylene	U ug/L	2.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:31	SO
o-Xylene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:31	SO
tert-Butyl methyl ether (MTBE)	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:31	SO
Dibromofluoromethane (S)	102 %	70-130		1	4/11/2013 09:00	SO	4/11/2013 16:31	SO
Toluene d8 (S)	98 %	70-130		1	4/11/2013 09:00	SO	4/11/2013 16:31	SO
4-Bromofluorobenzene (S)	101 %	70-130		1	4/11/2013 09:00	SO	4/11/2013 16:31	SO

**Semivolatiles by EPA 8270C**

Analysis Desc: PAH List by 8270C SIM (W)

Preparation Method: EPA 3510C SIM

Analytical Method: EPA 8270/PAH SIM

1-Methylnaphthalene	0.343 ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
2-Methylnaphthalene	0.320 ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Acenaphthene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Acenaphthylene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Anthracene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Benzo(a)anthracene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Benzo(a)pyrene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Benzo(b)fluoranthene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Benzo(g,h,i)perylene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Benzo(k)fluoranthene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Chrysene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Dibenzo(a,h)anthracene	U ug/L	0.050	0.00510	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Fluoranthene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Fluorene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Indeno(1,2,3-cd)pyrene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Naphthalene	2.03 ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Phenanthrene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Pyrene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
Nitrobenzene-d5 (S)	52 %	30-110		1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
2-Fluorobiphenyl (S)	57 %	30-110		1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS
p-Terphenyl-d14 (S)	87 %	30-140		1	4/12/2013 11:09	BFM	4/12/2013 16:59	SS

**Semivolatiles by GC**

Report ID: 1332074 - 1112031  
4/23/2013

Page 15 of 44

**FD0H# E86546**

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**ANALYTICAL RESULTS**

Workorder: 1332074  
Project ID: BETHEL

Lab ID: **1332074006** Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: **MW-8** Date Collected: 4/10/2013 12:03

Parameters	Results Units	PQL	MDL	DF Prepared	By	Analyzed	By	Qual
Analysis Desc: Florida PRO by GC (W)				Preparation Method: EPA 3510C				
				Analytical Method: FL-PRO (GC)				
Florida Pro Total	0.0831 mg/L	0.100	0.046	1	4/11/2013 16:07	BH	4/12/2013 16:01	SS
o-Terphenyl (S)	72 %	50-150		1	4/11/2013 16:07	BH	4/12/2013 16:01	SS
n-Triacontane-d62 (S)	98 %	50-150		1	4/11/2013 16:07	BH	4/12/2013 16:01	SS

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**ANALYTICAL RESULTS**

Workorder 1332074  
Project ID: BETHEL

Lab ID: 1332074007 Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: MW-9 Date Collected: 4/10/2013 13:10

Parameters	Results Units	PQL	MDL	DF Prepared	By	Analyzed	By	Qual
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**Volatiles by GC/MS**

Analysis Desc: BTEX/MTBE by 8260B (W)

Preparation Method: EPA 5030B

Analytical Method: EPA 8260B

Benzene	0.820i ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:57	SO
Ethylbenzene	15.9 ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:57	SO
Toluene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:57	SO
Xylenes- Total	0.820i ug/L	3.00	0.800	1	4/11/2013 09:00	SO	4/11/2013 16:57	SO
m & p-xylene	0.820i ug/L	2.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:57	SO
o-Xylene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:57	SO
tert-Butyl methyl ether (MTBE)	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 16:57	SO
Dibromofluoromethane (S)	99 %	70-130		1	4/11/2013 09:00	SO	4/11/2013 16:57	SO
Toluene d8 (S)	98 %	70-130		1	4/11/2013 09:00	SO	4/11/2013 16:57	SO
4-Bromofluorobenzene (S)	100 %	70-130		1	4/11/2013 09:00	SO	4/11/2013 16:57	SO

**Semivolatiles by EPA 8270C**

Analysis Desc: PAH List by 8270C SIM (W)

Preparation Method: EPA 3510C SIM

Analytical Method: EPA 8270/PAH SIM

1-Methylnaphthalene	9.15 ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
2-Methylnaphthalene	0.102 ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Acenaphthene	0.034i ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Acenaphthylene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Anthracene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Benzo(a)anthracene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Benzo(a)pyrene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Benzo(b)fluoranthene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Benzo(g,h,i)perylene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Benzo(k)fluoranthene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Chrysene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Dibenzo(a,h)anthracene	U ug/L	0.050	0.00510	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Fluoranthene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Fluorene	0.030i ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Indeno(1,2,3-cd)pyrene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Naphthalene	21.3 ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Phenanthrene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Pyrene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
Nitrobenzene-d5 (S)	57 %	30-110		1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
2-Fluorobiphenyl (S)	75 %	30-110		1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS
p-Terphenyl-d14 (S)	82 %	30-140		1	4/12/2013 11:09	BFM	4/12/2013 18:23	SS

**Semivolatiles by GC**

Report ID: 1332074 - 1112031  
4/23/2013

Page 17 of 44

**FD0H# E86546**

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**ANALYTICAL RESULTS**

Workorder 1332074  
Project ID: BETHEL

Lab ID: **1332074007** Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: **MW-9** Date Collected: 4/10/2013 13:10

Parameters	Results Units	PQL	MDL	DF Prepared	By	Analyzed	By	Qual
Analysis Desc: Florida PRO by GC (W)				Preparation Method: EPA 3510C				
				Analytical Method: FL-PRO (GC)				
Florida Pro Total	0.940 mg/L	0.100	0.046	1	4/11/2013 16:07	BH	4/15/2013 10:33	SS
o-Terphenyl (S)	70 %	50-150		1	4/11/2013 16:07	BH	4/15/2013 10:33	SS
n-Triacontane-d62 (S)	93 %	50-150		1	4/11/2013 16:07	BH	4/15/2013 10:33	SS



**ANALYTICAL RESULTS**

Workorder 1332074  
Project ID: BETHEL

Lab ID: 1332074008 Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: MW-10 Date Collected: 4/10/2013 13:35

Parameters	Results Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
<b>Volatiles by GC/MS</b>									
Analysis Desc: BTEX/MTBE by 8260B (W)					Preparation Method: EPA 5030B				
					Analytical Method: EPA 8260B				
Benzene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 17:23	SO	
Ethylbenzene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 17:23	SO	
Toluene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 17:23	SO	
Xylenes- Total	U ug/L	3.00	0.800	1	4/11/2013 09:00	SO	4/11/2013 17:23	SO	
m & p-xylene	U ug/L	2.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 17:23	SO	
o-Xylene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 17:23	SO	
tert-Butyl methyl ether (MTBE)	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 17:23	SO	
Dibromofluoromethane (S)	97 %	70-130			4/11/2013 09:00	SO	4/11/2013 17:23	SO	
Toluene d8 (S)	98 %	70-130			4/11/2013 09:00	SO	4/11/2013 17:23	SO	
4-Bromofluorobenzene (S)	99 %	70-130			4/11/2013 09:00	SO	4/11/2013 17:23	SO	

<b>Semivolatiles by EPA 8270C</b>									
Analysis Desc: PAH List by 8270C SIM (W)					Preparation Method: EPA 3510C SIM				
					Analytical Method: EPA 8270/PAH.SIM				
1-Methylnaphthalene	U ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
2-Methylnaphthalene	U ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Acenaphthene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Acenaphthylene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Anthracene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Benzo(a)anthracene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Benzo(a)pyrene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Benzo(b)fluoranthene	U ug/L	0.050	0.015	1	4/12/2013 11:08	BFM	4/12/2013 18:51	SS	
Benzo(g,h,i)perylene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Benzo(k)fluoranthene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Chrysene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Dibenzo(a,h)anthracene	U ug/L	0.050	0.00510	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Fluoranthene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Fluorene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Indeno(1,2,3-cd)pyrene	U ug/L	0.050	0.015	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Naphthalene	0.259 ug/L	0.100	0.050	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Phenanthrene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Pyrene	U ug/L	0.050	0.025	1	4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
Nitrobenzene-d5 (S)	58 %	30-110			4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
2-Fluorobiphenyl (S)	62 %	30-110			4/12/2013 11:09	BFM	4/12/2013 18:51	SS	
p-Terphenyl-d14 (S)	92 %	30-140			4/12/2013 11:09	BFM	4/12/2013 18:51	SS	



**ANALYTICAL RESULTS**

Workorder: 1332074  
Project ID: BETHEL

Lab ID: 1332074008 Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: MW-10 Date Collected: 4/10/2013 13:35

Parameters	Results Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
Analysis Desc: EPA 8260B EDB Scan (W)				Preparation Method: EPA 5030B					
				Analytical Method: EPA 8260B (EDB List)					
1,2-Dibromoethane (EDB)	U ug/L	0.020	0.010	1	4/11/2013 15:00	SO	4/11/2013 21:50	SO	
4-Bromofluorobenzene (S)	87 %	60-140		1	4/11/2013 15:00	SO	4/11/2013 21:50	SO	
<b>Semivolatiles by GC</b>									
Analysis Desc: Florida PRO by GC (W)				Preparation Method: EPA 3510C					
				Analytical Method: FL-PRO (GC)					
Florida Pro Total	0.0821 mg/L	0.100	0.046	1	4/11/2013 16:07	BH	4/15/2013 10:56	SS	
o-Terphenyl (S)	82 %	50-150		1	4/11/2013 16:07	BH	4/15/2013 10:58	SS	
n-Triacontane-d62 (S)	109 %	50-150		1	4/11/2013 16:07	BH	4/15/2013 10:56	SS	
Analysis Desc: EPA 200.8 Metals (W)				Preparation Method: EPA 200.2 mod.					
				Analytical Method: EPA 200.8 (Total)					
Lead	U ug/L	8.0	0.12	4	4/10/2013 16:22	ZS	4/11/2013 13:40	ZS	





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**ANALYTICAL RESULTS**

Workorder 1332074

Project ID: BETHEL

Lab ID: 1332074009

Date Received: 4/10/2013 16:00

Matrix: Aqueous Liquid

Sample ID: MW-11

Date Collected: 4/10/2013 14:00

Parameters	Results Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
<b>Volatiles by GC/MS</b>									
Analysis Desc: BTEX/MTBE by 8260B (W)					Preparation Method: EPA 5030B				
					Analytical Method: EPA 8260B				
Benzene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 17:49	SO	
Ethylbenzene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 17:49	SO	
Toluene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 17:49	SO	
Xylenes- Total	U ug/L	3.00	0.800	1	4/11/2013 09:00	SO	4/11/2013 17:49	SO	
m & p-xylene	U ug/L	2.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 17:49	SO	
o-Xylene	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 17:49	SO	
tert-Butyl methyl ether (MTBE)	U ug/L	1.00	0.400	1	4/11/2013 09:00	SO	4/11/2013 17:49	SO	
Dibromofluoromethane (S)	96 %	70-130			4/11/2013 09:00	SO	4/11/2013 17:49	SO	
Toluene d8 (S)	101 %	70-130			4/11/2013 09:00	SO	4/11/2013 17:49	SO	
4-Bromofluorobenzene (S)	100 %	70-130			4/11/2013 09:00	SO	4/11/2013 17:49	SO	

**Semivolatiles by EPA 8270C**

Analysis Desc: PAH List by 8270C SIM (W)					Preparation Method: EPA 3510C SIM				
					Analytical Method: EPA 8270/PAH SIM				
1-Methylnaphthalene	U ug/L	0.100	0.050	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
2-Methylnaphthalene	U ug/L	0.100	0.050	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Acenaphthene	U ug/L	0.050	0.025	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Acenaphthylene	U ug/L	0.050	0.025	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Anthracene	U ug/L	0.050	0.025	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Benzo(a)anthracene	U ug/L	0.050	0.025	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Benzo(a)pyrene	U ug/L	0.050	0.015	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Benzo(b)fluoranthene	U ug/L	0.050	0.015	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Benzo(g,h,i)perylene	U ug/L	0.050	0.015	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Benzo(k)fluoranthene	U ug/L	0.050	0.015	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Chrysene	U ug/L	0.050	0.025	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Dibenzo(a,h)anthracene	U ug/L	0.050	0.00510	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Fluoranthene	U ug/L	0.050	0.025	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Fluorene	U ug/L	0.050	0.025	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Indeno(1,2,3-cd)pyrene	U ug/L	0.050	0.015	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Naphthalene	0.088i ug/L	0.100	0.050	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Phenanthrene	U ug/L	0.050	0.025	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Pyrene	U ug/L	0.050	0.025	1	4/12/2013 13:20	BH	4/12/2013 19:19	SS	
Nitrobenzene-d5 (S)	56 %	30-110			4/12/2013 13:20	BH	4/12/2013 19:19	SS	
2-Fluorobiphenyl (S)	61 %	30-110			4/12/2013 13:20	BH	4/12/2013 19:19	SS	
p-Terphenyl-d14 (S)	103 %	30-140			4/12/2013 13:20	BH	4/12/2013 19:19	SS	

**Semivolatiles by GC**

Report ID: 1332074 - 1112031  
 4/23/2013

Page 21 of 44

**FDOH# E86546**

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**ANALYTICAL RESULTS**

Workorder 1332074  
Project ID: BETHEL

Lab ID: 1332074009 Date Received: 4/10/2013 16:00 Matrix: Aqueous Liquid  
Sample ID: MW-11 Date Collected: 4/10/2013 14:00

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
Analysis Desc: Florida PRO by GC (W)		Preparation Method: EPA 3510C								
		Analytical Method: FL-PRO (GC)								
Florida Pro Total	U	mg/L	0.100	0.046	1	4/11/2013 16:07	BH	4/15/2013 11:19	SS	
o-Terphenyl (S)	73	%	50-150		1	4/11/2013 16:07	BH	4/15/2013 11:19	SS	
n-Triacontane-d62 (S)	98	%	50-150		1	4/11/2013 16:07	BH	4/15/2013 11:19	SS	



**ANALYTICAL RESULTS**

Workorder 1332074

Project ID: BETHEL

Lab ID: 1332074010 Date Received: 4/10/2013 16:00 Matrix: Soil/Solid  
Sample ID: SS-1C Date Collected: 4/10/2013 11:07

Parameters	Results Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
<b>Volatiles by GC/MS</b>									
Analysis Desc: BTEX/MTBE by 8260B (S)					Preparation Method: 5035 (High)				
					Analytical Method: EPA 8260B				
Benzene	U mg/Kg	0.106	0.024	50	4/11/2013 09:00	SO	4/11/2013 19:05	SO	
Ethylbenzene	19.7 mg/Kg	0.106	0.017	50	4/11/2013 09:00	SO	4/11/2013 19:05	SO	L
Toluene	0.021 mg/Kg	0.106	0.021	50	4/11/2013 09:00	SO	4/11/2013 19:05	SO	
Xylenes- Total	1.65 mg/Kg	0.106	0.052	50	4/11/2013 09:00	SO	4/11/2013 19:05	SO	
m & p-xylene	1.46 mg/Kg	0.106	0.034	50	4/11/2013 09:00	SO	4/11/2013 19:05	SO	
o-Xylene	0.199 mg/Kg	0.106	0.019	50	4/11/2013 09:00	SO	4/11/2013 19:05	SO	
tert-Butyl methyl ether (MTBE)	U mg/Kg	0.159	0.059	50	4/11/2013 09:00	SO	4/11/2013 19:05	SO	
Dibromofluoromethane (S)	88 %	60-135		50	4/11/2013 09:00	SO	4/11/2013 19:05	SO	
Toluene d8 (S)	91 %	60-135		50	4/11/2013 09:00	SO	4/11/2013 19:05	SO	
4-Bromofluorobenzene (S)	117 %	60-135		50	4/11/2013 09:00	SO	4/11/2013 19:05	SO	
<b>Semivolatiles by EPA 8270C</b>									
Analysis Desc: EPA 8310 PAH List by 8270C (S)					Preparation Method: EPA 3545				
					Analytical Method: EPA 8310 List by 8270C				
1-Methylnaphthalene	28.5 mg/Kg	5.29	1.13	50	4/18/2013 15:12	AMM	4/19/2013 18:36	SS	
2-Methylnaphthalene	52.1 mg/Kg	5.29	1.42	50	4/18/2013 15:12	AMM	4/19/2013 18:36	SS	
Acenaphthene	0.106 mg/Kg	0.106	0.033	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Acenaphthylene	U mg/Kg	0.106	0.027	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Anthracene	0.078 mg/Kg	0.106	0.027	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Benzo(a)anthracene	U mg/Kg	0.106	0.020	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Benzo(a)pyrene	U mg/Kg	0.106	0.017	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Benzo(b)fluoranthene	U mg/Kg	0.106	0.057	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Benzo(g,h,i)perylene	U mg/Kg	0.212	0.017	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Benzo(k)fluoranthene	U mg/Kg	0.106	0.024	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Chrysene	U mg/Kg	0.106	0.024	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Dibenzo(a,h)anthracene	U mg/Kg	0.106	0.013	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Fluoranthene	U mg/Kg	0.106	0.023	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Fluorene	0.350 mg/Kg	0.106	0.038	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Indeno(1,2,3-cd)pyrene	U mg/Kg	0.106	0.013	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Naphthalene	44.0 mg/Kg	5.29	1.42	50	4/18/2013 15:12	AMM	4/19/2013 18:36	SS	
Phenanthrene	0.328 mg/Kg	0.106	0.025	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Pyrene	0.026 mg/Kg	0.106	0.024	1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
Nitrobenzene-d5 (S)	73 %	20-120		1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
2-Fluorobiphenyl (S)	80 %	30-115		1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	
p-Terphenyl-d14 (S)	75 %	15-140		1	4/18/2013 15:12	AMM	4/19/2013 14:03	SS	

**Wet Chemistry**

Report ID: 1332074 - 1112031  
4/23/2013

Page 23 of 44

**FDOH# E86546**

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**ANALYTICAL RESULTS**

Workorder 1332074  
Project ID: BETHEL

Lab ID: **1332074010** Date Received: 4/10/2013 16:00 Matrix: Soil/Solid  
Sample ID: **SS-1C** Date Collected: 4/10/2013 11:07

Parameters	Results Units	PQL	MDL	DF Prepared	By	Analyzed	By	Qual
<b>Analysis Desc: 2540G Percent Solids (Dryweight)</b>		<b>Analytical Method: SM 2540G</b>						
Percent Solids (Dryweight)	94.4 %	0.1		1		4/16/2013 13:58	AMM	
<b>Semivolatiles by GC</b>								
<b>Analysis Desc: Florida PRO by GC (S)</b>		<b>Preparation Method: EPA 3545</b>						
		<b>Analytical Method: FL-PRO (GC)</b>						
Florida Pro Total	1130 mg/Kg	48.7	24.4	10	4/15/2013 15:56	BH	4/17/2013 12:07	SS
o-Terphenyl (S)	44 %	50-150		10	4/15/2013 15:56	BH	4/17/2013 12:07	SS J2d
n-Trifluoromethane-d62 (S)	55 %	50-150		10	4/15/2013 15:56	BH	4/17/2013 12:07	SS

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**ANALYTICAL RESULTS**

Workorder 1332074

Project ID: BETHEL

Lab ID: 1332074011

Date Received: 4/10/2013 16:00

Matrix: Soil/Solid

Sample ID: SS-2C

Date Collected: 4/10/2013 11:45

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
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**Volatiles by GC/MS**

Analysis Desc: BTEX/MTBE by 8260B (S)

Preparation Method: 5035 (High)

Analytical Method: EPA 8260B

Benzene	U mg/Kg	0.105	0.024	50	4/11/2013 09:00	SO	4/11/2013 19:31	SO		
Ethylbenzene	19.6 mg/Kg	0.105	0.017	50	4/11/2013 09:00	SO	4/11/2013 19:31	SO		L
Toluene	U mg/Kg	0.105	0.021	50	4/11/2013 09:00	SO	4/11/2013 19:31	SO		
Xylenes- Total	6.51 mg/Kg	0.105	0.052	50	4/11/2013 09:00	SO	4/11/2013 19:31	SO		
m & p-xylene	6.38 mg/Kg	0.105	0.033	50	4/11/2013 09:00	SO	4/11/2013 19:31	SO		
o-Xylene	0.124 mg/Kg	0.105	0.018	50	4/11/2013 09:00	SO	4/11/2013 19:31	SO		
tert-Butyl methyl ether (MTBE)	U mg/Kg	0.157	0.058	50	4/11/2013 09:00	SO	4/11/2013 19:31	SO		
Dibromofluoromethane (S)	86 %		60-135		50	4/11/2013 09:00	SO	4/11/2013 19:31	SO	
Toluene d8 (S)	94 %		60-135		50	4/11/2013 09:00	SO	4/11/2013 19:31	SO	
4-Bromofluorobenzene (S)	114 %		60-135		50	4/11/2013 09:00	SO	4/11/2013 19:31	SO	

**Semivolatiles by EPA 8270C**

Analysis Desc: EPA 8310 PAH List by 8270C (S)

Preparation Method: EPA 3545

Analytical Method: EPA 8310 List by 8270C

1-Methylnaphthalene	32.9 mg/Kg	5.23	1.12	50	4/18/2013 15:12	AMM	4/19/2013 19:02	SS		
2-Methylnaphthalene	49.7 mg/Kg	5.23	1.41	50	4/18/2013 15:12	AMM	4/19/2013 19:02	SS		
Acenaphthene	0.122 mg/Kg	0.105	0.033	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Acenaphthylene	U mg/Kg	0.105	0.026	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Anthracene	0.078 mg/Kg	0.105	0.026	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Benzo(a)anthracene	0.027 mg/Kg	0.105	0.020	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Benzo(a)pyrene	U mg/Kg	0.105	0.017	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Benzo(b)fluoranthene	U mg/Kg	0.105	0.056	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Benzo(g,h,i)perylene	U mg/Kg	0.209	0.017	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Benzo(k)fluoranthene	U mg/Kg	0.105	0.023	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Chrysene	U mg/Kg	0.105	0.024	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Dibenzo(a,h)anthracene	U mg/Kg	0.105	0.013	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Fluoranthene	0.063 mg/Kg	0.105	0.023	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Fluorene	0.275 mg/Kg	0.105	0.037	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Indeno(1,2,3-cd)pyrene	U mg/Kg	0.105	0.013	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Naphthalene	38.2 mg/Kg	5.23	1.41	50	4/18/2013 15:12	AMM	4/19/2013 19:02	SS		
Phenanthrene	0.270 mg/Kg	0.105	0.025	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Pyrene	0.046 mg/Kg	0.105	0.024	1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS		
Nitrobenzene-d5 (S)	84 %		20-120		1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS	
2-Fluorobiphenyl (S)	82 %		30-115		1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS	
p-Terphenyl-d14 (S)	76 %		15-140		1	4/18/2013 15:12	AMM	4/19/2013 13:37	SS	

**Wet Chemistry**

Report ID: 1332074 - 1112031  
4/23/2013

Page 25 of 44

FD0H# E86546

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**ANALYTICAL RESULTS**

Workorder 1332074  
Project ID: BETHEL

Lab ID: **1332074011** Date Received: 4/10/2013 16:00 Matrix: Soil/Solid  
Sample ID: **SS-2C** Date Collected: 4/10/2013 11:45

Parameters	Results	Units	PQL	MDL	DF Prepared	By	Analyzed	By	Qual
<b>Analysis Desc: 2540G Percent Solids (Dryweight)</b>					<b>Analytical Method: SM 2540G</b>				
Percent Solids (Dryweight)	95.7	%	0.1		1		4/16/2013 13:58	AMM	
<b>Semivolatiles by GC</b>									
<b>Analysis Desc: Florida PRO by GC (S)</b>					<b>Preparation Method: EPA 3545</b>				
					<b>Analytical Method: FL-PRO (GC)</b>				
Florida Pro Total	2300	mg/Kg	96.2	48.1	20	4/15/2013 15:56	BH	4/17/2013 12:31	SS
o-Terphenyl (S)	73	%	50-150		20	4/15/2013 15:56	BH	4/17/2013 12:31	SS
n-Triacontane-d62 (S)	101	%	50-150		20	4/15/2013 15:56	BH	4/17/2013 12:31	SS

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**ANALYTICAL RESULTS QUALIFIERS**

Workorder 1332074

Project ID: BETHEL

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**PARAMETER QUALIFIERS**

- J2d Surrogate recovery was outside defined limits due to matrix required sample dilution.
- L Off-scale high. Reported value is above the calibration range.

**PROJECT COMMENTS**

- 1332074 A reported value of U indicates that the compound was analyzed for but not detected above the MDL. A value flagged with an "I" flag indicates that the reported value is between the laboratory method detection limit and the practical quantitation limit.

**FDOH# E86546**  
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**QUALITY CONTROL DATA**

Workorder 1332074

Project ID: BETHEL

QC Batch:	XXX/6314	Analysis Method:	FL-PRO (GC)			
QC Batch Method:	EPA 3510C					
Associated Lab Samples:	1332060002	1332062001	1332062002	1332062003	1332062004	1332074001
	1332074002	1332074003	1332074004	1332074005	1332074006	1332074007
	1332074008	1332074009				

METHOD BLANK: 57410

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Semivolatiles by GC				
o-Terphenyl (S)	%	81	50-150	
n-Triacontane-d62 (S)	%	107	50-150	
Florida Pro Total	mg/L	U	0.048	

LABORATORY CONTROL SAMPLE & LCSD: 57411                      57412

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Semivolatiles by GC										
o-Terphenyl (S)	%				80	80	50-150	0	20	
n-Triacontane-d62 (S)	%				108	105	50-150	4	20	
Florida Pro Total	mg/L	0.85	0.995	0.999	117	117	55-118	0.4	20	



**QUALITY CONTROL DATA**

Workorder 1332074  
Project ID: BETHEL

QC Batch:	MXX/5520	Analysis Method:	EPA 200.8 (Total)			
QC Batch Method:	EPA 200.2 mod.					
Associated Lab Samples:	1332069055	1332069060	1332069065	1332069070	1332070001	1332074002
	1332074003	1332074008	1332075001			

METHOD BLANK: 57423

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Lead	ug/L	U	0.029	

LABORATORY CONTROL SAMPLE & LCSD: 57424 57425

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Lead	ug/L	50	54	53	108	105	85-115	1.87	20	

MATRIX SPIKE SAMPLE: 57427 Original: 1332070001

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	0	50	52	105	70-130	

MATRIX SPIKE SAMPLE: 57429 Original: 1332074008

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	0	50	61	122	70-130	

SAMPLE DUPLICATE: 57426 Original: 1332070001

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
Lead	ug/L	0	U	0	20	

**FD0H# E86546**

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**QUALITY CONTROL DATA**

Workorder 1332074

Project ID: BETHEL

SAMPLE DUPLICATE: 57428

Original: 1332074008

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
Lead	ug/L	0	U	0	20	

**FDOH# E86546**

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**QUALITY CONTROL DATA**

Workorder 1332074

Project ID: BETHEL

QC Batch:	VXX/5117	Analysis Method:		EPA 8260B		
QC Batch Method:	EPA 5030B					
Associated Lab Samples:	1332073001	1332074001	1332074002	1332074003	1332074004	1332074005
	1332074006	1332074007	1332074008	1332074009		

METHOD BLANK: 57455

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Volatiles by GC/MS				
Dibromofluoromethane (S)	%	98	70-130	
Toluene d8 (S)	%	98	70-130	
4-Bromofluorobenzene (S)	%	103	70-130	
tert-Butyl methyl ether (MTBE)	ug/L	U	0.400	
Benzene	ug/L	U	0.400	
Toluene	ug/L	U	0.400	
Ethylbenzene	ug/L	U	0.400	
m & p-xylene	ug/L	U	0.400	
o-Xylene	ug/L	U	0.400	
Xylenes- Total	ug/L	U	0.800	

LABORATORY CONTROL SAMPLE & LCSD: 57456 57457

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Volatiles by GC/MS										
Dibromofluoromethane (S)	%				96	98	70-130	2	25	
Toluene d8 (S)	%				98	95	70-130	3	25	
4-Bromofluorobenzene (S)	%				101	98	70-130	3	25	
tert-Butyl methyl ether (MTBE)	ug/L	50.1	48.7	51.9	97	104	70-130	6	25	
Benzene	ug/L	50.2	50.4	50.8	100	101	70-130	0.8	25	
Toluene	ug/L	50.2	49.8	48.7	99	97	70-130	2	25	
Ethylbenzene	ug/L	50.1	52.4	51.3	105	102	70-130	2	25	
m & p-xylene	ug/L	100	105	105	104	105	70-130	0	25	
o-Xylene	ug/L	50.1	52.7	50.7	105	101	70-130	4	25	
Xylenes- Total	ug/L	151	158	156	105	104	70-130	1		

**FDOH# E86546**

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**QUALITY CONTROL DATA**

Workorder 1332074

Project ID: BETHEL

SAMPLE DUPLICATE: 57458

Original: 1332074001

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
Volatiles by GC/MS						
Dibromofluoromethane (S)	%	39.1		1	25	
Toluene d8 (S)	%	39.1		0	25	
4-Bromofluorobenzene (S)	%	39.9		4	25	
tert-Butyl methyl ether (MTBE)	ug/L	0	U	0	25	
Benzene	ug/L	0	U	0	25	
Toluene	ug/L	0	U	0	25	
Ethylbenzene	ug/L	0	U	0	25	
m & p-xylene	ug/L	0	U	0	25	
o-Xylene	ug/L	0	U	0	25	
Xylenes- Total	ug/L	0	U	0		





**QUALITY CONTROL DATA**

Workorder 1332074

Project ID: BETHEL

QC Batch: VXX/5118 Analysis Method: EPA 8260B  
QC Batch Method: 5035 (High)  
Associated Lab Samples: 1332074010 1332074011

METHOD BLANK: 57459

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Volatiles by GC/MS				
Dibromofluoromethane (S)	%	98	60-135	
Toluene d8 (S)	%	98	60-135	
4-Bromofluorobenzene (S)	%	103	60-135	
tert-Butyl methyl ether (MTBE)	mg/Kg	U	0.0011	
Benzene	mg/Kg	U	0.00048	
Toluene	mg/Kg	U	0.00040	
Ethylbenzene	mg/Kg	U	0.00033	
m & p-xylene	mg/Kg	U	0.00064	
o-Xylene	mg/Kg	U	0.00035	
Xylenes- Total	mg/Kg	U	0.00099	

LABORATORY CONTROL SAMPLE & LCSD: 57460 57461

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Volatiles by GC/MS										
Dibromofluoromethane (S)	%				98	98	60-135	2	30	
Toluene d8 (S)	%				98	95	60-135	3	30	
4-Bromofluorobenzene (S)	%				101	98	60-135	3	30	
tert-Butyl methyl ether (MTBE)	mg/Kg	0.05	0.049	0.052	97	104	60-135	6	30	
Benzene	mg/Kg	0.05	0.050	0.051	100	101	60-135	2	30	
Toluene	mg/Kg	0.05	0.050	0.049	99	97	60-135	2	30	
Ethylbenzene	mg/Kg	0.05	0.052	0.051	105	102	60-135	2	30	
m & p-xylene	mg/Kg	0.1	0.105	0.105	104	105	60-135	0	30	
o-Xylene	mg/Kg	0.05	0.053	0.051	105	101	60-135	4	30	
Xylenes- Total	mg/Kg	0.151	0.158	0.156	105	104	60-135	1	30	



**QUALITY CONTROL DATA**

Workorder 1332074

Project ID: BETHEL

QC Batch:	XXX/6317		Analysis Method:		EPA 8270/PAH SIM	
QC Batch Method:	EPA 3510C SIM					
Associated Lab Samples:	1332073001	1332074001	1332074002	1332074003	1332074004	1332074005
	1332074006	1332074007	1332074008	1332074009	1332081001	1332081002
	1332081003	1332081004	1332081005	1332081006	1332081007	1332081008
	1332086001	1332091001				

METHOD BLANK: 57462

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
<b>Semivolatiles by EPA 8270C</b>				
Nitrobenzene-d5 (S)	%	45	30-110	
2-Fluorobiphenyl (S)	%	72	30-110	
p-Terphenyl-d14 (S)	%	106	30-140	
Naphthalene	ug/L	U	0.050	
2-Methylnaphthalene	ug/L	U	0.050	
1-Methylnaphthalene	ug/L	U	0.050	
Acenaphthylene	ug/L	U	0.025	
Acenaphthene	ug/L	U	0.025	
Fluorene	ug/L	U	0.025	
Phenanthrene	ug/L	U	0.025	
Anthracene	ug/L	U	0.025	
Fluoranthene	ug/L	U	0.025	
Pyrene	ug/L	U	0.025	
Benzo(a)anthracene	ug/L	U	0.025	
Chrysene	ug/L	U	0.025	
Benzo(b)fluoranthene	ug/L	U	0.015	
Benzo(k)fluoranthene	ug/L	U	0.015	
Benzo(a)pyrene	ug/L	U	0.015	
Dibenzo(a,h)anthracene	ug/L	U	0.0051	
Indeno(1,2,3-cd)pyrene	ug/L	U	0.015	
Benzo(g,h,i)perylene	ug/L	U	0.015	

LABORATORY CONTROL SAMPLE & LCSD: 57463 57464

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
<b>Semivolatiles by EPA 8270C</b>										
Nitrobenzene-d5 (S)	%				39	37	30-110	5	40	
2-Fluorobiphenyl (S)	%				68	64	30-110	7	40	
p-Terphenyl-d14 (S)	%				88	81	30-140	9	40	
Naphthalene	ug/L	5.02	4.25	4.10	85	82	30-140	4	40	
2-Methylnaphthalene	ug/L	4.97	3.82	3.48	77	70	30-140	9	40	
1-Methylnaphthalene	ug/L	4.93	4.41	4.02	90	82	30-140	9	40	

Report ID: 1332074 - 1112031  
4/23/2013

Page 34 of 44

**FDOH# E86546**

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**QUALITY CONTROL DATA**

Workorder 1332074  
Project ID: BETHEL

LABORATORY CONTROL SAMPLE & LCSD: 57463 57464

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Acenaphthylene	ug/L	4.97	4.44	4.22	89	85	30-120	5	40	
Acenaphthene	ug/L	4.99	5.15	4.81	103	96	30-120	7	40	
Fluorene	ug/L	5.01	4.94	4.66	99	93	30-140	6	40	
Phenanthrene	ug/L	4.99	4.00	3.72	80	75	30-120	7	40	
Anthracene	ug/L	4.98	4.54	4.35	91	87	30-140	4	40	
Fluoranthene	ug/L	5.02	5.82	5.36	116	107	30-120	8	40	
Pyrene	ug/L	5.02	4.93	4.49	98	89	40-140	9	40	
Benzo(a)anthracene	ug/L	5.01	4.88	4.62	97	92	30-120	5	40	
Chrysene	ug/L	5.02	4.50	4.25	90	85	30-140	6	40	
Benzo(b)fluoranthene	ug/L	5.01	4.06	3.79	81	76	30-140	7	40	
Benzo(k)fluoranthene	ug/L	4.98	4.44	4.03	89	81	30-140	10	40	
Benzo(a)pyrene	ug/L	5	4.34	4.09	87	82	30-140	6	40	
Dibenzo(a,h)anthracene	ug/L	4.95	3.49	2.72	71	55	30-140	25	40	
Indeno(1,2,3-cd)pyrene	ug/L	4.99	4.20	3.78	84	76	30-140	11	40	
Benzo(g,h,i)perylene	ug/L	5	3.38	2.98	68	60	30-120	13	40	

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**QUALITY CONTROL DATA**

Workorder 1332074

Project ID: BETHEL

QC Batch: VXX/5119 Analysis Method: EPA 8260B (EDB List)  
QC Batch Method: EPA 5030B  
Associated Lab Samples: 1332074002 1332074003 1332074008

METHOD BLANK: 57479

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	U	0.010	
Dibromofluoromethane (S)	%	107	60-140	
Toluene d8 (S)	%	103	60-140	
4-Bromofluorobenzene (S)	%	87	60-140	

LABORATORY CONTROL SAMPLE & LCSD: 57480 57481

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	0.25	0.240	0.231	96	92	60-140	4	40	
Dibromofluoromethane (S)	%				101	103	60-140	2	40	
Toluene d8 (S)	%				108	108	60-140	0.4	40	
4-Bromofluorobenzene (S)	%				81	82	60-140	2	40	

LABORATORY CONTROL SAMPLE: 57482

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	0.1	0.100	100	60-140	
Dibromofluoromethane (S)	%			98	60-140	
Toluene d8 (S)	%			106	60-140	
4-Bromofluorobenzene (S)	%			80	60-140	

SAMPLE DUPLICATE: 57483 Original: 1332074002

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	0	U	0	40	
Dibromofluoromethane (S)	%					
Toluene d8 (S)	%					
4-Bromofluorobenzene (S)	%	221		1	40	

**FDOH# E86546  
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**QUALITY CONTROL DATA**

Workorder 1332074

Project ID: BETHEL

QC Batch:	XXX/6323	Analysis Method:		FL-PRO (GC)		
QC Batch Method:	EPA 3545					
Associated Lab Samples:	1332072001	1332072002	1332072003	1332072004	1332072005	1332072006
	1332072007	1332074010	1332074011	1332102001	1332102002	1332102003
	1332102004	1332102005	1332102006	1332102007	1332102008	1332109001

METHOD BLANK: 57560

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Semivolatiles by GC				
o-Terphenyl (S)	%	66	50-150	
n-Triacontane-d62 (S)	%	111	50-150	
Florida Pro Total	mg/Kg	U	2.30	

LABORATORY CONTROL SAMPLE & LCSD: 57561 57562

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Semivolatiles by GC										
o-Terphenyl (S)	%				71	66	50-150	8	20	
n-Triacontane-d62 (S)	%				106	102	50-150	4	20	
Florida Pro Total	mg/Kg	34	33.0	31.1	97	92	63-143	6	20	

MATRIX SPIKE SAMPLE: 57564 Original: 1332072001

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Semivolatiles by GC							
o-Terphenyl (S)	%					59	50-150
n-Triacontane-d62 (S)	%					84	50-150
Florida Pro Total	mg/Kg	5.73	34	33.2	81	51-215	

SAMPLE DUPLICATE: 57583 Original: 1332072001

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
Semivolatiles by GC						
o-Terphenyl (S)	%	1.38		20	20	
n-Triacontane-d62 (S)	%	2.01		14	20	

Report ID: 1332074 - 1112031  
4/23/2013

Page 37 of 44

**FDOH# E86546**  
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**QUALITY CONTROL DATA**

Workorder 1332074

Project ID: BETHEL

SAMPLE DUPLICATE: 57563

Original: 1332072001

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
Florida Pro Total	mg/Kg	5.73	11.1i	45	20	P1



