

ATTACHMENT 8

Phase 2 Environmental Assessment



Evans Environmental & Geosciences

**PHASE II
ENVIRONMENTAL SITE ASSESSMENT**

FOR

**13 LOTS
NW 7TH TERRACE AND NW 6TH STREET
FORT LAUDERDALE, BROWARD COUNTY, FLORIDA**

Prepared For:

**The Urban Group
1424 South Andrews Avenue
Suite 200
Fort Lauderdale, FL 33316**

Prepared by:

**Evans Environmental & Geosciences
14505 Commerce Way, Suite 400
Miami Lakes, Florida 33016
(305) 374-8300**

**June 2003
Project No.: 2003-1359**

A handwritten signature in black ink, appearing to read 'Steven A. Harrison', written over a horizontal line.

**Steven A. Harrison, P.G.
Sr. Technical Advisor**

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SECTION 1.0 INTRODUCTION

1.1 PURPOSE

Evans Environmental & Geosciences (EE&G) was retained by The Urban Group, the Client, to perform a Phase II Environmental Site Assessment (ESA) of the property consisting 13 lots located within the vicinity of NW 7th Terrace and NW 6th Street, in Fort Lauderdale, Broward County, Florida (hereafter referred to as the "*Property*"). Refer to **Figure A1, Appendix A**, for the portion of the USGS Topographic Map depicting the location of the *Property*. Refer to **Figure A2, Appendix A**, for a site map of the *Property* and adjoining properties.

The objective of this Phase II ESA was to investigate potential environmental concerns identified in the Phase I ESA prepared for the *Property* by EE&G in May 2003. The Phase I ESA revealed the following Recognized Environmental Condition (REC) in association with the *Property*:

- A printing facility formerly occupied the Property at 545 NW 7th Terrace and was connected to a septic system.
- Moses Car Care, located at 605 NW 7th Avenue, maintained three 10,000-gallon USTs and no analytical data was observed for the facility.
- Texaco, located at 825 NW 6th Street, operated as a service station for approximately 27 years from 1957-1983 and no analytical data was observed for the facility.
- The following facilities of concern were identified in the city directories for the surrounding properties.

- Filling Station, historically located at 703 NW 6th Street (approximately 200 feet east of the Property), was identified in the 1952-53, 1956-57, and 1961 city directories.

No files were available for review at the DPEP regarding the operation of these facilities. Facilities of this type most likely maintained USTs and/or produced regulated waste streams. Due to the lack of analytical data, these facilities could pose a potential environmental concern to this parcel, and are considered RECs.

SECTION 2.0 ASSESSMENT METHODOLOGY

The Phase II ESA conducted for the *Property* consisted of the collection of soil and groundwater samples to assess for potential impacts associated with the REC identified at the *Property*. The samples were collected using a "direct-push" drilling technique (i.e., Geoprobe), which involved hydraulically driving a sampling device to the desired depth, collecting the sample, and extracting the device. The collection and analyses of soil and groundwater samples as part of this Phase II ESA will be performed in accordance with the Standard Operating Procedures (SOP) as detailed in Chapter 62-160 of the Florida Administrative Code (FAC).

On June 13, 2003, EE&G advanced Geoprobe points at five locations within the *Property* for the collection of soil and groundwater samples from the subsurface. The Geoprobe points were advanced to provide access to the subsurface in areas of the *Property* which had the potential of being affected subsurface impacts associated with the RECs identified in the Phase I ESA. The locations of the Geoprobe sampling points are shown in **Figure A2, Appendix A** and described as follows:

- Geoprobe Point 1 (GP-1) was located in the northwest portion of the *Property* to address potential concerns associated with a former filling station
- Geoprobe Point 2 (GP-2) was located in the northeast portion of the *Property* to address potential concerns associated with a former filling station to the northeast of the *Property*.
- Geoprobe Points 3 and 4 (GP-3 and GP-4) was located within the north central portion of the *Property* to assess for potential concerns associated with the former printing facility located at 545 NW 7th Terrace.
- Geoprobe Point 5 (designated as SB-3) was located in the west central portion of the *Property* to address potential concerns associated with the former printing facility located at 545 NW 7th Terrace.

