# APPENDIX

## CITY OF NAPLES
## RECYCLING TRANSFER FACILITY

Support Documents and Reports:

A. PSI Site Characterization Study – August 2, 2004

B. PSI Geotechnical Report – October 19, 2005

C. PSI Work Plan – August 21, 2006

D. YPC Geotechnical Report – May 30, 2012

E. YPC Geotechnical Report *Supplement* - June 15, 2012

F. Ardaman Limited Phase II Environmental Assessment – June 29, 2011

G. FDEP Guidance for Disturbance and Use of Old Closed Landfills and Waste Disposal Areas in Florida – February 3, 2011

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# SITE CHARACTERIZATION STUDY
# NAPLES AIRPORT RECYCLING CENTER
# COLLIER COUNTY, FLORIDA

PREPARED FOR:

COLLIER COUNTY
SOLID WASTE MANAGEMENT DEPARTMENT
3301 TAMIAMI TRAIL, EAST
HEALTH AND COMMUNITY SERVICES BUILDING
3RD FLOOR
NAPLES, FLORIDA 34112

PREPARED BY:

PROFESSIONAL SERVICE INDUSTRIES, INC.
5801 BENJAMIN CENTER DRIVE
SUITE 112
TAMPA, FLORIDA 33634
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PSI PROJECT NO. 552-4G078

AUGUST 2, 2004

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Senior Project Engineer

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Senior Project Manager

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## ACRONYM KEY

| | |
|---|---|
| C&D | Construction and Demolition |
| CGI | Combustible Gas Indicator |
| CO | Carbon Monoxide |
| EPA | United States Environmental Protection Agency |
| FDEP | Florida Department of Environmental Protection |
| FID | Flame Ionization Detector |
| $H_2S$ | Hydrogen sulfide |
| LEL | Lower Explosive Limit |
| mg/kg | Milligram per kilogram |
| mg/L | Milligram per liter |
| MSL | Mean Sea Level |
| MSW | Municipal Solid Waste |
| NELAC | National Environmental Laboratories Accreditation Conference |
| $O_2$ | Oxygen |
| OSHA | Occupational Safety and Health Administration |
| OVA | Organic Vapor Analysis |
| PG | Professional Geologist |
| PPE | Personal Protective Equipment |
| ppm | parts per million |
| PSI | Professional Service Industries, Inc. |
| SOP | Standard Operating Procedure |
| TPH | Total petroleum hydrocarbons |
| VOCs | Volatile Organic Compounds |
| TCLP | Toxicity Characteristics Leaching Procedure |

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August 12, 2004

Mr. Kevin Dugan
Collier County
Solid Waste Management Dept.
County Government Center
3301 Tamiami Trail East, Bldg. H
Naples, Florida 34112

Mr. R. Shane Cox, PE
Collier County
Public Utilities Engineering Dept.
County Government Center
3301 Tamiami Trail East, Bldg. H
Naples, Florida 34112

**Re: Site Characterization Study**
Naples Airport Recycling Center
Naples, Collier County, Florida
PSI Project No.: 552-4G078

Dear Mr. Dugan and Mr. Cox:

PSI has performed a Site Characterization Study of the above-referenced property. Please find copies of the final report enclosed.

Thank you for choosing PSI as your consultant for this project. If you have any questions, or if we can be of additional service, please call us at (813) 886-1075.

Respectfully submitted,

**PROFESSIONAL SERVICE INDUSTRIES, INC.**

Nana G. Faulkner, PG, CHMM
Senior Project Manager

Professional Service Industries, Inc. • 5801 Benjamin Center Drive, Suite 112 • Tampa, FL 33634 • Phone 813/886-1075 • Fax 813/888-6514

# 1.0 PROJECT BACKGROUND

## 1.1 Purpose

PSI has been retained to design a recycling and household hazardous waste collection center at the Naples Airport Recycling Center located in Naples, Collier County, Florida. The design improvements include placement of three structures on site that are to be located on top of an old landfill. Landfill refuse is less dense than soil and gives rise to concerns that differential settlement could occur under the foundations of the proposed structures. One possible solution to prevent differential settling is to excavate the landfill, separate the refuse from soil, replace that material with select fill, and compact as specified by the geotechnical engineer. In order to estimate the costs and feasibility of the reclamation, subsurface exploration via test pits was necessary to determine the nature and vertical extent of landfill material, and to determine whether any borrow pits exist on site. Additionally, PSI collected samples during the excavation of the test pits for geotechnical soil classification, and laboratory toxicity tests.

## 1.2 Project Location and Site Description

The Naples Airport Recycling Center is located at 2640 W. Enterprise Avenue in Naples, Collier County, Florida. Naples Airport is adjacent to the south, and Airport Pulling Road lies approximately ¼ mile to the east. The site is rectangular in shape, and consists of approximately 4 acres. The Naples Airport Recycling Center is located in Section 35, Township 50 South, Range 25 East as referenced by the Naples North, Florida, USGS Quadrangle Map (Figure 1). The area surrounding the recycling center is generally vacant wooded and marshy land with some commercial/office development to the north. A day care center is located adjacent to the north.

The Naples Airport Recycling Center currently receives construction and demolition debris, and recyclable refuse, which is loaded into roll-off boxes and transported off site. Site security is maintained by the airport perimeter fence and locked gate during non-business hours.

## 1.3 Background Information

The Naples Airport was constructed in 1942 for the Army Air Corps and served as a base of operation for training gunners, bomber crews, and fighter pilots for combat. At the end of World War II, the military no longer needed the facility and ownership returned to the city and county in 1947, as had been agreed upon previously. The city and county operated the airport jointly until the county sold its interest to the city in 1958.

A landfill operated on the northern end of the airport dating back to the 1940's until its closure in the early 1970's. Four acres of the old landfill's 25 acres has been converted into a recycling drop off center, and construction and demolition (C&D) transfer station.

## 1.4 Site Specific Health and Safety Plan

A Site Specific Health and Safety Plan has been developed for this project and implemented in the Work Plan. During fieldwork a tailgate safety meeting was conducted each day prior to the beginning of work. The project team signed the Health and Safety Plan following each briefing.

# 2.0 SUBSURFACE SITE CHARACTERIZATION

## 2.1 Introduction

On April 6, 2004, PSI mobilized to Naples Airport Recycling Center to begin excavating a total of 35 test pits in locations shown on Figure 2, to facilitate observation of waste materials for purposes of site characterization, and to determine whether any borrow pits exist on site. Approximate waste composition based on visual observations was conducted to include organic type waste, paper waste, and C & D materials. An Occupational Safety and Health Administration (OSHA) trained crew performed excavation of the test pits, consisting of an equipment operator, safety officer/supervisor, staff engineer, and senior project engineer. The excavation and gas well monitoring were completed on April 14, 2004.

## 2.2 General Site Conditions

Site access is via Enterprise Avenue, which sits at an elevation of approximately 6 feet above sea level. The airport and lands surrounding the landfill sit at an elevation of approximately 5 feet above Mean Sea Level (MSL). The footprints of the proposed operations center, household hazardous waste center, and recycling building are at elevations of approximately 13 feet above MSL, 19 feet above MSL, and 15 feet above MSL, respectively, and are shown on the Site Plan and Proposed Facility Layout As Of May 2004 (Figure 2). A trash berm borders the south side of the recycling center and rises to an elevation of approximately 30 feet above MSL. The berm has approximately 6 inches of cover soil on it, and is covered by thick grass. The west side of the recycling center is characterized by moguls caused by the dumping of silty deposits excavated from County ditches. This area is at an average elevation of approximately 21 feet above MSL. At the time of the excavations, the water table was at or near its seasonal low elevation.