**QUALITY CONTROL DATA**

Workorder 1332074  
Project ID: BETHEL

QC Batch: XXX/6333 Analysis Method: EPA 8310 List by 8270C  
QC Batch Method: EPA 3545  
Associated Lab Samples: 1332074010 1332074011 1332109001 1332118004 1332118005

METHOD BLANK: 57637

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Semivolatiles by EPA 8270C				
Nitrobenzene-d5 (S)	%	51	20-120	
2-Fluorobiphenyl (S)	%	76	30-115	
p-Terphenyl-d14 (S)	%	83	15-140	
Naphthalene	mg/Kg	U	0.027	
2-Methylnaphthalene	mg/Kg	U	0.027	
1-Methylnaphthalene	mg/Kg	U	0.021	
Acenaphthylene	mg/Kg	U	0.025	
Acenaphthene	mg/Kg	U	0.031	
Fluorene	mg/Kg	U	0.036	
Phenanthrene	mg/Kg	U	0.024	
Anthracene	mg/Kg	U	0.025	
Fluoranthene	mg/Kg	U	0.022	
Pyrene	mg/Kg	U	0.023	
Benzo(a)anthracene	mg/Kg	U	0.019	
Chrysene	mg/Kg	U	0.023	
Benzo(b)fluoranthene	mg/Kg	U	0.054	
Benzo(k)fluoranthene	mg/Kg	U	0.022	
Benzo(a)pyrene	mg/Kg	U	0.016	
Dibenzo(a,h)anthracene	mg/Kg	U	0.012	
Indeno(1,2,3-cd)pyrene	mg/Kg	U	0.012	
Benzo(g,h,i)perylene	mg/Kg	U	0.016	

LABORATORY CONTROL SAMPLE & LCSD: 57638 57639

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Semivolatiles by EPA 8270C										
Nitrobenzene-d5 (S)	%				61	64	20-120	4	40	
2-Fluorobiphenyl (S)	%				95	97	30-115	2	40	
p-Terphenyl-d14 (S)	%				84	87	15-140	4	40	
Naphthalene	mg/Kg	2.01	1.79	1.79	89	89	20-140	0	40	
2-Methylnaphthalene	mg/Kg	1.99	2.00	2.03	101	102	20-140	1	40	
1-Methylnaphthalene	mg/Kg	1.97	2.16	2.16	110	110	20-140	0	40	
Acenaphthylene	mg/Kg	1.99	1.82	1.81	92	91	20-140	0.6	40	
Acenaphthene	mg/Kg	2	1.95	1.94	98	97	35-120	0.5	40	
Fluorene	mg/Kg	2	1.55	1.54	77	77	20-140	0.6	40	

Report ID: 1332074 - 1112031  
4/23/2013

Page 39 of 44

**FDOH# E86546**  
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**QUALITY CONTROL DATA**

Workorder 1332074

Project ID: BETHEL

LABORATORY CONTROL SAMPLE & LCSD: 57638 57639

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Phenanthrene	mg/Kg	1.99	1.76	1.76	88	88	20-140	0	40	
Anthracene	mg/Kg	1.99	1.89	1.82	95	91	20-140	4	40	
Fluoranthene	mg/Kg	2.01	1.88	1.87	94	93	20-140	0.5	40	
Pyrene	mg/Kg	2.01	1.97	2.05	98	102	40-140	4	40	
Benzo(a)anthracene	mg/Kg	2	1.69	1.73	84	86	20-140	2	40	
Chrysene	mg/Kg	2.01	2.01	2.02	100	100	20-140	0.5	40	
Benzo(b)fluoranthene	mg/Kg	2	1.71	1.76	85	88	20-140	3	40	
Benzo(k)fluoranthene	mg/Kg	1.99	1.82	1.82	92	91	20-140	0	40	
Benzo(a)pyrene	mg/Kg	2	1.93	1.96	96	98	20-140	2	40	
Dibenzo(a,h)anthracene	mg/Kg	1.98	1.93	1.89	97	96	20-140	2	40	
Indeno(1,2,3-cd)pyrene	mg/Kg	2	2.07	2.11	104	106	20-140	2	40	
Benzo(g,h,i)perylene	mg/Kg	2	1.60	1.63	80	82	20-140	2	40	

MATRIX SPIKE SAMPLE: 57648 Original: 1332118004

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Semivolatiles by EPA 8270C							
Nitrobenzene-d5 (S)	%				60	20-120	
2-Fluorobiphenyl (S)	%				87	30-115	
p-Terphenyl-d14 (S)	%				75	15-140	
Naphthalene	mg/Kg	0	2.01	1.63	81	20-140	
2-Methylnaphthalene	mg/Kg	0	1.99	1.85	93	20-140	
1-Methylnaphthalene	mg/Kg	0	1.97	1.96	100	20-140	
Acenaphthylene	mg/Kg	0	1.99	1.62	82	20-140	
Acenaphthene	mg/Kg	0	2	1.73	87	35-120	
Fluorene	mg/Kg	0	2	1.39	69	20-140	
Phenanthrene	mg/Kg	0	1.99	1.55	78	20-140	
Anthracene	mg/Kg	0	1.99	1.66	83	20-140	
Fluoranthene	mg/Kg	0	2.01	1.64	82	20-140	
Pyrene	mg/Kg	0	2.01	1.76	88	40-140	
Benzo(a)anthracene	mg/Kg	0	2	1.49	74	20-140	
Chrysene	mg/Kg	0	2.01	1.69	84	20-140	
Benzo(b)fluoranthene	mg/Kg	0	2	1.45	72	20-140	
Benzo(k)fluoranthene	mg/Kg	0	1.99	1.71	86	20-140	
Benzo(a)pyrene	mg/Kg	0	2	1.6	80	20-140	
Dibenzo(a,h)anthracene	mg/Kg	0	1.98	1.58	80	20-140	
Indeno(1,2,3-cd)pyrene	mg/Kg	0	2	1.74	87	20-140	
Benzo(g,h,i)perylene	mg/Kg	0	2	1.35	67	20-140	

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**QUALITY CONTROL DATA**

Workorder 1332074  
Project ID: BETHEL

SAMPLE DUPLICATE: 57647

Original: 1332118004

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
Semivolatiles by EPA 8270C						
Nitrobenzene-d5 (S)	%	1.1		4	40	
2-Fluorobiphenyl (S)	%	1.65		2	40	
p-Terphenyl-d14 (S)	%	1.56		0.6	40	
Naphthalene	mg/Kg	0	U	0	40	
2-Methylnaphthalene	mg/Kg	0	U	0	40	
1-Methylnaphthalene	mg/Kg	0	U	0	40	
Acenaphthylene	mg/Kg	0	U	0	40	
Acenaphthene	mg/Kg	0	U	0	40	
Fluorene	mg/Kg	0	U	0	40	
Phenanthrene	mg/Kg	0	U	0	40	
Anthracene	mg/Kg	0	U	0	40	
Fluoranthene	mg/Kg	0	U	0	40	
Pyrene	mg/Kg	0	U	0	40	
Benzo(a)anthracene	mg/Kg	0	U	0	40	
Chrysene	mg/Kg	0	U	0	40	
Benzo(b)fluoranthene	mg/Kg	0	U	0	40	
Benzo(k)fluoranthene	mg/Kg	0	U	0	40	
Benzo(a)pyrene	mg/Kg	0	U	0	40	
Dibenzo(a,h)anthracene	mg/Kg	0	U	0	40	
Indeno(1,2,3-cd)pyrene	mg/Kg	0	U	0	40	
Benzo(g,h,i)perylene	mg/Kg	0	U	0	40	

FDOH# E86546

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Jupiter Environmental Laboratories, Inc.  
150 S. Old Dixie Highway  
Jupiter, FL 33458  
Phone: (561)575-0030  
Fax: (561)575-4118

### QUALITY CONTROL DATA QUALIFIERS

Workorder 1332074

Project ID: BETHEL

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### QUALITY CONTROL PARAMETER QUALIFIERS

P1 RPD value not applicable for sample concentrations less than 5 times the PQL.

Report ID: 1332074 - 1112031  
4/23/2013

Page 42 of 44

FDOH# E86546

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 150 S. Old Dixie Highway  
 Jupiter, FL 33458  
 Phone: (561)575-0030  
 Fax: (561)575-4118

**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Workorder 1332074  
 Project ID: BETHEL

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1332074001	DMW-1	EPA 3510C	XXX/6314	FL-PRO (GC)	XGCP/2716
1332074002	MW-2	EPA 3510C	XXX/6314	FL-PRO (GC)	XGCP/2716
1332074003	MW-3	EPA 3510C	XXX/6314	FL-PRO (GC)	XGCP/2716
1332074004	MW-4	EPA 3510C	XXX/6314	FL-PRO (GC)	XGCP/2716
1332074005	MW-7	EPA 3510C	XXX/6314	FL-PRO (GC)	XGCP/2716
1332074006	MW-8	EPA 3510C	XXX/6314	FL-PRO (GC)	XGCP/2716
1332074007	MW-9	EPA 3510C	XXX/6314	FL-PRO (GC)	XGCP/2716
1332074008	MW-10	EPA 3510C	XXX/6314	FL-PRO (GC)	XGCP/2716
1332074009	MW-11	EPA 3510C	XXX/6314	FL-PRO (GC)	XGCP/2716
1332074002	MW-2	EPA 200.2 mod.	MXX/5520	EPA 200.8 (Total)	MMS/4923
1332074003	MW-3	EPA 200.2 mod.	MXX/5520	EPA 200.8 (Total)	MMS/4923
1332074008	MW-10	EPA 200.2 mod.	MXX/5520	EPA 200.8 (Total)	MMS/4923
1332074001	DMW-1	EPA 5030B	VXX/5117	EPA 8260B	VMS/4928
1332074002	MW-2	EPA 5030B	VXX/5117	EPA 8260B	VMS/4928
1332074003	MW-3	EPA 5030B	VXX/5117	EPA 8260B	VMS/4928
1332074004	MW-4	EPA 5030B	VXX/5117	EPA 8260B	VMS/4928
1332074005	MW-7	EPA 5030B	VXX/5117	EPA 8260B	VMS/4928
1332074006	MW-8	EPA 5030B	VXX/5117	EPA 8260B	VMS/4928
1332074007	MW-9	EPA 5030B	VXX/5117	EPA 8260B	VMS/4928
1332074008	MW-10	EPA 5030B	VXX/5117	EPA 8260B	VMS/4928
1332074009	MW-11	EPA 5030B	VXX/5117	EPA 8260B	VMS/4928
1332074010	SS-1C	5035 (High)	VXX/5118	EPA 8260B	VMS/4929
1332074011	SS-2C	5035 (High)	VXX/5118	EPA 8260B	VMS/4929
1332074001	DMW-1	EPA 3510C SIM	XXX/6317	EPA 8270/PAH SIM	XMS/3644
1332074002	MW-2	EPA 3510C SIM	XXX/6317	EPA 8270/PAH SIM	XMS/3644
1332074003	MW-3	EPA 3510C SIM	XXX/6317	EPA 8270/PAH SIM	XMS/3644

Report ID: 1332074 - 1112031  
 4/23/2013

Page 43 of 44

**FDOH# E86546**

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Workorder 1332074

Project ID: BETHEL

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1332074004	MW-4	EPA 3510C SIM	XXX/6317	EPA 8270/PAH SIM	XMS/3644
1332074005	MW-7	EPA 3510C SIM	XXX/6317	EPA 8270/PAH SIM	XMS/3644
1332074006	MW-8	EPA 3510C SIM	XXX/6317	EPA 8270/PAH SIM	XMS/3644
1332074007	MW-9	EPA 3510C SIM	XXX/6317	EPA 8270/PAH SIM	XMS/3644
1332074008	MW-10	EPA 3510C SIM	XXX/6317	EPA 8270/PAH SIM	XMS/3644
1332074009	MW-11	EPA 3510C SIM	XXX/6317	EPA 8270/PAH SIM	XMS/3644
1332074002	MW-2	EPA 5030B	VXX/5119	EPA 8260B (EDB List)	VMS/4930
1332074003	MW-3	EPA 5030B	VXX/5119	EPA 8260B (EDB List)	VMS/4930
1332074008	MW-10	EPA 5030B	VXX/5119	EPA 8260B (EDB List)	VMS/4930
1332074010	SS-1C	EPA 3545	XXX/6323	FL-PRO (GC)	XGCP/2718
1332074011	SS-2C	EPA 3545	XXX/6323	FL-PRO (GC)	XGCP/2718
1332074010	SS-1C	SM 2540G	WGR/1962		
1332074011	SS-2C	SM 2540G	WGR/1962		
1332074010	SS-1C	EPA 3545	XXX/6333	EPA 8310 List by 8270C	XMS/3650
1332074011	SS-2C	EPA 3545	XXX/6333	EPA 8310 List by 8270C	XMS/3650

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Company Name				LAB ANALYSIS										Requested Turnaround Time					
Address				Parameters										Notes: Rush requests subject to acceptance by the laboratory					
City				Field Filtered (Y/N)										<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Expedited					
Sampling Site Address				Due										<input type="checkbox"/> / /					
Attn				Comments															
Project Name																			
Sampler Name/Signature																			
Sample Label (Client ID)	Collected Date	Collected Time	Matrix Code	# of Cont	COB (BTEX + MDE) (B260)	PAHS (B260)	TPH (B260)	LEAD (6010)	COB (SP41)	PAHS + ANTRC (B260)	PAHS (B270C) + TPH (B260)	SPLP - BENZENE (H040)	TPH SPECIATION (H040)						
9 10 11 12 13 14 15 16 17 18 19 20	MW-11	4/10/13	14:00	GW	3	2	1	1						31/9/00095					
	SS-1C	4/10/13	11:07	SO	8					2	1	1	4	* HOLD SAMPLES					
	SS-2C	4/10/13	11:45	SO	8					2	1	1	4	FOR TPH SPECIATION & SPLP PENDING ANALYSIS					
Matrix Codes:				Pres Codes		Relinquished by		Date		Time		Received by		Date		Time			
S: Soil/Solid Sediment GW: Ground Water WW: Wastewater DW: Drinking Water				SW: Surface Water SL: Sludge O: Other (Please Specify)		A: none B: HNO <sub>3</sub> C: H <sub>2</sub> SO <sub>4</sub> D: NaOH E: HCl		I: Ice O: Other V: MeOH N: Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> Z: Zink		4-10		15:40		JRT		4-10		15:40	
QA/QC level with report				None		1		2		3		See price guide for applicable fees							
FDEP Dry Cleaning				FDEP UST Pre-Approval		Temp Control:		3		°C									

**Appendix VIII**  
**SCS Worksheets**

# Historical Summary

Submit with Proposal and include appropriate Tables and Figures

## Discharge History

FDEP FAC ID #: 319100095

Site Name: Bethel Service Station

Site Score: 31

Facility Type: Closed - No Tanks

List Active Tanks (ASTs/USTs & contents): None

### First Discharge

Discharge Date: 10/7/1990

Discharged Product: Unleaded Gasoline

Eligibility Program: ATRP

CAP Remaining:

### Discharge Summary *location/quantity etc.*

Contamination discovered / reported in conjunction with removal of 2 on-site USTs.

### Second Discharge

Discharge Date:

Discharged Product:

Eligibility Program:

CAP Remaining:

### Discharge Summary *location/quantity etc.*

### Third Discharge

Discharge Date:

Discharged Product:

Eligibility Program:

CAP Remaining:

### Discharge Summary *location/quantity etc.*

## Assessment History

SA Approval Date: 11/7/2005

Average DTW: 0' - 5'

Groundwater Flow: W-SW

1st Lithology (USCS): SW

2nd Lithology (USCS): Not Sampled

Land Use (plume area): Commercial

Zoning (plume area): Commercial

Private Wells: 5

Last Sampled: 12/13/2004

Petroleum Contamination: No

Public Supply Wells: 0

Last Sampled:

Petroleum Contamination:

### Groundwater Contaminants

BTEX	Yes
PAHs	Yes
TRPHs	Yes
MTBE	No
Pb	No
Other	No

### Soil Contaminants

BTEX	Yes
PAHs	Yes
TRPHs	Yes
MTBE	No
Pb	Not Analyzed
Other	Not Analyzed

### Assessment Summary *complex lithology, free product etc.*

TSAR completed 10/7/2005 and approved 11/7/2005. Medium to fine grain sands to 30'. Groundwater and soil plumes extend from the former UST area to the W-SW, consistent with groundwater flow direction. No free product encountered.

## Remedial Action History

RAP Order Date:

RA Technology:

2nd RA Technology:

RA Start Date:

RA End Date:

### Remedial Action Summary *expand on remedial history and define other.*



## Site Characterization Screening Information

FDEP FAC ID #: 319100095  
 Does Site Qualify for LTNAM: No

Site Name: Bethel Service Station

Dominant Lithology Vadose Zone  
 First Lithology (USCS): SM  
 Second Lithology (USCS): Not Applicable  
 Dominant Lithology Saturated Zone  
 First Lithology (USCS): SM  
 Second Lithology (USCS): Not Applicable

Average Depth to Water: 0' - 5'  
 Groundwater Flow Direction: Southwest

Recommended Technology for SRCO: Standard Excavation  
 Combined Technology: Not Applicable

Consultant SRCO Cost Estimate: \$50,001 - \$100,000  
 Consultant NFAC Cost Estimate: \$50,001 - \$100,000

Are on-site buildings housing Sensitive Receptors No  
 If yes, current use of the building Not Applicable

Plume Characteristics	Groundwater	Soil
Shrinking or Stable		
On-site only	No	Yes
Plume <1/4 acre		Not App
Exclusion Zone Only		Not App
In DOT ROW only	Not App	Not App
On State-Owned Land Only	Not App	Not App
Organoleptic Exceedence only (< HB CTLs)		
DE Soil Exceedences above 2' BLS		No
DE Soil Exceedences from 2' to 10' BLS		No
DE Soil Exceedences below 10' BLS		No
Free Product	No	
Site Qualifies for LSSI NFA	No	

DE = Direct Exposure CTLs; HB = Health Based; BLS = below land surface  
 SCS Template 6-15-12

GW Contaminants one per constituent	≤ GCTL	≤ NADC	> NADC	Not Analyzed
Benzene		X		
Ethylbenzene			X	
Toluene	X			
Total Xylenes	X			
MTBE	X			
Naphthalene			X	
1-Methylnaphthalene		X		
2-Methylnaphthalene		X		
TRPHs		X		
EDB	X			
As				X
Pb	X			
Other				X

Soil Contaminants (select one unless Leachability & Direct Exposure CTLs specified)	No Soil Exceedences*	Exceeds Leachability	Exceeds Direct Exposure	Not Analyzed
Benzene	X			
Ethylbenzene		X		
Toluene	X			
Total Xylenes		X		
MTBE	X			
Naphthalene		X		
1-Methylnaphthalene		X		
2-Methylnaphthalene		X		
Other PAHs	X			
TRPHs		X	X	
As				X
Pb				X
Other				X

\* Below direct exposure and leachability CTLs (or alternative SCTLs established through SPLP or fractionation)

# Potential Indicators for Imminent Threat

FDEP FAC ID #: 319100095

Site Name: Bethel Service Station

## 1) Persistent or Intermittent Petroleum Odors or Vapors

- No a) Have Odors or Vapors been reported or detected in a confined space (i.e. inside occupied building or basement, utility vault, utility conduit or storm drain, etc.) ?
- No b) Have Odors or Vapors been reported or detected in an open-air environment (i.e. parking garage, public park, highway rest area, etc.) ?

Describe:

Not applicable

## 2) Exposed Free Phase Petroleum Product (Includes sheen)

- No a) Is Free Product (FP) exposed on the ground surface?
- No b) Is FP exposed on surface water body?
- No c) Is FP in the top 2' ( $\leq 24"$ ) of soil (in wells, borings, holes or trenches) ?

Describe:

Not applicable

## 3) Active Potable Wells(s) - Private or Limited Use

- No a) Did a Potable Well located within a 1/4 mile of this facility have a sample with  $>1/2$  Maximum Contaminant Levels (MCL) for Petroleum Contaminants of Concern (COC)?
- No b) Does a Potable Water Supply Well exist within 100' of a current or former storage tank system?

Describe:

Please note the site has a well (currently not in use due to availability of municipal water)

## 4) Active Public Water System (PWS) well within 500' of facility

- No a) Does the site have a MW with COC  $>$  Natural Attenuation Default Concentrations?
- No b) Did sampling results from PWS well report COC levels  $> 1/2$  MCL?
- No c) Did PWS or MW sampling results identify Benzene above Cleanup Target Levels?

Describe (highest benzene value, location of PWS wells, etc.) :

Not applicable

Consultant Company: FOURTUNE 4, INC D/B/A ENVIRONMENTAL ASSESSMENTS & CONSULTING

Consultant Site Manager: Robert Perkins Date 4/26/2013

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SEP 16 2010

BREVARD COUNTY  
NATURAL RESOURCES MGMT



**LIMITED SOURCE REMOVAL REPORT**

**Shark-Mart  
9490 90th Avenue  
Vero Beach, Indian River County, Florida  
FDEP Facility I.D. No. 31/9602448**

*Submitted to:*  
**Mr. David S. Maher, P.G.  
Brevard County Government Center  
Natural Resources Management Department  
2725 Judge Fran Jamieson Way  
Building A, Suite 219  
Viera, Florida 32940**

*Prepared by:*  
**Advanced Environmental Technologies, LLC.  
4265 New Tampa Highway, Suite 1  
Lakeland, Florida 33815  
(863) 619-9708**

**September 15, 2010  
AET Project Number: 25740.00**



**P.G. Certification**

**Limited Source Removal Report** for the Shark-Mart facility located at 9490 90<sup>th</sup> Avenue, Vero Beach, Indian River County, Florida, **FDEP Facility I.D. No. 31/9602448.**

I hereby certify that in my professional judgment, the components of this **Limited Source Removal Report** satisfy the requirements in accordance with Chapter 62-770 Florida Administrative Code (FAC), and the conclusions in this document provide reasonable assurances that the objectives have been met.

\_\_\_\_\_ I personally completed this review

  X   This document was prepared by Angela Kurth working under my direct supervision

\_\_\_\_\_  
**Keith Townsel, P.G., PSSSC**  
Professional Geologist  
Florida License No. 100420

Date \_\_\_\_\_





September 15, 2010

David S. Maher, P.G.  
Site Manager/RA Specialist  
Brevard and Indian River Counties  
Brevard County Government Center  
2725 Judge Fran Jamieson Way  
Building A, Room 219  
Viera, Florida 32940

**RE: Limited Source Removal Report**  
**Shark-Mart**  
**9490 90th Avenue**  
**Vero Beach, Indian River County, Florida**  
**FDEP Facility I.D. #31-9602448**  
**Discharge Date: August 12, 2010**  
**AET Project #25740.00**

Dear Mr. Maher:

Advanced Environmental Technologies, LLC (AET) is pleased to provide you with this report detailing the recent source soil removal activities conducted for the premium and regular spill containment buckets located at the referenced facility. As discussed with Charles Vogt of the Indian River Health Department, the closure assessment included soil sample screening for petroleum vapor concentrations, the collection of four soil samples (two from each spill bucket) and one groundwater sample for confirmation laboratory analyses, and submittal of this Limited Source Removal Report.

#### **Site Location**

The subject site is currently a gasoline storage and fueling facility located at 9490 90<sup>th</sup> Avenue, Vero Beach, Indian River County, Florida. The site is located on the corner of 90<sup>th</sup> Avenue and County Road (CR) 512 (Fellsmere Road). A Site Plan is included as **Figure 1**.

#### **Background**

On August 2, 2010, one soil sample was collected by Applied Science and Engineering, LLC during the spill bucket replacement activities. The spill buckets were replaced on the premium, regular and diesel underground storage tanks (USTs). The report documenting these activities was not available at the time of this AET report submittal.

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4265 New Tampa Highway, Suite 1 • Lakeland, FL 33815 **Phone:** 863-619-9708 **Fax:** 863-619-7467

**CORPORATE HEADQUARTERS** 3124 West Main Street Suite 10 • Dothan, AL 36303 **Phone:** 334-699-2920 **Fax:** 800-692-0563

### **Field Activities**

On August 17, 2010, AET arrived at the site to perform limited source removal activities on the regular and premium underground storage tanks (USTs). The concrete surface was removed to expose the spill bucket and a 4 foot x 4 foot area surrounding each spill bucket.

Four soil samples, for Net Petroleum Hydrocarbon (NPH) analysis, were collected from each side of each spill bucket (SS-1 through SS-4 on the regular spill bucket and SS-5 through SS-8 on the premium spill bucket). The soil samples were screened for the presence of hydrocarbons using a Mini-Rae 2000. A portion of each soil sample was placed into pre-cleaned pint mason jars and covered with aluminum foil. After equilibrating for a minimum of five minutes, the soil samples were screened for the presence of organic vapors. The soil screening summary is included as **Table 1** and depicted on **Figure 2**. The field equipment calibration records are included in **Appendix A**.

Following the NPH analysis, approximately 2-3 yards of soil was removed, by vacuum truck, from each area surrounding the regular and premium spill buckets, for a total of approximately 5-6 yards removed (approximately 1000 gallons based on the vacuum truck measurements). All soil was removed in each of the 4 foot x 4 foot areas down to the top of the respective USTs. A copy of the Waste Manifest for disposal of the soil is included in **Appendix B**. Photo documentation of the limited source removal is included in **Appendix C**.

AET then collected confirmatory sidewall soil samples for NPH analysis. Each sidewall soil sample returned a NPH measurement of <1 ppm on each spill bucket. The soil screening summary is included as **Table 1** and depicted on **Figure 2**.

Upon completion of the source soil removal and NPH analysis, AET collected four soil samples for confirmation laboratory analysis. A North wall (NW) sample and a South wall (SW) sample were collected from the premium spill bucket and a West wall (WW) sample and a South wall (SW) sample were collected from the regular spill bucket.

The four soil samples were submitted under chain of custody to Environmental Testing Laboratories (ETL) to be analyzed using EPA Method 8260B for Volatile Organic Aromatics (VOAs), EPA Method 8270C for Polynuclear Aromatic Hydrocarbons (PAHs), and Total Recoverable Petroleum Hydrocarbons by the Florida Petroleum Residual Organic Method (FL-PRO).

The four soil samples did not report any constituents in excess of the FDEP Table II Chapter 62-770 Soil Cleanup Target Levels (SCTLs). The soil laboratory analytical results are reported in **Table 2** and depicted on **Figure 3**. A copy of the laboratory analytical report is provided in **Appendix D**.

One temporary groundwater monitoring well (TWP-1) was installed between the two spill buckets, directly west of the USTs in the grassy area. TWP-1 was installed to 12 feet below land

surface (bls) with 10 feet of 0.010 slotted screen. A 20/30 sand sand-pack was installed around TWP-1 to one foot above the screen. A copy of the Well Construction and Development Log is included in **Appendix A**.

The groundwater sample collected from TWP-1 did not report any constituents in excess of the FDEP Table I Chapter 62-770 Groundwater Cleanup Target Levels (GCTLs). The groundwater analytical results are reported in **Table 3** and depicted on **Figure 3**. A copy of the laboratory analytical report is included in **Appendix D**.

### Summary

A Limited Source Soil Removal was completed on August 17, 2010. Approximately 5-6 yards of soil was removed from the area surrounding the regular and premium spill buckets. A copy of the Waste Manifest for the removed soil is included in **Appendix B**. Photo documentation is included in **Appendix C**.

Four sidewall soil samples (two from each spill bucket) were collected from the walls of the excavated area for laboratory analysis. The soil analytical results did not report any petroleum constituents in excess of the FDEP's Table II SCTLs. A copy of the laboratory analytical results is provided in **Appendix D**.


One temporary groundwater monitoring well was installed between the two spill buckets, directly west of the USTs in the grassy area. TWP-1 was installed to 12 feet below land surface (bls) with 10 feet of 0.010 slotted screen and a 20/30 sand pack to one foot above the screen. A copy of the Well Construction and Development Log is included in **Appendix A**. The groundwater analytical results did not report any petroleum constituents in excess of the FDEP's Table I GCTLs.

### Recommendation

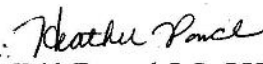
Based on the laboratory analytical results from the August 2010 soil and groundwater sampling at the subject facility, AET submits that no further action is warranted at this time.

If you have any questions, comments or require any additional information please contact the undersigned at (863) 619-9708.

Sincerely,  
**Advanced Environmental Technologies, LLC.**

  
Angela Kurth  
Senior Project Manager

  
Keith Townsel, P.G., PSSSC  
for

  
for Keith Townsel, P.G., PSSSC  
Chief Technical Officer

Attachments: Figures, Tables, Appendices A - D

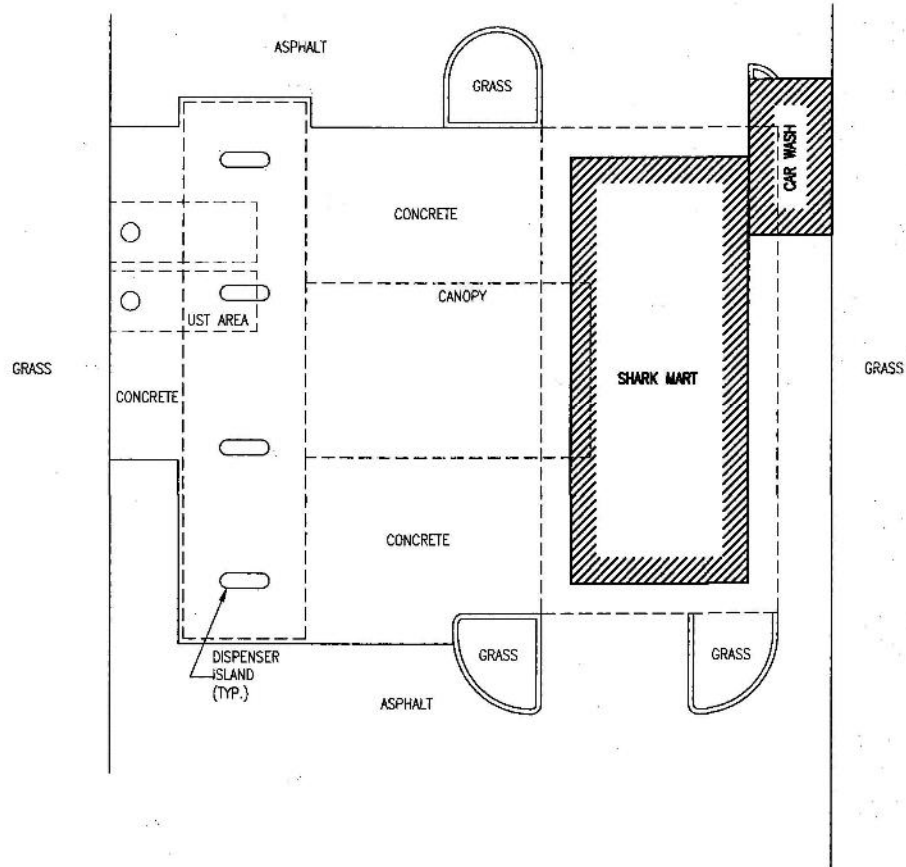
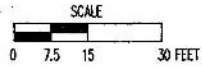
cc: Ms. Mary Vinson, Reliance Petroleum, 3501 SW Corporate Parkway, Palm City, Florida 34990

**FIGURES**

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C:\Documents and Settings\PCaulias.A\ET.000\Desktop\FIGURES SM.dwg, 1-SM (3), J. Territo, Lakeland, FL



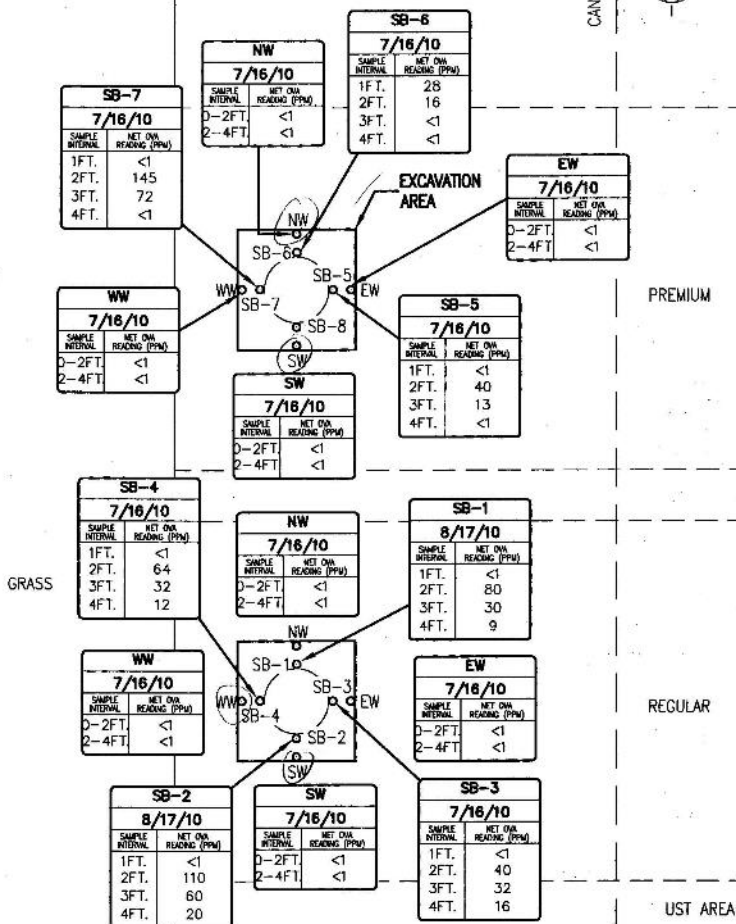
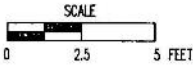
SHARK MART  
9492 90TH AVENUE  
VERO BEACH, FLORIDA INDIAN RIVER COUNTY  
FDEP FAC. ID NO.: 31 9602448

SITE MAP

FIGURE

1

PROJECT NO.  
25740.00



**LEGEND**

○ SOIL SAMPLE LOCATION

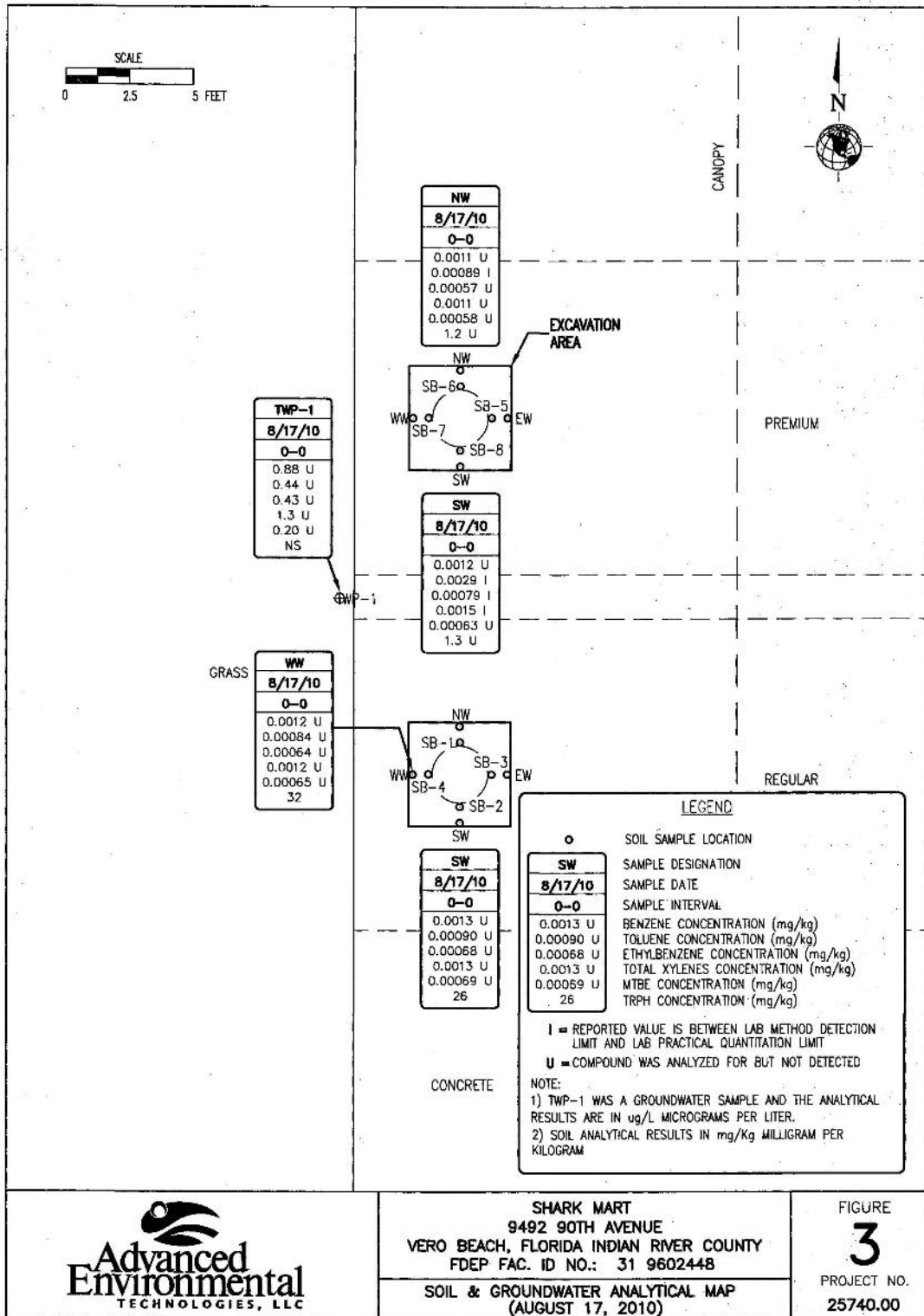
NW	
7/16/10	
SAMPLE INTERVAL	NET OVA READING (PPM)
D-2FT	<1
2-4FT	<1

SAMPLE DESIGNATION  
SAMPLE DATE  
\* OVA/FID SCREENING RESULT (PPM)  
\* SAMPLE INTERVALS ARE IN FBLs  
PPM = PARTS PER MILLION  
FBLs = FEET BELOW LAND SURFACE



**SHARK MART**  
 9492 90TH AVENUE  
 VERO BEACH, FLORIDA INDIAN RIVER COUNTY  
 FDEP FAC. ID NO.: 31 9602448  
 SOIL SCREENING SUMMARY  
 (JULY 16 & AUGUST 17, 2010)

FIGURE  
**2**  
 PROJECT NO.  
 25740.00



**TABLES**

**TABLE 1: SOIL SCREENING SUMMARY**

Facility ID#: 31-9602448

Facility Name: SHARK MART

SOIL BORING NUMBER	DATE OF BORING	SAMPLE INTERVAL (ft bls)	OVA SCREENING RESULTS			Lithology/Comments
			Unfiltered Reading (ppm)	Filtered Reading (ppm)	Net Reading (ppm)	
Regular Spill Bucket (SS-1)	8/2/2010	unk			3193	soil sample collected by AFS
Premium Spill Bucket	8/2/2010	unk			75.8	
Diesel Spill Bucket	8/2/2010	unk			0	
SB-1	8/17/2010	1			<1	
		2			80	
		3			30	
		4			9	
SB-2	8/17/2010	1			<1	
		2			110	
		3			60	
		4			20	
SB-3	7/16/2010	1			<1	
		2			40	
		3			32	
		4			16	
SB-4	7/16/2010	1			<1	
		2			64	
		3			32	
		4			12	
SB-5	7/16/2010	1			<1	
		2			40	
		3			13	
		4			<1	
SB-6	7/16/2010	1			28	
		2			16	
		3			<1	
		4			<	
SB-7	7/16/2010	1			<1	
		2			145	
		3			72	
		4			<1	
Premium (North Wall)	7/16/2010	0-2			<1	
		2-4			<1	
Premium (South Wall)	7/16/2010	0-2			<1	
		2-4			<1	
Premium (East Wall)	7/16/2010	0-2			<1	
		2-4			<1	
Premium (West Wall)	7/16/2010	0-2			<1	
		2-4			<1	
Regular (North Wall)	7/16/2010	0-2			<1	
		2-4			<1	
Regular (South Wall)	7/16/2010	0-2			<1	
		2-4			<1	
Regular (East Wall)	7/16/2010	0-2			<1	
		2-4			<1	
Regular (West Wall)	7/16/2010	0-2			<1	
		2-4			<1	

**NOTES:**

ft bls = Feet Below Land Surface  
 ppm = Part Per Million  
 NR = No Response, ND = Not Detected  
 -- = Not measured

**TABLE 2: SOIL ANALYTICAL SUMMARY - Carcinogenic PAHs**

Facility ID#: 31-9602448

Facility Name: SHARK MART

See notes at end of table.