2.1 SOIL ASSESSMENT METHODOLOGY

EE&G advanced three borings at the *Property* using the Geoprobe drill rig and collected soil samples from Geoprobe points SB-1 and SB-2. The soil samples were collected from surface grade to approximately 4 feet below land surface (BLS), using a Macro Core sampler. The samples were screened in the field to assess for the presence of organic vapors, and to visually assess the soils for indications of petroleum staining or unnatural discoloration. The samples, which were retrieved in 4 foot acetate liners to isolate the samples and maintain their integrity, were segregated into 2 foot intervals for field analysis. The soil samples were transferred from the acetate liners and placed into pre-cleaned 16 ounce soil jars until half-full, covered with aluminum foil, and allowed to equilibrate to obtain representative readings. The soil samples were screened using a Foxboro Model 128 Organic Vapor Analyzer (OVA), equipped with a Flame Ionization Detector (FID). The OVA/FID was utilized with, and without a charcoal filter to assess for the presence of naturally occurring methane. The net OVA/FID readings were interpreted to assess for the presence of volatile organic compounds, indicative of a petroleum hydrocarbon or chlorinated solvent source. Soil samples

were collected in accordance with Florida Department of Environmental Protection (FDEP)-Standard Operating Procedures (SOPs) as specified in Chapter 62-160 of the Florida Administrative Code (FAC).

Laboratory analyses were conducted on the soil samples collected from SB-1, SB-2, and SB-3, at a depth of approximately 4 to 6 feet BLS. The groundwater table was observed to be at a depth of approximately 6 feet BLS. The Geoprobe sampling locations are shown in **Figure A2, Appendix A**.

The soil samples collected were placed into laboratory supplied, pre-cleaned sample bottles, placed on ice, and transported to Severn Trent Laboratory (STL – Miami), a FDEP-approved and Department of Health (DOH)-certified laboratory for analyses.

- The soil samples were analyzed for the following parameters:
 - Volatile Organic Aromatics (VOA) by EPA Method 8021.
 - Volatile Organic Halocarbons (VOH) by EPA method 8021.
 - Total Petroleum Hydrocarbons (TPH) by Method FL-PRO.
 - Arsenic (As), Barium (Ba), Cadmium (Cd), Chromium (Cr), Lead (Pb), Selenium (Se), and Silver (Ag) by EPA Method 6010.
 - Mercury (Hg) by EPA Method 7471A.

2.2 GROUNDWATER ASSESSMENT METHODOLOGY

Using the Geoprobe, six groundwater samples were collected from four locations at the *Property*. Four samples were collected from the surface/ interface of the shallow groundwater table and two samples were collected from deeper horizons to assess for potential vertical migration. The Geoprobe rig utilized a Screen Point 15 (SP15) sampler, in which a decontaminated unit was threaded onto the leading end of a probe rod and driven to the desired sampling interval. While the sampler was driven to a depth, O-ring seals at the drive head and expendable drive point provided a watertight system. Once at the desired sampling interval, the drive rod was retracted to expose the 4-foot long screened interval and allow access for groundwater sampling. The groundwater samples were collected utilizing polyethylene tubing fitted with a stainless steel check valve. New polyethylene tubing was utilized at each collection point. Water was drawn through the tubing to the ground surface using a peristaltic pump. In order to collect groundwater samples representative of the portion of the aquifer from which they were collected, approximately 5 volumes of the Geoprobe wells were purged before sampling. Groundwater samples were collected in accordance with FDEP-SOPs as specified in Chapter 62-160 FAC.

Groundwater samples were collected from Geoprobe points GP-1, GP-2, GP-3S, and GP-4S, where the screened interval was placed from approximately 6 to 10 feet BLS within the shallow portion of the surficial aquifer. The groundwater table was observed to be at approximately 6 to 7 feet BLS. The screened interval was designed to intersect the groundwater/soil interface to identify the potential presence of separate phase product.