## 2.3 Test Pit Investigation

Prior to site characterization, the foliage was cleared and the area surveyed. This preliminary work was followed by test pit excavation, air monitoring, recording of data, assessment of excavated materials, organic vapor testing, gas well placement, and backfilling, using the removed debris and soil. The test pits were excavated using a Volvo Model D200 excavator. Information recorded for each test pit included the following, which is summarized in Tables 1 and 2.

- Location of Test Pits
- Date of Excavation

- Organic Vapor Analysis (OVA) Measurements
- Methane Measurements
- Lower Explosive Limit (LEL) Measurements
- Carbon Monoxide (CO) Measurements
- Hydrogen Sulfide ($H_2S$) Measurements
- Oxygen ($O_2$) Measurements
- Surface Elevation
- Thickness of Cover
- Depth to Water
- Approximate Percentage and Makeup of Landfill Debris
- Odor

Photographic documentation was taken at every test pit. Representative photographs are included in Appendix A.

An Organic Vapor Analyzer (OVA) equipped with a Flame Ionization Detector (FID), and a Combustible Gas Indicator (CGI), were used to monitor for the presence of organic vapors, combustible gases, $H_2S$, CO, and $O_2$. The purpose of air monitoring was to ensure the safety of the field crew in accordance with the Site Specific Health and Safety Plan. The monitoring also established a baseline of the potential extent of air emissions from any future reclamation activity. The purpose of the OVA monitoring was to determine the presence of Volatile Organic Compounds (VOCs) in soils excavated from the test pits. The CGI was used to monitor landfill gas concentrations and ambient air quality in the vicinity of the test pit excavations.

## 2.4 Gas Well Installation and Monitoring

A total of ten landfill gas monitoring wells were installed in the subject area, whose locations are shown on Figure 2. The wells were constructed using one-inch PVC well casings with an overall length of 12 feet, slotted on the interval from four feet to 12 feet, as depicted in Figure 10. The wells were fitted with a PVC cap with a gas petcock machine threaded into the top, thus creating an airtight seal, and a means of sampling. The wells were allowed to sit capped for four days prior to readings. A Magnehelix model gauge was used to measure the gas pressure emitting from the wells, and an MSA Minuteman model LEL meter was used to measure CO, $H_2S$, percent LEL, and $O_2$ levels. High LEL readings indicate the need to design for a gas venting system to be installed under the foundation of any structure not permanently open to the atmosphere.

## 2.5 Soil Analytical Sampling Program

The OVA-FID measures combustible organic gases in parts-per-million (ppm), which includes methane. A filter is then placed on the instrument probe to remove VOCs and a second reading is taken which generally represents the methane concentration. The concentration of VOCs in the soil/debris sample is calculated from the difference between the two readings. OVA-FID and CGI readings were taken from each pit, and are shown on Table 1.

Soil samples were taken for analysis, as a precautionary measure to determine the level of personal protective equipment required to ensure the safety of the field crews in any future site reclamation activities. The soil samples were taken under chain of custody to Severn Trent Laboratories, Inc. in Tampa, Florida, and analyzed for the following parameters:

- Semi volatile organic compounds by EPA Method 8270
- Petroleum Range Organics by FL-PRO
- RCRA Metals by EPA Method 6010
- Cyanide by EPA Method 7471

The soil samples were collected in accordance with methodologies specified in Florida Department of Environmental Protection (FDEP) Standard Operating Procedure (SOP) 001/01. The soil samples were submitted under chain-of-custody procedures to an analytical laboratory approved by the National Environmental Laboratories Accreditation Conference (NELAC). The soil samples were used to characterize the composition of tested materials and to determine contaminant levels, in order to specify Personal Protective Equipment (PPE) in any future site reclamation activities.

# 3.0 DATA EVALUATION

## 3.1 Test Pit Evaluation

The purpose of the test pit evaluation was to establish the nature, extent, toxicity, and subsurface characteristics of the former landfill.

## 3.2 Vertical Profile

The vertical soil profiles of the test pit excavations are shown on Figures 3 through 6. In general, the landfill contained a cover of sandy soil ranging from 6 inches to 3 feet in thickness with an average thickness of 18 inches. The thickness of the debris varied from 6 feet to 16 feet. In some cases, the thickness of the debris layer could not be accurately determined, due to the debris extending below the water table, as shown in Figure 2. At the time of the test pit excavations, the average depth of the water table appeared to be approximately two feet above MSL.

## 3.3 Classification of Excavated Material

The excavated material was evaluated for general percentages of the various waste constituents, which included paper, plastic, steel, wood, soil, and fiber. The test pits revealed approximately 50 percent soil and 50 percent municipal solid waste (MSW). The percentage of soil is most likely due to the final and daily cover with soil during operation of the landfill. Plastic sheeting from trash bags was evident in most of the test pits. Evidence of burning was observed in most of the test pits. It is known that MSW was burned until the late 1960's. Other materials found included tires, logs, carpet, rope, steel cable, and hose. The waste consisted primarily of household refuse, with a relatively small amount (5%-10%) of construction and demolition debris. Organic material apparently has decomposed to a great extent, based on visual observation. Scavenging birds took no interest in the debris unearthed during the test pit excavations. Newspapers found during the excavations were dated from 1968 to 1974.

## 3.4 Results of Test Pit Excavations

Excavations on the east side of the landfill typically revealed refuse buried down past the water table, as shown in Figure 2. Starting at the test pit row four and working to the west, the water table was no longer breached, and the excavations began to clear the buried refuse as shown in Figure 2. Test pits east of row four and south of the access road generally had refuse buried past the water table, possibly indicating the existence of borrow pits. The refuse unearthed in all of the test pits appeared to be thoroughly decomposed, with approximately 5 percent of the total volume consisting of organic material that would be subject to further decomposition.

### 3.5 Results of Vapor Headspace Analysis

Gas monitoring was accomplished by three methods. Ambient air downwind of the test pits was monitored during excavations; containerized air with 16-ounce mason jars half filled with soil and allowed to volatilize prior to OVA and LEL analysis; and LEL readings were taken with the CGI from the gas monitoring wells.

Two instruments were used to collect gas readings from the excavated material. A Heath Consultants Porta FID-II was used to analyze vapor headspace in the mason jars, and determine VOCs and methane concentrations. An MSA Minuteman was used to analyze both the vapor headspace in the mason jars, and the gas monitoring wells. The CGI measures $H_2S$ in ppm, and $O_2$, CO, and LEL in parts per hundred (percent).

Vapor headspace analyses of the test pits are shown in Table 1. Unfiltered OVA readings range from 0 to 5000 ppm. Total methane concentration range from 0 to 110 ppm. Total VOC concentration range from 0 to 4950 ppm. Readings over 100 percent of the LEL were observed at B-1, C-1, D-1, A-2, C-3, and A-5. Carbon monoxide readings ranged from 0 to 91 ppm. Monitored levels of oxygen below the threshold value of 19.5%, (from the Health and Safety Plan) were recorded in test pits B-1, the Operations Center, A-7, A-2, B-2, B-3, C-3, D-3, B-4, D-4, A-5, B-5, C-5, D-5, C-6, C-7, and D-7. Hydrogen sulfide was not encountered in any of the test pit headspace vapor analysis tests. Measurements of the air downwind of the excavations did not yield any oxygen readings less than 20.8 percent. Carbon monoxide (CO) and hydrogen sulfide ($H_2S$) were not detected downwind of any of the test pits.