Boring/ Well No.	Sample		OVA		Laboratory Analyses								Comments
	Date Collected	Depth to Water (ft)	Sample Interval (ft)	Net OVA Reading (ppm)	Benzo (a) pyrene (mg/kg)	Benzo (a) anthracene (mg/kg)	Benzo (b) fluoranthene (mg/kg)	Benzo (k) fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenz (a,h) anthracene (mg/kg)	Indeno (1,2,3-cd) pyrene (mg/kg)	Benzo (a) pyrene equivalent (mg/kg)	
REG / W WALL	8/17/2010	7.5	3	<1	0.010 U	0.015 U	0.014 U	0.011 U	0.024 U	0.018 U	0.022 U		
REG / S WALL	8/17/2010	7.5	3	<1	0.010 U	0.015 U	0.014 U	0.012 U	0.025 U	0.018 U	0.023 U		
PREM / N WALL	8/17/2010	7.5	3	<1	0.009 U	0.014 U	0.019 U	0.011 U	0.023 U	0.017 U	0.022 U		
PREM / S WALL	8/17/2010	7.5	3	<1	0.010 U	0.015 U	0.014 U	0.012 U	0.024 U	0.018 U	0.023 U		
Leachability Based on Groundwater Criteria (mg/kg)					6	0.8	2.4	24	77	0.7	6.6	**	
Direct Exposure Residential (mg/kg)					0.1*	#	#	#	#	#	#	0.1	

Notes:  
 NA = Not Available  
 NS = Not Sampled  
 \*\* = Leachability value not applicable  
 # = Direct Exposure value not applicable except as part of the Benzo(a)pyrene equivalent.

If analyte is not detected, report the method detection limit [i.e., 0.01 U or ND(0.01); BDL or <0.01 are not acceptable].

**TABLE 2: SOIL ANALYTICAL SUMMARY - Non-Carcinogenic PAHs**

Facility ID#: 31-9602448

Facility Name: SHARK MART

See notes at end of table.

Sample				OVA	Laboratory Analyses											Comments	
Boring/ Well No.	Date Collected	Depth to Water (ft)	Sample Interval (ft/s)	Net OVA Reading (ppm)	Naph- thalene (mg/kg)	1-Methyl- naph- thalene (mg/kg)	2-Methyl- naph- thalene (mg/kg)	Acen- aph- thene (mg/kg)	Acen- aph- thylene (mg/kg)	Anthra- cene (mg/kg)	Benzo (b,h,i) pety- lene (mg/kg)	Fluoran- thene (mg/kg)	Fluor- ene (mg/kg)	Phenan- threne (mg/kg)	Pyrene (mg/kg)		
Regular Spill Bucket (SS-1)	8/2/2010	unk	unk	3192	1.82	3.02	4.02	0.034 U	0.011 U	0.021 I	0.024 U	0.018 U	0.023 U	0.050 I	0.021 U		
REG / W WALL	8/17/2010	7.5	3	<1	0.020 I	0.19	0.12	0.029 U	0.016 U	0.019 I	0.015 U	0.018 I	0.044 I	0.052 I	0.020 I		
REG / S WALL	8/17/2010	7.5	3	<1	0.012 U	0.019 U	0.012 U	0.012 U	0.017 U	0.017 U	0.018 U	0.014 U	0.018 U	0.014 U	0.017 U		
PREM / N WALL	8/17/2010	7.5	3	<1	0.011 U	0.018 U	0.011 U	0.011 U	0.016 U	0.016 U	0.014 U	0.012 U	0.014 U	0.013 U	0.016 U		
PREM / S WALL	8/17/2010	7.5	3	<1	0.012 U	0.019 U	0.012 U	0.012 U	0.017 U	0.017 U	0.015 U	0.014 U	0.018 U	0.014 U	0.017 U		
Leachability Based on Groundwater Criteria (mg/kg)					1.2	3.1	8.8	2.1	27	2,350	32,000	1,200	150	250	890		
Direct Exposure Residential (mg/kg)					55	200	210	2,400	1,900	21,000	2,500	3,200	2,800	2,200	2,400		

Notes:  
NA = Not Available.  
NS = Not Sampled.

If analyte is not detected, report the method detection limit [i.e., 0.01 U or ND(0.01); BCL or <0.01 are not acceptable].

**TABLE 2: SOIL ANALYTICAL SUMMARY - VOAs, TRPHs and Metals**

Facility ID#: 31-9602448

Facility Name: SHARK MART

See notes at end of table.

Sample				OVA	Laboratory Analyses										Comments
Boring/ Well No.	Date Collected	Depth to Water (ft)	Sample Interval (ft)	Net OVA Reading (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TRPHs (mg/kg)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	
Regular Spill Bucket (SS-1)	9/2/2010	unk	unk	3193	0.768	8.30	3.98	41.8	0.052 U	255					
REG / W WALL	8/17/2010	7.5	3	<1	0.0012 U	0.00084 U	0.00064 U	0.0012 U	0.00066 U	32					
REG / S WALL	8/17/2010	7.5	3	<1	0.0013 U	0.00099 U	0.00098 U	0.0013 U	0.00089 U	26					
PREM / W WALL	8/17/2010	7.5	3	<1	0.0011 U	0.00083 U	0.00087 U	0.0011 U	0.00058 U	1.2 U					
PREM / S WALL	8/17/2010	7.5	3	<1	0.0012 U	0.00091 U	0.00079 U	0.0015 U	0.00083 U	1.3 U					
Leachability Based on Groundwater Criteria (mg/kg)					0.007	0.5	0.6	0.2	0.09	340		7.5	36		
Direct Exposure Residential (mg/kg)					1.2	7,500	1,500	130	4,400	460	2.1	82	210	400	

Notes:  
 NA = Not Available.  
 NS = Not Sampled.  
 \* = Leachability value may be determined using TCLP.

If an analyte is not detected, report the method detection limit [i.e., 0.01 U or ND(0.01); BDL or <0.01 are not acceptable].





**TABLE 3: GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY - PAHs and TRPHs**

Facility ID#: 31-9502448      Facility Name: SHARK MART      See notes at end of table.

Sample Location	Date	TRPHs (µg/L)	Naphthalene (µg/L)	1-Methylnaphthalene (µg/L)	2-Methylnaphthalene (µg/L)	Acenaphthene (µg/L)	Acenaphthylene (µg/L)	Anthracene (µg/L)	Benzo (g,h,i) perylene (µg/L)	Fluoranthene (µg/L)	Fluorene (µg/L)	Phenanthrene (µg/L)	Pyrene (µg/L)	Benzo (k) pyrene (µg/L)	Benzo (a) anthracene (µg/L)	Benzo (b) fluoranthene (µg/L)	Benzo (k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz (a,h) anthracene (µg/L)	Indeno (1,2,3-cd) pyrene (µg/L)
TWP-1	8/17/2010	110 U	0.43 U	0.79 U	0.46 U	0.38 U	0.63 U	0.86 U	0.59 U	0.87 U	0.66 U	0.55 U	0.63 U	0.063 U	0.063 U	0.065 U	0.082 U	0.48 U	0.090 U	0.10 U
<b>GCTLs</b>		5,000	14	28	28	20	210	2,100	210	280	280	210	210	0.2**	0.05*	0.05*	0.5	4.8	0.005*	0.05*
<b>NADCs</b>		50,000	140	280	280	200	2,100	21,000	2,100	2,800	2,800	2,100	2,100	20	5	5	50	480	0.5	5

Notes: NA = Not Available.  
 NS = Not Sampled.  
 GCTLs = Groundwater Cleanup Target Levels specified in Table 1 of Chapter 62-777, F.A.C.  
 NADCs = Natural Attenuation Default Source Concentrations specified in Table V of Chapter 62-777, F.A.C.  
 \*\* = As provided in Chapter 62-550, F.A.C.  
 \* = See the October 12, 2004 "Guidance for the Selection of Analytical Methods and for the Evaluation of Practical Quantitation Limits" to determine how to evaluate data when the CTL is lower than the PQL.

If an analyte is not detected, report the method detection limit (i.e., 0.01 U or ND(0.01); BDL or <0.01 are not acceptable).  
 Freshwater Surface Water (FSW), Marine Surface Water (MSW) and Groundwater of Low Yield/Poor Quality (LY/PQ) CTLs should be added to the base of the table as applicable.

**APPENDIX A**

**EQUIPMENT CALIBRATION RECORDS  
SOIL BORING LOG  
WELL CONSTRUCTION/DEVELOPMENT LOG**







DEP-SOP-001/01  
 FT 1000 General Field Testing and Measurement

Form FD 9000-8: FIELD INSTRUMENT CALIBRATION RECORDS

INSTRUMENT (MAKE/MODEL#) Min Ra-e. INSTRUMENT # P10

PARAMETER: [check only one]

- TEMPERATURE     CONDUCTIVITY     SALINITY     pH     ORP  
 TURBIDITY     RESIDUAL CI     DO     OTHER PIA

STANDARDS: [Specify the type(s) of standards used for calibration, the origin of the standards, the standard values, and the date the standards were prepared or purchased]

Standard A 100% Isobutyl KMR

Standard B \_\_\_\_\_

Standard C \_\_\_\_\_

DATE (yy/mm/dd)	TIME (hr:min)	STD (A, B, C)	STD VALUE	INSTRUMENT RESPONSE	% DEV.	CALIBRATED (YES, NO)	TYPE (INT, CONT)	SAMPLER INITIALS
8-17-0	7:10	A	100%	99.6	.4	Y	INT	Tha
8-17-0	15:00	A	100%	98.0	.2	Y	CONT	Tha

## BORING LOG

Boring/Well Number: <b>TWP-1</b>		Permit Number:		FDEP Facility Identification Number: <b>31-960244B</b>	
Site Name: <b>SHACK MACT</b>		Borehole Start Date: <b>8-17-10</b>		Borehole Start Time: <b>13:00</b> <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	
		End Date: <b>10</b>		End Time: <b>14:00</b> <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	
Environmental Contractor: <b>AET</b>		Geologist's Name:		Environmental Technician's Name: <b>Tony MATINE</b>	
Drilling Company:		Pavement Thickness (inches): <b>6.65</b>		Borehole Diameter (inches): <b>3"</b>	
				Borehole Depth (feet): <b>12'</b>	
Drilling Method(s): <b>Hand Auger</b>		Apparent Borehole DTW (in feet from soil moisture content): <b>8.5'</b>		Measured Well DTW (in feet after water recharges in well): <b>-</b>	
				OVA (list model and check type): <b>minRAE</b> <input type="checkbox"/> FID <input checked="" type="checkbox"/> FID	
Disposition of Drill Cuttings [check method(s)]: <input type="checkbox"/> Drum <input checked="" type="checkbox"/> Spread <input type="checkbox"/> Backfill <input type="checkbox"/> Stockpile <input type="checkbox"/> Other					
<i>(describe if other or multiple items are checked):</i>					
Borehole Completion (check one): <input checked="" type="checkbox"/> Well <input type="checkbox"/> Grout <input type="checkbox"/> Bentonite <input type="checkbox"/> Backfill <input type="checkbox"/> Other (describe)					

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
HA	2'	-	-	CI	-	-	1	0-6" GRASS			
HA	4'	-	-	CI	-	-	2	6" - 4' DARK BLOWN			
							3	in QTZ SANDS			
HA	6'	-	-	CI	-	-	4	4' - 12' - LIGHT TAN			
							5	TO BLOWN. IN			
							6	QTZ SANDS.			
							7	well SORTED			
							8				
							9				
							10				
							11				
							12				

Temp well installed to 12' BT

Sample Type Codes: PH = Post Hole; HA = Hand Auger; SS = Split Spoon; ST = Shelby Tube; DP = Direct Push; SC = Sonic Core; DC = Drill Cuttings  
 Moisture Content Codes: D = Dry; M = Moist; W = Wet; S = Saturated



## WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA					
Well Number: <b>TWP-1</b>		Site Name: <b>SHARK MART</b>		FDEP Facility I.D. Number:	Well Install Date(s): <b>8-17-10</b>
Well Location and Type (check appropriate boxes): <input checked="" type="checkbox"/> On-Site <input type="checkbox"/> Right-of-Way <input type="checkbox"/> Off-Site Private Property <input type="checkbox"/> Above Grade (AG) <input type="checkbox"/> Flush-to-Grade		Well Purpose: <input type="checkbox"/> Perched Monitoring <input checked="" type="checkbox"/> Shallow (Water-Table) Monitoring <input type="checkbox"/> Intermediate or Deep Monitoring <input type="checkbox"/> Remediation or Other (describe)		Well Install Method: <b>Hand Auger</b>	
If AG, list feet of riser above land surface:				Surface Casing Install Method: <b>NA</b>	
Borehole Depth (feet): <b>12'</b>	Well Depth (feet): <b>12'</b>	Borehole Diameter (inches): <b>3"</b>	Manhole Diameter (inches): <b>NA</b>	Well Pad Size: <b>NA</b> feet by <b>NA</b> feet	
Riser Diameter and Material: <b>2" schedule 40</b>		Riser/Screen Connections: <input checked="" type="checkbox"/> Flush-Threaded <input type="checkbox"/> Other (describe)	Riser Length: <b>2</b> feet from <b>0</b> feet to <b>2</b> feet		
Screen Diameter and Material: <b>2" 0.10 slot PVC</b>		Screen Slot Size: <b>0.10</b>	Screen Length: <b>10</b> feet from <b>2</b> feet to <b>10</b> feet		
1 <sup>st</sup> Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary <b>NA</b>		1 <sup>st</sup> Surface Casing I.D. (inches): <b>NA</b>	1 <sup>st</sup> Surface Casing Length: <b>NA</b> feet from <b>0</b> feet to <b>NA</b> feet		
2 <sup>nd</sup> Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary <b>NA</b>		2 <sup>nd</sup> Surface Casing I.D. (inches): <b>NA</b>	2 <sup>nd</sup> Surface Casing Length: <b>NA</b> feet from <b>0</b> feet to <b>NA</b> feet		
3 <sup>rd</sup> Surface Casing Material: also check: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary <b>NA</b>		3 <sup>rd</sup> Surface Casing I.D. (inches): <b>NA</b>	3 <sup>rd</sup> Surface Casing Length: <b>NA</b> feet from <b>0</b> feet to <b>NA</b> feet		
Filter Pack Material and Size: <b>20/30</b>	Prepacked Filter Around Screen (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No		Filter Pack Length: <b>11</b> feet from <b>1</b> feet to <b>11</b> feet		
Filter Pack Seal Material and Size: <b>NA</b>		Filter Pack Seal Length: <b>NA</b> feet from <b>NA</b> feet to <b>NA</b> feet			
Surface Seal Material: <b>NA</b>		Surface Seal Length: <b>NA</b> feet from <b>NA</b> feet to <b>NA</b> feet			

WELL DEVELOPMENT DATA			
Well Development Date: <b>8-17-10</b>		Well Development Method (check one): <input type="checkbox"/> Surge/Pump <input checked="" type="checkbox"/> Pump <input type="checkbox"/> Compressed Air <input type="checkbox"/> Other (describe)	
Development Pump Type (check): <input type="checkbox"/> Submersible <input type="checkbox"/> Other (describe) <input type="checkbox"/> Centrifugal <input checked="" type="checkbox"/> Peristaltic		Depth to Groundwater (before developing in feet): <b>7.5'</b>	
Pumping Rate (gallons per minute): <b>2.5</b>	Maximum Drawdown of Groundwater During Development (feet): <b>1'</b>	Well Purged Dry (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Pumping Condition (check one): <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Intermittent	Total Development Water Removed (gallons): <b>6 galls</b>	Development Duration (minutes): <b>8m</b>	Development Water Drummed (check one): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Water Appearance (color and odor) At Start of Development: <b>Clear / no odor</b>		Water Appearance (color and odor) At End of Development: <b>Clear / no odor.</b>	

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

## GROUNDWATER SAMPLING LOG

SITE NAME: <b>SHACK MART</b>	SITE LOCATION: <b>SEBASTIAN, FL</b>
WELL NO: <b>TWP-1</b>	DATE: <b>8-17-10</b>

### PURGING DATA

WELL DIAMETER (inches): <b>2"</b>	TUBING DIAMETER (inches): <b>1.25</b>	WELL SCREEN INTERVAL DEPTH: <b>2</b> feet to <b>12</b> feet	STATIC DEPTH TO WATER (feet): <b>7.5</b>
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) = ( <b>12</b> feet - <b>7.5</b> feet ) X <b>1.6</b> gallons/foot = <b>0.72</b>			
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) = _____ gallons + ( _____ gallons/foot X _____ feet ) + _____ gallons = _____			

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): <b>9.5'</b>		FINAL PUMP OR TUBING DEPTH IN WELL (feet): <b>9.5'</b>		PURGING INITIATED AT: <b>16:32</b>		PURGING ENDED AT: <b>16:45</b>		TOTAL VOLUME PURGED (gallons):			
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) <small>µmhos/cm or µS/cm</small>	DISSOLVED OXYGEN (circle units) <small>(mg/L or % saturation)</small>	TURBIDITY (NTUs)	COLOR (describe)	OI (det)
16:39	0.72	0.72	1.36	8.94	6.96	28.6	32.6	0.16	19.6	Clear	M
16:41	0.72	1.44	1.36	8.94	6.96	28.6	30.4	0.14	19.7		
16:43	0.72	2.16	1.36	8.94	6.95	28.6	30.4	0.14	12.2		
16:45	0.72	2.88	1.36	8.94	6.95	28.6	30.4	0.12	8.5		

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88  
 TUBING INSIDE DIA. CAPACITY (Gal./FT): 1/8" = 0.0005; 3/16" = 0.0014; 1/4" = 0.0025; 5/16" = 0.004; 3/8" = 0.009; 1/2" = 0.010; 5/8" = 0.011  
 PURGING EQUIPMENT CODES: B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; Q = Other (Specify)

### SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: <b>Tony Matam</b>	SAMPLER(S) SIGNATURE(S): <b>T.M.</b>	SAMPLING INITIATED AT: <b>16:45</b>	SAMPLING ENDED AT: <b>17:00</b>
PUMP OR TUBING DEPTH IN WELL (feet): <b>9.5'</b>	TUBING MATERIAL CODE: <b>PE</b>	FIELD-FILTERED: <b>Y</b> <input type="checkbox"/> <b>N</b> <input type="checkbox"/>	FILTER SIZE: _____
FIELD DECONTAMINATION: PUMP <b>Y</b> <input type="checkbox"/> <b>N</b> <input type="checkbox"/>	TUBING <b>Y</b> <input type="checkbox"/> <b>N</b> (replaced) <input type="checkbox"/>	DUPLICATE: <b>Y</b> <input type="checkbox"/> <b>N</b> <input type="checkbox"/>	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE FLOW R. (ml per ml)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
TWP-1	3	CG	40ml	HCL			8021B	RBPP	50
	1	AG	1L	A2504			FI-Pro	APP	500
	1	AG	1L	ICE			PA+1	APP	500

REMARKS:

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

SAMPLING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailor; BP = Bladder Pump; ESP = Electric Submersible Pump; RFP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); Q = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.  
 2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)  
 pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS-22 optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

**APPENDIX B**  
**COPY OF WASTE MANIFEST**  
**(SOIL DISPOSAL 8/17/2010)**

IMAGE QUALITY

AS YOU VIEW THE FOLLOWING  
DOCUMENT, PLEASE NOTE THAT  
PORTIONS OF THE ORIGINAL WERE OF  
POOR QUALITY

# NON-HAZARDOUS WASTE MANIFEST

M4

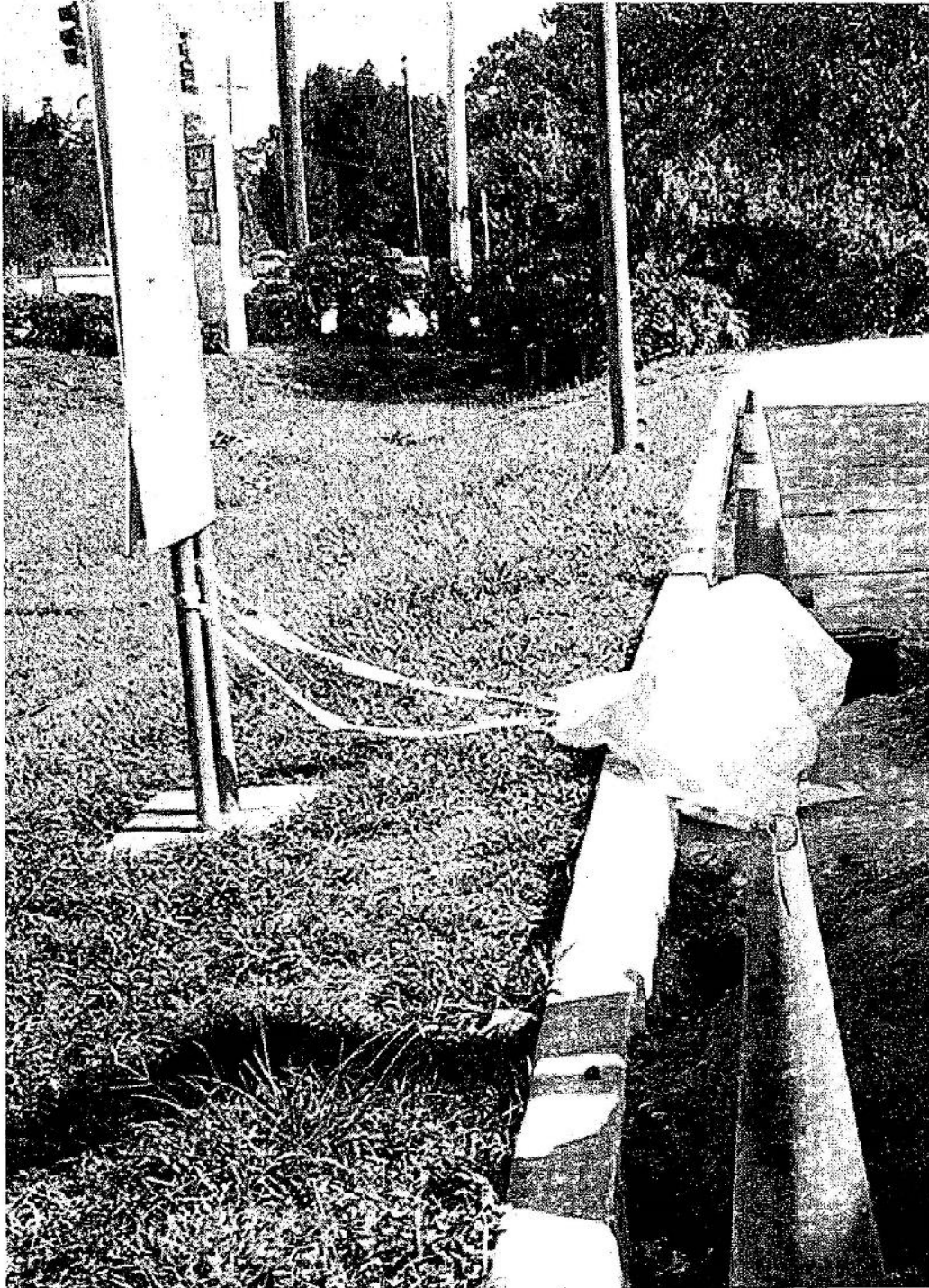
Please print or type (Form designed for use on 11x17 (12 pitch) typewriter)

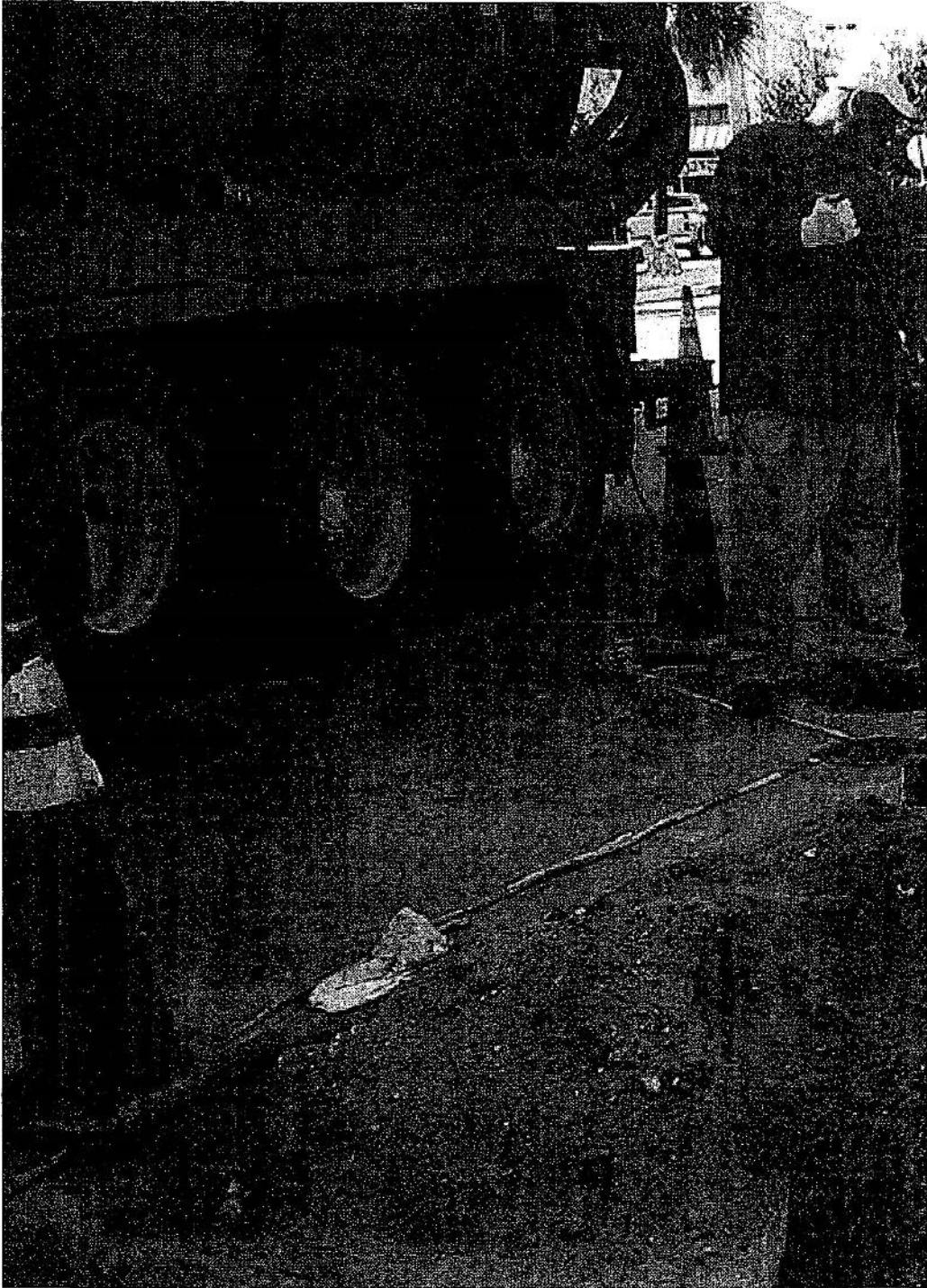
<b>NON-HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No.		Manifest Document No.	2. Page 1 of			
3. Generator's Name and Mailing Address <b>SHARK MART 9490 90th Avenue SEBASTIAN FL</b>		4. Generator's Phone ( )						
5. Transporter 1 Company Name <b>ALWA CLEAR</b>		6. US EPA ID Number <b>FLR000034033</b>		A. State Transporter's ID				
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone				
9. Designated Facility Name and Site Address <b>ALWA CLEAR 3210 WHITTEN RD LAKE PARK FL 33801</b>		10. US EPA ID Number <b>FLR000034033</b>		C. State Transporter's ID				
				D. Transporter 2 Phone				
				E. State Facility's ID				
				F. Facility's Phone: <b>863-644-0665</b>				
11. WASTE DESCRIPTION			12. Containers		13. Total Quantity			
			No.	Type	14. Unit WL/Vol.			
			a. <b>NON HAZ NON REG WASTE material</b>			<b>2</b>	<b>PDS</b>	<b>1000</b>
			b.					
			c.					
d.								
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above					
15. Special Handling Instructions and Additional Information								
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.								
Printed/Typed Name <b>Tom McLaughlin</b>				Date Month Day Year <b>8/17/10</b>				
17. Transporter 1 Acknowledgement of Receipt of Materials				Date				
Printed/Typed Name <b>Joseph K. Haggan</b>				Signature <i>Joseph K. Haggan</i>				
18. Transporter 2 Acknowledgement of Receipt of Materials				Date				
Printed/Typed Name				Signature				
19. Discrepancy Indication Space								
20. Facility Owner or Operator, Certification of receipt of the waste materials covered by this manifest, except as noted in Item 19.								
Printed/Typed Name <b>MILE ZIMMER</b>				Date Month Day Year <b>8/17/10</b>				
Signature <i>Mile Zimmer</i>								

NON-HAZARDOUS WASTE

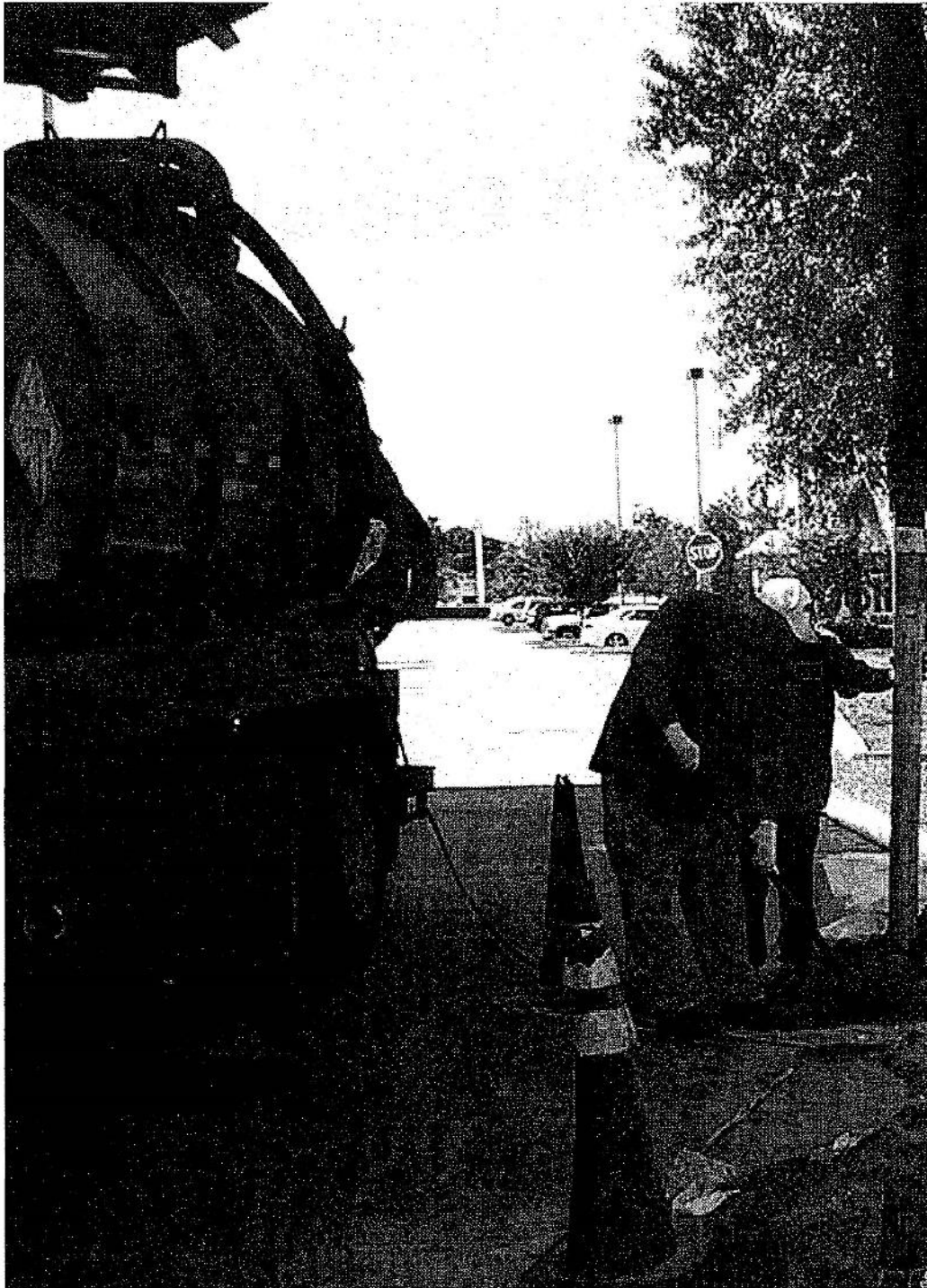


**APPENDIX C**  
**PHOTOGRAPHS**  
**(LTD SOURCE SOIL REMOVAL 8/17/2010)**















**APPENDIX D**

**LABORATORY ANALYTICAL REPORTS  
AND CHAIN OF CUSTODY RECORDS  
(SOIL AND GROUNDWATER)**



ENVIRONMENTAL TESTING LABORATORIES, INC.  
412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

DATE REPORTED: 8/24/2010

MR. JOHN MARKS  
ADVANCED ENVIRONMENTAL TECHNOLOGIES  
4265 NEW TAMPA HIGHWAY  
LAKELAND, FL 33815

**ETL PROJECT NUMBER: 10-2204**  
**CLIENT PROJECT ID: M-3986.00**  
**CLIENT FACILITY ID: 31-9602448**  
**CLIENT FACILITY NAME: SHARK MART**

DEAR MR. JOHN MARKS:

Enclosed are the analytical results for sample(s) received by Environmental Testing Laboratories on August 19, 2010. Results reported herein are reported on an as received basis and conform to current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Sample analyses performed by Environmental Testing Laboratories, Inc. (ETL) unless otherwise noted. ETL is accredited through NELAC and the Florida Department of Health, Certification #E87684. Scope of analyses: RCRA/CERCLA Metals, General Chemistry, Extractable Organics, and Volatile Organics. Effective Dates: February 14, 2002 through June 30, 2011.

If you have any questions concerning this report, please feel free to contact me.

Respectfully Submitted,

**Brad  
Williams**

Digitally signed by Brad Williams  
DN: cn=Brad Williams,  
o=Environmental Testing  
Laboratories, ou=ETL,  
email=bwilliams@etl-inc.com, c=US  
Date: 2010.08.24 10:14:01 -0400

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

**REPORT OF LABORATORY ANALYSIS**

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ENVIRONMENTAL TESTING LABORATORIES INC

Laboratory Project#: 10-2204

Client Project / Site Name SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.  
412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

## PROJECT NOTE SUMMARY

### GENERAL

#### GENERAL

- Solid samples are reported on a dry-weight basis unless otherwise noted.
- (S\$) Denotes an ETL Laboratory Surrogate Compound
- Environmental Testing Laboratories, Inc. is accredited through NELAC and the Florida Department of Health, Certification #E87684
- Refer to Section 4.0 of the ETL Quality Assurance Manual for measure of uncertainty
- All analyses performed using EPA or FL-DEP method and certified to meet NELAC requirements except as noted.

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

### METHOD SUMMARY

Laboratory Name: ENVIRONMENTAL TESTING LABORATORIES - THOMASVILLE, GA

Certification #: E87684

Analyte	Method	Description	Matrix
		As Reported by ETL - 3510 / FL-PRO-DEP - Total Residual Petroleum Hydrocarbons	Ground Water
		As Reported by ETL - 3510 / 8270C - Polycyclic Aromatic Hydrocarbons by GC/MS	Ground Water
		As Reported by ETL - 5035 / 8021B - Volatiles by Gas Chromatography/PID/ECLD	Soil
		As Reported by ETL - 5030 / 8021B - Volatiles by Gas Chromatography/PID/ECLD	Ground Water
		As Reported by ETL - 3550 / 8270C - Polycyclic Aromatic Hydrocarbons by GC/MS	Soil
		As Reported by ETL - 3550 / FL-PRO-DEP - Total Residual Petroleum Hydrocarbons	Soil

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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FL NEL AP #E87684





ENVIRONMENTAL TESTING LABORATORIES INC.