Groundwater samples were collected from Geoprobe points GP-3D and GP-4D where the screened interval was placed from approximately 21 to 25 feet BLS within the deeper portion of the surficial aquifer. The screened interval was designed to assess for the presence of chlorinated solvents (cleaning chemicals and degreasers) which may have migrated vertically through the aquifer.

The groundwater samples were collected in laboratory supplied, pre-cleaned sample bottles, placed on ice, and transported to STL-Miami, an FDEP-approved and DOH-certified laboratory for analyses.

- The groundwater samples from GP-1, and GP-2 were analyzed for the following parameters:
 - VOA by EPA Method 8021.
 - Polynuclear Aromatic Hydrocarbons (PAH) by EPA method 8270.
 - TPH by method FL-PRO.
- The groundwater samples from GP-3S, and GP-4S were analyzed for the following parameter:
 - VOA by EPA Method 8021.
 - VOH by EPA Method 8021.
 - TPH by method FL-PRO.
- The groundwater samples from GP-3D and GP-4D were analyzed for the following parameter:
 - VOH by EPA Method 8021.

Additionally, an equipment blank was collected to assess the effectiveness of decontamination procedures and sampling methodologies. This sample was archived, and based upon the analytical results, it was not necessary to analyze this sample.

SECTION 3.0 ASSESSMENT FINDINGS

3.1 SOIL LITHOLOGY AND VISUAL CHARACTERISTICS

Soil samples collected from the site were examined for lithologic characteristics. The 0 to 6 foot BLS section of the lithologic column consisted of fine to medium grained light tan sand. From 6 feet to the bottom of the borings at approximately 8 feet below land surface, the lithology consisted of dark brown medium to fine grained sand. The groundwater table was observed to be at approximately 6 to 7 feet BLS. A copy of the sampling logs are provided in **Appendix B**.

No odor was apparent in association with the soil samples collected. The soil samples collected did not reveal the presence of debris or staining.

3.2 OVA RESULTS

OVA results generated from field-testing of soils were compared with the action level established in the FDEP's "Guidelines for Assessment and Source Removal of Petroleum Contaminated Soils", dated May 1998. The action level defined by these guidelines was 10 parts per million (ppm) of organic vapors. Analysis of the soil samples collected from the soil borings did not reveal the presence of organic vapors above 10 ppm. The OVA results from the soil samples analyzed are summarized in **Table 1**.

TABLE 1
SUMMARY OF SOIL OVA RESULTS

SOIL BORING DESIGNATION	DEPTH IN FEET	PARTS PER MILLION (TOTAL)	PARTS PER MILLION (WITH CARBON FILTER)	PARTS PER MILLION (NET)
SB - 1	0 - 2	0	0	0
	2 - 4	0.5	0	0.5
	4 - 6	0.6	0	0.6
	6 - 8	1.0	0	1.0
SB - 2	0 - 2	0	0	0
	2 - 4	0.2	0	0.2
	4 - 6	0.8	0	0.8
	6 - 8	1.5	0	1.5
SB - 3	0 - 2	0.0	0	0.0
	2 - 4	0.0	0	0.0
	4 - 6	0.4	0	0.4
	6 - 8	0.7	0	0.7

- **Bold** - indicates an elevated concentration that may be indicative of a source area
- **Net** = parts per million total - parts per million with carbon filter

3.3 SOIL ANALYTICAL RESULTS

Analytical results of soil samples were compared to the Soil Cleanup Target Levels (SCTLs), as defined in Chapter 62-777 of the Florida Administrative Code (FAC) and shown in Table 2. The laboratory method detection limits were below the SCTLs for the parameters analyzed.

Results from the analyses of the soil samples collected from Geoprobe points SB-1, SB-2, and SB-3 were below all applicable SCTLs for the parameters analyzed. A copy of the laboratory analytical results and Chain of Custody form are provided in Appendix C. The analytical results of the soil samples collected are summarized in Table 2.