### 3.6 Results of Gas Well Monitoring

Gas well monitoring results are shown in Table 3. The gas wells were sampled with the CGI on two separate dates. On April 14, 2004, oxygen levels ranged from 11.3 percent to 20.8 percent. CO was encountered in two of the wells, C-1 and C-5, at readings of 74 ppm and 2 ppm, respectively. $H_2S$ was not encountered and landfill gas pressure was not measured on this date. Landfill gas readings greater than 100 percent of the LEL were observed at monitoring well locations B-4, B-6, C-1, and C-5. A landfill gas reading of 94 percent of the LEL was observed at monitoring well location C-2, and one of 16 percent of the

LEL was observed at A-2. Landfill gas at one percent of the LEL was observed at the Ops Center.

The observations recorded on May 17, 2004 show oxygen levels ranging from 0.5 percent to 11.3 percent. CO readings range from 1 to 8 ppm, and 1 ppm $H_2S$ was observed in B-6. Landfill gas readings greater than 100 percent of the LEL were observed in locations B-4, B-5, C-1, C-4 and C-5. Additionally, landfill gas concentration of 47 percent of the LEL was observed in well B-6. A landfill gas concentration of one percent of the LEL was observed in locations A-2, A-3, C-2, and at the Ops Center. Landfill gas pressure was observed using a Magnehelix gauge, which measures low pressure using inches of water. All of the readings were zero, except for locations B-6, C-1, and C-6, where pressures of minus 0.1 inches of water were observed.

### 3.7 Results of Environmental Soil Sampling

The OVA-FID gas sampling provided one of the methods used to determine which of the test pits would be subjected to environmental analysis. Excavated materials that exhibited odors or that visually were not representative of other test pit material excavated provided another means of identifying material to be analyzed.

Environmental soil sampling did not show any adverse effects from constituents in the landfill with the exception of arsenic, barium, and total petroleum hydrocarbons (TPH) at sample locations B-6, C-6 and C-7.

The concentrations of arsenic in Samples B-6, C-6 (C-6 samples taken from the same hole at depths of 4 feet and 15 feet), and C-7 were found to be 2.8 mg/kg, 1.7 mg/kg, 5.5 mg/kg, and 2.8 mg/kg, respectively.

The concentration of TPH at B-6 was found to be 1400 mg/kg.

The concentrations of barium at B-6 (12 feet bls) and C-6 (15 feet bls) were found to be 35 mg/kg and 190 mg/kg, respectively.

The laboratory results and chain of custody are contained in Appendix B.

# 4.0 HISTORICAL INFORMATION

The test pits were conducted to define the extent of debris in the area where the structures connected with the Naples Recycling Center improvements were to be located. This work provided information to better estimate the costs associated with reclamation and backfilling the footprints of the proposed structures. During the course of the test pit excavations, it became apparent that borrow pits may exist underneath the old landfill, since excavations were revealing the existence of trash beneath the water table. This discovery prompted further research into the history of the old landfill, which led to the discovery of aerial photographs and articles written about the old landfill.

Prior to May 1940, the land where the Naples Airport now sits was undeveloped and wooded (see Figure 7, 1940 Aerial Photograph). The airport was constructed and used as an Army Airfield during World War II, most likely in the configuration shown in Figure 8, which is an aerial photograph taken in 1952. Figure 9 is an aerial photograph of the Naples Airport area, taken in 1985. In comparing the three photographs, it is apparent that an area of disturbed soil appears in the 1952 photograph that was not present in the 1940 photograph. The 1985 aerial photograph shows the presence of the recycling center. Further interpretation of the aerial photographs is not possible, but the possibility exists that the area of disturbed soil shown in Figure 8 was a borrow pit(s). The existence of borrow pits in the vicinity of the old landfill is documented in an article taken from the Naples Airport Archives (Appendix C). A quote from the article states that 'The land, approximately 38 acres, was originally a borrow pit for field construction'.

In addition to the aerial photographs, and relevant to the environmental aspects of the site, PSI discovered a document entitled *Overview of Groundwater Monitoring Data at the City of Naples Airport Authority Closed Landfill (FDEP Facility # 5211000851)*, authored by Crystal Environmental, Inc., and dated February 21, 1992. This document describes an FDEP permit issued to the City of Naples Airport Authority requiring routine groundwater monitoring at the closed landfill site on Enterprise Road. A total of 6 monitoring wells were sampled quarterly beginning in October 1987 and ending in December 1991. The wells were closed and the monitoring ceased due primarily to the fact that data from several monitored parameters either failed to be detected in appreciable concentrations, and/or did not produce any notable trends (with respect to background water quality information). The full report is available in Appendix C.

# 5.0 CONCLUSIONS AND RECOMMENDATIONS

## 5.1 General

Historically, the site now known as the Naples Airport Recycling Facility was originally a borrow pit for limestone production. Sometime in the 1940's, the site was converted into a solid waste dump. The landfill was closed sometime in the early 1970's, and turned into a transfer station and recycling drop-off facility. Refuse was burned until 1968, when the Airport Master Plan recommended the immediate halt to further burning.

## 5.2 Test Pits

Due to the information gathered from the test pit excavations, PSI recommends that future buildings be located west of test pit row five, as referenced on the Figure 2 site map. The existence of borrow pits cannot be ruled out east of row five, since debris was found into the water table.

The area west of row five, appears to be better suited for permanent structural buildings, since a debris layer is clearly defined, and there does not appear to be any borrow pits in the area. Confirmatory drilling is recommended within the footprint of any permanent structural buildings contemplated for construction.

## 5.3 Gas Wells

The results of the landfill gas monitoring revealed high concentrations of landfill gas within the landfill. The gas does not appear to be under pressure according to pressure tests taken at the well heads. Due to observed readings of 100 percent of the LEL in four of the gas monitoring wells, PSI recommends that passive gas venting be incorporated into the design of any permanent structures constructed on site that are not permanently open to the atmosphere.

## 5.4 Environmental Soil Analysis

The Environmental Protection Agency (EPA) and State regulatory agencies have utilized several analytical leaching procedures in order to simulate disposal environments and to characterize a waste's toxicity to its surroundings. Regulatory bodies have most often used the Toxicity Characteristics Leaching Procedure (TCLP) as a gauge of the waste's toxicity to the environment, and to humans. The EPA has established concentrations of substances using the TCLP test, above which, the material is considered hazardous.

Laboratories report the total analyte concentrations of soil samples in units of milligrams per kilogram (mg/kg). The TCLP is reported in milligrams per liter (mg/L). A general rule of thumb when making a comparison between the total concentration of a substance in mg/kg and the TCLP in mg/L is that it would take approximately 20 times as much of a substance reported in mg/kg to equal the hazardous threshold reported in mg/L.