Laboratory Project#: 10-2204

Client Project / Site Name: SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.  
412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

### SAMPLE SUMMARY

Laboratory Sample ID	Client Sample ID / Location	Sample Matrix / Description	Grab / Composite	Date / Time Sampled	Date Received
106847	TWP-1	GW - Ground Water	G	08/17/2010 - 16:00	08/19/2010
106848	REG / W WALL	SO - Soil	G	08/17/2010 - 14:00	08/19/2010
106849	REG / S WALL	SO - Soil	G	08/17/2010 - 14:20	08/19/2010
106850	PREM / N WALL	SO - Soil	G	08/17/2010 - 13:10	08/19/2010
106851	PREM / S WALL	SO - Soil	G	08/17/2010 - 13:40	08/19/2010

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

EXECUTIVE SUMMARY

Analyte	CAS#	Result	Qualifier	PQL	Units	Method
<b>REG / W WALL - Laboratory ID# 106848</b>						
NAPHTHALENE	91-20-3	0.020	I	0.084	mg/kg*dw	8270C
ACENAPHTHENE	83-32-9	0.029	I	0.084	mg/kg*dw	8270C
FLUORENE	86-73-7	0.044	I	0.084	mg/kg*dw	8270C
PHENANTHRENE	85-01-8	0.052	I	0.084	mg/kg*dw	8270C
ANTHRACENE	120-12-7	0.019	I	0.084	mg/kg*dw	8270C
FLUORANTHENE	206-44-0	0.018	I	0.084	mg/kg*dw	8270C
1-METHYLNAPHTHALENE	90-12-0	0.19		0.084	mg/kg*dw	8270C
2-METHYLNAPHTHALENE	91-57-6	0.12		0.084	mg/kg*dw	8270C
PYRENE	129-00-0	0.020	I	0.084	mg/kg*dw	8270C
DRO (C10-C28)		18		4.1	mg/kg*dw	FL-PRO-DEP
TRO (C28-C40)		15		4.1	mg/kg*dw	FL-PRO-DEP
TOTAL PRO (C8-C40)		32		4.1	mg/kg*dw	FL-PRO-DEP
<b>REG / S WALL - Laboratory ID# 106849</b>						
DRO (C10-C28)		9.5		4.3	mg/kg*dw	FL-PRO-DEP
TRO (C28-C40)		17		4.3	mg/kg*dw	FL-PRO-DEP
TOTAL PRO (C8-C40)		26		4.3	mg/kg*dw	FL-PRO-DEP
<b>PREM / N WALL - Laboratory ID# 106850</b>						
TOLUENE	108-88-3	0.00089	I	0.0048	mg/kg*dw	8021B
<b>PREM / S WALL - Laboratory ID# 106851</b>						
TOLUENE	108-88-3	0.0029	I	0.0054	mg/kg*dw	8021B
ETHYLBENZENE	100-41-4	0.00079	I	0.0054	mg/kg*dw	8021B
TOTAL XYLENES	1330-20-7	0.0015	I	0.011	mg/kg*dw	8021B

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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Laboratory Project#: 10-2204

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412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106847

Sample Time: 16:00

Grab or Composite: G

Client Sample ID: TWP-1

Sample Date: 8/17/2010

Matrix: GW

Client Sample Location:

Date Received: 08/19/2010

Volatiles by Gas Chromatography/PID/ECLD

Preparation Method / Date: NA

InstrumentID: GC101VPID\

Extraction Method / Date: 5030 - 08/19/2010

DataFile: PID-58755

Sample Volume (L): 0.0050

Analysis Method / Date: 8021B - 08/19/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include METHYL-TERT-BUTYL ETHER, BENZENE, TOLUENE, ETHYLBENZENE, TOTAL XYLENES, and A.A.A-TRIFLUOROTOLUENE (SS).

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA

InstrumentID: GC105IMS\

Extract Volume (mL): 0.50

Extraction Method / Date: 3510 - 08/23/2010

DataFile: 106847.D

Sample Volume (L): 0.50

Analysis Method / Date: 8270C - 08/23/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include NAPHTHALENE, ACENAPHTHYLENE, ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLUORANTHENE, 1-METHYLNAPHTHALENE, 2-METHYLNAPHTHALENE, PYRENE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLUORANTHENE, BENZO(K)FLUORANTHENE, BENZO(A)PYRENE, and INDENO(1,2,3-CD)PYRENE.

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

REPORT OF LABORATORY ANALYSIS

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FL NELAP #E87684



ENVIRONMENTAL TESTING LABORATORIES INC

Laboratory Project#: 10-2204

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412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106847

Sample Time: 16:00

Grab or Composite: G

Client Sample ID: TWP-1

Sample Date: 8/17/2010

Matrix: GW

Client Sample Location:

Date Received: 08/19/2010

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA

InstrumentID: GC105MS1

Extract Volume (mL): 0.50

Extraction Method / Date: 3510 - 08/23/2010

DataFile: 106847.D

Sample Volume (L): 0.50

Analysis Method / Date: 8270C - 08/23/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include DIBENZ(A,H)ANTHRACENE, BENZO(G,H,I)PERYLENE, NITROBENZENE-D5 (S\$), 2-FLUOROBIPHENYL (S\$), and P-TERPHENYL-D14 (S\$).

Total Residual Petroleum Hydrocarbons

Preparation Method / Date: NA

InstrumentID: GC103\FID1

Extract Volume (mL): 0.50

Extraction Method / Date: 3510 - 08/19/2010

DataFile: 41109

Sample Volume (L): 0.44

Analysis Method / Date: FL-PRO-DEP - 08/20/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include GRO (C8-C10), DRO (C10-C28), TRO (C28-C40), TOTAL PRO (C8-C40), O-TERPHENYL (S\$), and NONATRIACONTANE (S\$).

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

REPORT OF LABORATORY ANALYSIS

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ENVIRONMENTAL TESTING LABORATORIES INC

Laboratory Project#: 10-2204

Client Project / Site Name SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.
412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106848

Sample Time: 14:00

Grab or Composite: G

Client Sample ID: REG / W WALL

Sample Date: 8/17/2010

Matrix: SO

Client Sample Location:

Date Received: 08/19/2010

Percent Moisture: 20 %

Volatiles by Gas Chromatography/PID/ECLD

Preparation Method / Date: NA

InstrumentID: GC1081

Extraction Method / Date: 5035 - 08/19/2010

DataFile: 1H1912.D

Sample Weight (g): 5.71

Analysis Method / Date: 8021B - 08/19/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include METHYL-TERT-BUTYL ETHER, BENZENE, TOLUENE, ETHYLBENZENE, TOTAL XYLENES, and A,A,A-TRIFLUOROTOLUENE (\$\$).

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA

InstrumentID: GC105MS1

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 106848.D

Sample Weight (g): 30

Analysis Method / Date: 8270C - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include NAPHTHALENE, ACENAPHTHYLENE, ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLUORANTHENE, 1-METHYLNAPHTHALENE, 2-METHYLNAPHTHALENE, PYRENE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLUORANTHENE, BENZO(K)FLUORANTHENE, BENZO(A)PYRENE, and INDENO(1,2,3-CD)PYRENE.

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

REPORT OF LABORATORY ANALYSIS

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FL NELAP #E87684



ENVIRONMENTAL TESTING LABORATORIES INC

Laboratory Project#: 10-2204

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412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106848

Sample Time: 14:00

Grab or Composite: G

Client Sample ID: REG / W WALL

Sample Date: 8/17/2010

Matrix: SO

Client Sample Location:

Date Received: 08/19/2010

Percent Moisture: 20 %

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA

InstrumentID: GC105MS1

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 106848.D

Sample Weight (g): 30

Analysis Method / Date: 8270C - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include DIBENZ(A,H)ANTHRACENE, BENZO(G,H,I)PERYLENE, NITROBENZENE-D5 (S\$), 2-FLUOROBIPHENYL (S\$), and P-TERPHENYL-D14 (S\$).

Total Residual Petroleum Hydrocarbons

Preparation Method / Date: NA

InstrumentID: GC103\FIDA

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 41130

Sample Weight (g): 30

Analysis Method / Date: FL-PRO-DEP - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include GRO (C8-C10), DRO (C10-C28), TRO (C28-C40), TOTAL PRO (C8-C40), O-TERPHENYL (S\$), and NONATRIACONTANE (S\$).

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

REPORT OF LABORATORY ANALYSIS

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FL NELAP #E87684



ENVIRONMENTAL TESTING LABORATORIES INC

Laboratory Project#: 10-2204

Client Project / Site Name SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.
412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106849

Sample Time: 14:20

Grab or Composite: G

Client Sample ID: REG / S WALL

Sample Date: 8/17/2010

Matrix: SO

Client Sample Location:

Date Received: 08/19/2010

Percent Moisture: 23 %

Volatiles by Gas Chromatography/PID/ECLD

Preparation Method / Date: NA

InstrumentID: GC081

Extraction Method / Date: 5035 - 08/19/2010

DataFile: 1H1913.D

Sample Weight (g): 5.54

Analysis Method / Date: 8021B - 08/19/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include METHYL-TERT-BUTYL ETHER, BENZENE, TOLUENE, ETHYLBENZENE, TOTAL XYLENES, and A,A-A-TRIFLUOROTOLUENE (S\$).

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA

InstrumentID: GC105IMS\

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 106849.D

Sample Weight (g): 30

Analysis Method / Date: 8270C - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include NAPHTHALENE, ACENAPHTHYLENE, ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLUORANTHENE, 1-METHYLNAPHTHALENE, 2-METHYLNAPHTHALENE, PYRENE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLUORANTHENE, BENZO(K)FLUORANTHENE, BENZO(A)PYRENE, and INDENO(1,2,3-CD)PYRENE.

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

REPORT OF LABORATORY ANALYSIS

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PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106849

Sample Time: 14:20

Grab or Composite: G

Client Sample ID: REG / S WALL

Sample Date: 8/17/2010

Matrix: SO

Client Sample Location:

Date Received: 08/19/2010

Percent Moisture: 23 %

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA

InstrumentID: GC05MS1

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 106849.D

Sample Weight (g): 30

Analysis Method / Date: 8270C - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include DIBENZ(A,H)ANTHRACENE, BENZO(G,H,I)PERYLENE, NITROBENZENE-D6 (S\$), 2-FLUOROBIPHENYL (S\$), and P-TERPHENYL-D14 (S\$).

Total Residual Petroleum Hydrocarbons

Preparation Method / Date: NA

InstrumentID: GC03\FID1

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 41131

Sample Weight (g): 30

Analysis Method / Date: FL-PRO-DEP - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include GRO (C8-C10), DRO (C10-C28), TRO (C28-C40), TOTAL PRO (C8-C40), O-TERPHENYL (S\$), and NONATRIACONTANE (S\$).

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106850 Sample Time: 13:10 Grab or Composite: G
Client Sample ID: PREM / N WALL Sample Date: 8/17/2010 Matrix: SO
Client Sample Location: Date Received: 08/19/2010 Percent Moisture: 17 %

Volatiles by Gas Chromatography/PID/ECLD

Preparation Method / Date: NA InstrumentID: GC1081
Extraction Method / Date: 5035 - 08/19/2010 DataFile: 1H1914.D Sample Weight (g): 6.19
Analysis Method / Date: 8021B - 08/19/2010
Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include METHYL-TERT-BUTYL ETHER, BENZENE, TOLUENE, ETHYLBENZENE, TOTAL XYLENES, and A,A,A-TRIFLUOROTOLUENE (S\$).

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA InstrumentID: GC105MS1 Extract Volume (mL): 1.0
Extraction Method / Date: 3550 - 08/20/2010 DataFile: 106850.D Sample Weight (g): 30
Analysis Method / Date: 8270C - 08/21/2010
Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include NAPHTHALENE, ACENAPHTHYLENE, ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLUORANTHENE, 1-METHYLNAPHTHALENE, 2-METHYLNAPHTHALENE, PYRENE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLUORANTHENE, BENZO(K)FLUORANTHENE, BENZO(A)PYRENE, and INDENO(1,2,3-CD)PYRENE.

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106850 Sample Time: 13:10 Grab or Composite: G
Client Sample ID: PREM / N WALL Sample Date: 8/17/2010 Matrix: SO
Client Sample Location: Date Received: 08/19/2010 Percent Moisture: 17 %

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA InstrumentID: GC105MS1 Extract Volume (mL): 1.0
Extraction Method / Date: 3550 - 08/20/2010 DataFile: 106850.D Sample Weight (g): 30
Analysis Method / Date: 8270C - 08/21/2010
Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include DIBENZ(A,H)ANTHRACENE, BENZO(G,H,I)PERYLENE, NITROBENZENE-D5 (S\$), 2-FLUOROBIPHENYL (S\$), and P-TERPHENYL-D14 (S\$).

Total Residual Petroleum Hydrocarbons

Preparation Method / Date: NA InstrumentID: GC103FID1 Extract Volume (mL): 1.0
Extraction Method / Date: 3550 - 08/20/2010 DataFile: 41133 Sample Weight (g): 30
Analysis Method / Date: FL-PRO-DEP - 08/21/2010
Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include GRO (C8-C10), DRO (C10-C28), TRO (C28-C40), TOTAL PRO (C8-C40), O-TERPHENYL (S\$), and NONATRIACONTANE (S\$).

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor
Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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PHONE: (229)-228-2592
FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106851

Sample Time: 13:40

Grab or Composite: G

Client Sample ID: PREM / S WALL

Sample Date: 8/17/2010

Matrix: SO

Client Sample Location:

Date Received: 08/19/2010

Percent Moisture: 22 %

Volatiles by Gas Chromatography/PID/EGLD

Preparation Method / Date: NA

InstrumentID: GC1081

Extraction Method / Date: 5035 - 08/19/2010

DataFile: 1H1915.D

Sample Weight (g): 5.96

Analysis Method / Date: 8021B - 08/19/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include METHYL-TERT-BUTYL ETHER, BENZENE, TOLUENE, ETHYLBENZENE, TOTAL XYLENES, and A,A-A-TRIFLUOROTOLUENE (S\$).

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA

InstrumentID: GC105MS1

Extract Volume (mL): 1.0

Extraction Method / Date: 3550 - 08/20/2010

DataFile: 106851.D

Sample Weight (g): 30

Analysis Method / Date: 8270C - 08/21/2010

Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include NAPHTHALENE, ACENAPHTHYLENE, ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLUORANTHENE, 1-METHYLNAPHTHALENE, 2-METHYLNAPHTHALENE, PYRENE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLUORANTHENE, BENZO(K)FLUORANTHENE, BENZO(A)PYRENE, and INDENO(1,2,3-CD)PYRENE.

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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FAX: (229)-228-2594

ANALYTICAL DATA

Laboratory Sample Number: 106851 Sample Time: 13:40 Grab or Composite: G
Client Sample ID: PREM / S WALL Sample Date: 8/17/2010 Matrix: SO
Client Sample Location: Date Received: 08/19/2010 Percent Moisture: 22 %

Polycyclic Aromatic Hydrocarbons by GC/MS

Preparation Method / Date: NA InstrumentID: GC105MS1 Extract Volume (mL): 1.0
Extraction Method / Date: 3550 - 08/20/2010 DataFile: 106851.D Sample Weight (g): 30
Analysis Method / Date: 8270C - 08/21/2010
Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include DIBENZ(A,H)ANTHRACENE, BENZO(G,H,I)PERYLENE, NITROBENZENE-D5 (S\$), 2-FLUOROBIPHENYL (S\$), and P-TERPHENYL-D14 (S\$).

Total Residual Petroleum Hydrocarbons

Preparation Method / Date: NA InstrumentID: GC103FID1 Extract Volume (mL): 1.0
Extraction Method / Date: 3550 - 08/20/2010 DataFile: 41134 Sample Weight (g): 30
Analysis Method / Date: FL-PRO-DEP - 08/21/2010
Analysis Time:

Table with 8 columns: ANALYTE, CAS No., RESULT, DF, MDL, PQL, UNITS, ANALYST. Rows include GRO (C8-C10), DRO (C10-C28), TRO (C28-C40), TOTAL PRO (C8-C40), O-TERPHENYL (S\$), and NONATRIACONTANE (S\$).

PQL = Practical Quantitation Limit; MDL = Method Detection Limit; DF = Dilution Factor
Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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Laboratory Project#: 10-2204

Client Project / Site Name: SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.  
412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

QUALITY CONTROL DATA

BatchID: LBTXA081910 Prep / Extraction / Analysis Method: SW-846-5030 / SW-846-8021B

ClockID: LBTXA081810 Associated Samples: 106780 106781 106782 106783 106784 106785 106786 106787 106788 106789 106790 106847

QCID: LBTXA081910MBLK	Blank Prep/Extraction Date: 08/19/2010			
QCDescription: METHOD BLANK	Blank Analysis Date: 08/19/2010			
Data File(s): PID-68744	InstrumentID: GC101(PID)			
Analyte	MDL	Blank Result	PQL	Units
METHYL-TERT-BUTYL ETHER	0.20	0.20 U	1.0	ug/L
BENZENE	0.88	0.88 U	1.0	ug/L
TOLUENE	0.44	0.44 U	1.0	ug/L
ETHYLBENZENE	0.43	0.43 U	1.0	ug/L
TOTAL XYLENES	1.3	1.3 U	2.0	ug/L

QCID: LBTXA081910LCS	LCS Prep/Extraction Date: 08/19/2010			LCSD Prep/Extraction Date: 08/19/2010			
QCDescription: LAB CONTROL STANDARD / DUPLICATE	LCS Analysis Date: 08/19/2010			LCSD Analysis Date: 08/19/2010			
Data File(s): PID-58741 / PID-58742	InstrumentID: GC101(PID)						
Analyte	Spike Amount	LCS Result	LCS %Recovery	LCSD Result	LCSD %Recovery	LCSD %RPD	%Rec. / %RPD Limit
METHYL-TERT-BUTYL ETHER	50.0ug/L / 50.0ug/L	45.5ug/L	91%	47.1ug/L	94%	3%	70-130% / 20%RPD
BENZENE	100ug/L / 100ug/L	98.5ug/L	100%	102ug/L	102%	2%	70-130% / 20%RPD
TOLUENE	50.0ug/L / 50.0ug/L	49.6ug/L	99%	51.1ug/L	102%	3%	70-130% / 20%RPD
ETHYLBENZENE	50.0ug/L / 50.0ug/L	47.3ug/L	95%	48.5ug/L	97%	3%	70-130% / 20%RPD
TOTAL XYLENES	150ug/L / 150ug/L	150ug/L	100%	154ug/L	103%	3%	70-130% / 20%RPD

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

REPORT OF LABORATORY ANALYSIS

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 Laboratory Project#: 10-2204  
 Client Project / Site Name SHARK MART

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 412 WEST WALCOTT STREET  
 THOMASVILLE, GA 31792  
 PHONE: (229)-228-2592  
 FAX: (229)-228-2594

QUALITY CONTROL DATA

BatchID: LBTXA081910 Prep/Extraction/Analysis Method: SW-846.5030 / SW-846.8021B

ClockID: LBTXA081910 Associated Samples: 106780 106781 106782 106783 106784 106785 106786 106787 106788 106789 106790 106847

QCID: LBTXA081910MS	MS Prep/Extraction Date: 08/20/2010		MSD Prep/Extraction Date: 08/20/2010					
QCDescription: MATRIX SPIKE / DUPLICATE	MS Analysis Date: 08/20/2010		MSD Analysis Date: 08/20/2010					
Data File(s): PID-58790 / PID-58791	InstrumentID: GC101PID1							
Analyte	Native Result	Spike Amount	MS Result	MS %Recovery	MSD Result	MSD %Recovery	MSD %RPD	%Rec. / %RPD Limit
METHYL-TERT-BUTYL ETHER	0ug/L	25.0ug/L / 25.0ug/L	20.7ug/L	83%	20.3ug/L	81%	2 %	70-130% / 20%RPD
BENZENE	0ug/L	50.0ug/L / 50.0ug/L	46.4ug/L	93%	44.8ug/L	90%	4 %	70-130% / 20%RPD
TOLUENE	0ug/L	25.0ug/L / 25.0ug/L	23.3ug/L	93%	22.4ug/L	90%	4 %	70-130% / 20%RPD
ETHYLBENZENE	0ug/L	28.0ug/L / 28.0ug/L	18.3ug/L	73%	17.2ug/L	69% *J	6 %	70-130% / 20%RPD
TOTAL XYLENES	0ug/L	78ug/L / 75ug/L	70.8ug/L	84%	66.5ug/L	83%	6 %	70-130% / 20%RPD

Report Date: 9/24/2010 - Revision #: 0 - Revision Date:

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Laboratory Project#: 10-2204

Client Project / Site Name SHARK MART

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412 WEST WALCOTT STREET  
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PHONE: (229)-228-2592  
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QUALITY CONTROL DATA

BatchID: SBTXA081910 Prep/Extraction/Analysis Method: SW-846 5025 / SW-846 8260B

ClientID: SBTXAD81910 Associated Samples: 106846 106848 106849 106850 106861

QCID: SBTXA081910MBLK		Blank Prep/Extraction Date: 08/19/2010		
QCDescription: METHOD BLANK		Blank Analysis Date: 08/19/2010		
Data File(s): 1H1911.D		InstrumentID: GC1081		
Analyte	MDL	Blank Result	PQL	Units
METHYL-TERT-BUTYL ETHER	0.00099	0.00099 U	0.0050	mg/kg
BENZENE	0.0011	0.0011 U	0.0020	mg/kg
TOLUENE	0.00077	0.00077 U	0.0050	mg/kg
ETHYLBENZENE	0.00058	0.00058 U	0.0050	mg/kg
TOTAL XYLENES	0.0011	0.0011 U	0.010	mg/kg

QCID: SBTXA081910LCS		LCS Prep/Extraction Date: 08/19/2010			LCS Prep/Extraction Date: 08/19/2010		
QCDescription: LAB CONTROL STANDARD / DUPLICATE		LCS Analysis Date: 08/19/2010			LCS Analysis Date: 08/19/2010		
Data File(s): 1H1908.D / 1H1909.D		InstrumentID: GC1081					
Analyte	Spike Amount	LCS Result	LCS %Recovery	LCS/D Result	LCS/D %Recovery	LCS/D %RPD	%Rec. / %RPD Limit
METHYL-TERT-BUTYL ETHER	0.100mg/kg / 0.100mg/kg	0.103mg/kg	103%	0.101mg/kg	101%	2%	60-130% / 35%RPD
BENZENE	0.200mg/kg / 0.200mg/kg	0.196mg/kg	98%	0.192mg/kg	96%	2%	60-130% / 35%RPD
TOLUENE	0.100mg/kg / 0.100mg/kg	0.0987mg/kg	99%	0.097mg/kg	97%	2%	60-130% / 35%RPD
ETHYLBENZENE	0.100mg/kg / 0.100mg/kg	0.0991mg/kg	99%	0.0873mg/kg	87%	2%	60-130% / 35%RPD
TOTAL XYLENES	0.300mg/kg / 0.300mg/kg	0.297mg/kg	99%	0.292mg/kg	97%	2%	60-130% / 35%RPD

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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QUALITY CONTROL DATA

BatchID: SPAHA082010 Prep/Extraction/Analysis Method: SW-846 3550 / SW-846 8270C

ClientID: SPAHA082010 Associated Samples: 106559 106580 106632 106633 106634 106635 106702 106703 106704 106705 106706 106738 106844 106845  
 106846 106848 106849 106850 106851

Analyte	MDL	Blank Result	PQL	Units
NAPHTHALENE	0.0090	0.0090 U	0.067	mg/kg
ACENAPHTHYLENE	0.013	0.013 U	0.067	mg/kg
ACENAPHTHENE	0.0090	0.0090 U	0.067	mg/kg
FLUORENE	0.012	0.012 U	0.067	mg/kg
PHENANTHRENE	0.011	0.011 U	0.067	mg/kg
ANTHRACENE	0.013	0.013 U	0.067	mg/kg
FLUORANTHENE	0.011	0.011 U	0.067	mg/kg
1-METHYLNAPHTHALENE	0.015	0.015 U	0.067	mg/kg
2-METHYLNAPHTHALENE	0.0090	0.0090 U	0.067	mg/kg
PYRENE	0.013	0.013 U	0.067	mg/kg
BENZO(A)ANTHRACENE	0.012	0.012 U	0.067	mg/kg
CHRYSENE	0.019	0.019 U	0.067	mg/kg
BENZO(B)FLUORANTHENE	0.011	0.011 U	0.067	mg/kg
BENZO(K)FLUORANTHENE	0.0080	0.0080 U	0.067	mg/kg
BENZO(A)PYRENE	0.0080	0.0080 U	0.067	mg/kg
INDENO(1,2,3-CD)PYRENE	0.018	0.018 U	0.067	mg/kg
DIBENZO(A,H)ANTHRACENE	0.014	0.014 U	0.067	mg/kg
BENZO(G,H)PERYLENE	0.012	0.012 U	0.067	mg/kg

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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412 WEST WALCOTT STREET
THOMASVILLE, GA 31702
PHONE: (229)-228-2592
FAX: (229)-228-2594

QUALITY CONTROL DATA

Batch ID: SPAHA082010 Prep / Extraction / Analysis Method: SW-846.3550 / SW-846.8270C

Client ID: SPAHA082010 Associated Samples: 106559 106580 106632 106633 106634 106635 106702 106703 106704 106705 106706 106738 106844 106845
106846 106848 106849 106850 106861

Table with columns: Analyte, Spike Amount, LCS Result, LCS %Recovery, LCS Result, LCS %Recovery, LCS %RPD, %Rec. / %RPD Limit. Rows include various polycyclic aromatic hydrocarbons like NAPHTHALENE, ACENAPHTHYLENE, etc.

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

REPORT OF LABORATORY ANALYSIS

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ENVIRONMENTAL TESTING LABORATORIES, INC.

Laboratory Project#: 10-2204

Client Project / Site Name SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.
412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

QUALITY CONTROL DATA

Batch ID: SPAHA082010 Prep/Extraction/Analysis Method: SW-846/3550/ SW-846/8270C

ClockID: SPAHA082010 Associated Samples: 106558 106560 106632 106633 106634 106635 106702 106703 106704 106705 106706 106738 106844 106845
106846 106848 106849 106850 106851

Table with columns: Analyte, Native Result, Spike Amount, MS Result, MS %Recovery, MSD Result, MSD %Recovery, MS/D %RPD, %Rec. / %RPD Limit. Rows include NAPHTHALENE, ACENAPHTHYLENE, ACENAPHTHENE, FLUORENE, PHENANTHRENE, ANTHRACENE, FLUORANTHENE, 1-METHYLNAPHTHALENE, 2-METHYLNAPHTHALENE, PYRENE, BENZO(A)ANTHRACENE, CHRYSENE, BENZO(B)FLUORANTHENE, BENZO(K)FLUORANTHENE, BENZO(A)PYRENE, INDENO(1,2,3-CD)PYRENE, DIBENZO(A,H)ANTHRACENE, BENZO(G,H)PERYLENE.

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

QUALITY CONTROL DATA

Batch ID: SPAHA082010 Prep / Extraction / Analysis Method: SW-846 3550 / SW-846 8270C

ClockID: SPAHA082010 Associated Samples: 106559 106560 106632 106633 106934 106635 106702 106703 106704 106705 106706 106738 106844 106845
106846 106848 106849 106850 106851

Table with 5 columns: Analyte, Native Result, Dup Result, Sample/Dup %RSD, %RPD Limit. Rows include various chemical compounds like NAPHTHALENE, ACENAPHTHYLENE, etc.

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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 412 WEST WALCOTT STREET  
 THOMASVILLE, GA 31792  
 PHONE: (229)-228-2592  
 FAX: (229)-228-2594

QUALITY CONTROL DATA

Batch ID: SPROA082010 Prep / Extraction / Analysis Method: SW 848:3550 (EDEP FL) PRO

ClockID: SPROA082010 Associated Samples: 106559 106560 106632 106633 106634 106635 106702 106703 106704 106705 106706 106736 106844 106845  
 106846 106848 106849 106850 106851

Analyte	MDL	Blank Result	PQL	Units
QCID: SPROA082010MBLK QCDescription: METHOD BLANK Data File(s): 41113				
Blank Prep/Extraction Date: 08/20/2010 Blank Analysis Date: 08/21/2010 InstrumentID: GC103\FID1				
GR0 (C6-C10)	1.0	1.0 U	3.3	mg/kg
DRO (C10-C28)	1.0	1.0 U	3.3	mg/kg
TRO (C28-C40)	1.0	1.0 U	3.3	mg/kg
TOTAL PRO (C6-C40)	1.0	1.0 U	3.3	mg/kg

Analyte	Spike Amount	LCS Result	LCS %Recovery	LCSD Result	LCSD %Recovery	LCS/D %RPD	%Rec. / %RPD Limit
QCID: SPROA082010LCS QCDescription: LAB CONTROL STANDARD / DUPLICATE Data File(s): 41111 / 41112							
LCS Prep/Extraction Date: 08/20/2010 LCS Analysis Date: 08/20/2010 InstrumentID: GC103\FID1							
TOTAL PRO (C6-C40)	28.3mg/kg / 28.3mg/kg	26.0mg/kg	92%	27.5mg/kg	99%	6%	50-150% / 35%RPD

Analyte	Native Result	Spike Amount	MS Result	MS %Recovery	MSD Result	MSD %Recovery	MS/D %RPD	%Rec. / %RPD Limit
QCID: SPROA082010MS QCDescription: MATRIX SPIKE / DUPLICATE Data File(s): 41136 / 41137								
MS Prep/Extraction Date: 08/20/2010 MS Analysis Date: 08/21/2010 InstrumentID: GC103\FID1								
TOTAL PRO (C6-C40)	0mg/kg	56.6mg/kg / NA	56.2mg/kg	103%	NA	NA	NA	50-150% / 35%RPD

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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Client Project / Site Name SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.  
412 WEST WALCOTT STREET  
THOMASVILLE, GA 31702  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

QUALITY CONTROL DATA

BatchID: SPROA082010 Prep / Extraction / Analysis Method: SW-846-3550 / FDEP-FL-PRO

ClientID: SPROA082010 Associated Samples: 106559 106580 106632 106633 106634 106635 106702 106703 106704 106705 106706 106738 106844 106845  
106846 106848 106849 106850 106851

QCID: SPROA082010DUP	DUP Prep/Extraction Date: 06/20/2010				
QCDescription: SAMPLE RESULT / DUPLICATE	DUP Analysis Date: 06/21/2010				
Data File(s): 41135	InstrumentID: GC03(FID)				
Analyte	Native Result	Dup Result	Sample/Dup %RSD	%RPD Limit	
TOTAL PRO (C8-C40)	630mg/kg	828 mg/kg	27%	35%RPD	

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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ENVIRONMENTAL TESTING LABORATORIES INC  
 Laboratory Project#: 10-2204  
 Client Project / Site Name: SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.  
 412 WEST WALCOTT STREET  
 THOMASVILLE, GA 31792  
 PHONE: (229)-228-2592  
 FAX: (229)-228-2594

QUALITY CONTROL DATA

Batch ID: WPAHA082310 Prep / Extraction / Analysis Method: SW-846-3510 / SW-846-8270C

Client ID: WPAHA082310 Associated Samples: 106847 106852 106863 106854 106855 106955 106856 106957 106958 106959 106960 106961 106962 106963  
 106864 106965 106966 106967

QCID: WPAHA082310/BLK	Blank Prep/Extraction Date: 08/23/2010			
QC Description: METHOD BLANK	Blank Analysis Date: 08/23/2010			
Data File(s): MBLKWPAH1.D	Instrument ID: GC105WMS1			
Analyte	MDL	Blank Result	PQL	Units
NAPHTHALENE	0.43	0.43 U	2.0	ug/L
ACENAPHTHYLENE	0.63	0.63 U	2.0	ug/L
ACENAPHTHENE	0.38	0.38 U	2.0	ug/L
FLUORENE	0.68	0.68 U	2.0	ug/L
PHENANTHRENE	0.65	0.65 U	2.0	ug/L
ANTHRACENE	0.65	0.65 U	2.0	ug/L
FLUORANTHENE	0.57	0.57 U	2.0	ug/L
1-METHYLNAPHTHALENE	0.75	0.75 U	2.0	ug/L
2-METHYLNAPHTHALENE	0.45	0.45 U	2.0	ug/L
PYRENE	0.63	0.63 U	2.0	ug/L
BENZO(A)ANTHRACENE	0.083	0.083 U	0.20	ug/L
CHRYSENE	0.48	0.48 U	2.0	ug/L
BENZO(B)FLUORANTHENE	0.083	0.083 U	0.10	ug/L
BENZO(K)FLUORANTHENE	0.082	0.082 U	0.20	ug/L
BENZO(A)PYRENE	0.065	0.065 U	0.20	ug/L
INDENO(1,2,3-CD)PYRENE	0.10	0.10 U	0.20	ug/L
DIBENZO(A,H)ANTHRACENE	0.090	0.090 U	0.20	ug/L
BENZO(G,H,I)PERYLENE	0.59	0.59 U	2.0	ug/L

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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Laboratory Project#: 10-2204

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412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2592
FAX: (229)-228-2594

QUALITY CONTROL DATA

Batch ID: WPAHA082310 Prep/Extraction/Analysis Method: SW-846 3510 / SW-846 8270C

Client ID: WPAHA082310 Associated Samples: 108847 108852 108853 108854 108855 108856 108857 108858 108859 108860 108861 108862 108863
108864 108865 108866 108867

Table with columns: Analyte, Spike Amount, LCS Result, LCS %Recovery, LCSD Result, LCSD %Recovery, LCS/D %RPD, %Rec. / %RPD Limit. Rows include various polycyclic aromatic hydrocarbons like Naphthalene, Fluorene, Anthracene, etc.

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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Laboratory Project#: 10-2204

Client Project / Site Name: SHARK MART

ENVIRONMENTAL TESTING LABORATORIES, INC.
412 WEST WALCOTT STREET
THOMASVILLE, GA 31792
PHONE: (229)-228-2562
FAX: (229)-228-2594

QUALITY CONTROL DATA

Batch ID: WPAHA082310 Prep/Extraction/Analysis Method: SW-846-3510 / SW-846-8270G

ClockID: WPAHA082310 Associated Samples: 106847 106852 106853 106854 106855 106955 106956 106957 106958 106959 106960 106961 106962 106963
106964 106965 106966 106967

Table with columns: Analyte, Native Result, Spike Amount, MS Result, MS %Recovery, MSD Result, MSD %Recovery, MSD %RPD, %Rec. / %RPD Limit. Rows include various polycyclic aromatic hydrocarbons like NAPHTHALENE, ACENAPHTHYLENE, etc.

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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 412 WEST WALCOTT STREET  
 THOMASVILLE, GA 31792  
 PHONE: (229)-228-2592  
 FAX: (229)-228-2594

QUALITY CONTROL DATA

BatchID: WPAHA082310 Prep / Extraction / Analysis Method: SW-846.3510 / SW-846.3270G

ClockID: WPAHA082310 Associated Samples: 106847 106852 106853 106854 106855 106856 106857 106858 106859 106860 106861 106862 106863  
 106864 106865 106866 106867

Analyte	Native Result	Dup Result	Sample/Dup %RSD	%RPD Limit
NAPHTHALENE	0.76Ug/L	1.07 Ug/L	34%	30%RPD
ACENAPHTHYLENE	0.83Ug/L	0.830 Ug/L	NA	30%RPD
ACENAPHTHENE	0.38Ug/L	0.380 Ug/L	NA	30%RPD
FLUORENE	0.56Ug/L	0.560 Ug/L	NA	30%RPD
PHENANTHRENE	0.55Ug/L	0.550 Ug/L	NA	30%RPD
ANTHRACENE	0.65Ug/L	0.650 Ug/L	NA	30%RPD
FLUORANTHENE	0.57Ug/L	0.570 Ug/L	NA	30%RPD
1-METHYLNAPHTHALENE	0.75Ug/L	0.750 Ug/L	NA	30%RPD
2-METHYLNAPHTHALENE	0.45Ug/L	0.450 Ug/L	NA	30%RPD
PYRENE	0.63Ug/L	0.630 Ug/L	NA	30%RPD
BENZO(A)ANTHRACENE	0.093Ug/L	0.0930 Ug/L	NA	30%RPD
CHRYSENE	0.46Ug/L	0.460 Ug/L	NA	30%RPD
BENZO(B)FLUORANTHENE	0.083Ug/L	0.0830 Ug/L	NA	30%RPD
BENZO(K)FLUORANTHENE	0.082Ug/L	0.0820 Ug/L	NA	30%RPD
BENZO(A)PYRENE	0.065Ug/L	0.0650 Ug/L	NA	30%RPD
INDENO(1,2,3-CD)PYRENE	0.10Ug/L	0.100 Ug/L	NA	30%RPD
DIBENZ(A,H)ANTHRACENE	0.090Ug/L	0.0900 Ug/L	NA	30%RPD
BENZOG(K,H)PERYLENE	0.59Ug/L	0.590 Ug/L	NA	30%RPD

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

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 412 WEST WALCOTT STREET  
 THOMASVILLE, GA 31792  
 PHONE: (229)-228-2592  
 FAX: (229)-228-2594

QUALITY CONTROL DATA

BatchID: WPROA081910 Prep / Extraction / Analysis Method: SW-846 3510 / FDEP FL: PRO

ClientID: WPROA081910 Associated Samples: 106768 106769 106774 106780 106781 106782 106783 106784 106785 106786 106787 106788 106789 106799 106847

QCID: WPROA081910MBLK		Blank Prep/Extraction Date: 08/19/2010		
QCDescription: METHOD BLANK		Blank Analysis Date: 08/20/2010		
Data File(s): 41091		InstrumentID: GC103\FID1		
Analyte	MDL	Blank Result	PQL	Units
GRO (C8-C10)	100	100 U	500	ug/L
DRO (C10-C28)	100	100 U	500	ug/L
TRO (C28-C40)	100	100 U	500	ug/L
TOTAL PRO (C8-C40)	100	100 U	500	ug/L

QCID: WPROA081910LCS		LCS Prep/Extraction Date: 08/19/2010			LCSD Prep/Extraction Date: 08/19/2010		
QCDescription: LAB CONTROL STANDARD / DUPLICATE		LCS Analysis Date: 08/20/2010			LCSD Analysis Date: 08/20/2010		
Data File(s): 41089 / 41090		InstrumentID: GC103\FID1					
Analyte	Spike Amount	LCS Result	LCS %Recovery	LCSD Result	LCSD %Recovery	LCS/D %RPD	%Rec. / %RPD Limit
TOTAL PRO (C8-C40)	850ug/L / 850ug/L	865ug/L	102%	865ug/L	102%	3%	50-150% / 90%RPD

QCID: WPROA081910MS		MS Prep/Extraction Date: 08/19/2010			MSD Prep/Extraction Date:			
QCDescription: MATRIX SPIKE / DUPLICATE		MS Analysis Date: 08/20/2010			MSD Analysis Date:			
Data File(s): 41092		InstrumentID: GC103\FID1						
Analyte	Native Result	Spike Amount	MS Result	MS %Recovery	MSD Result	MSD %Recovery	MS/D %RPD	%Rec. / %RPD Limit
TOTAL PRO (C8-C40)	0ug/L	850ug/L / 850ug/L	727ug/L	86%	NA	NA	NA	50-150% / 90%RPD

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412 WEST WALCOTT STREET  
THOMASVILLE, GA 31792  
PHONE: (229)-228-2592  
FAX: (229)-228-2594

## DATA QUALIFIERS

- I Data deviate from historically established concentration ranges.
- # Surrogate compound inadvertently omitted.
- \$ Due to dilution, surrogate compound was not detected.
- \* Not reported due to interference
- ? Data are rejected as should not be used.
- A Value reported is the arithmetic mean (average) of two or more determinations.
- B Results based upon colony counts outside the acceptable range.
- D Measurement made in the field.
- E Extra samples were taken at composite stations.
- F When reporting species, F indicates the female sex.
- H Value based on field kit determination; results may not be accurate.
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J Estimated value.
- K Off-scale low. Actual value is known to be less than the value given.
- L Off-scale high. Actual value is known to be greater than the value given.
- M Presence of material is verified but not quantified; the actual value is less than the value given.
- N Presumptive evidence of presence of material.
- O Sampled, but analysis lost or not performed.
- Q Sample held beyond the accepted holding time.
- R Significant rain in the past 48 hours.
- T Value reported is less than the laboratory method detection limit.
- U Compound was analyzed for but not detected.
- V Indicates that the analyte was detected in both the sample and the associated method blank.
- Y Laboratory analysis was from an improperly preserved sample. Data may not be accurate.
- Z Too many colonies were present; numeric value represents the filtration volume.