TABLE 2
SUMMARY OF SOIL ASSESSMENT FINDINGS

PARAMETER	SAMPLE DESIGNATION			SOIL CLEANUP TARGET LEVELS		
	SB - 1	SB-2	SB-3	DIRECT EXPOSURE RESIDENTIAL	DIRECT EXPOSURE COMMERCIAL	LEACHABILITY BASED ON GROUNDWATER CRITERIA
VOA	BDL	BDL	BDL	**	**	**
VOH	BDL	BDL	BDL	**	**	**
Arsenic	BDL	BDL	BDL	0.8	3.7	29
Barium	BDL	3.0	BDL	110	87,000	1,600
Cadmium	BDL	BDL	BDL	75	1,300	8
Chromium	BDL	3.9	BDL	210	420	38
Lead	BDL	2.8	3.5	400	920	*
TPH	BDL	BDL	BDL	340	2,500	340

- All concentrations reported in milligrams per kilogram (mg/Kg) unless indicated
- BOLD - indicates a concentration above the SCTL
- BDL - analytical results below the laboratory method detection limit
- NT - Not Tested
- * Leachability may be determined using TCLP
- ** This group of parameters is not regulated as a whole, although there are individual standards for compounds within the group.

3.4 GROUNDWATER ANALYTICAL RESULTS

Analytical results were compared with the FDEP *Contaminant Cleanup Target Levels*, per Chapter 62-777, FAC, which regulates the Groundwater Cleanup Target Levels (GCTLs; a.k.a. - No Further Action criteria) and Groundwater Natural Attenuation Default Source Concentrations (NADSCs; a.k.a. - Monitoring Only criteria). The laboratory method detection limits were below the GCTLs and NADSCs for the parameters analyzed. A copy of the sampling logs are included in **Appendix B**.

Results from the analyses of the groundwater samples collected from Geoprobe points placed at the *Property* were below the GCTLs and NADSCs for the parameters analyzed. A copy of the laboratory analytical results and Chain of Custody form are provided in **Appendix C**. The analytical results of the groundwater samples collected are summarized in **Table 3**.

TABLE 3

SUMMARY OF GROUNDWATER ASSESSMENT FINDINGS

PARAMETER	SAMPLE DESIGNATION						GROUNDWATER CLEANUP TARGET LEVEL	NATURAL ATTENUATION DEFAULT CONCENTRATION
	GP-1	GP-2	GP-3S	GP-3D	GP-4	GP-4D		
VOA	BDL	BDL	BDL	NT	BDL	NT	*	*
VOH	NT	NT	BDL	BDL	BDL	BDL	*	*
Chromium	NT	NT	5.0	NT	6.0	NT	100	1,000
As, Cd, Ba, Se, Pb, Hg, Ag	NT	NT	BDL	NT	BDL	NT	*	*
TPH	BDL	BDL	BDL	NT	BDL	NT	5,000	50,000
PAH	BDL	BDL	BDL	NT	BDL	NT	*	*

- All concentrations reported in micrograms per liter (ug/L) unless indicated
 - BOLD - indicates a concentration above the GCTL or NADSC
 - BDL - analytical results below the laboratory method detection limit
 - * Although individual parameters within this group have standards, this set of parameters does not have a group standard.
 - ** All results above detectable limits are listed individually.
- NT Not Tested

SECTION 4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the findings presented in this report, the following conclusions were developed.

- Collection and analyses of three soil samples from the *Property* did not reveal the presence of tested parameters at concentrations above applicable regulatory criteria. Based on these data, the vadose zone (unsaturated) soils in the vicinity of the sampling locations do not appear to have been significantly effected by the RECs identified in the Phase I ESA.
- Collection and analyses of four shallow and two deep groundwater samples did not reveal the presence of tested parameters (VOA, VOH, TPH, RCRA metals, and PAH) at concentrations above applicable regulatory criteria. Based on these data, the groundwater quality in the vicinity of these sampling locations does not appear to have been significantly effected by the RECs identified in the Phase I ESA.

The Phase II ESA subsurface investigation conducted for this Property did not reveal the presence of the tested parameters above regulatory standards. Based on these findings, no further investigation is warranted.