The highest arsenic and barium concentrations found in the laboratory analyses of soil samples taken from the Naples Airport Recycling Center was 5.5 mg/kg and 190 mg/kg, respectively. The TCLP used for arsenic and barium is 5 mg/L and 100 mg/L, respectively. Since the concentrations found in the soil samples are less than two times the amount listed as the TCLP, the substances are not considered to be toxic. Therefore, the level of personal protective equipment that is required by personnel working on any future reclamation projects at the Naples Airport Recycling Center should remain as is currently listed in the Site Health and Safety Plan.

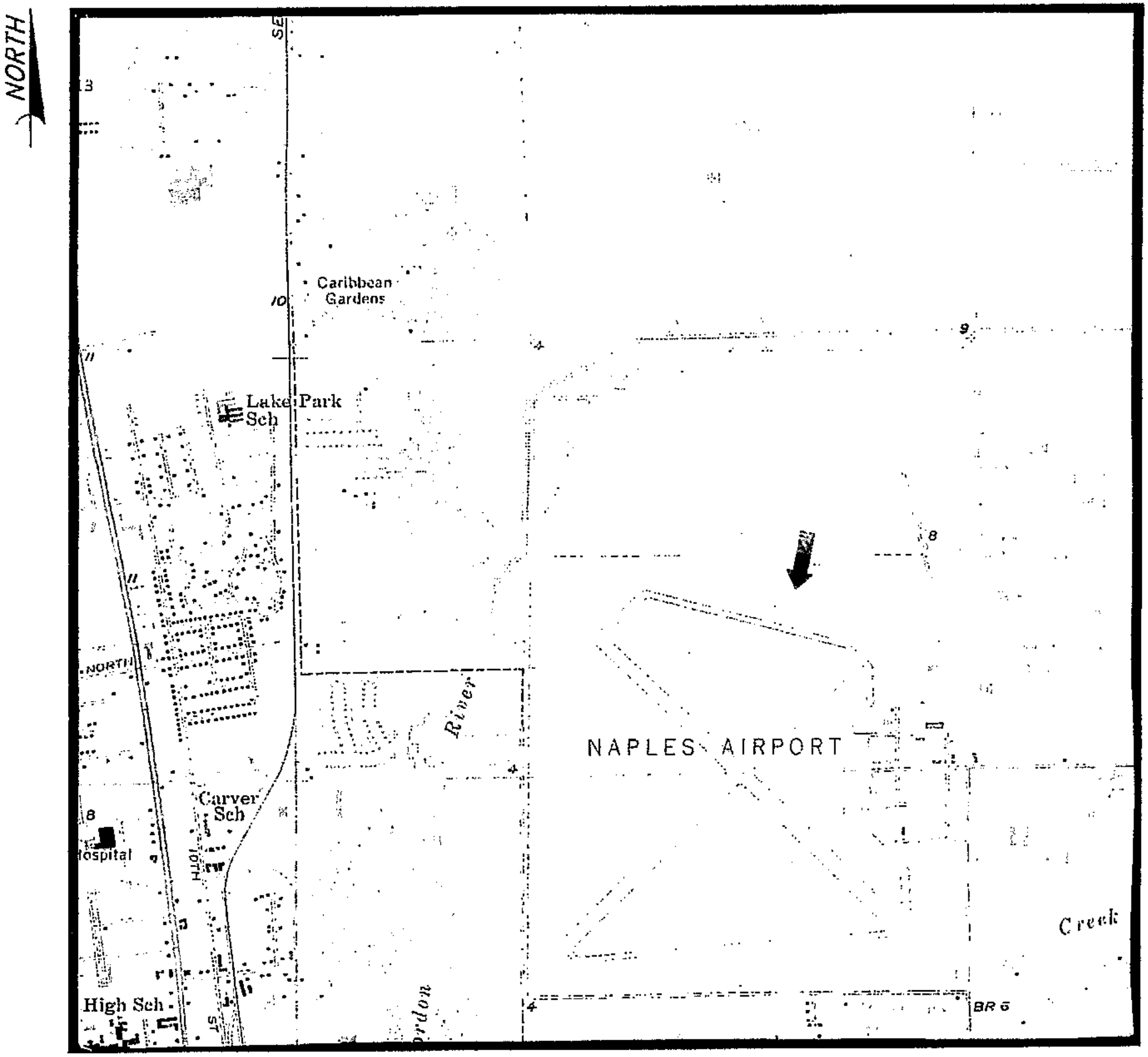
# 6.0 REFERENCES

Naples Airport Archives Article, April 20, 2004

Overview of Groundwater Monitoring Data at The City of Naples Airport Authority Closed Landfill, Crystal Environmental, Inc., February 1992

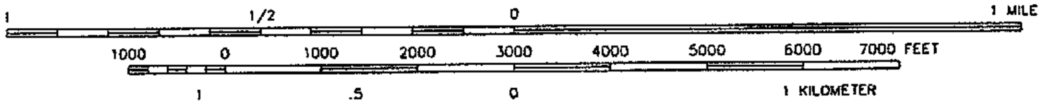
# FIGURES

APPROXIMATE SITE LOCATION



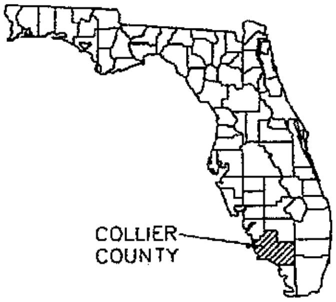
NOTE: THIS MAP TAKEN FROM USGS QUADRANGLE MAP