Report Date: 8/24/2010 - Revision #: 0 - Revision Date:

### REPORT OF LABORATORY ANALYSIS

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### Chain of Custody Record

Company: <b>AET</b>		Environmental Testing Laboratories, Inc.				Page <b>1</b> of <b>1</b>																					
Address: <b>4265 NEW TAMPA HWY LAKE JARVIS</b>		412 W. Walcott Street Thomasville, GA 31792-4399 229/228-2592 (telephone) 229/228-2594 (telex) www.etl-inc.com				Project Name: <b>SHARK MACT</b>																					
Telephone Number: <b>813-439-9735</b> Telex Number:		Project Number: <b>11-3986-00</b>				Project Manager: <b>Saba MARKS</b>																					
Sampled by (Print Name(s)) / Affiliation: <b>Tom MATANI</b>		Analyses Requested:				Facility ID Number: <b>31-9602448</b>																					
Sampler(s) Signature(s): <i>Tom Matani</i>		<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 10%;">CWA</td> <td style="width: 10%;">SWR</td> <td style="width: 10%;">PZ</td> <td style="width: 10%;">PAC</td> <td style="width: 10%;">EL-PRO</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>				CWA	SWR	PZ	PAC	EL-PRO						✓	✓	✓	✓	✓						REQUESTED DUE DATE: <b>Standard</b>	
CWA	SWR					PZ	PAC	EL-PRO																			
✓	✓	✓	✓	✓																							
Item No.		Field ID No.		Sample		Grab or Composite		Matrix (See Codes)		Number of Containers		Remarks		Lab Number													
				Date		Time																					
1	TWP-1	8/14/08	10:00	G	GW	5								106847													
2	RES/SW	8/14/08	14:00		S	4								106848													
3	RES/SW	8/14/08	14:20		S	4								106849													
4	PREN/SW	8/14/08	13:10		S	4								106850													
5	PREN/SW	8/14/08	13:40		S	4								106851													
Shipment Method		Total Number of Containers: <b>21</b>		Preservatives (see Codes) (CE):		Yes: <input type="checkbox"/> No: <input type="checkbox"/>																					
Out:	L	Via:	Item No.:	Relinquished by / Affiliation:	Date:	Time:	Accepted by / Affiliation:	Date:	Time:																		
Returned:	L	Via:		<b>Tom MATANI</b>	<b>8/16/08</b>		<b>FBS BK</b>	<b>8/16/08</b>																			
Additional Comments:		Cooler Number(s) / Temperature(s) (°C):		Sampling Kit Number:		Received In Lab By:																					
		<b>106847 @ 2°</b>				<b>Tom Matani / ETL 8/14/08 09:00</b>																					
MATRIX CODES:		A = Air		GW = Groundwater		SE = Sediment		SO = Soil		SW = Surface Water		WW = Wastewater		O = Other (specify)													
PRESERVATIVE CODES:		H = Hydrochloric acid		S = Sulfuric acid		N = Nitric		Na = Sodium Hydroxide																			
PRESERVATIVE CODES:		SOIL VOCs		MS = Methylene / Sodium Bisulfite		MD = Methanol / DI Water																					
ETL-PROJECT NO. <b>10-2204</b>												Page 399 of 324 PRIORITY INC.															

8738-2948-1025

ETL SAMPLE CUSTODY CHECKLIST

Assigned ETL Project Number: 10-2324

ETL Sample Custodian: JHO

Assigned ETL Lab ID Range: 106877 through 106881  
(start) (end)

Carrier: (Fed-Ex) UPS, DHL, Client, Etc.

Date Received: 8/19/10 0900

Cooler Temperatures	
Cooler #	Temperature °C
1	
2	2
3	
4	
5	
6	
7	
8	
9	
10	
Cooler temp. measured by (Circle one)	
Temperature Blank	
Other: <u>DR 162</u>	

Bottleware Received			
Bottleware Type	Preservative	Total Number of Containers	Properly Preserved?
40mL VOA Vial	HCl	2	YES/NO
40mL VOA Vial	None		N/A
40mL VOA Vial	DH2O	8	N/A
40mL VOA Vial	Sodium Bisulfate		YES/NO
40mL VOA Vial	MeOH	4	YES/NO
1-L Amber	None		N/A
1-L Amber	H2SO4		YES/NO
1-L Amber	HCl		YES/NO
HDPE Plastic	None		N/A
HDPE Plastic	HNO3		YES/NO
HDPE Plastic	H2SO4		YES/NO
4oz Soil Bulk Container	None	4	N/A
8oz Soil Bulk Container	None		N/A
18oz Soil Bulk Container	None		N/A

Was adequate sample volume submitted to perform all necessary project quality requirements (i.e. duplicate, MS/MSD, etc.) YES / NO

Additional Sample Volumes Submitted for Quality Control (Dup, MS, MSD)			
#	ETL Lab ID	Type	Parameters
1		DUP / MS / (MS/MSD)	VOC / SVOC / FL-PRO / Metals / GenChem
2		DUP / MS / (MS/MSD)	VOC / SVOC / FL-PRO / Metals / GenChem
3		DUP / MS / (MS/MSD)	VOC / SVOC / FL-PRO / Metals / GenChem
4		DUP / MS / (MS/MSD)	VOC / SVOC / FL-PRO / Metals / GenChem

Comments / Project Notes (i.e. Broken Bottleware, Temperature Discrepancies, Improper Preservation, etc.):  
One bottle sample for PRO on Twp-1 (106877) received broken. PAH  
sample was split and preserved for PRO. Sample to not used for  
PAH for other sample was received.  
Per John Mack: Sample date for all samples should be 8-17-10. RL

JUN 28 1994

Technical Review Section

RECEIVED  
D.E.R.

JUN 27 AM 11

STORAGE TANK  
REGULATION

ARDAMAN & ASSOCIATES, INC

CONTAMINATION ASSESSMENT REPORT  
MAPCO SS# 6170  
9020 95th STREET  
SEBASTIAN, FLORIDA  
FAC# 318509326  
EDI# 31-3108

Prepared For: Mr. James E. O'Neal, E.I.T  
Environmental Engineer  
MAPCO Petroleum Inc.  
1101 Kermit Drive  
Suite 800  
Nashville, TN 37217


June 23, 1994

Prepared By:



Kent B. Roberts,  
Project Manager

Reviewed By:



Steve Dublin, P.E.  
Vice President

  
6/23/94

318509326



Ardaman & Associates, Inc.

Geotechnical, Environmental and  
Materials Consultants

June 24, 1994

File # 94-808

Florida Department of Environmental Regulation  
Storage Tank Regulation Section  
2600 Blairstone Road  
Twin Towers Office Bldg.  
Tallahassee, FL. 32399-2400

Bureau of Waste Cleanup

JUN 28 1994

RE: Contamination Assessment Report  
MAPCO SS# 6170  
9020 95th Street, Sebastian, FL.

Technical Review Section

FAC #318509326  
EDI

Dear Project Manager;

Please find enclosed two copies of a contamination assessment report for the above referenced site. If you have any questions or comments concerning the enclosed please feel free to contact us at (305) 969-8788.

Very Truly Yours  
Ardaman & Associates

  
Kent B. Roberts  
Project Manager


  
Steve Dublin, P.E.  
Vice President

TABLE OF CONTENTS

1.0 INTRODUCTION.....4

2.0 BACKGROUND.....4

    2.1 Site Location and Description.....4

3.0 ENVIRONMENTAL SETTING.....5

    3.1 Topography.....5

    3.2 Regional Geology.....6

    3.3 Regional Hydrology.....6

    3.4 Underground Utility Survey.....7

    3.5 Tank and Line Testing.....7

    3.6 Proximity to Public Water Supplies.....7

4.0 CONTAMINATION ASSESSMENT METHODOLOGIES.....8

    4.1 Soil Borings.....8

    4.2 Monitor Well Installations.....9

        4.2.1 Shallow Well Installations.....9

        4.2.2 Deeper Well Installations.....9

    4.3 Data Collection Procedures.....10

        4.3.1 Sample Collection and Analysis.....10

        4.3.2 Aquifer Characteristic.....10

5.0 CONTAMINATION ASSESSMENT RESULTS.....11

    5.1 Site Geology and Hydrogeology.....11

    5.2 Liquid Phase Hydrocarbons Assessment Results.....12

    5.3 Soil Assessment Results.....12

    5.4 Groundwater Assessment Results.....13

    5.5 Aquifer Characteristic Testing Results.....14

6.0 QUALITY ASSURANCE AND HEALTH AND SAFETY.....15

7.0 SUMMARY AND CONCLUSIONS.....15

8.0 RECOMMENDATIONS.....16

9.0 REFERENCES.....18

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## LIST OF FIGURES

<u>Figure</u>	<u>Description</u>
1	Index Map
2	Local Land Use Map
3	Site Plan
4	Well Construction Diagram
5	Hydraulic Gradient Map (5/04/94)
5A	Hydraulic Gradient Map (6/14/94)
6	Benzene Plume Map
7	BTEX Plume Map
8	Vadose Zone Plume Map

## LIST OF TABLES

<u>Table</u>	<u>Description</u>
1	Well Construction Summary
2	Monitor Well Data Summary
3	Field Test Groundwater Quality Data
4	OVA Test Results
5	Analytical Groundwater Quality Data
6	Private Well Data

## LIST OF APPENDICES

<u>Appendix</u>	<u>Description</u>
A	Boring Logs/Monitor Well Diagrams
B	Analytical Results & Chain of Custodies
C	Aquifer Characteristic Testing
D	Contamination Assessment Summary Sheet
E	Tank & Line Tests

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## 1.0 INTRODUCTION

Ardaman & Associates, Inc. (Ardaman) has prepared a Contamination Assessment Report (CAR) for the MAPCO convenience store #6170 located at 9020 95th Street, in Sebastian, Florida. The site is registered as facility # 318509326 with the Florida Department of Environmental Protection (DEP). The site became eligible for state cleanup under the Early Detection Incentive (EDI) Program on October 28, 1988. The principle objectives of the assessment are outlined below:

- 1) Determine the source of any hydrocarbon contamination.
- 2) Determine the type, degree and extent of any hydrocarbon contamination of the soil and groundwater.
- 3) Determine the factors controlling contaminant migration.
- 4) Evaluate the relationship between the contamination and any possible sensitive receptors.

Information from the CAR will be used to assess the need for site remediation. Should site remediation be deemed necessary, aquifer characteristics and other data developed, during the preparation of this CAR, will be used in the preparation of a Remedial Action Plan.

## 2.0 BACKGROUND

### 2.1 Site Location and Description

The MAPCO facility is located on the northwest corner of the intersection of State Road 512 (Fellsmere Road) and County Road 510 in the western outskirts of the town of Sebastian. Figure 1 is a portion of the United States Geological Survey (USGS), "Fellsmere, Florida," quadrangle map showing the relative location of the facility. The site is located in the SE quarter of Section 22, Township 31 S, Range 37 E of Indian River County (Figure 1). Properties immediately surrounding the facility are generally undeveloped pasture lands or citrus groves. The facility is bound to the north by an old cemetery, and to the South, East and West by open pastures or wooded tracts. Figure 2 is a Local Land Use Map of the area.

The site is rectangular in shape and covers approximately half an acre. The property is currently operating as a convenience store and retail fueling outlet dispensing three grades of unleaded petroleum products from three (3) underground storage tanks (USTs) located directly south of the building. These tanks have a 10,000 gallon capacity and are constructed of steel, with asphalt coating.

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Overspill protection was installed in May of 1987. The tanks have an impressed current type of cathodic protection.

Figure 3 is a site plan showing the location of the facility and pertinent site features. Ardaman personnel initially visited the site on April 28, 1994. At that time, five 2-inch diameter monitor wells were present. Four were located near the corners of the UST pad and one at the western end of the dispenser island. Since the dispenser island straddles the center tank, monitor well five (MW-5) actually penetrates the UST bed between two of the underground storage tanks.

A review of the Department of Environmental Protection's data base and file for the MAPCO facility indicated that there is no record of any Initial Remedial Action (IRA) having been undertaken at this site. No information is available with regard to the type, source, or quantity of the product discharged at this facility. No specific incident of discharge or inventory loss is on file.

### 3.0 ENVIRONMENTAL SETTING

#### 3.1 Topography

The site lies on the Pamlico Terrace in Indian River County between the Atlantic Coastal Ridge and the Ten-Mile Ridge. The Pamlico terrace is an ancient marine terrace which marked the ocean bottom at a time when the sea stood higher than it does now. Most of the terrace is less than 25 feet above sea level. The Atlantic Coastal Ridge, which reaches altitudes of more than 50 feet, is a remnant of an offshore bar that was formed in the Pamlico sea. West of the Coastal Ridge is a flat or shallow trough-shaped area that is analogous to the present Indian River. About 7 miles west of the Coastal Ridge is a less pronounced ridge named the "Ten Mile Ridge".

The area between the Atlantic Coastal Ridge and the Ten-mile Ridge was swampy and lacked prominent stream channels other than the South Prong of Sebastian Creek at the North. Drainage was generally northward although during periods of high water some water drained eastward through gaps in the Atlantic Coastal Ridge. Surface water drainage patterns have been altered by man made drainage systems.

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### 3.2 Regional Geology

The formations underlying Indian River County dip slightly southeastward. They differ somewhat in composition and character and are the result of marine deposition during earlier periods of the earth's history.

Deposits of Pleistocene age, extending from land surface to depths of 100 to 150 feet are represented by the Anastasia and Fort Thompson Formations. The Anastasia Formation is present along the coast and grades inland into the Fort Thompson formation in the vicinity of the Ten-mile Ridge. Both the Anastasia and the Fort Thompson are composed primarily of sand and shell fragments, the main differences being that the grains and fragments are finer in the Fort Thompson and that the Anastasia contains many cemented layers.

Below the Fort Thompson and Anastasia Formations are deposits of Miocene age whose thickness ranges from 200 to 300 feet. The upper part of the Miocene sediments is undifferentiated and may be the equivalent of the Tamiami Formation. They consist of a series of clays, sandy clays and shell with some well cemented zones.

Underlying these undifferentiated deposits is the Hawthorn Formation, also of Miocene age. This formation consists of green and brown clay, sandy clay, and some limestone beds. In general, the Miocene sediments are much finer-grained than the overlying Pleistocene deposits.

Underlying the Miocene deposits are several hundred feet of limestone and dolomite of the Oligocene and Eocene ages.

### 3.3 Regional Hydrology

Two aquifers are present in Indian River County: the shallow aquifer consisting of all the unconsolidated or partly consolidated permeable deposits of the Anastasia and Fort Thompson formations, which extend from the land surface to a depth of about 150 feet; and the Floridan aquifer which consists of limestone and dolomite of middle Eocene and Oligocene age underlying the Hawthorne Formation of Miocene age. The two aquifers are separated by confining beds consisting of clay and other fine grained materials of the Hawthorne and younger formations.

The porosity of the shallow aquifer may be as great as 25%. The porosity of the Floridan may be only a few percent. However, the voids in the Floridan are well interconnected so water moves readily through this aquifer. Therefore, although the shallow

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aquifer contains several times more water per unit volume than the Floridan aquifer, the Floridan will transmit several times more water per unit volume than the shallow aquifer. Yields of 300 to 500 gal/min are obtained from 10" wells in the shallow aquifer, but yields of as much as 3000 gal/min are obtained from 10-inch wells that tap the Floridan aquifer.

The shallow aquifer is recharged mostly by direct infiltration of rainfall. There is little interchange between water in the shallow aquifer and that in the Floridan aquifer because of the thick confining bed. However, within the irrigation districts an important quantity of water is added to the shallow aquifer by artificial recharge of water withdrawn from the Floridan wells for irrigation.

#### 3.4 Underground Utility Survey

On May 19, 1994, a survey of underground utilities directly connected with the site and located within the vicinity was completed. This survey was based on a markout of utilities coordinated through the Underground Notification Clearance Liaison for Excavation (UNCLE). Utilities which were located during the markout are shown on the Site Plan (Figure-3). There is no apparent correlation between the location and depths of subsurface utilities and the contaminant plume.

#### 3.5 Tank and Line Testing

The structural integrity of the underground storage tank and lines were tested on September 14, 1992 and again on June 21, 1994 by Tanknology Corporation International. All tanks and lines were determined to be tight. The results of these tests can be found in Appendix E.

#### 3.6 Proximity to Public Water Supplies

The proximity of the site to private wells, public well fields and surface water bodies was researched with the aid of published listings, maps and visual observations. There is a public potable water well on site to serve the convenience store. The location of this well can be found in figure 3. A review of the well completion reports and consumptive use permits on file at the St. Johns River Water Management District indicates that there are no other private wells within a quarter mile radius of the site or public wells within a half mile radius. The nearest surface water

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body is the Sebastian River South Prong located approximately one quarter of a mile to the East.

#### 4.0 CONTAMINATION ASSESSMENT METHODOLOGIES

##### 4.1 Soil Boring

A soil boring and field screening program was conducted to assess the potential horizontal and vertical extent of soil contamination in the UST and dispenser area. There is no record of diesel fuel ever having been stored or dispensed at this site. However, results from an initial round of monitor well sampling indicated that some naphthalenes were present in the groundwater. Therefore, an OVA reading of 50 ppm was used to define "excessively contaminated" soils. A total of 4 soil borings were drilled to assess the vadose zone. The approximate locations of these borings are shown on Figure 3.

All soil borings were continuously sampled to a depth of approximately four (4) feet below land surface (bls). Lithologic logs were prepared in the field for each boring. Upon completion, the boring holes were abandoned by grouting to the surface with neat cement.

Soil borings were completed utilizing a stainless steel hand-auger after a 4" diameter hole was cut through the concrete pavement with a rotary hammer drill. The hand auger was advanced manually. Soil samples were screened in the field with a Foxboro Model 128 Organic Vapor Analyzer (OVA) equipped with a flame ionization detector (FID). OVA responses were recorded using the headspace analysis method. Field headspace analyses were conducted by placing the composite soil sample, one-half full, into a 16-ounce jar. The mouth of the jar was then sealed with a layer of tin foil. After a 5-minute equilibration period, the OVA's probe was inserted through the tin foil and into the jar. The equipment was monitored and a peak reading obtained. The depth from which the sample was collected and the OVA response were noted. OVA responses were recorded first without and then with an activated charcoal filter. This was done in order to determine if natural methane gas contributed to the OVA response. The carbon filter absorbs the organic vapors, and allows the methane to pass through and be detected by the FID. The field screening results are summarized in Table 4.

##### 4.2 Monitor Well Installations

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#### 4.2.1 Shallow Monitor Well Installations

Ardaman personnel installed one (1) shallow monitor well in order to fully delineate the contaminant plume in the horizontal direction. Results from the gaging and sampling of the five (5) pre-existing wells MW-1 through 5 were used to determine the optimum location of this new well. The locations of all the wells are shown in Figure-3. The monitor well was installed using hollow stem auger drilling methods and is approximately 12.5 feet in total depth. The well was constructed with a two foot length of 2-inch diameter, flush threaded, Schedule 40 PVC casing coupled to a ten (10) foot length of 0.010-inch slotted PVC well screen. Approximately 1 foot of well screen was set above the water table with 9 feet extending into the water bearing zone. This was done in order to intercept the upper most fluctuations of the surficial aquifer.

The annular space between the screen and the borehole was packed with 20-30 grade silica sand to at least one foot above the screened interval. A one foot thick bentonite seal was placed on top of the sand pack. The remainder of the well's annulus was grouted to the surface with neat cement to prevent the migration of surface contaminants along the borehole. The monitor well was completed at the surface with an 8-inch diameter, cast iron, flush mounted, manhole type vault set in a concrete pads. The well was fitted with a locking cap and secured with a lock. A typical monitoring well detail is shown in Figure-4. Table 1 is a well construction summary listing pertinent information for each well. The monitor well was developed by surging and overpumping until the discharge water appeared sediment free.

#### 4.2.2 Deep Monitor Well Installation

In order to assess the maximum vertical extent of contamination, one "deep" monitor well was drilled. A 2-inch diameter, deep monitor well (MW-7D) was installed on the eastern side of the property. The positioning of the deep well was dictated, to a large extent, by the numerous underground utilities running in an East-West direction just South of the tank pad and by the overhead power lines running in a North-South direction just East of the tank pad. The general direction of groundwater flow is to the East towards the Sebastian River South Prong. The deep well was screened from a depth of 18.5 to 23.5 feet bls. The deep well was also installed by using a truck mounted hollow stem auger drill rig.

Monitor well MW-7D was generally constructed as described earlier in the shallow monitor well installation section. A one-foot thick

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bentonite seal was placed on top of the sand pack. The deep well location is shown in figure 3.

#### 4.3 Data Collection Procedures

##### 4.3.1 Sample Collection and Analysis

Soil samples were field screened for organic vapors by the headspace method, as discussed in Section 4.1.

Groundwater samples were collected from the five (5) existing compliance wells on May 4, 1994. Collected samples were analyzed for parameters included in EPA Methods 601 (Purgeable Halocarbons), EPA Method 602 with MTBE (Volatile Organic Aromatics), EPA Method 504, (Ethylene Dibromide (EDB)), EPA Method 610 (Polynuclear Aromatic Hydrocarbons), EPA 418.1 Total Petroleum Hydrocarbons and EPA 239.2 (Lead, Total). Cumulatively, these analyses are known as the Gasoline/Kerosine Analytical Group. All laboratory analysis was performed by Savannah Laboratories & Environmental Services, Inc., a State certified analytical laboratory (DHRS #890142G). The laboratory analytical reports, along with the chain of custody documentation, are included in Appendix B. On May 25, 1994, monitor wells MW-6, MW-7D and the potable water well were sampled for Purgeable Aromatics (EPA Method 602) and Polynuclear Aromatic Hydrocarbons (EPA Method 610). All monitoring wells were sampled following Ardaman & Associates standard sampling procedures, as outlined in our Generic Quality Assurance Plan #900305G, on file with and approved by the Florida Department of Environmental Protection (FDEP). Prior to sampling, the wells were purged of three (3) to five (5) well volumes, so that representative groundwater samples could be collected. The samples were collected from Teflon bailers and transferred to laboratory supplied bottles which contained the appropriate preservatives. The samples were packed in ice and hand delivered to the laboratory. Proper chain of custody documentation accompanied the samples.

##### 4.3.2 Aquifer Characteristic Testing

The top of casing elevations of the pre-existing monitor wells were surveyed with a level/transit on April 28, 1994. Casing head elevations were referenced to an arbitrary benchmark which was assigned an elevation of twenty feet. The top of casing of all monitor wells were surveyed on May 19, 1994. The May 19th survey results matched the April 28th survey results within one-one hundredth of a foot. It was not necessary to reposition the

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instrument during either surveying event. Depth to liquid phase hydrocarbons (LPH) and/or water was measured to the nearest one-one hundredth of a foot with a sonic interface probe. Depths were recorded on three separate occasions in order to assess the changes in water table elevation due to precipitation or possible draw down from the on-site water well.

Slug tests were performed on three (3) selected monitor wells (MW-6, MW-7D, and MW-4) using the slug out method. The selected wells were from areas believed to be most representative of the site's hydrogeology. With the slug test method, the hydraulic conductivity of a well is determined from the rate of rise of the water level in the well after a certain volume or "slug" is rapidly removed from the well. The slug consisted of a 3.5 foot length of 1 & 1/4 inch diameter, Schedule 40, PVC pipe that had been capped and filled with portland cement. First, a calibrated pressure transducer, rated at 20 psi, was lowered to within a foot of the bottom of the well. The pressure transducer's cable was connected to an electronic data logger. Then the slug was completely submerged. After the water level in the well had reached equilibrium, the slug was rapidly removed and water level versus time was recorded with the datalogger.

Groundwater quality parameters, such as temperature, conductivity, iron content, hardness and pH were measured from water samples taken from selected monitor wells. Table 3 is a summary of these field measurements. This data may be used to determine if a future remediation system will need a fouling prevention pre-treatment system.

## 5.0 CONTAMINATION ASSESSMENT RESULTS

### 5.1 Site Geology and Hydrogeology

The shallow subsurface geology was assessed through the examination of soil cuttings and cores generated during soil boring and monitor well installation activities. Lithologic descriptions for each boring and monitor well are included in Appendix A.

The shallow subsurface generally consisted of relatively thick deposits of unconsolidated, quartz sand. The quartz sand deposits, which ranged in color from orange to brown, were fine to medium grained, and contained some clay. Shell fragments were observed in the drill cuttings from below 15 feet. No significant hydraulic confining units were encountered during this assessment.

The depth to water measurements for the monitor wells were recorded on May 4, 1994, May 19, 1994 and June 14, 1994. The groundwater

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table lies at 3 to 5 feet bls. The range of groundwater fluctuation observed between the monitoring periods was an average of 1.0 foot.

Depth to water measurements taken on May 4, 1994 and June 14, 1994 were used to calculate relative water table elevations and are presented in Table-2. Areas of equal water table elevations were contoured to determine the local groundwater flow direction, as shown in Figures 5 and 5A. Groundwater flow is perpendicular to the contour lines from areas of higher to lower water table elevations. Groundwater flow appears to be slightly contorted in the area of the tank farm. However the gradient maps show the water table sloping to the East southeast in the general direction of the Sebastian River South Prong.

There was no apparent influence from the on-site potable water well on the depth to water measurements performed during this assessment. The water well pump operates on a very intermittent basis. It will turn on automatically when the pressure in the water storage tank, located on top of the pump shed, drops below a preset level. The water well's screened interval is below eighty (80) feet.

The local hydraulic gradient was determined from the difference in water table elevations between monitor wells MW-1 and MW-6. This difference was then divided by the distance between the two wells. Based on these results, the local hydraulic gradient is estimated to be 0.0064ft/ft.

#### 5.2 Liquid Phase Hydrocarbon Assessment Results

Liquid phase hydrocarbons, (or free floating product), was not observed in any of the monitor wells or anywhere else on site during the conduct of this assessment.

#### 5.3 Soil Assessment Results

Field screening results of the headspace analysis ranged from 0 to 170 parts per million (ppm) and are summarized in Table-4. The area of highest organic vapor responses was near the western edge of the UST pad at a depth of approximately 3 feet bls. All samples from each soil boring were screened for methane gas using a granulated activated carbon (GAC) filter in-line with the OVA. Methane was detected in several of the soil samples.

Historically, this facility has dispensed only gasoline products. However, Napthalenes were detected in the ground water.

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Therefore, a conservative 50 ppm OVA reading was used to define "excessively contaminated" soils. "Excessively contaminated" unsaturated soils were only encountered in boring SB-2. The volume of "excessively contaminated soils" was estimated at less than 70 cubic yards. An isoconcentration map for "excessively contaminated" soils in the vadose zone is shown on Figure-8. The vadose zone plume was delineated in the horizontal direction to the North by SB-1, to the East by SB-4, to the South by MW-6, and to the West by SB-3).

#### 5.4 Groundwater Assessment Results

Groundwater samples collected from monitor well MW-5 were the only samples containing VOA concentrations above the laboratory instrument's lower detection limits. Samples from this well had benzene concentrations of 96 parts per billion (ppb) and Total VOA concentrations (sum of benzene, ethyl benzene, toluene, and total xylenes) of 111.5 ppb. These dissolved petroleum constituents exceed Target Cleanup Levels, as defined in Chapter 17-770 FAC. Concentrations of total lead were detected in water samples obtained from wells MW-1 through MW-4. However, none of the lead concentrations exceeded the DEP cleanup target level of 0.05 mg/L. Detectable concentrations of Ethylene dibromide were not recorded during this assessment. The concentrations of total naphthalenes detected in MW-5 (130 ppb) also exceeded the DEP target level of 100 ppb.

The very limited dissolved hydrocarbon plume appears to be centered around monitor well MW-5 which penetrates the UST bed. Isoconcentration maps for Benzene and total VOAs are shown in figures 6 and 7 respectively. The Napthalene plume is expected to mirror the BTEX plume shown in figure 7. The dissolved hydrocarbon plumes are fully delineated in the horizontal direction to the North by MW-1 and MW-2, to the East by MW-2 and MW-3, to the South by MW-3, MW-6 and MW-4, and to the west by MW-4 and MW-1.

The dissolved hydrocarbon plumes are delineated in the vertical direction by the "deep" monitor well MW-7D, which was screened to a depth of 25 feet. No measurable levels of the tested parameters were detected in samples collected from MW-6, MW-7D or the on-site potable water well which was sampled as a precautionary measure. The laboratory analytical reports are included in Appendix B and summarized in Table 5.

#### 5.5 Aquifer Characteristic Testing Results

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On June 14, 1994, slug tests were completed in monitor wells MW-6, MW-7D, and MW-4. Data files were created from the water level measurements recorded by means of a Hermit 2000 electronic datalogger. The files were transferred to an IBM compatible computer and print-outs were generated with a word processing program. Drawdown versus time was then plotted on a semi-log scale using a graphics computer program. A best-fitting line was selected for that portion of the plot that was most representative of flow from the undisturbed aquifer. The print-outs, the plot, and the equation for the best fit exponential curve, for each test can be found in Appendix C. Values derived from the plots and other input parameters were then entered into a series of equations developed by Herman Bouwer and R.C. Rice (1976) for determining the hydraulic conductivity of unconfined aquifers with partially penetrating wells. The hydraulic conductivity equations, input parameters and results can also be found in Appendix C.

Assumptions made in calculating the aquifer characteristics include an effective porosity ( $n$ ) of 25%, (based on visual observations of the borings and drill cuttings) and an aquifer thickness of 100 feet. (based on USGS cross section map (Miller, 1987)) The Storativity Coefficient or Specific Yield of the unconfined aquifer was estimated to be 0.15.

The hydraulic conductivity ( $K$ ) at this site varies considerably with depth. This phenomena was observed during the purging of wells MW-6 and MW-7D prior to sampling. The deep well recharged almost immediately following the removal of a well volume of water. MW-6 took over 10 minutes to recharge. The slug test results confirm this change in hydraulic conductivity. It can be explained by the clay content observed in the sands from the shallow auger cuttings. The drill cuttings below 15 feet produced a much cleaner sand.

The ( $K$ ) value derived from the slug test performed on MW-4 fell in between the values obtained for MW-6 and MW-7D. MW-4 is a compliance well located on the southwest corner of the tank pad. The hydraulic conductivity value obtained from this well likely reflects the high permeability of the pea gravel bed used as a cushion for the underground storage tanks. Therefore, the  $K$  value of 27.5 gallons per day per square foot derived from the MW-6 slug test is most likely to represent the hydraulic conductivity of the shallow subsurface through which the hydrocarbon plume might migrate. This value, converted to feet per day, was used to calculate a ground water flow velocity of 0.0932 feet per day. The hydraulic conductivity and transmissivity values derived from all 3 tests may be found in Appendix C.

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#### 6.0 QUALITY ASSURANCE AND HEALTH & SAFETY

Ardaman & Associates, Inc.'s Comprehensive Quality Assurance Plan #900305G is on file with the FDEP. The Comprehensive QAP was prepared in accordance with FDEP's "Guidelines for Preparing Quality Assurance Plans" (DER-QA-001/85) and EPA's "Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual" (EPA Region IV, 1986). Savannah Laboratories & Environmental Services, Inc. Comprehensive QAP #890142G is on file with the FDEP as well.

All samples were analyzed within their applicable holding times. Results of the analyses of the equipment rinsate were below instrument detection limits for all tested parameters. All field work for this assessment was performed under Ardaman's Health and Safety plan. No accidents or excessive personal exposures were documented during site activities.

#### 7.0 SUMMARY AND CONCLUSIONS

On March 28, 1994, Ardaman & Associates, Inc., was retained by MAPCO Petroleum Inc., to conduct a Contamination Assessment for the MAPCO convenience store/service station #6170 (FAC #318509326). The station is located at 9020 95th Street, in Sebastian, Florida. There are three (3) 10,000-gallon steel underground storage tanks at this facility. The tanks contain three grades of unleaded gasoline. There is no record of any Initial Remedial Action (IRA) and no remedial action was taken during the Contamination Assessment Phase of this project. No information is available with regard to the type, source and quantity of the product lost at this facility. No specific incident of discharge or inventory loss has been documented. The tanks and lines tested tight on March 20, 1992 and again on June 21, 1994.

Based on the findings of this assessment, the subsurface, in the immediate vicinity of the UST farm has been affected by the storage and handling of petroleum products. Minor discharges during fueling operations are suspected of being the source of both the limited soil and groundwater contamination.

The horizontal and vertical extent of the hydrocarbons in the soil was studied during the installation of the monitoring wells and soil borings. Excessive soil contamination was assessed through soil head space readings for total organic vapors in the vadose zone. There is an estimated 70 cubic yards of "excessively contaminated" unsaturated soils around the western edge of the tank

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pad. Headspace analyses ranged from 0 to 130 parts per million. The highest organic vapor responses were recorded at a depth of approximately 3 feet bls.

Two (2) monitor wells were installed to help delineate the horizontal and vertical extent of the dissolved hydrocarbon plume at this facility. Calculations presented in this report indicates that the groundwater flow is East-Southeast under a hydraulic gradient of 0.0064 ft/ft.

Groundwater samples collected from monitor well MW-5 contained dissolved hydrocarbons above the laboratory instrument's lower detection limits. Benzene concentrations of 96 parts per billion (ppb), total VOA concentrations of 111.5 ppb total Napthalenes of 130 ppb and MTBE concentrations of 24 ppb were recorded in MW-5. These dissolved petroleum constituents exceed Target Cleanup Levels, as defined in Chapter 17-770 FAC.

The dissolved hydrocarbon plume is fully delineated in the horizontal direction to the North by MW-1 and MW-2, to the East by MW-2 and MW-3, to the South by MW-3, MW-6 and MW-4, and to the west by MW-4 and MW-1. The dissolved hydrocarbon plume is delineated in the vertical direction at a depth of 25 feet bls. A CAR Summary Sheet/Checklist is included in Appendix D.

#### 8.0 RECOMMENDATIONS

Ardaman & Associates, Inc. recommends that a Monitoring Only Plan (MOP) be implemented at this site for the following reasons:

1. Ardaman & Associates Generic Quality Assurance Plan #900305G has been approved by the DEP.
2. Free product is not present at this site.
3. Groundwater contamination is not widespread, does not extend off-site and is not migrating vertically.
4. Groundwater contamination falls well within the DEP monitoring only guidelines for source and perimeter wells at a site with a G-II aquifer and a potable well within a 1/4 mile radius.
5. The tanks & lines tested tight as recently as June 21, 1994.

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6. There is no record of diesel fuel ever having been sold at this site. If the Gasoline Analytical Group reading of 500 ppm is used to define "excessively contaminated soil", there is no excessively contaminated soil at this site. Even with the Kerosene Analytical Group level of 50 ppm, the amount of contaminated soil is very limited.

The following (existing) monitor wells have been selected to meet the monitoring only criteria set forth in 17-770.660 (3) F.A.C.:

	MONITOR WELL	DESIGNATION
1.	MW-5	Source Well
2.	MW-1	Upgradient Well
3.	MW-2	Upgradient Well
4.	MW-3	Downgradient Well
5.	MW-4	Downgradient Well

These wells will be monitored and sampled quarterly for a period of one year. The samples will be analyzed by EPA method 602. Quarterly status reports containing the analytical results will be forwarded to the Department. If, after one year, the hydrocarbon concentrations reflect a decreasing trend and/or meet the end point criteria specified in 17-770.730 (a), a Site Rehabilitation Completion Report (SRCR) will be prepared. If the hydrocarbon concentrations do not show a decreasing trend, a "Short Term Cleanup Strategy" will be proposed in a RAP as per the guidelines published by the DEP's Engineering Support Section dated October 10, 1994.

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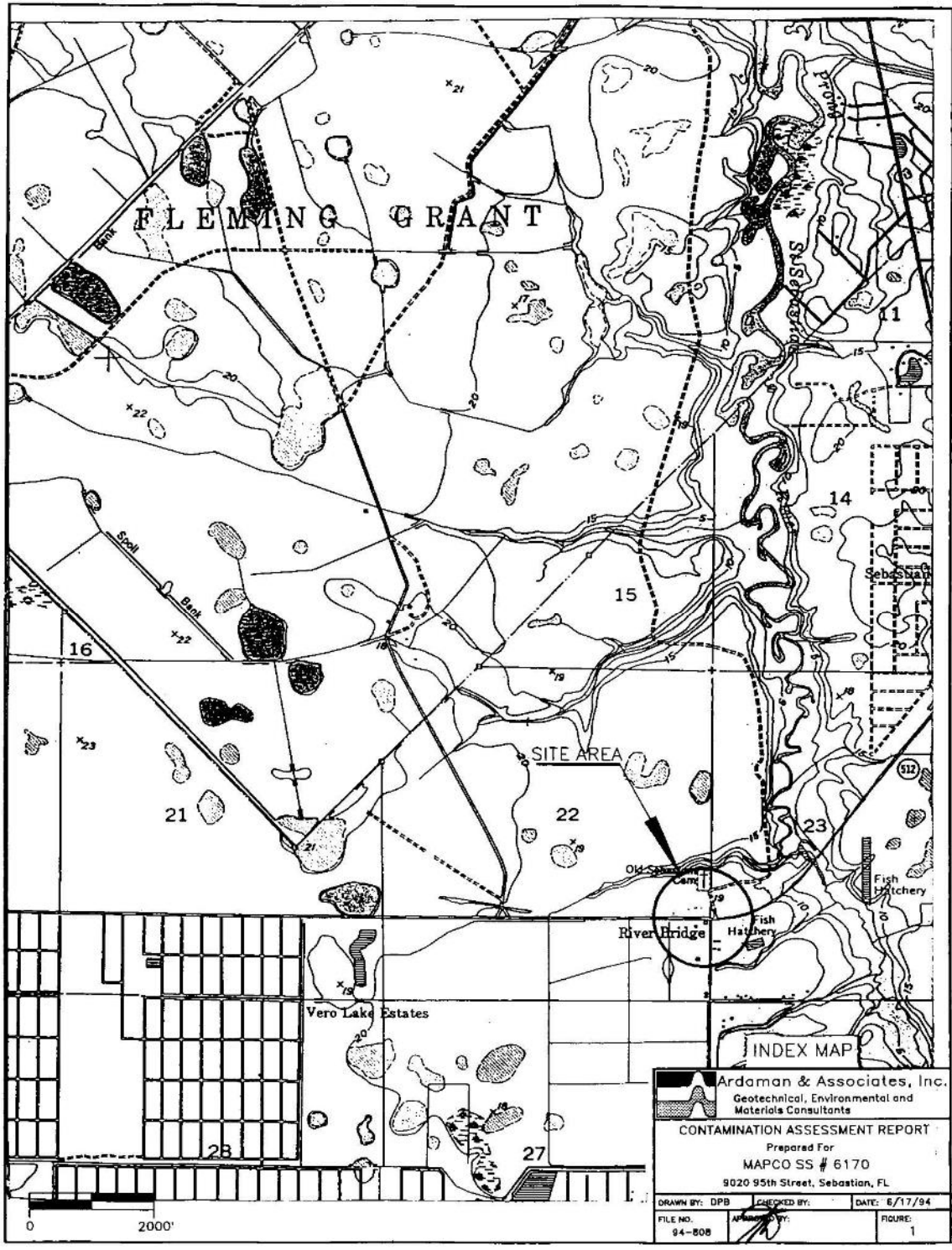
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Ardaman & Associates, Inc.