*SCALE 1:24000*



*CONTOUR INTERVAL 5 FEET*

*NATIONAL GEODETIC VERTICAL DATUM OF 1929*



MAP NAME: "NAPLES, FLORIDA"
DATE: 1958(PHOTOREVISED 1972)
TOWNSHIP: 50 S
RANGE: 25 E
SECTION: 35

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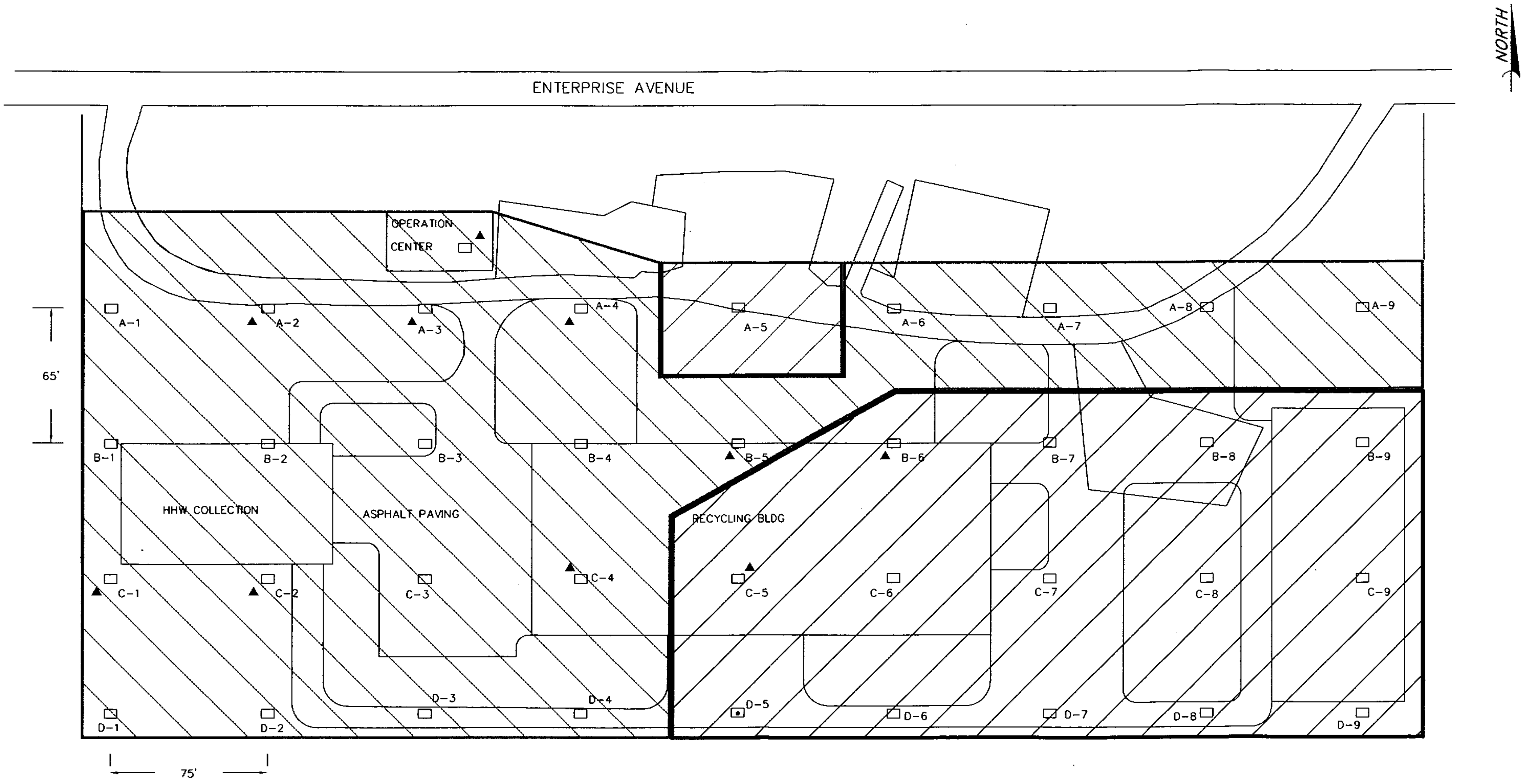
## USGS VICINITY MAP

NAPLES AIRPORT RECYCLING CENTER
2640 W ENTERPRISE AVENUE
NAPLES, COLLIER COUNTY, FLORIDA

| | | | | | | |
|---|---|---|---|---|---|---|
| CHKD. BY: | DRAWN BY: VAS | DATE: 06/29/04 | SCALE: NOTED | REVISION: | PROJECT NO.: 552-40078 | FIGURE NO.: 1 |



PROPOSED FACILITY LAYOUT
AS OF MAY 2004

## LEGEND

☐ APPROXIMATE TEST PIT LOCATION

▲ APPROXIMATE VAPOR MONITORING POINT

▨ TRASH EXTENDS INTO WATER TABLE

▧ TRASH STOPS BEFORE WATER TABLE

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## SITE MAP

PROPOSED FACILITY LAYOUT
NAPLES AIRPORT RECYCLING CENTER
COLLIER COUNTY SOLID WASTE MANAGEMENT DEPARTMENT
NAPLES, COLLIER COUNTY, FLORIDA

0 50 100
APPROXIMATE SCALE IN FEET

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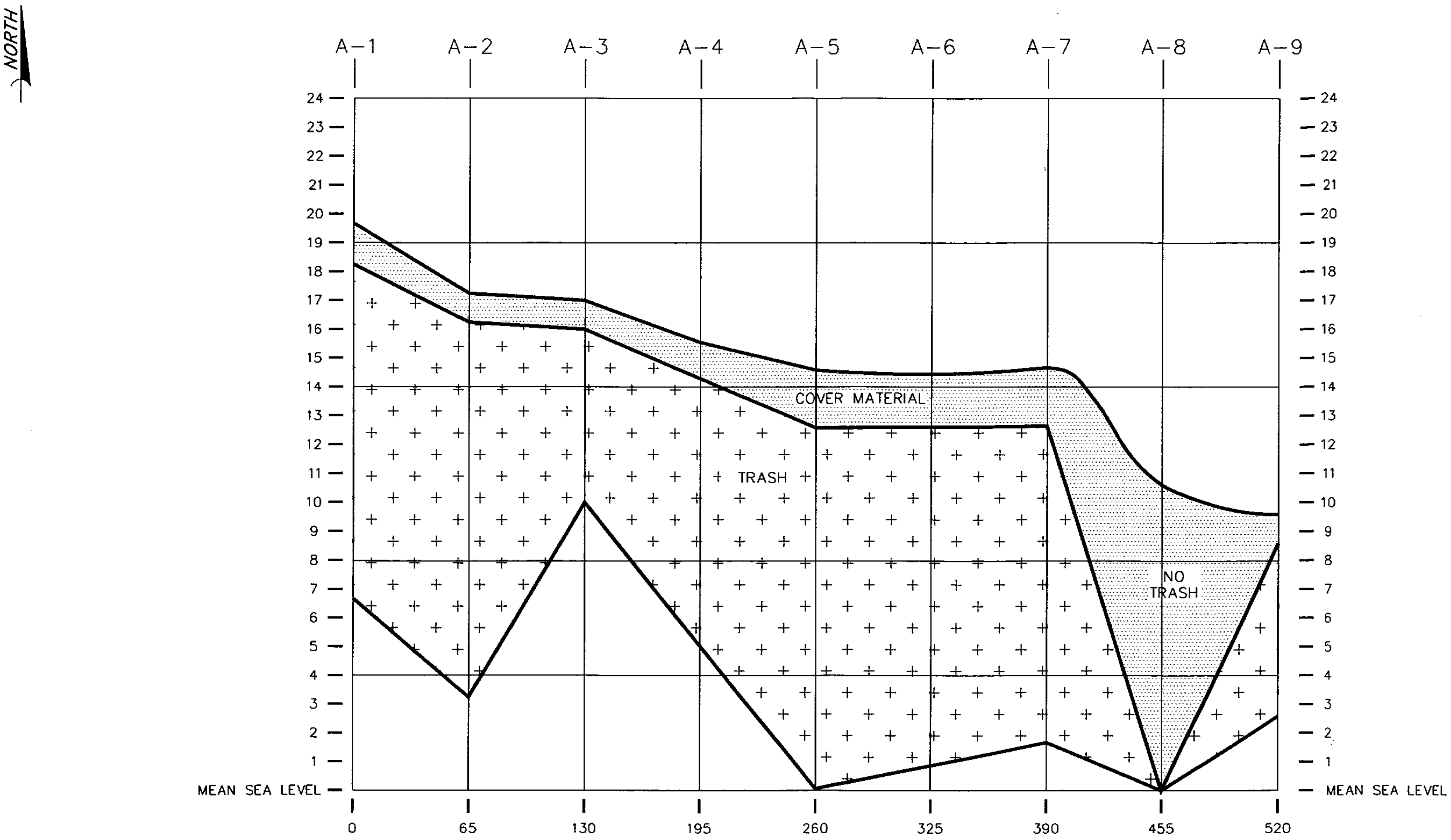
| DRAWN BY: VAS | CHKD. BY: | DATE: 08/06/04 |
| SCALE: 1" = 50' | REVISION | |
| PROJECT NO.: 552-4G005-2 | | FIGURE NO.: 2 |



HORIZONTAL SCALE: 1"=65'
VERTICAL SCALE: 1"=4'

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# VERTICAL SOIL PROFILE 'A' ROW
FACILITY DESIGN AREA
NAPLES AIRPORT
NAPLES, COLLIER COUNTY, FLORIDA

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CHKD. BY:
DATE: 06/30/04
SCALE: NOTED
REVISION
PROJECT NO.: 552-4G078
FIGURE NO.: 3

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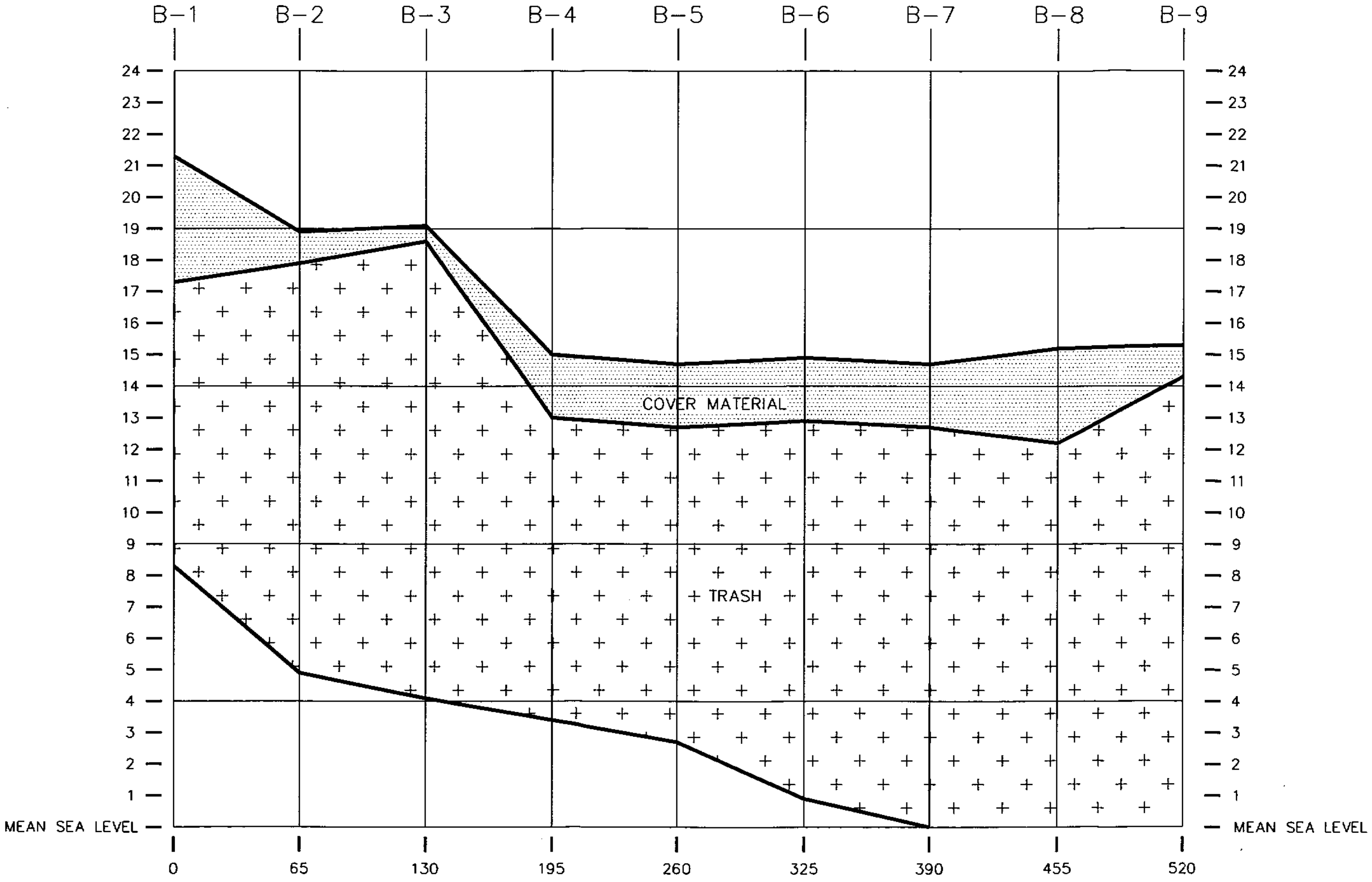

HORIZONTAL SCALE: 1"=65'
VERTICAL SCALE: 1"=4'

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# VERTICAL SOIL PROFILE 'B' ROW
FACILITY DESIGN AREA
NAPLES AIRPORT
NAPLES, COLLIER COUNTY, FLORIDA

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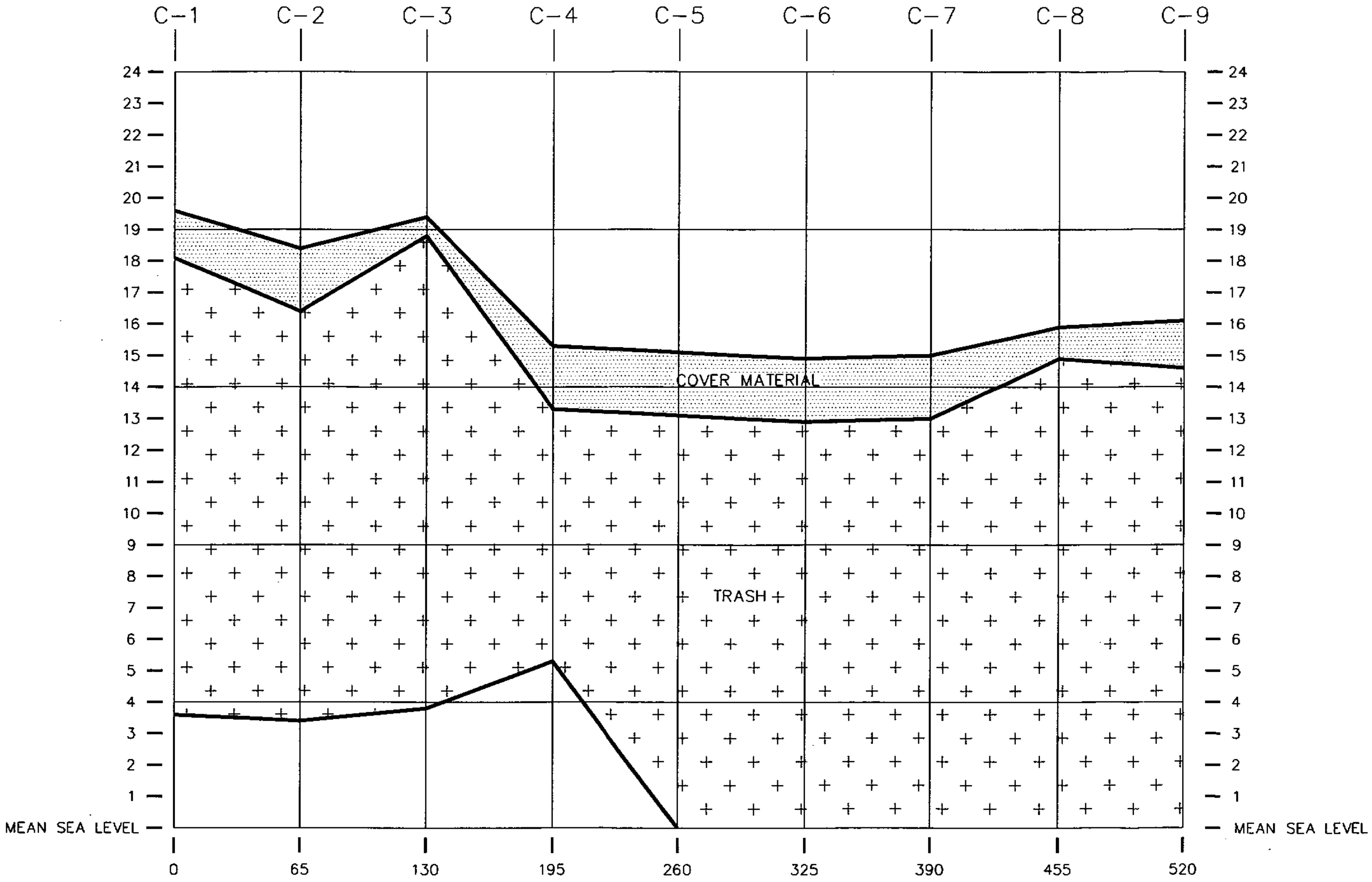
| PROJECT NO.: 552-4G078 | | FIGURE NO.: 4 |