**FIGURES**

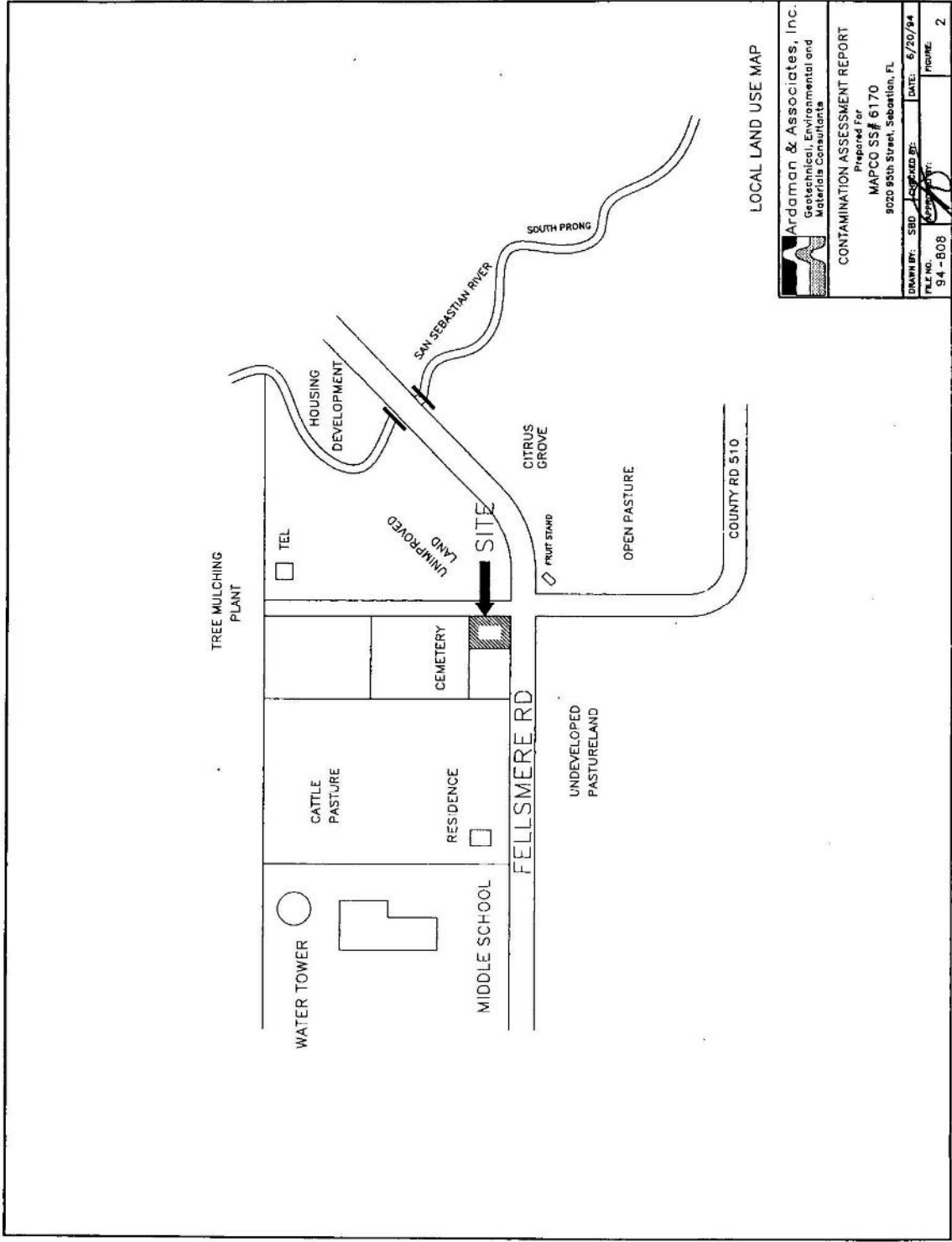


**INDEX MAP**



**Ardaman & Associates, Inc.**  
 Geotechnical, Environmental and  
 Materials Consultants

**CONTAMINATION ASSESSMENT REPORT**  
 Prepared For  
 MAPCO SS # 6170  
 9020 95th Street, Sebastian, FL

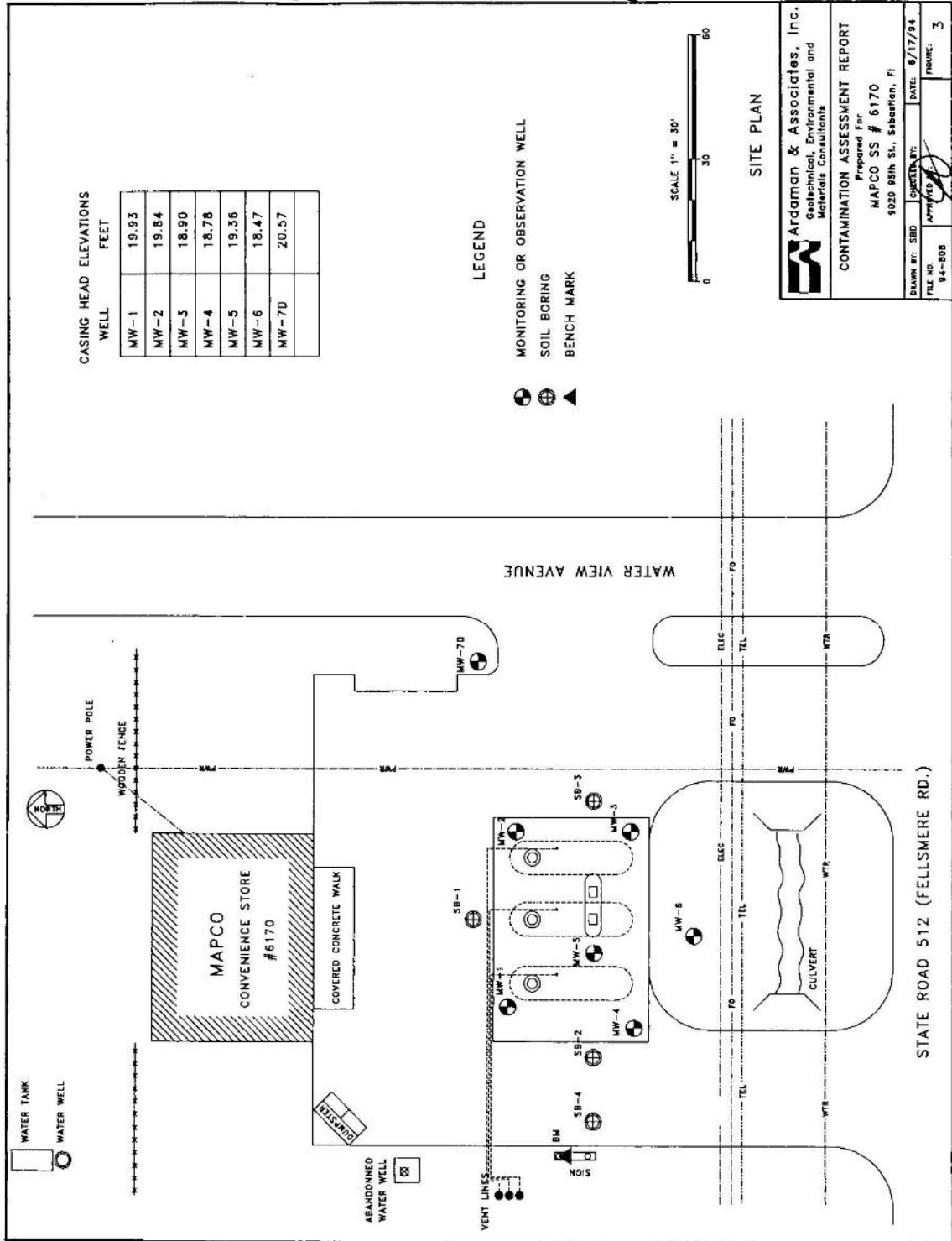
DRAWN BY: DPB	CHECKED BY:	DATE: 6/17/94
FILE NO. 94-808	APPROVED BY:	FIGURE 1



LOCAL LAND USE MAP

 <b>Ardaman &amp; Associates, Inc.</b> Geotechnical, Environmental and Materials Consultants	
Prepared For <b>MAPCO SS# 6170</b> 9020 95th Street, Sebastian, FL	
DRAWN BY: SBD FILE NO.: 94-808	CHECKED BY:  DATE: 6/20/94 FIGURE: 2

CONTAMINATION ASSESSMENT REPORT



**Ardaman & Associates, Inc.**  
 Geotechnical, Environmental and  
 Materials Consultants

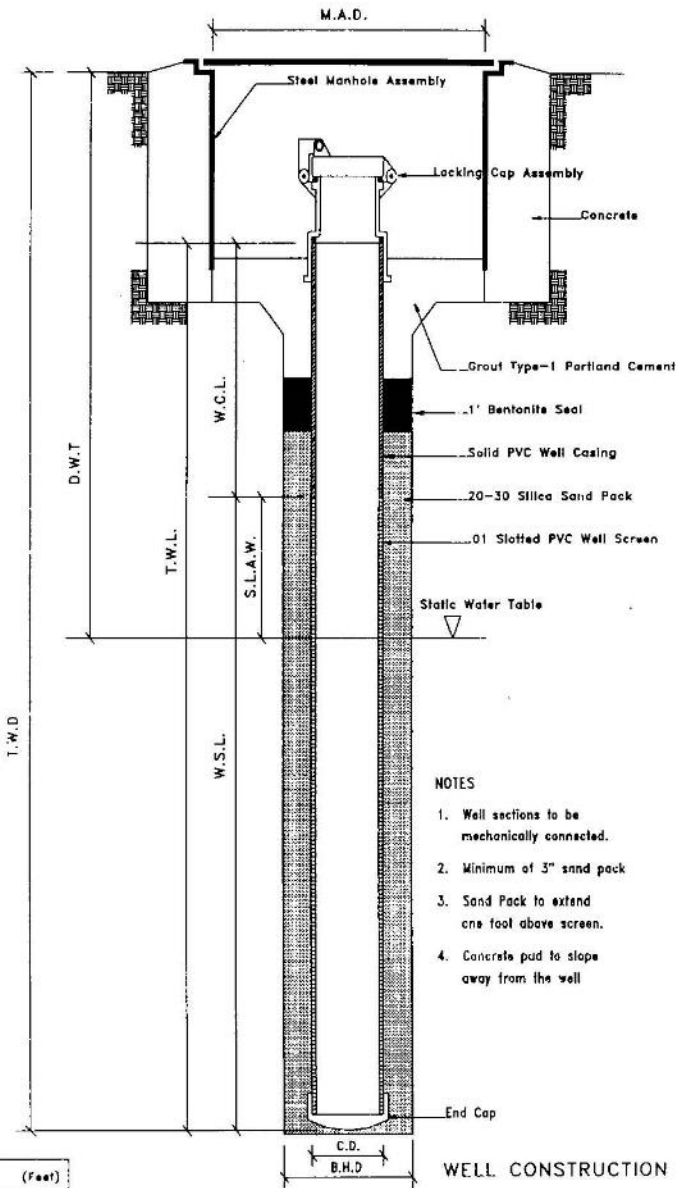
**CONTAMINATION ASSESSMENT REPORT**  
 Prepared For  
 MAPCO SS # 6170  
 9020 95th St., Sebastian, FL

DATE: 6/17/94

DRAWN BY: SBD CHECKED BY: JPP

FILE NO.: 94-005 PROJECT: 3

SHALLOW MONITOR WELL - (TYPICAL)



NOTES

1. Well sections to be mechanically connected.
2. Minimum of 3" sand pack
3. Sand Pack to extend one foot above screen.
4. Concrete pad to slope away from the well

WELL CONSTRUCTION DIAGRAM

MONITOR WELL DATA	(Feet)
Depth to Water (D.T.W.)	3.0
Total Well Depth (T.W.D.)	12.5
Total Well Length (T.W.L.)	12.0
Screen Length Above Water (S.L.A.W.)	1.0
Well Screen Length (W.S.L.)	10.0
Well Casing Diameter (C.D.)	0.167
Well Borehole Diameter (B.H.D.)	0.833
Well Casing Length (W.C.L.)	2.0
Manhole Assembly Diameter (M.A.D.)	0.667

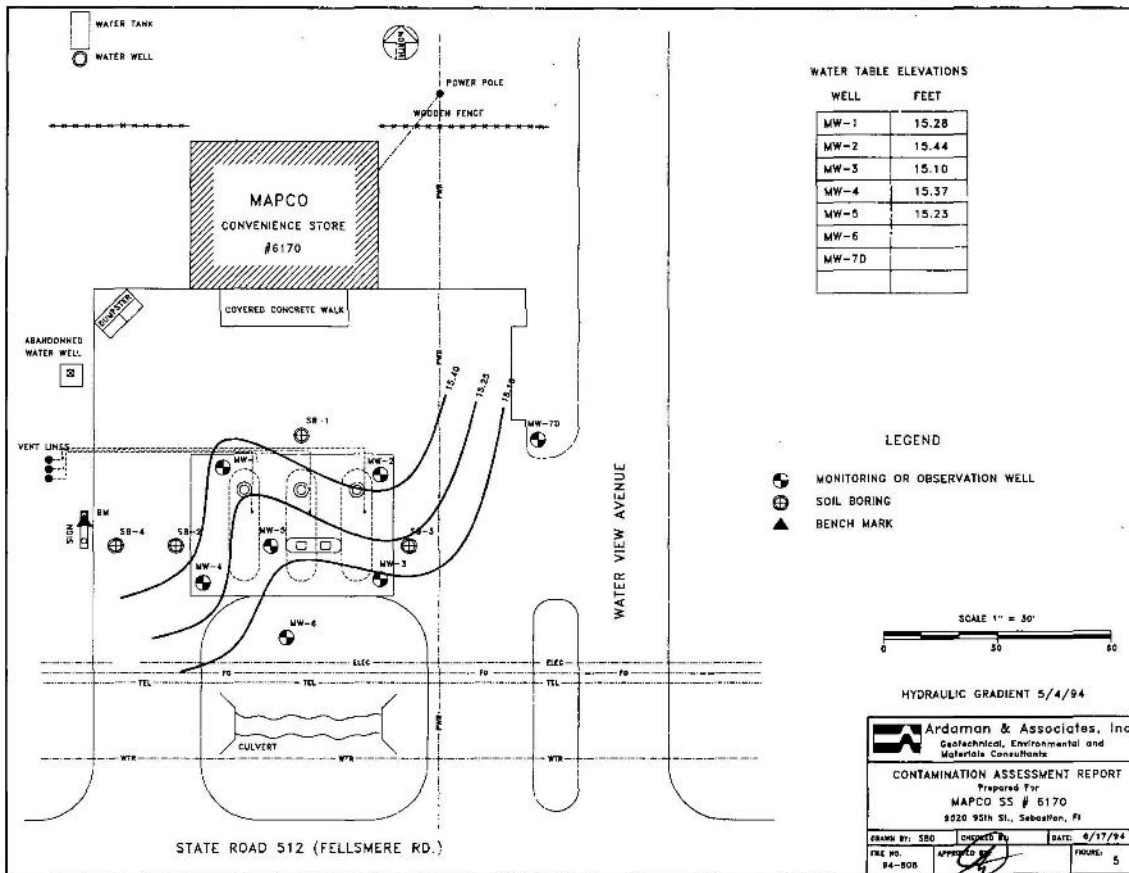
(Not to Scale)

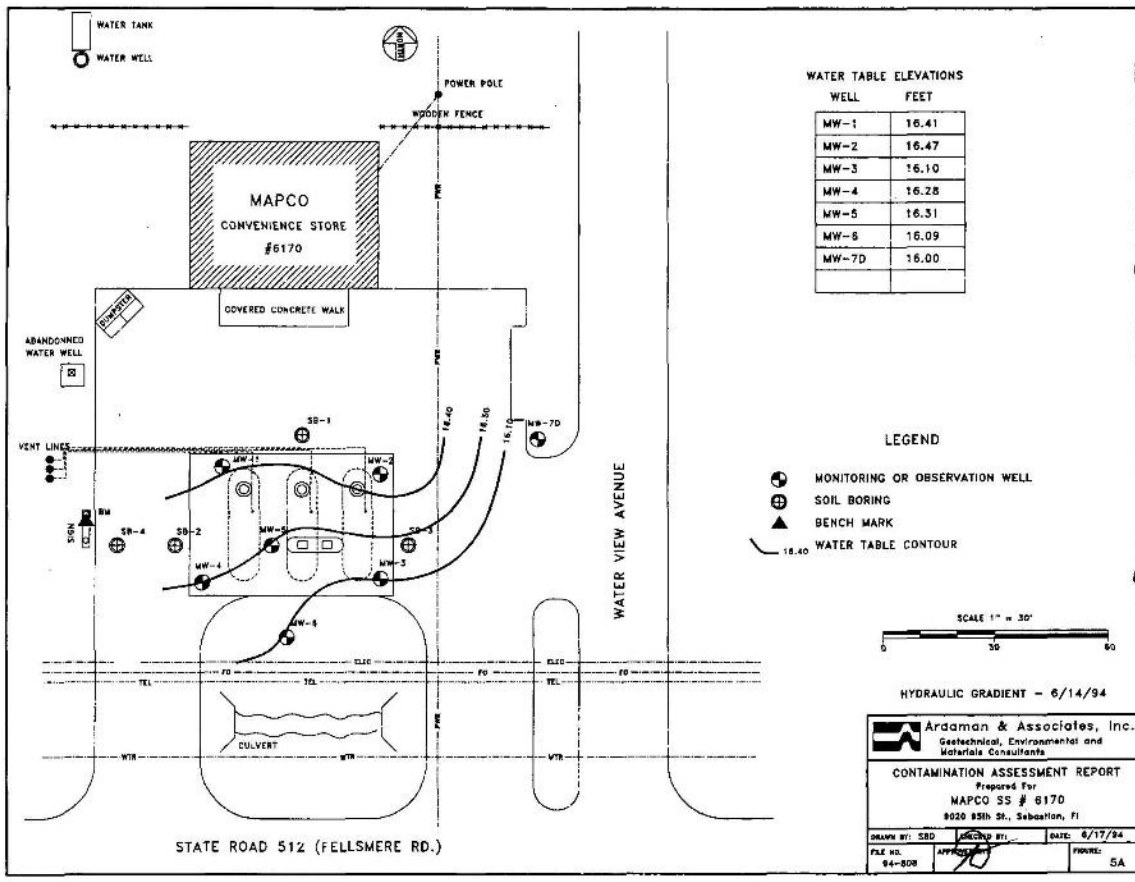
**Ardaman & Associates, Inc.**  
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 Materials Consultants

**CONTAMINATION ASSESSMENT REPORT**

Prepared For  
**MAPCO SS# 6170**  
 9020 85th St., Sebring, FL

DRAWN BY: SBD	DESIGNED BY:	DATE: 8/17/94
FILE NO: 94-808	APPROVED BY: <i>[Signature]</i>	FIGURE: 4





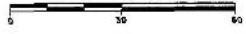
WATER TABLE ELEVATIONS

WELL	FEET
MW-1	16.41
MW-2	16.47
MW-3	16.10
MW-4	16.28
MW-5	16.31
MW-6	16.09
MW-7D	16.00

LEGEND

- ⊕ MONITORING OR OBSERVATION WELL
- ⊕ SOIL BORING
- ▲ BENCH MARK
- 16.40 WATER TABLE CONTOUR

SCALE 1" = 30'

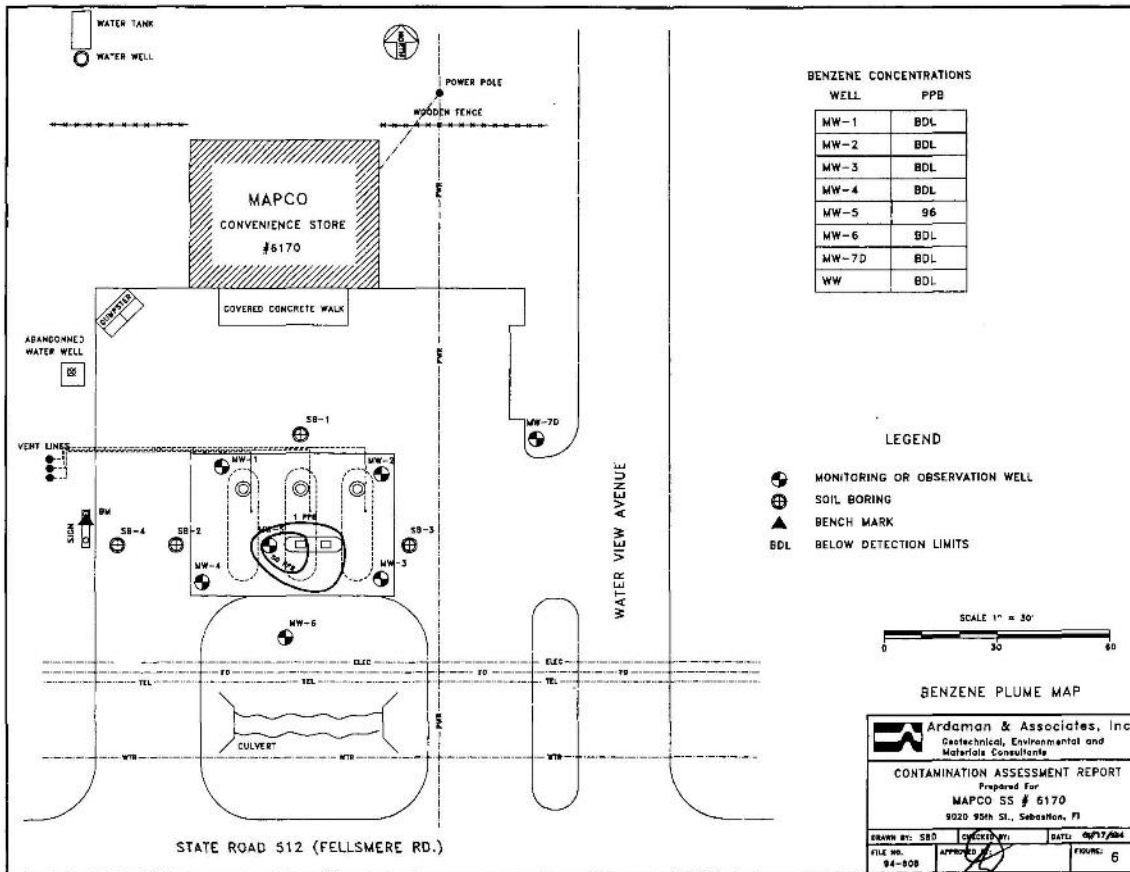


HYDRAULIC GRADIENT - 6/14/94

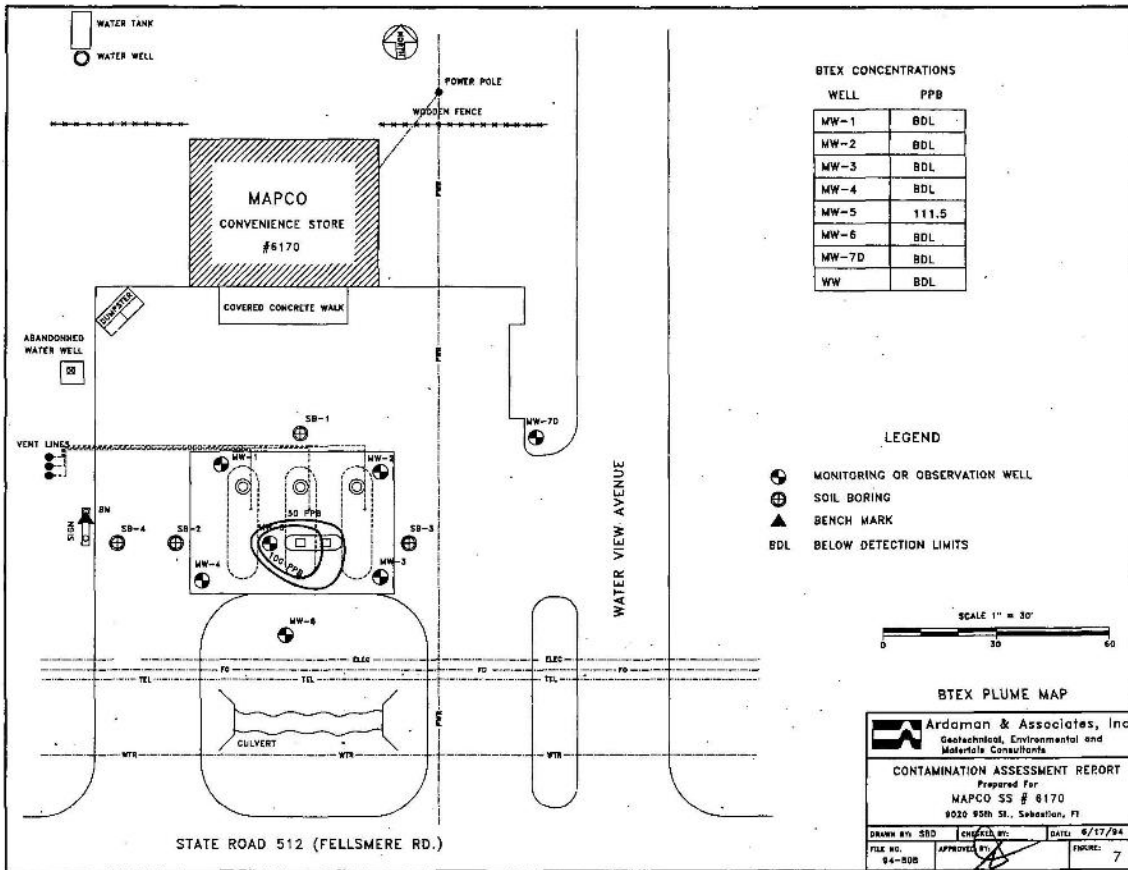
**Ardaman & Associates, Inc.**  
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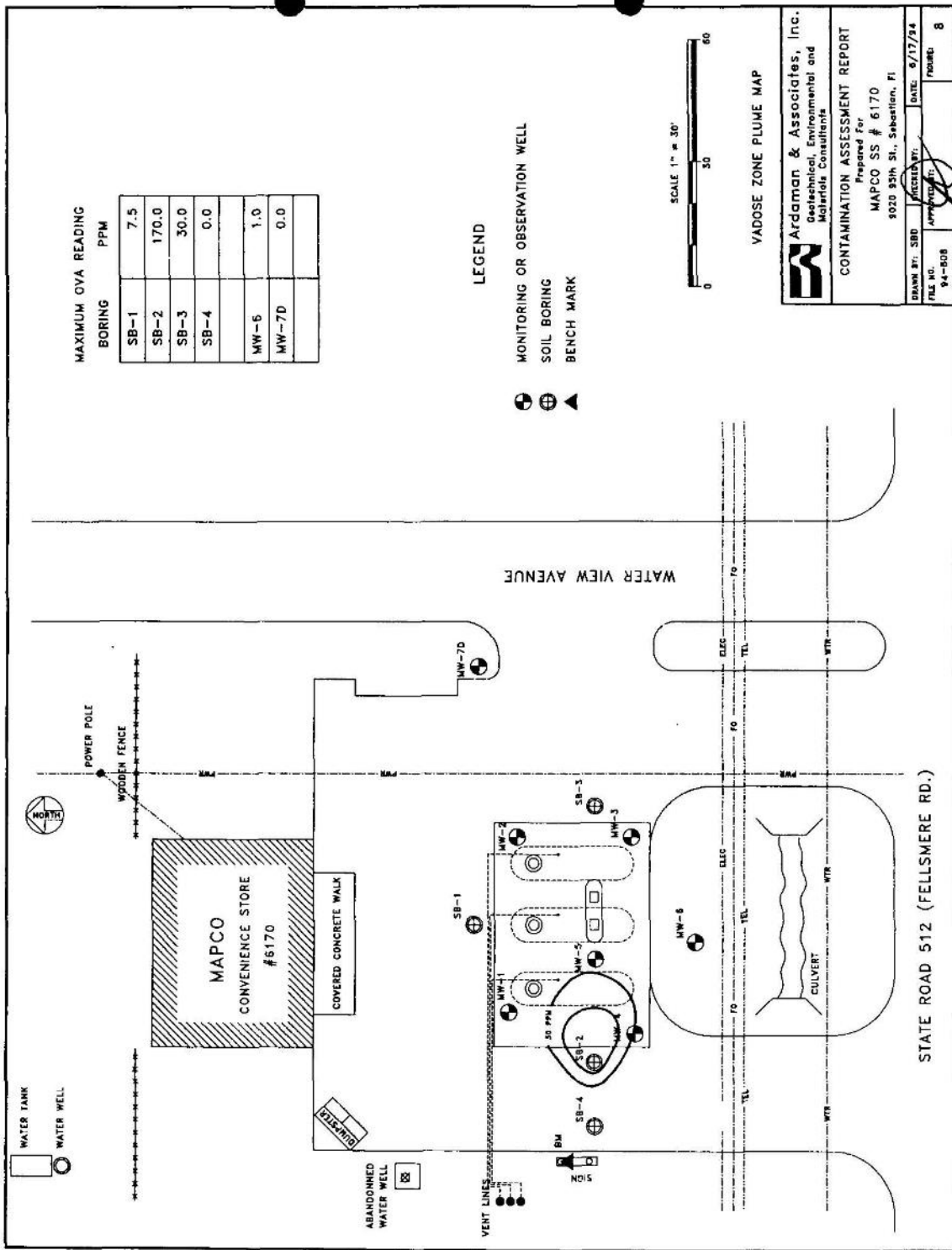
**CONTAMINATION ASSESSMENT REPORT**  
Prepared For  
MAPCO SS # 6170  
8020 85th St., Sebastian, FL

DRAWN BY: SBD CHECKED BY: DATE: 6/17/94  
FILE NO. 94-808 APPROVED BY: FINNELL: SA











**TABLES**

**TABLE 1**  
**Monitoring Well Construction Details**

MAPCC # 6170  
9020 95th Street  
Sebastian, Florida

Well	Diameter	Casing		Screen		Total Depth	Sand Pack
		Material	Length	Material	Length		
MW-1*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-2*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-3*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-4*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-5*	2.0"	Sch 40 PVC	1.00	0.01" Slotted PVC	9'	1.00-10.00	20/30 Silica Sand
MW-6	2.0"	Sch 40 PVC	2.00	0.01" Slotted PVC	10'	2.00-12.00	20/30 Silica Sand
MW-7D	2.0"	Sch 40 PVC	20.00	0.01" Slotted PVC	5'	20.00-25.00	20/30 Silica Sand

\*Wells installed by a previous contractor; therefore, well construction details are the result of physical measurements

**TABLE 2**  
**Monitoring Data - 6/14/94**

MAPCO #6170  
 9020 95th Street  
 Sebastian, Florida

Well	Casing Elevation	Depth to Water	Water Table Elevation	Liquid Phase Hydrocarbons
MW-1	19.93	3.52	16.41	0.00
MW-2	19.84	3.37	16.47	0.00
MW-3	18.90	2.80	16.10	0.00
MW-4	18.78	2.50	16.28	0.00
MW-5	19.36	3.05	16.31	0.00
MW-6	18.47	2.38	16.09	0.00
MW-7D	20.57	4.57	16.00	0.00

**TABLE 2A**  
**Monitoring Data - 5/19/94**

MAPCO #6170  
 9020 95th Street  
 Sebastian, Florida

Well	Casing Elevation	Depth to Water	Water Table Elevation	Liquid Phase Hydrocarbons
MW-1	19.93	4.65	15.28	0.00
MW-2	19.84	4.40	15.44	0.00
MW-3	18.90	3.80	15.10	0.00
MW-4	18.78	3.41	15.37	0.00
MW-5	19.36	4.13	15.23	0.00

TABLE 3  
Groundwater Quality Data

MAPCO #6170  
9020 95th Street  
Sebastian, Florida

Well	Temperature deg C	Conductivity mhos	CaCO3 mg/L	Iron mg/L	PH
MW-1	31.2	825	NT	NT	6.90
MW-2	32.4	931	NT	NT	6.70
MW-3	30.9	552	NT	NT	6.70
MW-4	30.7	807	NT	NT	6.70
MW-5	32.9	1302	NT	NT	7.20
MW-6	32.1	895	137	1.2	7.00
MW-7D	33.6	1244	120	5.6	6.50

\*NT - Not tested

TABLE 4

OVA Results Summary - PPM

MAPCC #6170  
9020 95th Street  
Sebastian, Florida

Depth (feet)

Sample ID	1'			2'			3'			4'			5'			6'			7'			8'		
	U	F	A	U	F	A	U	F	A	U	F	A	U	F	A	U	F	A	U	F	A	U	F	A
SB-1	0	0	0	1	1	0	10	2.5	7.5	10	2.5	7.5												
SB-2	6	1	5	20	4	16	180	10	170	200	70	130												
SB-3	0	0	0	10	0	10	0	0	0	50	20	30												
SB-4	0	0	0	0	0	0	0	0	0	0	0	0												
MW-6	0	0	0	0	0	0	1	0	0	1	0	0												
MW-7D	0	0	0	0	0	0	8	8	0	45	45	0												

NOTES:  
All Readings in PPM  
U - Unfiltered  
F - Filtered  
A - Difference

TABLE 5

Summary of Groundwater Analytical Results

MAPCO # 6170  
 9020 95th Street  
 Sebastian, Florida  
 Collected 4/4/94

Well ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Total BTEX	MTBE	
MW-1	BDL	BDL	BDL	BDL	BDL	BDL	
MW-2	BDL	BDL	BDL	BDL	BDL	BDL	
MW-3	BDL	BDL	BDL	BDL	BDL	11	
MW-4	BDL	BDL	BDL	BDL	BDL	BDL	
MW-5	96	5	3.4	7.1	111.5	24	
MW-6*	BDL	BDL	BDL	BDL	BDL	BDL	
MW-7D*	BDL	BDL	BDL	BDL	BDL	BDL	
WW*	BDL	BDL	BDL	BDL	BDL	BDL	
Well ID	EPA 601	EDB	Napths	PAH's	TRPH (mg/L)	Pb Unfiltered (mg/L)	Pb Filtered (mg/L)
MW-1	BDL	BDL	BDL	BDL	BDL	0.023	
MW-2	BDL	BDL	BDL	BDL	BDL	0.031	
MW-3	BDL	BDL	BDL	BDL	BDL	0.0054	
MW-4	BDL	BDL	BDL	BDL	BDL	0.0069	
MW-5	BDL	BDL	130	BDL	BDL	BDL	

\* Collected 5/25/94



**APPENDIX A**  
**BORING LOGS**  
**&**  
**MONITORING WELL DIAGRAMS**

## GEOLOGIC BORING LOG SB-1

DEPTH (feet)	OVA (ppm)	DESCRIPTION
0	0	Orange, Fine to Medium Quartz Sand
2	0	
	7.5	Grey, Silty, Clayey, Fine to Medium Quartz Sand
4	7.5	<u>    </u>
5		

Owner: MAPCO Petroleum Inc.	Casing: NA
Location: 9020 95th Street Sebastian, FL.	Screen: NA
Date Installed: 5-19-94	Total Well Depth: NA
Drilling Method: Hand Auger	Static Water Table: 4.5'
Sample Method: Hand Auger	Remarks: Above Background Readings

## GEOLOGIC BORING LOG SB-2

DEPTH (feet)	OVA (ppm)	DESCRIPTION
0	5	Orange, Fine to Medium Quartz Sand
-2	16	
-4	170	Grey, Silty, Clayey Fine to Medium Quartz Sand
-5	130	<u>    </u> ∇

Owner: MAPCO Petroleum Inc.	Casing: NA
Location: 9020 95th Street Sebastian, FL.	Screen: NA
Date Installed: 5-19-94	Total Well Depth: NA
Drilling Method: Hand Auger	Static Water Table: 4.5'
Sample Method: Hand Auger	Remarks: Above Background Readings

## GEOLOGIC BORING LOG SB-3

DEPTH (feet)	OVA (ppm)	DESCRIPTION
0	0	Orange, Fine to Medium Quartz Sand
2	10	
4	0	Brown, Silty, Fine to Medium Quartz Sand
5	30	with Trace Clay <u>  v  </u>

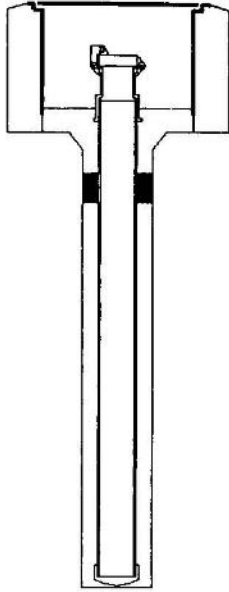
Owner: MAPCO Petroleum Inc.	Casing: NA
Location: 9020 95th Street Sebastian, FL.	Screen: NA
Date Installed: 6-14-94	Total Well Depth: NA
Drilling Method: Hand Auger	Static Water Table: 4.5'
Sample Method: Hand Auger	Remarks: Above Background Readings

## GEOLOGIC BORING LOG SB-4

DEPTH (feet)	OVA (ppm)	DESCRIPTION
0	0	Orange, Fine to Medium Quartz Sand
2	0	Brown, Silty, Clayey Fine to Medium Quartz Sand
4	0	<u>        </u>
5		

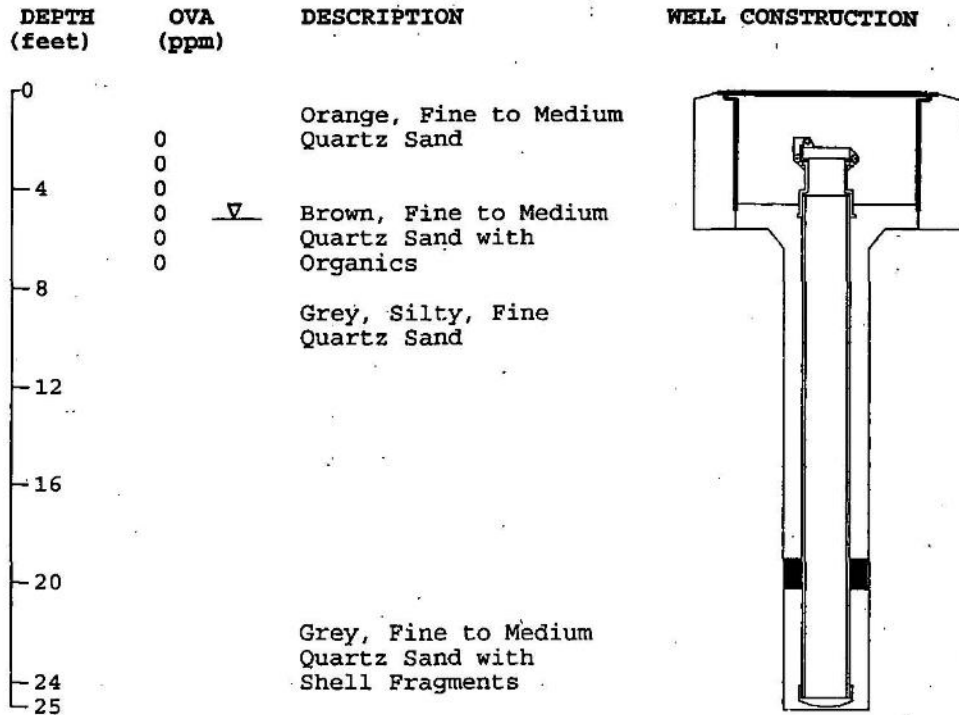
Owner: MAPCO Petroleum Inc.	Casing: NA
Location: 9020 95th Street Sebastian, FL.	Screen: NA
Date Installed: 6-14-94	Total Well Depth: NA
Drilling Method: Hand Auger	Static Water Table: 4.5'
Sample Method: Hand Auger	Remarks: Above Background Readings

## GEOLOGIC WELL LOG MW-6

DEPTH (feet)	OVA (ppm)	DESCRIPTION	WELL CONSTRUCTION
0	0		
-2	0	Orange, Fine to Medium Quartz Sand	
-4	1	Grey, Fine to Medium Quartz Sand	
-6	0	—∇	
-8	0	Brown, Silty Sand with Organics	
-10	0	Grey, Silty, Clayey Quartz Sand	
-12			

Owner: MAPCO Petroleum Inc.	Casing: 2.0' of 2" Diameter Sch 40 PVC
Location: 9020 95th Street Sebastian, FL.	Screen: 10'-0.01" Slot 2" Diameter Sch 40 PVC
Date Installed: 5-19-94	Total Well Depth: 12.0'
Drilling Method: Hollow Stem Auger	Static Water Table: 4.5'
Sample Method: Hand Auger & Cuttings	Remarks: Above Background Readings

## GEOLOGIC WELL LOG MW-7D



Owner: MAPCO Petroleum Inc.	Casing: 20.0' of 2" Diameter Sch 40 PVC
Location: 9012 95th Street Sebastian, FL.	Screen: 5'-0.01" Slot 2" Diameter Sch 40 PVC
Date Installed: 5-19-94	Total Well Depth: 25.0'
Drilling Method: Hollow Stem Auger	Static Water Table: 4.5'
Sample Method: Hand Auger & Cuttings	Remarks: Above Background Readings



**APPENDIX B**  
**ANALYTICAL RESULTS**  
**&**  
**CHAIN OF CUSTODIES**



**SL SAVANNAH LABORATORIES**  
 & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D4-91357

Received: 04 MAY 94

Mr. Steve Dublin  
 Ardaman and Associates  
 3665 Park Central N. Blvd.  
 Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED				
91357-1	MW-1	05-04-94				
91357-2	MW-2	05-04-94				
91357-3	MW-3	05-04-94				
91357-4	MW-4	05-04-94				
91357-5	MW-5	05-04-94				
PARAMETER		91357-1	91357-2	91357-3	91357-4	91357-5
Purgeables (601/602)						
Bromodichloromethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform, ug/l		<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether, ug/l		<10J	<10J	<10J	<10J	<10J
Chloroform, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethylene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene, ug/l		<1.0	<1.0	<1.0	<1.0	<1.0

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 & ENVIRONMENTAL SERVICES, INC.