HORIZONTAL SCALE: 1"=65'
VERTICAL SCALE: 1"=4'

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# VERTICAL SOIL PROFILE 'C' ROW
## FACILITY DESIGN AREA
## NAPLES AIRPORT
NAPLES, COLLIER COUNTY, FLORIDA

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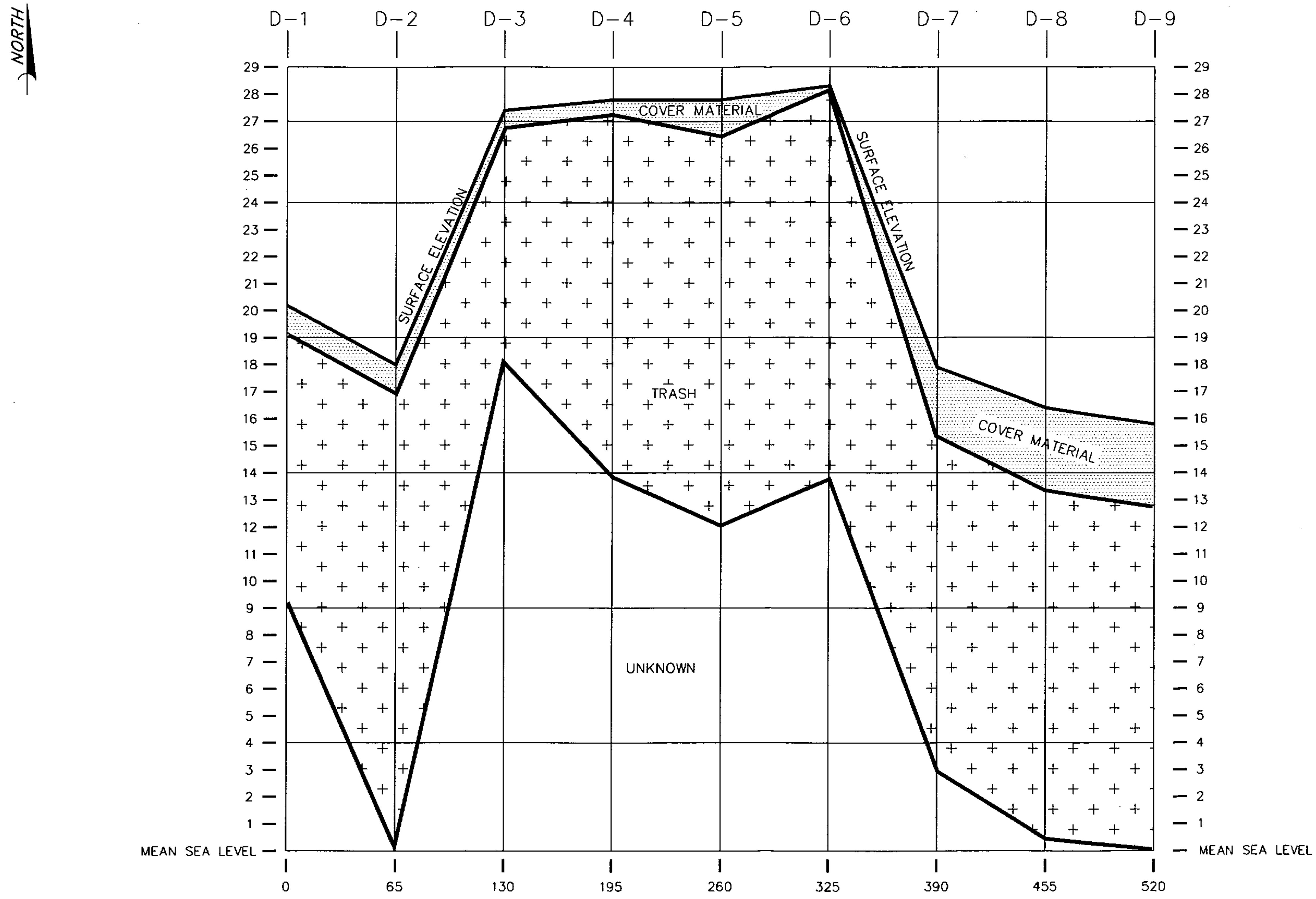
| SCALE: NOTED | REVISION | |
| PROJECT NO.: 552-4G078 | | FIGURE NO.: 5 |



HORIZONTAL SCALE: 1"=65'
VERTICAL SCALE: 1"=4'