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REPORT OF RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED				
91357-1	MW-1	05-04-94				
91357-2	MW-2	05-04-94				
91357-3	MW-3	05-04-94				
91357-4	MW-4	05-04-94				
91357-5	MW-5	05-04-94				
PARAMETER	91357-1	91357-2	91357-3	91357-4	91357-5	
Methylene chloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
1,1,2,2-Tetrachloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Trichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Vinyl chloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	96	
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	3.4	
Toluene, ug/l	<1.0	<1.0	<1.0	<1.0	5.0	
Xylenes, ug/l	<1.0	<1.0	<1.0	<1.0	7.1	
Methyl-tert-butyl ether (MTBE), ug/l	<10	<10	11	<10	24	
Date Analyzed	05.05.94	05.05.94	05.05.94	05.05.94	05.11.94	
Method Number	601/602	601/602	601/602	601/602	601/602	
Dilution factor	1	1	1	1	1	

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REPORT OF RESULTS

Page 3

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES					DATE SAMPLED
91357-1	MW-1					05-04-94
91357-2	MW-2					05-04-94
91357-3	MW-3					05-04-94
91357-4	MW-4					05-04-94
91357-5	MW-5					05-04-94
PARAMETER	91357-1	91357-2	91357-3	91357-4	91357-5	
Polynuclear Aromatic Hydrocarbons (610)						
Acenaphthene, ug/l	<10	<10	<10	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10	<10	<10
Benzo(b,k)fluoranthene, ug/l	<10	<10	<10	<10	<10	<10
Chrysene + Benzo(a)anthracene, ug/l	<10	<10	<10	<10	<10	<10
Fluoranthene, ug/l	<10	<10	<10	<10	<10	<10
Fluorene, ug/l	<10	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	<10	<10	<10	<10	<10
Naphthalene, ug/l	<10	<10	<10	<10	<10	130
Phenanthrene + Anthracene, ug/l	<10	<10	<10	<10	<10	<10
Pyrene, ug/l	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene, ug/l	<10	<10	<10	<10	<10	<10
1-Methylnaphthalene, ug/l	<10	<10	<10	<10	<10	<10
Date Extracted	05.05.94	05.05.94	05.05.94	05.05.94	05.05.94	05.05.94
Date Analyzed	05.11.94	05.11.94	05.11.94	05.11.94	05.11.94	05.11.94
Method Number	EPA 610	EPA 610	EPA 610	EPA 610	EPA 610	EPA 610
Dilution factor	1	1	1	1	1	1

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REPORT OF RESULTS

Page 4

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES					DATE SAMPLED
91357-1	MW-1					05-04-94
91357-2	MW-2					05-04-94
91357-3	MW-3					05-04-94
91357-4	MW-4					05-04-94
91357-5	MW-5					05-04-94
PARAMETER	91357-1	91357-2	91357-3	91357-4	91357-5	
Ethylene Dibromide						
1,2-Dibromoethane (EDB) , ug/l	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Date Analyzed	05.06.94	05.06.94	05.06.94	05.06.94	05.06.94	05.06.94
Method Number	EPA 504.1	EPA 504.1	EPA 504.1	EPA 504.1	EPA 504.1	EPA 504.1
Petroleum Hydrocarbons						
Petroleum Hydrocarbons, mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Date Extracted	05.09.94	05.09.94	05.09.94	05.09.94	05.09.94	05.09.94
Date Analyzed	05.09.94	05.09.94	05.09.94	05.09.94	05.09.94	05.09.94
Method Number	EPA 418.1	EPA 418.1	EPA 418.1	EPA 418.1	EPA 418.1	EPA 418.1
Lead						
Lead, mg/l	0.023	0.031	0.0054	0.0069	<0.0050	
Date Analyzed	05.09.94	05.09.94	05.09.94	05.09.94	05.10.94	
Method Number	EPA 239.2	EPA 239.2	EPA 239.2	EPA 239.2	EPA 239.2	

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LOG NO: D4-91357

Received: 04 MAY 94

Mr. Steve Dublin  
Ardaman and Associates  
3665 Park Central N. Blvd.  
Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
Sampled By: SD/DB

REPORT OF RESULTS

Page 5

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
91357-6	Equipment Blank	05-04-94
PARAMETER	91357-6	
Purgeables (601/602)		
Bromodichloromethane, ug/l		<1.0
Bromoform, ug/l		<5.0
Bromomethane, ug/l		<1.0
Carbon tetrachloride, ug/l		<1.0
Chlorobenzene, ug/l		<1.0
Chloroethane, ug/l		<1.0
2-Chloroethylvinyl Ether, ug/l		<10J
Chloroform, ug/l		<1.0
Chloromethane, ug/l		<1.0
Dibromochloromethane, ug/l		<1.0
1,2-Dichlorobenzene, ug/l		<1.0
1,3-Dichlorobenzene, ug/l		<1.0
1,4-Dichlorobenzene, ug/l		<1.0
Dichlorodifluoromethane, ug/l		<1.0
1,1-Dichloroethane, ug/l		<1.0
1,2-Dichloroethane, ug/l		<1.0
1,1-Dichloroethene, ug/l		<1.0
trans-1,2-Dichloroethylene, ug/l		<1.0
1,2-Dichloropropane, ug/l		<1.0
cis-1,3-Dichloropropene, ug/l		<1.0
trans-1,3-Dichloropropene, ug/l		<1.0
Methylene chloride, ug/l		<1.0
1,1,2,2-Tetrachloroethane, ug/l		<1.0
Tetrachloroethene, ug/l		<1.0
1,1,1-Trichloroethane, ug/l		<1.0

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REPORT OF RESULTS

Page 6

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
91357-6	Equipment Blank	05-04-94
PARAMETER	91357-6	
1,1,2-Trichloroethane, ug/l	<1.0	
Trichloroethene, ug/l	<1.0	
Trichlorofluoromethane, ug/l	<1.0	
Vinyl chloride, ug/l	<1.0	
Benzene, ug/l	<1.0	
Ethylbenzene, ug/l	<1.0	
Toluene, ug/l	<1.0	
Xylenes, ug/l	<1.0	
Methyl-tert-butyl ether (MTBE), ug/l	<10	
Date Analyzed	05.05.94	
Method Number	601/602	
Dilution factor	1	

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Project: #94-808 (MAPCO #)  
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REPORT OF RESULTS

Page 7

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
91357-6	Equipment Blank	05-04-94
PARAMETER		91357-6
Polynuclear Aromatic Hydrocarbons (610)		
Acenaphthene, ug/l		<10
Acenaphthylene, ug/l		<10
Benzo(a)pyrene, ug/l		<10
Benzo(g,h,i)perylene, ug/l		<10
Benzo(b,k)fluoranthene, ug/l		<10
Chrysene + Benzo(a)anthracene, ug/l		<10
Fluoranthene, ug/l		<10
Fluorene, ug/l		<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l		<10
Naphthalene, ug/l		<10
Phenanthrene + Anthracene, ug/l		<10
Pyrene, ug/l		<10
2-Methylnaphthalene, ug/l		<10
1-Methylnaphthalene, ug/l		<10
Date Extracted		05.05.94
Date Analyzed		05.11.94
Method Number		EPA 610
Dilution factor		1
Ethylene Dibromide		
1,2-Dibromoethane (EDB), ug/l		<0.020
Date Analyzed		05.06.94
Method Number		EPA 504.1
Petroleum Hydrocarbons		
Petroleum Hydrocarbons, mg/l		<1.0
Date Extracted		05.09.94
Date Analyzed		05.09.94
Method Number		EPA 418.1

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Project: #94-808 (MAPCO #)  
Sampled By: SD/DB

REPORT OF RESULTS

Page 8

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
91357-6	Equipment Blank	05-04-94
PARAMETER		91357-6
Lead		
Lead, mg/l		<0.0050
Date Analyzed		05.09.94
Method Number		EPA 239.2



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Project: #94-808 (MAPCO #)  
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REPORT OF RESULTS

Page 9

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES			
91357-7	Lab Blank			
91357-8	Accuracy - % Recovery (Mean)			
91357-9	Precision - Relative % Difference			
91357-10	Detection Limit			
PARAMETER	91357-7	91357-8	91357-9	91357-10
Purgeables (601/602)				
Bromodichloromethane, ug/l	<1.0	---	---	1.0
Bromoform, ug/l	<5.0	---	---	5.0
Bromomethane, ug/l	<1.0	---	---	1.0
Carbon tetrachloride, ug/l	<1.0	---	---	1.0
Chlorobenzene, ug/l	<1.0	87 %	14 %	1.0
Chloroethane, ug/l	<1.0	---	---	1.0
2-Chloroethylvinyl Ether, ug/l	<10J	---	---	10J
Chloroform, ug/l	<1.0	---	---	1.0
Chloromethane, ug/l	<1.0	---	---	1.0
Dibromochloromethane, ug/l	<1.0	---	---	1.0
1,2-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,3-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,4-Dichlorobenzene, ug/l	<1.0	---	---	1.0
Dichlorodifluoromethane, ug/l	<1.0	---	---	1.0
1,1-Dichloroethane, ug/l	<1.0	---	---	1.0
1,2-Dichloroethane, ug/l	<1.0	---	---	1.0
1,1-Dichloroethene, ug/l	<1.0	106 %	26 %	1.0
trans-1,2-Dichloroethylene, ug/l	<1.0	---	---	1.0
1,2-Dichloropropane, ug/l	<1.0	---	---	1.0
cis-1,3-Dichloropropene, ug/l	<1.0	---	---	1.0
trans-1,3-Dichloropropene, ug/l	<1.0	---	---	1.0
Methylene chloride, ug/l	<1.0	---	---	1.0

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Project: #94-808 (MAPCO #)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 10

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91357-7 Lab Blank  
 91357-8 Accuracy - % Recovery (Mean)  
 91357-9 Precision - Relative % Difference  
 91357-10 Detection Limit

PARAMETER	91357-7	91357-8	91357-9	91357-10
1,1,2,2-Tetrachloroethane, ug/l	<1.0	---	---	1.0
Tetrachloroethene, ug/l	<1.0	---	---	1.0
1,1,1-Trichloroethane, ug/l	<1.0	---	---	1.0
1,1,2-Trichloroethane, ug/l	<1.0	---	---	1.0
Trichloroethene, ug/l	<1.0	103 %	17 %	1.0
Trichlorofluoromethane, ug/l	<1.0	---	---	1.0
Vinyl chloride, ug/l	<1.0	---	---	1.0
Benzene, ug/l	<1.0	83 %	7.2 %	1.0
Ethylbenzene, ug/l	<1.0	---	---	1.0
Toluene, ug/l	<1.0	93 %	8.6 %	1.0
Xylenes, ug/l	<1.0	---	---	1.0
Methyl-tert-butyl ether (MTBE), ug/l	<10	---	---	10
Date Analyzed	05.05.94	---	---	---
Method Number	601/602	---	---	---

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Project: #94-808 (MAPCO #)  
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REPORT OF RESULTS

Page 11

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91357-7 Lab Blank  
 91357-8 Accuracy - % Recovery (Mean)  
 91357-9 Precision - Relative % Difference  
 91357-10 Detection Limit

PARAMETER	91357-7	91357-8	91357-9	91357-10
<b>Polynuclear Aromatic Hydrocarbons (610)</b>				
Acenaphthene, ug/l	<10	---	---	10
Acenaphthylene, ug/l	<10	76 %	2.6 %	10
Benzo(a)pyrene, ug/l	<10	---	---	10
Benzo(g,h,i)perylene, ug/l	<10	---	---	10
Benzo(b,k)fluoranthene, ug/l	<10	---	---	10
Chrysene + Benzo(a)anthracene, ug/l	<10	---	---	10
Fluoranthene, ug/l	<10	79 %	5.0 %	10
Fluorene, ug/l	<10	82 %	2.4 %	10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	---	---	10
Naphthalene, ug/l	<10	66 %	1.5 %	10
Phenanthrene + Anthracene, ug/l	<10	---	---	10
Pyrene, ug/l	<10	80 %	6.3 %	10
2-Methylnaphthalene, ug/l	<10	---	---	10
1-Methylnaphthalene, ug/l	<10	---	---	10
Date Extracted	05.05.94	---	---	---
Date Analyzed	05.11.94	---	---	---
Method Number	EPA 610	---	---	---
<b>Ethylene Dibromide</b>				
1,2-Dibromoethane (EDB) , ug/l	<0.020	90 %	0 %	0.020
Date Analyzed	05.06.94	---	---	---
Method Number	EPA 504.1	---	---	---

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LOG NO: D4-91357

Received: 04 MAY 94

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 Pompano Beach, FL 33064

Project: #94-808 (MAPCO #)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 12

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91357-7 Lab Blank  
 91357-8 Accuracy - % Recovery (Mean)  
 91357-9 Precision - Relative % Difference  
 91357-10 Detection Limit

PARAMETER	91357-7	91357-8	91357-9	91357-10
<b>Petroleum Hydrocarbons</b>				
Petroleum Hydrocarbons, mg/l	<1.0	70 %	2.8 %	1.0
Date Extracted	05.09.94	---	---	---
Date Analyzed	05.09.94	---	---	---
Method Number	EPA 418.1	---	---	---
<b>Lead</b>				
Lead, mg/l	<0.0050	98 %	4.1 %	0.0050
Date Analyzed	05.09.94	---	---	---
Method Number	EPA 239.2	---	---	---

Method References: EPA 40 CFR Part 136, EPA 600/4-79-020 and EPA 600/4-88-039.  
 J - Estimated Value.

Paul Canevaro

Final Page Of Report

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL



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LOG NO: D4-91548

Received: 25 MAY 94

Mr. Steve Dublin  
 Ardaman & Associates, Inc.  
 2608 West 84th. Street  
 Hialeah, FL 33016

Project: #94-808 (MAPCO)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED			
91548-1	MW-6	05-25-94			
91548-2	MW-7D	05-25-94			
91548-3	WW	05-25-94			
91548-4	Equipment	05-25-94			
PARAMETER	91548-1	91548-2	91548-3	91548-4	
Purgeable Aromatics (602)					
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	
Chlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	
Toluene, ug/l	<1.0	<1.0	<1.0	<1.0	
Xylenes, ug/l	<1.0	<1.0	<1.0	<1.0	
Methyl-Tert-Butyl-Ether (MTBE), ug/l	<10	<10	<10	<10	
Date Analyzed	05.26.94	05.26.94	05.26.94	05.26.94	
Method Number	EPA 602	EPA 602	EPA 602	EPA 602	
Dilution factor	1	1	1	1	

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Project: #94-808 (MAPCO)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED			
91548-1	MW-6	05-25-94			
91548-2	MW-7D	05-25-94			
91548-3	WW	05-25-94			
91548-4	Equipment	05-25-94			
PARAMETER	91548-1	91548-2	91548-3	91548-4	
Polynuclear Aromatic Hydrocarbons (610)					
Acenaphthene, ug/l	<10	<10	<10	<10	
Acenaphthylene, ug/l	<10	<10	<10	<10	
Benzo(a)pyrene, ug/l	<10	<10	<10	<10	
Benzo(g,h,i)perylene, ug/l	<10	<10	<10	<10	
Benzo(b,k)fluoranthene, ug/l	<10	<10	<10	<10	
Chrysene + Benzo(a)anthracene, ug/l	<10	<10	<10	<10	
Fluoranthene, ug/l	<10	<10	<10	<10	
Fluorene, ug/l	<10	<10	<10	<10	
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	<10	<10	<10	
Naphthalene, ug/l	<10	<10	<10	<10	
Phenanthrene + Anthracene, ug/l	<10	<10	<10	<10	
Pyrene, ug/l	<10	<10	<10	<10	
2-Methylnaphthalene, ug/l	<10	<10	<10	<10	
1-Methylnaphthalene, ug/l	<10	<10	<10	<10	
Date Extracted	05.25.94	05.25.94	05.25.94	05.25.94	
Date Analyzed	06.01.94	06.01.94	06.01.94	06.01.94	
Method Number	EPA 610	EPA 610	EPA 610	EPA 610	
Dilution factor	1	1	1	1	

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LOG NO: D4-91548

Received: 25 MAY 94

Mr. Steve Dublin  
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Project: #94-808 (MAPCO)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 3

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91548-5 Lab Blank  
 91548-6 Accuracy - % Recovery (Mean)  
 91548-7 Precision - Relative % Difference  
 91548-8 Detection Limit

PARAMETER	91548-5	91548-6	91548-7	91548-8
Purgeable Aromatics (602)				
Benzene, ug/l	<1.0	112 %	5.3 %	1.0
Chlorobenzene, ug/l	<1.0	89 %	8.9 %	1.0
1,2-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,3-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,4-Dichlorobenzene, ug/l	<1.0	---	---	1.0
Ethylbenzene, ug/l	<1.0	---	---	1.0
Toluene, ug/l	<1.0	102 %	3.9 %	1.0
Xylenes, ug/l	<1.0	---	---	1.0
Methyl-Tert-Butyl-Ether (MTBE), ug/l	<10	---	---	10
Date Analyzed	05.26.94	---	---	---
Method Number	EPA 602	---	---	---



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Project: #94-808 (MAPCO)  
 Sampled By: SD/DB

REPORT OF RESULTS

Page 4

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

91548-5 Lab Blank  
 91548-6 Accuracy - % Recovery (Mean)  
 91548-7 Precision - Relative % Difference  
 91548-8 Detection Limit

PARAMETER	91548-5	91548-6	91548-7	91548-8
Polynuclear Aromatic Hydrocarbons (610)				
Acenaphthene, ug/l	<10	---	---	10
Acenaphthylene, ug/l	<10	80 %	11 %	10
Benzo(a)pyrene, ug/l	<10	---	---	10
Benzo(g,h,i)perylene, ug/l	<10	---	---	10
Benzo(b,k)fluoranthene, ug/l	<10	---	---	10
Chrysene + Benzo(a)anthracene, ug/l	<10	---	---	10
Fluoranthene, ug/l	<10	88 %	8.0 %	10
Fluorene, ug/l	<10	82 %	3.7 %	10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	---	---	10
Naphthalene, ug/l	<10	80 %	14 %	10
Phenanthrene + Anthracene, ug/l	<10	---	---	10
Pyrene, ug/l	<10	88 %	6.8 %	10
2-Methylnaphthalene, ug/l	<10	---	---	10
1-Methylnaphthalene, ug/l	<10	---	---	10
Date Extracted	05.25.94	---	---	---
Date Analyzed	06.01.94	---	---	---
Method Number	EPA 610	---	---	---

Method Reference: EPA 40 CFR Part 136.

  
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 Fax (813) 885-7049

## ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

P.O. NUMBER	PROJECT NUMBER	PROJECT NAME	MATRIX TYPE	REQUIRED ANALYSES	PAGE	OF
	94-808	MARCO			1	1
CLIENT NAME: ARDMAN & ASSOCIATES CLIENT ADDRESS: 3465 PACEWALKER BLVD. N., POMPANO BEACH, FL 33069 SAMPLER(S) NAME(S): J. DUBOIN / D. BOURGEOIS CLIENT PROJECT MANAGER: S. DUBOIN			TELEPHONE/FAX NO.: (904) 878-5788 / (904) 878-5788 CITY, STATE, ZIP CODE: TAMPA, FL 33609			
SAMPLE IDENTIFICATION			NUMBER OF CONTAINERS SUBMITTED			
DATE	TIME		AQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	
5/24/94	13:00	MW-6	✓		3	1
5/24/94	12:50	MW-7D	✓		3	1
5/24/94	12:30	WW	✓		3	1
5/24/94	13:15	EQUIPMENT	✓		3	1
REPORT DUE DATE: 6/2/94 * SUBJECT TO RUSH FEES						
RECEIVED BY: (SIGNATURE) [Signature] DATE: 5/24/94 TIME: 15:30			RECEIVED BY: (SIGNATURE) [Signature] DATE: 5/25/94 TIME: 16:00			
RECEIVED FOR LABORATORY USE ONLY: SAVANNAH LABORATORY USE ONLY DATE: 5/25/94 TIME: 16:00 CUSTODY INTACT: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> CUSTODY SEAL NO.: D491548						



**APPENDIX C**  
**AQUIFER CHARACTERISTICS**  
**&**  
**TESTING**

## SLUG TEST CALCULATIONS

### UNCONFINED AQUIFER WITH PARTIALLY PENETRATING WELL

File Number 94-808

Well Number MW-6

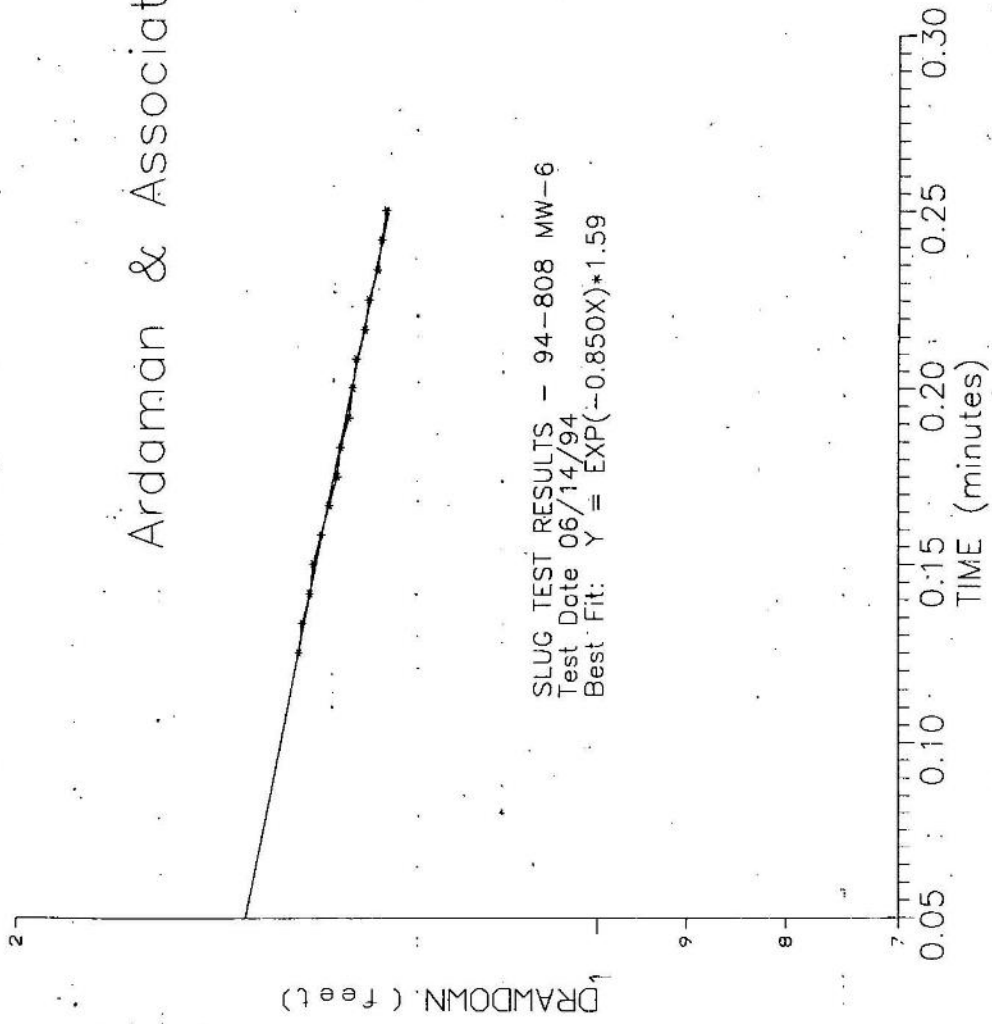
#### INPUT DATA

Static Water Table to Well Bottom (H) ft	9.12
Aquifer thickness (D) ft	100.00
Length of Well Screen in Water (L) ft	9.12
Radius of Casing (Rc) inches	2.00
Y Value @ t equals 0 (Yo) ft	1.59
Y Value @ Time t (Y) ft	1.34
Time (t) sec	12.00
Radius of borehole (Rw) inches	5.00
Dimensionless Coefficient (A)	1.85
Dimensionless Coefficient (B)	0.30
Estimated Porosity (n)	0.25

#### CALCULATIONS

L/Rw	21.89
$X = \ln(D-H)/Rw$	5.39
IF $X \geq 6$ use 6	5.39
$\ln(Rc/Rw) = (1.1/\ln(L/Rw) + (A+B*(X))/L/Rw)^{-1}$	1.94
$Y = (\ln(Yo/Y))/t$	0.01
$K = (Rc^2 * \ln(Rc/Rw) / 2L) * Y$	4.217E-05
K in gallons per day per square foot	27.25
T in square feet per day	364.37

Ardaman & Associates, Inc.



SE2000  
Environmental Logger  
06/15 08:14

Unit# TEST0HPP Test 0

Setups:           INPUT 1  
-----  
Type               Level (F)  
Mode               TOC  
I.D.               MW-6

Reference           0.000  
SG                  1.000  
Linearity           0.095  
Scale factor        20.056  
Offset              0.002  
Delay mSEC          50.000

Step 0 06/14 13:48:18

Elapsed Time        INPUT 1  
-----  
0.0000              5.270  
0.0083              4.147  
0.0166              1.569  
0.0250              0.724  
0.0333              1.200  
0.0416              1.677  
0.0500              1.759  
0.0583              1.620  
0.0666              1.486  
0.0750              1.448  
0.0833              1.473  
0.0916              1.492  
0.1000              1.486  
0.1083              1.461  
0.1166              1.442  
0.1250              1.429  
0.1333              1.423  
0.1416              1.410  
0.1500              1.404  
0.1583              1.391  
0.1666              1.378  
0.1750              1.365  
0.1833              1.359  
0.1916              1.346  
0.2000              1.340  
0.2083              1.334  
0.2166              1.321  
0.2250              1.315  
0.2333              1.302  
0.2416              1.296

0.2500	1.289
0.2583	1.270
0.2666	1.270
0.2750	1.257
0.2833	1.251
0.2916	1.245
0.3000	1.238
0.3083	1.226
0.3166	1.219
0.3250	1.219
0.3333	1.207
0.3500	1.194
0.3666	1.175
0.3833	1.162
0.4000	1.156
0.4166	1.137
0.4333	1.124
0.4500	1.111
0.4666	1.099
0.4833	1.086
0.5000	1.073
0.5166	1.054
0.5333	1.041
0.5500	1.029
0.5666	1.022
0.5833	1.003
0.6000	0.991
0.6166	0.978
0.6333	0.965
0.6500	0.959
0.6666	0.940
0.6833	0.933
0.7000	0.914
0.7166	0.908
0.7333	0.902
0.7500	0.889
0.7666	0.876
0.7833	0.870
0.8000	0.857
0.8166	0.851
0.8333	0.845
0.8500	0.825
0.8666	0.825
0.8833	0.819
0.9000	0.806
0.9166	0.794
0.9333	0.787
0.9500	0.781
0.9666	0.775
0.9833	0.768
1.0000	0.762
1.2000	0.686
1.4000	0.629
1.6000	0.571

## SLUG TEST CALCULATIONS

### UNCONFINED AQUIFER WITH PARTIALLY PENETRATING WELL

File Number 94-808

Well Number MW-7D

#### INPUT DATA

Static Water Table to Well Bottom (H) ft	19.68
Aquifer thickness (D) ft	100.00
Length of Well Screen in Water (L) ft	5.00
Radius of Casing (Rc) inches	2.00
Y Value @ t equals 0 (Yo) ft	0.88
Y Value @ Time t (Y) ft	0.11
Time (t) sec	3.00
Radius of borehole (Rw) inches	5.00
Dimensionless Coefficient (A)	1.85
Dimensionless Coefficient (B)	0.30
Estimated Porosity (n)	0.25

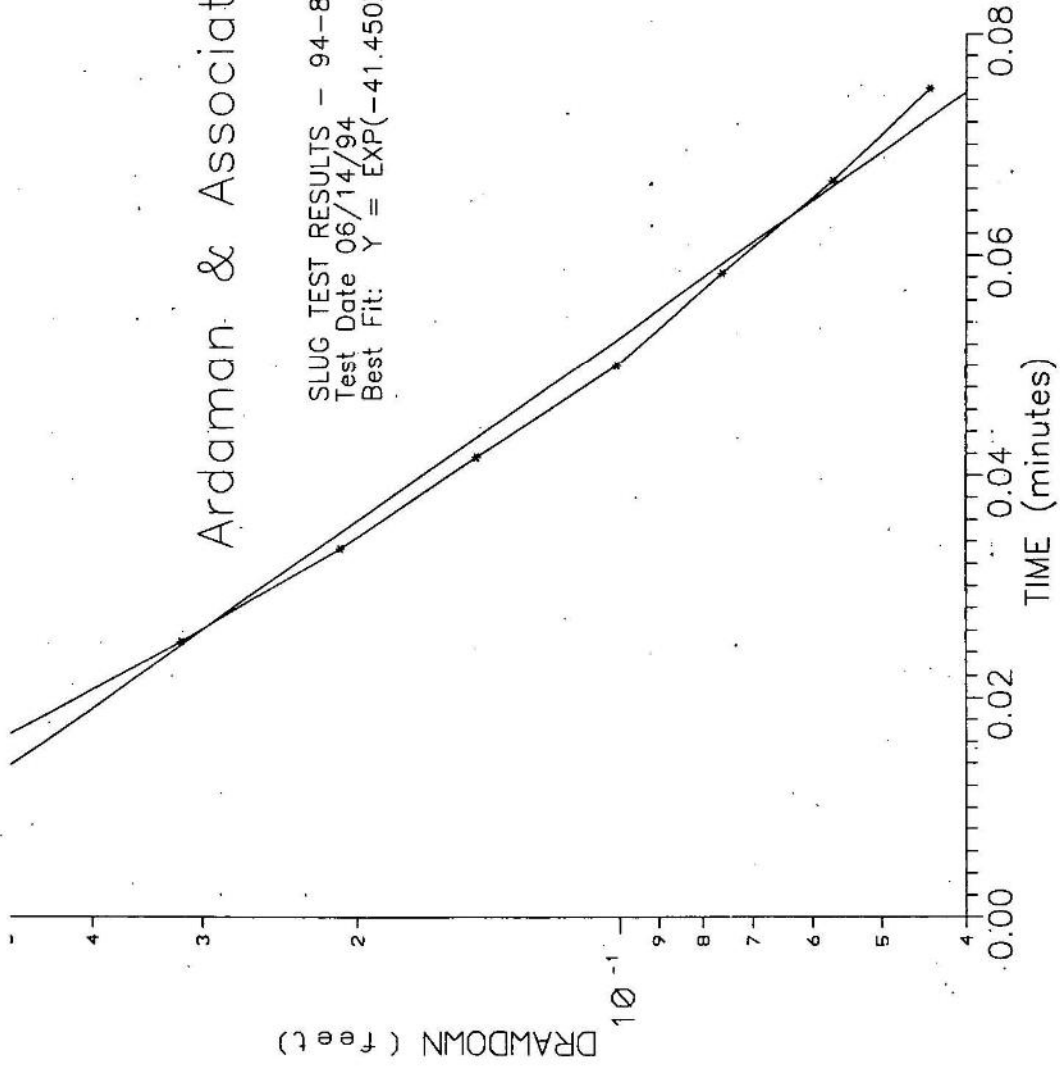
#### CALCULATIONS

L/Rw	12.00
$X = \ln(D-H)/Rw$	5.26
IF $X \geq 6$ use 6	5.26
$\ln(Rc/Rw) = (1.1/\ln(L/Rw) + (A+B*(X))/L/Rw)^{-1}$	1.37
$Y = (\ln(Yo/Y))/t$	0.69
$K = (Rc^2 * \ln(Rc/Rw) / 2L) * Y$	2.635E-03
K in gallons per day per square foot	1702.99
T in square feet per day	22767.29



Ardaman & Associates, Inc.

SLUG TEST RESULTS - 94-808 MW-7D  
Test Date 06/14/94  
Best Fit:  $Y = EXP(-41.450X) * 0.883$



SE2000  
Environmental Logger  
06/15 08:55

Unit# TEST0HPP Test 4

Setups: INPUT 1

-----  
Type Level (F)  
Mode TOC  
I.D. MW7D

Reference 0.000  
SG 1.000  
Linearity 0.095  
Scale factor 20.056  
Offset 0.002  
Delay mSEC 50.000

Step 0 06/14 14:28:52

Elapsed Time INPUT 1

-----  
0.0000 1.608  
0.0083 0.858  
0.0166 0.489  
0.0250 0.305  
0.0333 0.203  
0.0416 0.146  
0.0500 0.108  
0.0583 0.076  
0.0666 0.063  
0.0750 0.044  
0.0833 0.038  
0.0916 0.025  
0.1000 0.025  
0.1083 0.025  
0.1166 0.019  
0.1250 0.019  
0.1333 0.019  
0.1416 0.019  
0.1500 0.019  
0.1583 0.012  
0.1666 0.012  
0.1750 0.006  
0.1833 0.012  
0.1916 0.006  
0.2000 0.012  
0.2083 0.006  
0.2166 0.012  
0.2250 0.012  
0.2333 0.006  
0.2416 0.006

## SLUG TEST CALCULATIONS

### UNCONFINED AQUIFER WITH PARTIALLY PENETRATING WELL

File Number 94-808

Well Number MW-4

#### INPUT DATA

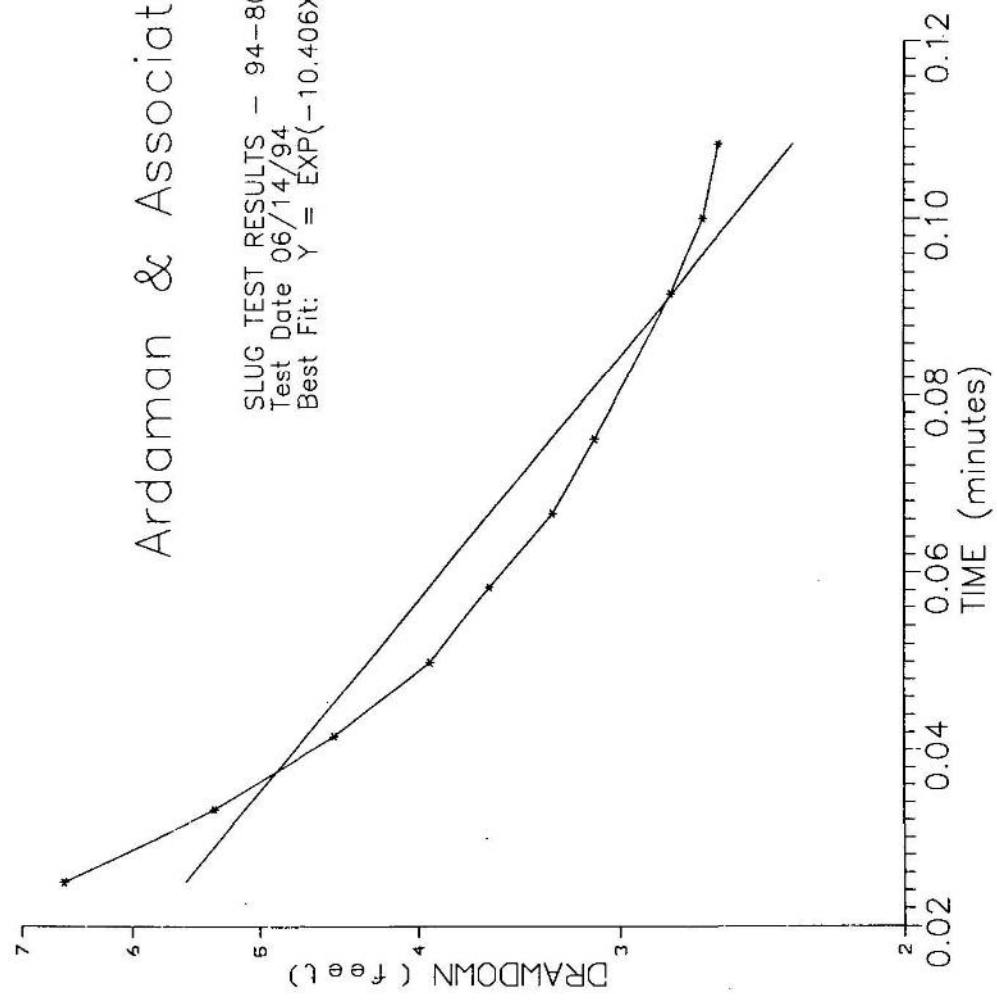
Static Water Table to Well Bottom (H) ft	6.27
Aquifer thickness (D) ft	100.00
Length of Well Screen in Water (L) ft	6.27
Radius of Casing (Rc) inches	2.00
Y Value @ t equals 0 (Yo) ft	0.72
Y Value @ Time t (Y) ft	0.26
Time (t) sec	6.00
Radius of borehole (Rw) inches	5.00
Dimensionless Coefficient (A)	1.85
Dimensionless Coefficient (B)	0.30
Estimated Porosity (n)	0.25

#### CALCULATIONS

L/Rw	15.05
$X = \ln(D-H)/Rw$	5.42
IF $X \geq 6$ use 6	5.42
$\ln(Rc/Rw) = (1.1/\ln(L/Rw) + (A+B*(X))/L/Rw)^{-1}$	1.57
$Y = (\ln(Yo/Y))/t$	0.17
$K = (Rc^2 * \ln(Rc/Rw) / 2L) * Y$	6.035E-04
K in gallons per day per square foot	390.06
T in square feet per day	5214.67

Ardaman & Associates, Inc.

SLUG TEST RESULTS - 94-808 MW-4  
Test Date 06/14/94  
Best Fit:  $Y = EXP(-10.406X)*0.722$



SE2000  
Environmental Logger  
06/15 08:20

Unit# TEST0HPP Test 1

-----  
Setups:           INPUT 1  
-----  
Type            Level (F)  
Mode            TOC  
I.D.            MW-4

Reference       0.000  
SG              1.000  
Linearity       0.095  
Scale factor    20.056  
Offset          0.002  
Delay mSEC     50.000

Step 0 06/14 14:06:34

-----  
Elapsed Time    INPUT 1  
-----  
0.0083         7.753  
0.0166         0.838  
0.0250         0.660  
0.0333         0.533  
0.0416         0.450  
0.0500         0.393  
0.0583         0.361  
0.0666         0.330  
0.0750         0.311  
0.0833         0.298  
0.0916         0.279  
0.1000         0.266  
0.1083         0.260  
0.1166         0.254  
0.1250         0.247  
0.1333         0.241  
0.1416         0.234  
0.1500         0.234  
0.1583         0.228  
0.1666         0.228  
0.1750         0.222  
0.1833         0.222  
0.1916         0.222  
0.2000         0.222  
0.2083         0.215  
0.2166         0.209  
0.2250         0.209  
0.2333         0.209  
0.2416         0.203  
0.2500         0.209

## GROUNDWATER FLOW VELOCITY

File Number 94-808

### INPUT DATA

Source of high level reading	MW-1
Source of low level reading	MW-6
High level reading (H)	16.4100
Low level Reading (L)	16.0900
Distance between MWs (D)	50.0000
Porosity (n)	0.2500
Average Hydraulic Conductivity (K) (feet per day)	3.6400

### CALCULATIONS

$I = (H-L)/D$  0.0064

$V = (K*I)/n$  (feet per day) 0.0932

Checked By: *ABJ*

**APPENDIX D**  
**CONTAMINATION ASSESSMENT**  
**SUMMARY SHEET**

CONTAMINATION ASSESSMENT REPORT SUMMARY SHEET

Facility Name: MAPCO SS #6170 Reburial Site   
 Location: 9020 95th Street, Sebastian, Florida State Contract Site   
 EDI #: 31-3108 FAC I.D. #: 318509326 Other:   
 Date Reviewed: \_\_\_\_\_ Local Government: \_\_\_\_\_

(1) Source of spill: Fueling Operations Date of spill: Unknown

(2) Type of product: gasoline group gallons lost \_\_\_\_\_ kerosene group gallons lost \_\_\_\_\_

<input type="checkbox"/> leaded	_____	<input type="checkbox"/> kerosene	_____
<input checked="" type="checkbox"/> unleaded regular	<u>Unk</u>	<input type="checkbox"/> diesel	_____
<input checked="" type="checkbox"/> unleaded premium	<u>Unk</u>	<input type="checkbox"/> JP-4 Jet fuel	_____
<input type="checkbox"/> gasohol	_____	<input type="checkbox"/> Jet A fuel	_____

(3) Description of IRA (if any): None  Free product removal: N/A (gals)  
 Soil removal: N/A (cubic yds)  
 Soil Incineration: N/A (cubic yds)

(4) Free product still present? (yes/no)  no Maximum apparent product thickness: N/A (ft)

(5) Maximum groundwater contaminant levels (ppb): Total VOCs: 111.5 benzene: 96 EDB: BDL  
 lead: .031 MTBE: 24 others: 130 Napths

(6) Brief lithologic description: Fine to medium grained unconsolidated clayey sand

(7) Areal and vertical extent of soils contamination defined? (yes/no)  no  
 Highest current soil concentration (OVA: 170 ppm) or (EPA Method 5030/8020: \_\_\_\_\_ ppm)

(8) Lower aquifer contaminated? (yes/no)  no Depth of vertical contamination: Less than 20 ft.

(9) Date of last complete round of groundwater sampling: 4/4/94 Date of last soil sampling: 6/14/94

(10) OAPP approved? (yes/no)  no Date: 1/22/92

(11) Direction (e.g. NINW) of surficial groundwater flow: East-Southeast (Figure 5&5A on page Figure Section)

(12) Average depth to groundwater: 3.5 (ft)

(13) Observed range of seasonal groundwater fluctuations: One (ft)

(14) Estimated rate of groundwater flow: 0.0932 (ft/day)

(15) Hydraulic gradient across site: 0.0064 (ft/ft)

(16) Aquifer characteristics:	Value	Units	Method
Hydraulic conductivity	<u>27.25</u>	<u>GPD/ft<sup>2</sup></u>	<u>Slug Test MW-6</u>
Storage coefficient	<u>.20</u>	<u>-</u>	<u>Researched</u>
Aquifer thickness	<u>100</u>	<u>ft</u>	<u>Researched</u>
Effective soil porosity	<u>25</u>	<u>%</u>	<u>Observations</u>
Transmissivity	<u>365</u>	<u>Ft<sup>2</sup>/day</u>	<u>Slug Test MW-6</u>

(17) Other remarks: Plume limited to Tank pad area.



**APPENDIX E**  
**TANK AND LINE RESULTS**



### LINE TEST LOG

S.O.# 6170

OWNER: MARCO EXPRESS DATE: 6-21-94

ADDRESS: 9026 95th N. STREET SEASIDE FL 32978 SITE #: 6170

Tank No.: 1A Line No.: 1A  Pres. Syst.  Suction Syst. Product: NP 89 OCT

Pipe Mtr  ST  FRP  ENV-FL Test Pressure 50 psi Calib. Multiplier .00549

Compression Zero Pres. Level 24.0 Test Pres. Level 19.6 Pump Mgr. GILBARCO

TEST Level Δ 4.4 Volume Δ .024156 Enviro-Flex Line ONLY

LINE TEST	Reading #	Mil. Time	Level	Level Δ	Volume Δ	Projected G.P.H. Δ	Cylinders Changed	Cylinders Recorded	Gain-Loss +/-
START		<u>08:55</u>	<u>19.6</u>						
TESTED FROM:	1	<u>09:05</u>	<u>19.4</u>	<u>.2</u>	<u>.001098</u>	<u>.006588</u>			
	2	<u>09:15</u>	<u>19.3</u>	<u>.1</u>	<u>.000549</u>	<u>.003294</u>			
<input type="checkbox"/> Sub-pump	3	<u>09:25</u>	<u>19.3</u>	<u>0</u>	<u>0</u>	<u>0</u>			
<input type="checkbox"/> Dispenser	4								
<input checked="" type="checkbox"/> Retro-"T"	5								
	6								

Exist. LD# - 291-3004 XL0  
New LD #

End Zero Pres. Level: 23.6 FINAL LINE TIGHTNESS RATE: 0 FAIL  or PASS

Tank No.: 2 Line No.: 2A  Pres. Syst.  Suction Syst. Product: PUN 93 OCT

Pipe Mtr  ST  FRP  ENV-FL Test Pressure 50 psi Calib. Multiplier .00549

Compression Zero Pres. Level 24.0 Test Pres. Level 19.2 Pump Mgr. GILBARCO

TEST Level Δ 4.8 Volume Δ .026352 Enviro-Flex Line ONLY

LINE TEST	Reading #	Mil. Time	Level	Level Δ	Volume Δ	Projected G.P.H. Δ	Cylinders Changed	Cylinders Recorded	Gain-Loss +/-
START		<u>09:35</u>	<u>19.2</u>						
TESTED FROM:	1	<u>09:45</u>	<u>18.9</u>	<u>.3</u>	<u>.00647</u>	<u>.00882</u>			
	2	<u>09:55</u>	<u>18.8</u>	<u>.1</u>	<u>.000549</u>	<u>.003294</u>			
<input type="checkbox"/> Sub-pump	3	<u>10:05</u>	<u>18.8</u>	<u>0</u>	<u>0</u>	<u>0</u>			
<input type="checkbox"/> Dispenser	4								
<input checked="" type="checkbox"/> Retro-"T"	5								
	6								

Exist LD# 208906761 DC0  
New LD#

End Zero Pres. Level: 23.5 FINAL LINE TIGHTNESS RATE: 0 FAIL  or PASS

Tank No.: 3 Line No.: 3A  Pres. Syst.  Suction Syst. Product: RUN 87 OCT

Pipe Mtr  ST  FRP  ENV-FL Test Pressure 50 psi Calib. Multiplier .00549

Compression Zero Pres. Level 24.0 Test Pres. Level 19.9 Pump Mgr. REG JACKET

TEST Level Δ 4.1 Volume Δ .022509 Enviro-Flex Line ONLY

LINE TEST	Reading #	Mil. Time	Level	Level Δ	Volume Δ	Projected G.P.H. Δ	Cylinders Changed	Cylinders Recorded	Gain-Loss +/-
START		<u>10:55</u>	<u>19.9</u>						
TESTED FROM:	1	<u>11:05</u>	<u>19.7</u>	<u>.2</u>	<u>.000698</u>	<u>.006588</u>			
<input checked="" type="checkbox"/> Sub-pump	2	<u>11:15</u>	<u>19.7</u>	<u>0</u>	<u>0</u>	<u>0</u>			
<input type="checkbox"/> Dispenser	3	<u>10:25</u>	<u>19.7</u>	<u>0</u>	<u>0</u>	<u>0</u>			
<input type="checkbox"/> Retro-"T"	4								
	5								
	6								

Exist LD# 11291-7676 YCO BAD  
New LD# 21194-7356 YCO Good

End Zero Pres. Level: 23.7 FINAL LINE TIGHTNESS RATE: 0 FAIL  or PASS

UNIT MGR. (PRINT) STEVEN E. HAWKINS Unit Mgr. signature: [Signature] VacuTect Certi.#: #1483



SO# 115767

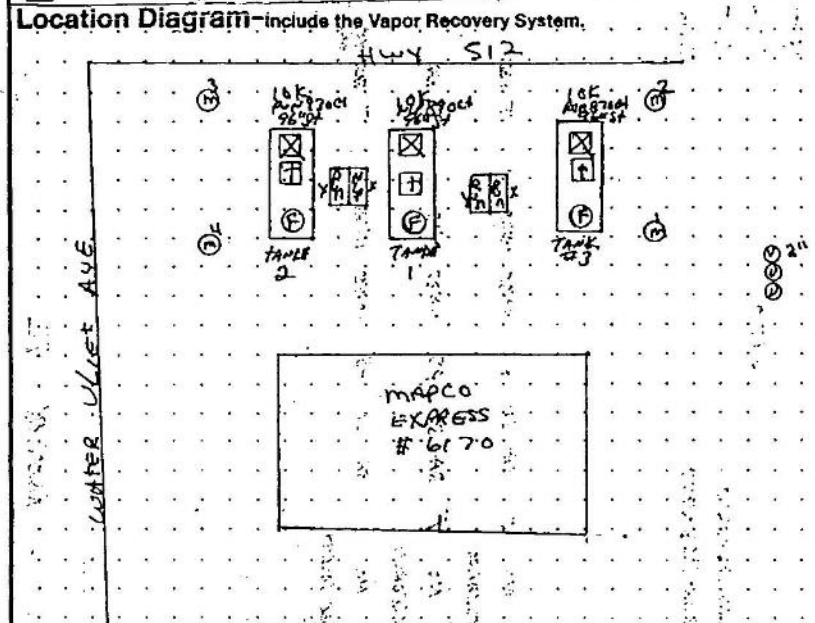
Owner: MAPCO EXPRESS

Site# 6170

MONITOR WELLS												
Well Number	1	2	3	4	5	6	7	8	9	10	11	12
Well Depth	116	LOCK	LOCK	LOCK								
Depth to Water	47	UP	UP	UP								
Product Detected												
AMOUNT In Inches	0											

Standard Symbols for diagram below:

- (V/B) V.R. w / Ball Float
- (B) Ball Float
- (M) Monitor Well (Outside Tank Bed Area)
- (G) Tank Gauge
- (I) Iron Cross
- (F) Fill
- (V) Vapor Recovery
- (A) Observation Well (Inside Tank Bed Area)
- (O) Vent
- (T) Turbine



Vapor Recovery System & Vents were tested with which tank?

Parts and Labor used 1 XLD WD RED JACKET 20' RUN 2" DUCT TANK #3 ALSO 3" 4" ALUM COAXIAL ADAPTER HAD TO CUT OFF EACH TANK TO REMOVE DRIP TUBES. / RUN HLP PUM

General Comments STANDARD TANKS + PRODUCT LINE + L.O'S + VENT LINES. FAIL. RUN L.O. REPLACED WITH NEW RED JACKET L.O. XLD. ALL TANKS + LINES + VENTS + L.O'S ARE TIGHT. HAD CUT OFF ALC 3 4" ALUM FILL COAXIAL ADAPTER TO REMOVE DRIP TUBES. PULLED TANK VALVE FROM TANK TOPS. CAPPED VENT LINES. TEST WITH TANK VACUUM.

When OWNER or local regulations require immediate reports of system failure—Complete the following:

REPORTED TO:	NAME	DATE	TIME
Phone#	OWNER or Regulatory Agency	FILE NUMBER	
Print Certified Testers Name		Vacu-test <sup>SM</sup> Certification Number	
Certified Testers Signature		Date Testing Completed	

STEVEN E. HAWKINS  
#0083  
6.21.94

605

0003

MAPCO

09/17/94 16:30

09/17/94 16:30

**TANKNOLOGY CORPORATION INTERNATIONAL**  
 6220 Fortwell, Houston, Texas 77060-0244 Phone (800) 888-0883 FAX (713) 890-8280

**Certificate of Tightness** Service Order # 062819 Test Date 09/14/92  
 Underground storage tank system(s) tested and found tight for:

TANK OWNER: MAPCO PETROLEUM  
 6170  
 STEP SAVER 9020 59TH ST. SEBASTIAN, FL

TEST SITE ADDRESS:

**[ 3 ] TANK(S) ONLY, [ 3 ] LINE(S) ONLY, [ 3 ] LEAK DETECTOR(S) ONLY.**

TANK SIZES & PRODUCTS TESTED


1	10000 RU	2000
3	10000 SU	2000
2	10000 SR	2000

LINES TESTED 1A, 2A, 3A  
 LEAK DETECTORS TESTED 112917676, 312913004 XLD, 208906761 DLD

Unit Mgr. Certificate Number & Name 09B TOMMY KAINER 08/94

Valid only with Corporate Seal

US Patent #4482248, Canadian Patent #1102593, European Patent Appl. #162263  
 TANKNOLOGY & Vacu-Tek are trademarks of TANKNOLOGY CORPORATION INTERNATIONAL. Note: See Vacu-Tek Test Report for tank identification and site location drawings.



100-04



# VacuTect™ TEST REPORT

Owner: MAPCO PETROLEUM

Site # 6170

Invoice Name/Address: MAPCO PETROLEUM 1800 SOUTH BALTIMORE TULSA, OK 74119

Site Name/Address: STEP SAVER 9020 59TH ST. SEBASTIAN, FL

S.O. # 062819  
 Date 09/14/92  
 Phone (918) 681-1358  
 Alt: MARK SCHUTT

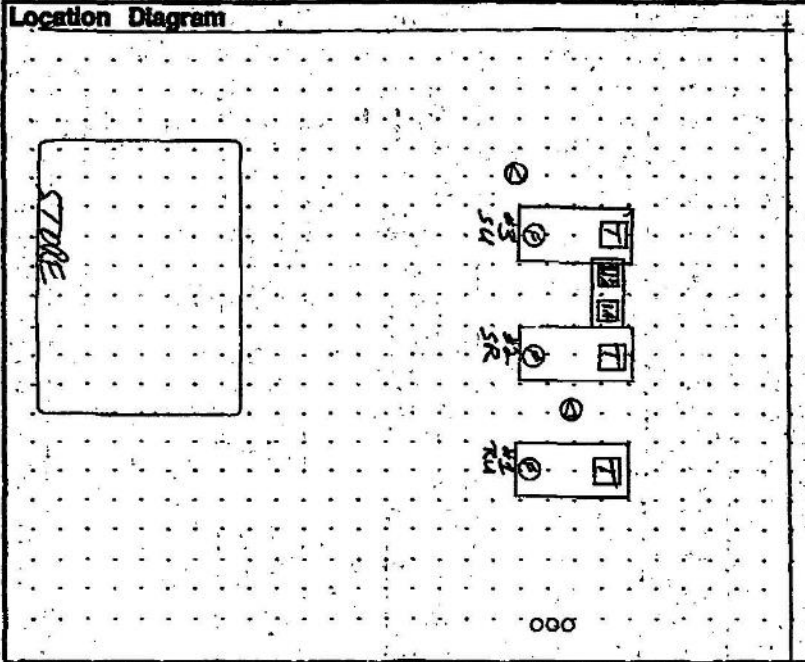
Seq. No.	Tank ID	Tank Capacity	Tank Material	Tank Type	TANKS				LINES				Leak Det.	Notes				
					Filled Level	Empty Level	Probe Level	Water Collected	Bubble Discharged	Large In Tank	Line Material	Line Size			Line Test Start	Line Test End	Final Leak Rate	
1	RU 2000	10000	Steel	ST	00.180	074.00	00.170	N	N	N	N	PS	PS	9756	10126	0.000	Y	TANKS AND LINES TESTED TO CFR-163 PARTS 280.281 & NIPFA 328 SPEC'S. OTHER.
2	SR 2000	10000	Steel	ST	00.160	074.80	00.160	N	N	N	N	PS	PS	10130	11100	0.000	Y	TANKS AND LINES TESTED TO CFR-163 PARTS 280.281 & NIPFA 328 SPEC'S. OTHER.
3	SU 2000	10000	Steel	ST	00.160	074.80	00.160	N	N	N	N	PS	PS	11148	12118	0.000	Y	TANKS AND LINES TESTED TO CFR-163 PARTS 280.281 & NIPFA 328 SPEC'S. OTHER.

TANKNOLOGY Region: SOUTH EAST REGION Unit # 080 State Lic. # State: FL  
 TANKNOLOGY Corporation International  
 8225 Hollister St., Houston, TX 77040  
 (800) 868-8563 • FAX (713) 690-2255

NOTE: Original VacuTect Data recordings are reviewed by Tankology's Audit Control Department and maintained on file.

SO# 62819 Owner: MAPCO Site# 6170

MONITOR WELLS												
Well Number	1	2	3	4	5	6	7	8	9	10	11	12
Well Depth	17	LOCKED										
Depth to Water	16											
Product Detected												
AMOUNT in inches	0											



Parts and Labor used 1XLD installed on SR2000 Sub Pump  
 @ 285.00

**General Comments**  
 All Tanks & Lines Tested Tight

When OWNER or local regulations require immediate reporting of a system failure -  
 Complete the following:

REPORTED TO:	NAME	DATE	TIME
Phone#	OWNER or Regulatory Agency	FILE NUMBER	
Print Certified Tester Name	Certified Tester Signature	Vacuum Certification Number	Date Testing Completed
		98	8/14/92

## Site 10- Current and Former Agricultural Areas

No discreet address

Facility ID: None

Risk Rating: Medium



Photo 13: Historic Google Earth aerial image from 1994, showing western portion of project area





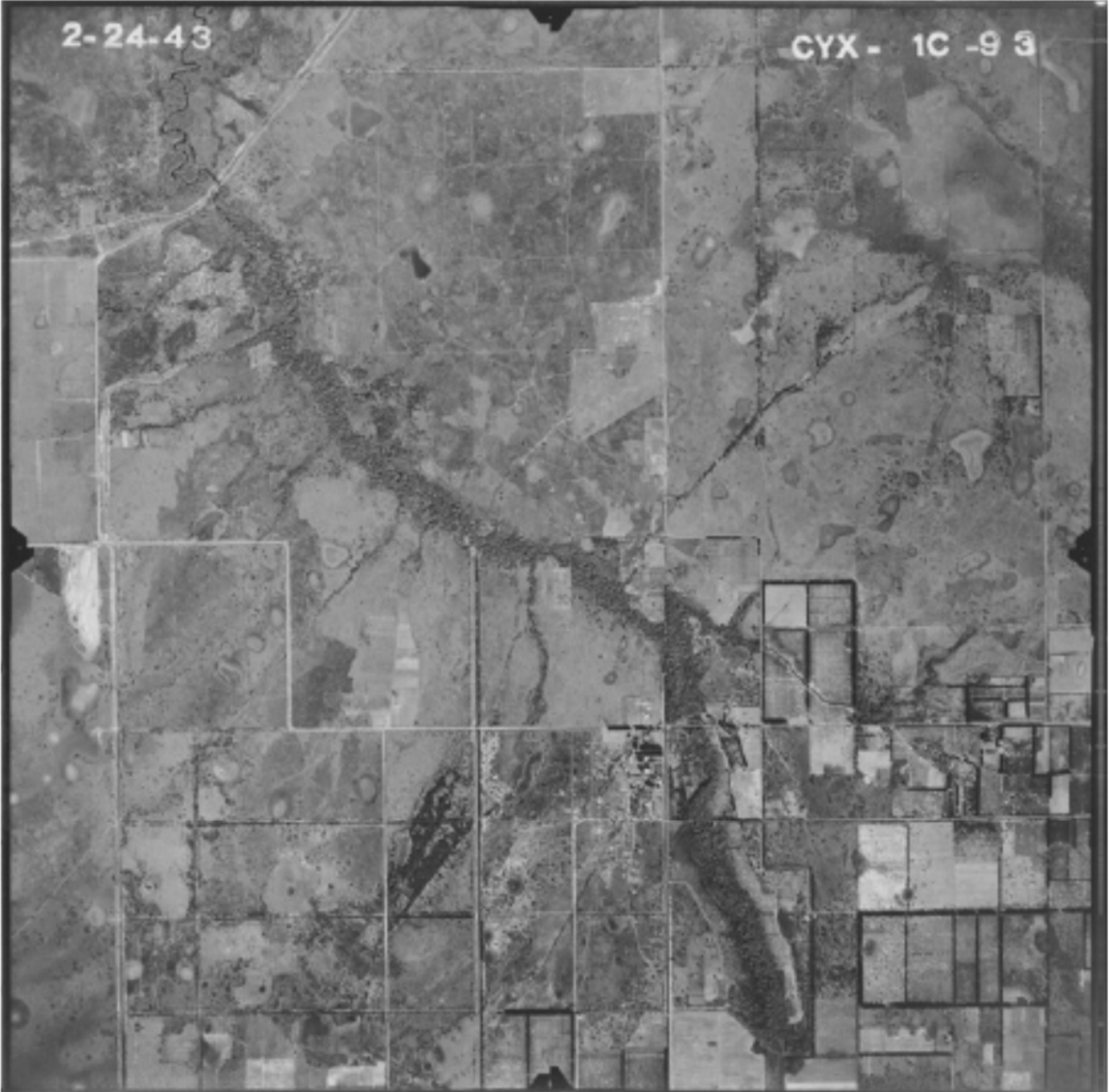


Photo 15: Historic aerial image from 1943



Photo 16: Historic aerial image from 1951

1  
2  
3  
4

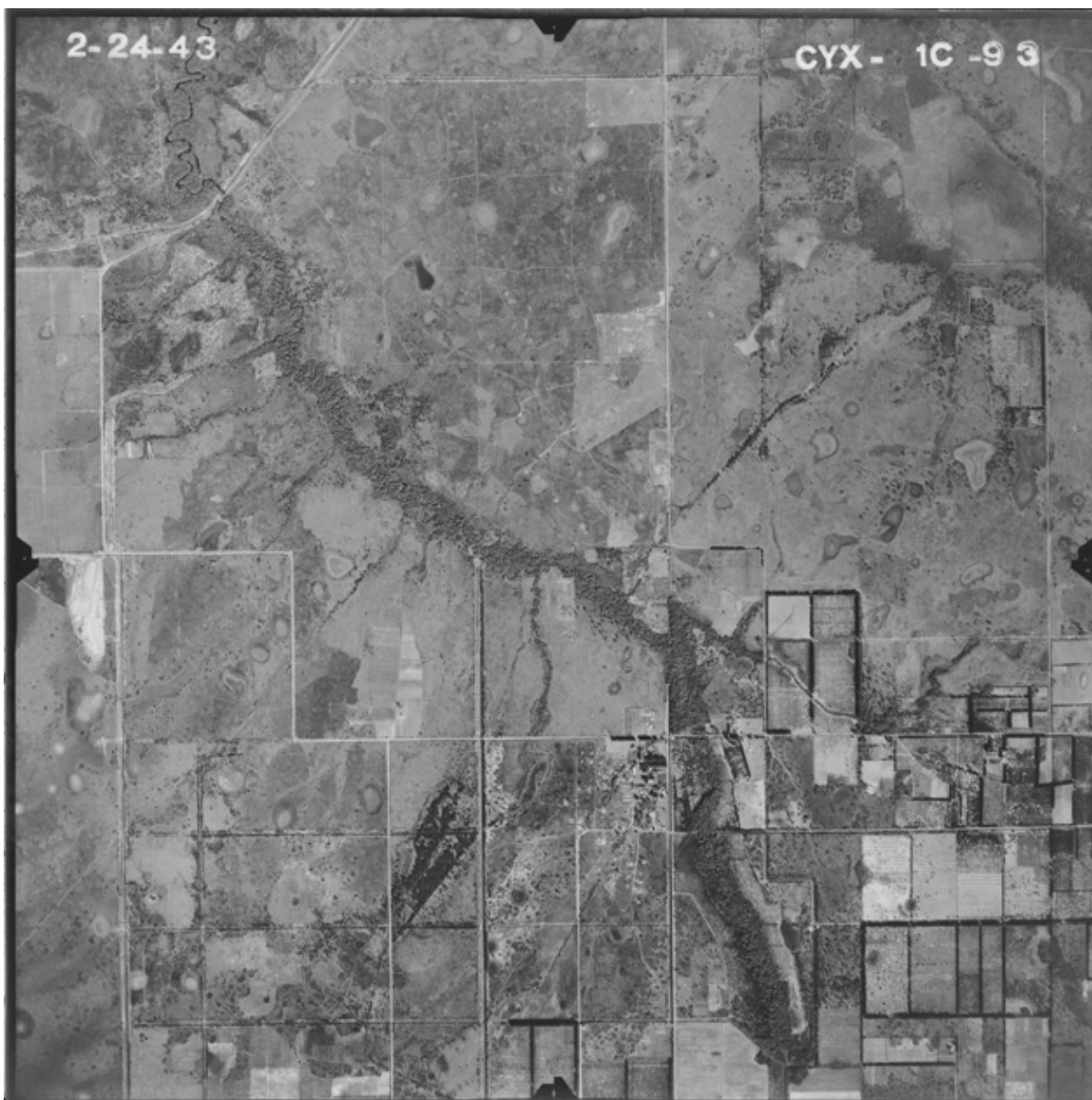
APPENDIX B- HISTORIC PHOTOGRAPHS



**Title:** Aerial photographs of Indian River County - Flight 1C (1943)

**URL:** <http://ufdc.ufl.edu/UF00071757/00001>

**Site:** University of Florida Digital Collections

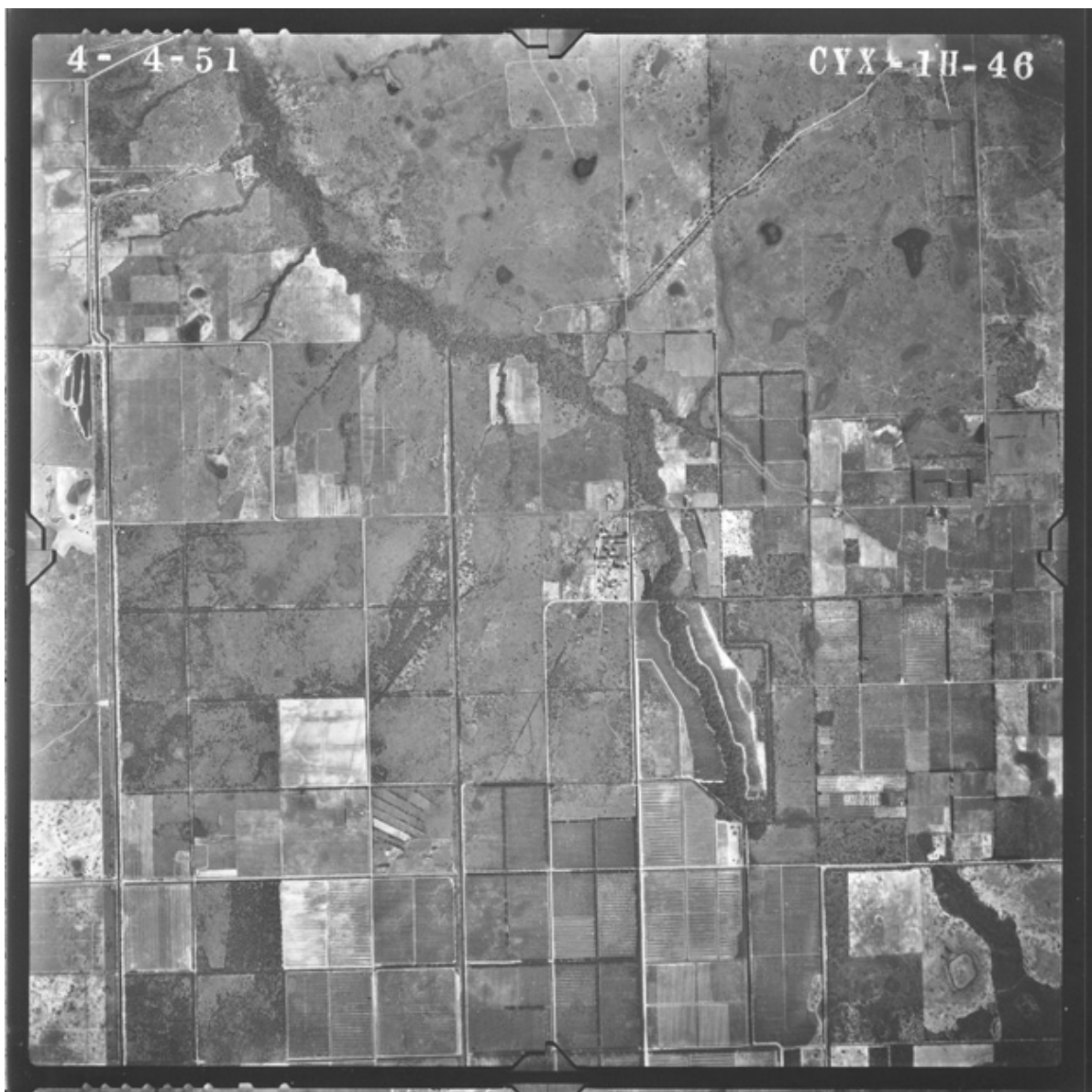




**Title:** Aerial photographs of Indian River County - Flight 1H (1951)

**URL:** <http://ufdc.ufl.edu/UF00071757/00005>

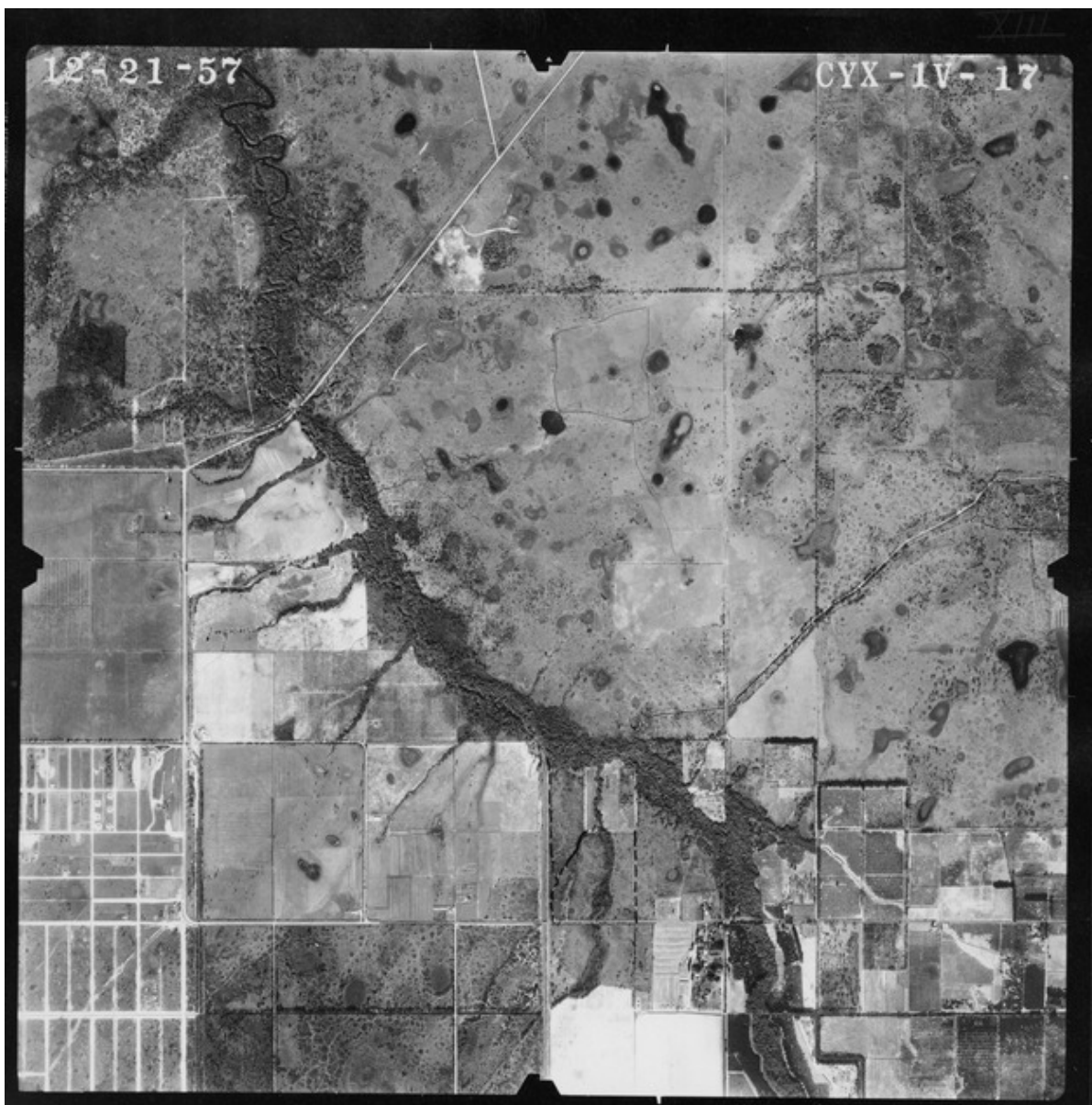
**Site:** University of Florida Digital Collections













**Title:** Aerial photographs of Indian River County - Flight 2MM (1970)

**URL:** <http://ufdc.ufl.edu/UF00071757/00009>

**Site:** University of Florida Digital Collections





**Title:** - Flight 180 (1981)  
**URL:** <http://ufdc.ufl.edu/UF00071757/00015>  
**Site:** University of Florida Digital Collections