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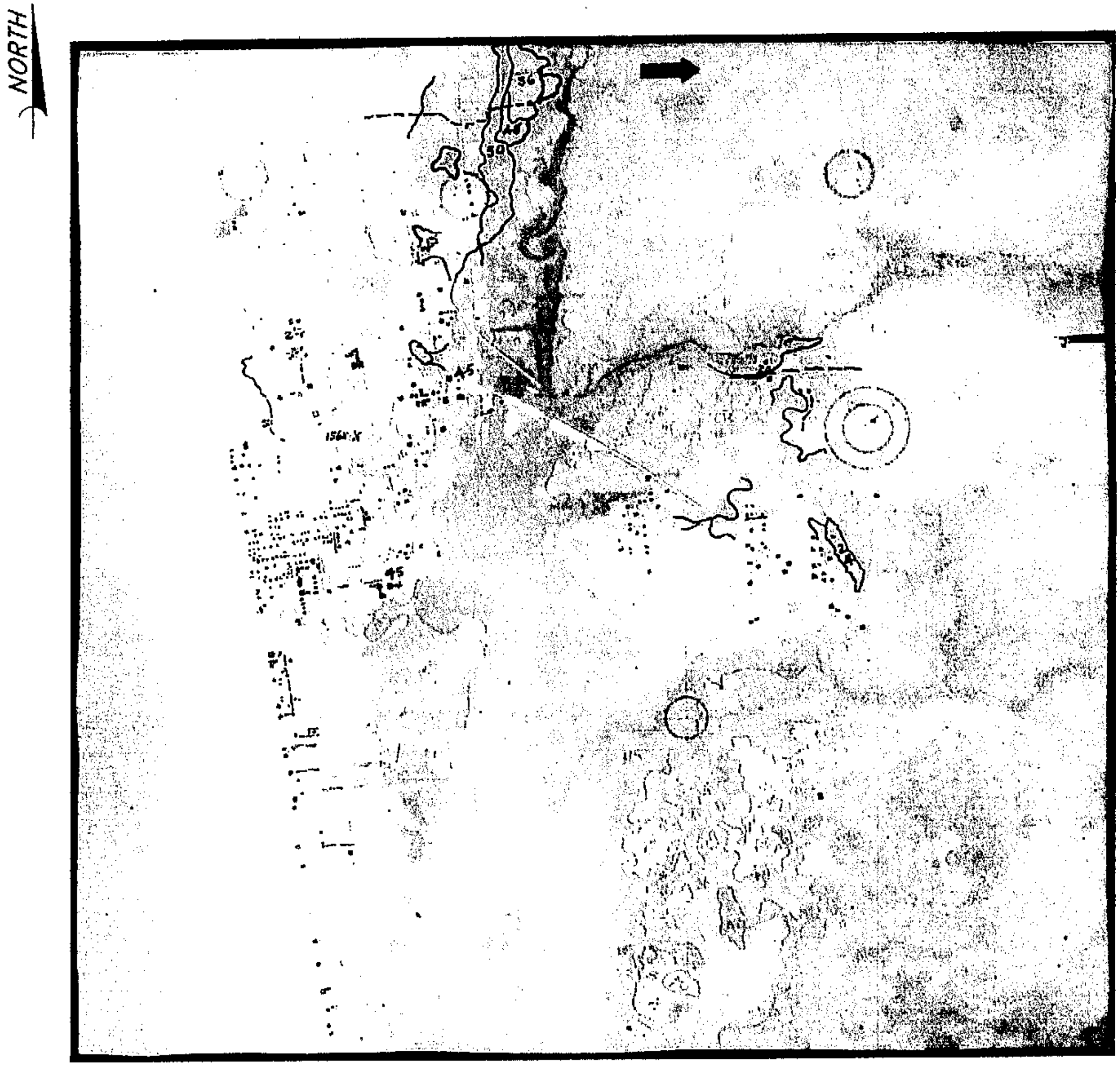
VERTICAL SOIL PROFILE 'D' ROW
FACILITY DESIGN AREA
NAPLES AIRPORT
NAPLES, COLLIER COUNTY, FLORIDA

| | | |
|---|---|---|
| DRAWN BY: VAS | CHKD. BY: | DATE: 06/30/04 |
| SCALE: NOTED | REVISION | |
| PROJECT NO.: 552-4G078 | | FIGURE NO.: 6 |



AERIAL PHOTOGRAPH DATE: 1940

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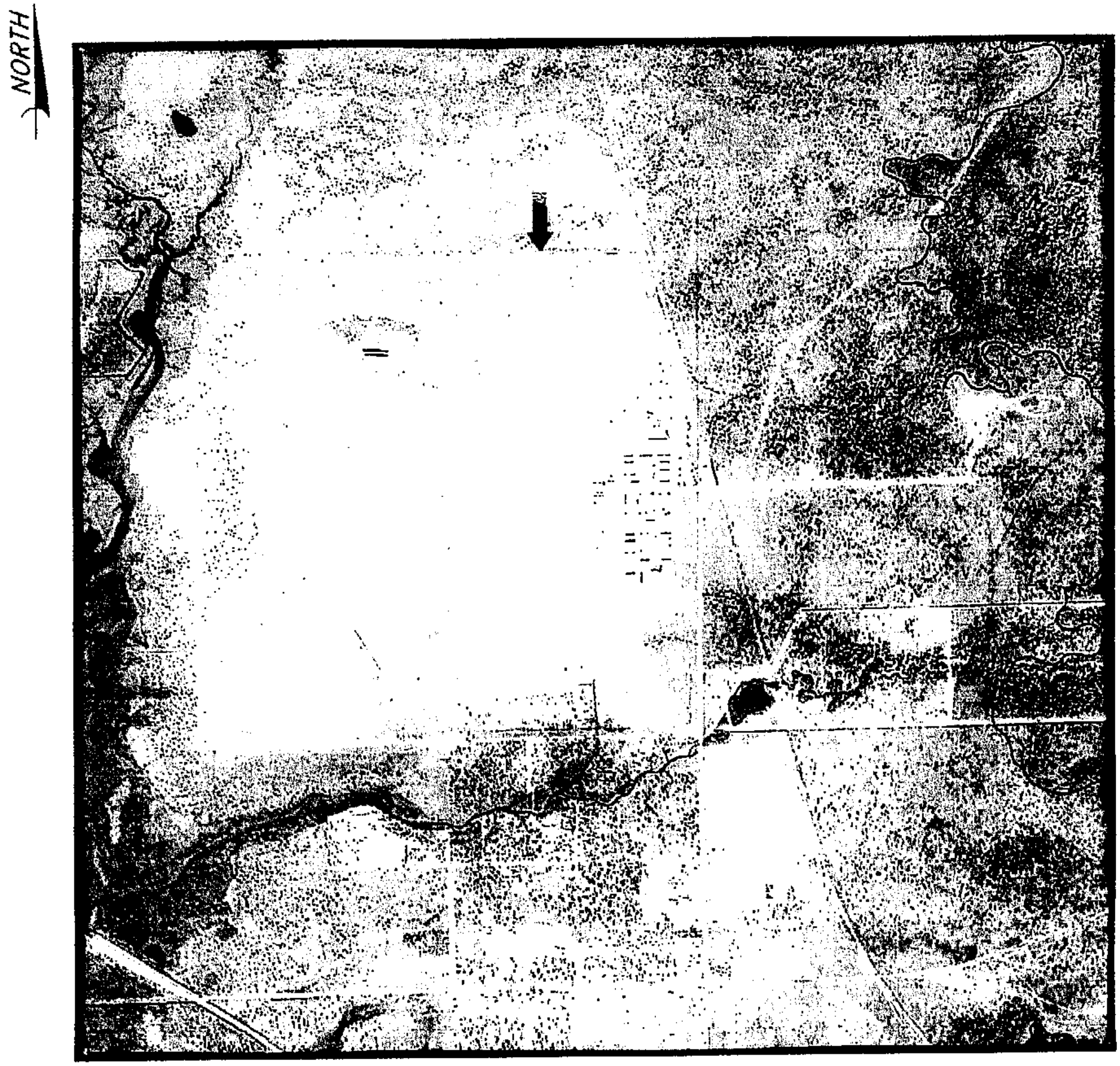
## AERIAL PHOTOGRAPH

NAPLES AIRPORT RECYCLING CENTER
2640 W ENTERPRISE AVENUE
NAPLES, COLLIER COUNTY, FLORIDA

| | | | | | | |
|---|---|---|---|---|---|---|
| CHKD. BY: | DRAWN BY: VAS | DATE: 06/29/04 | SCALE: | REVISION: | PROJECT NO.: 552-4G078 | FIGURE NO.: 7 |



AERIAL PHOTOGRAPH DATE: 1952

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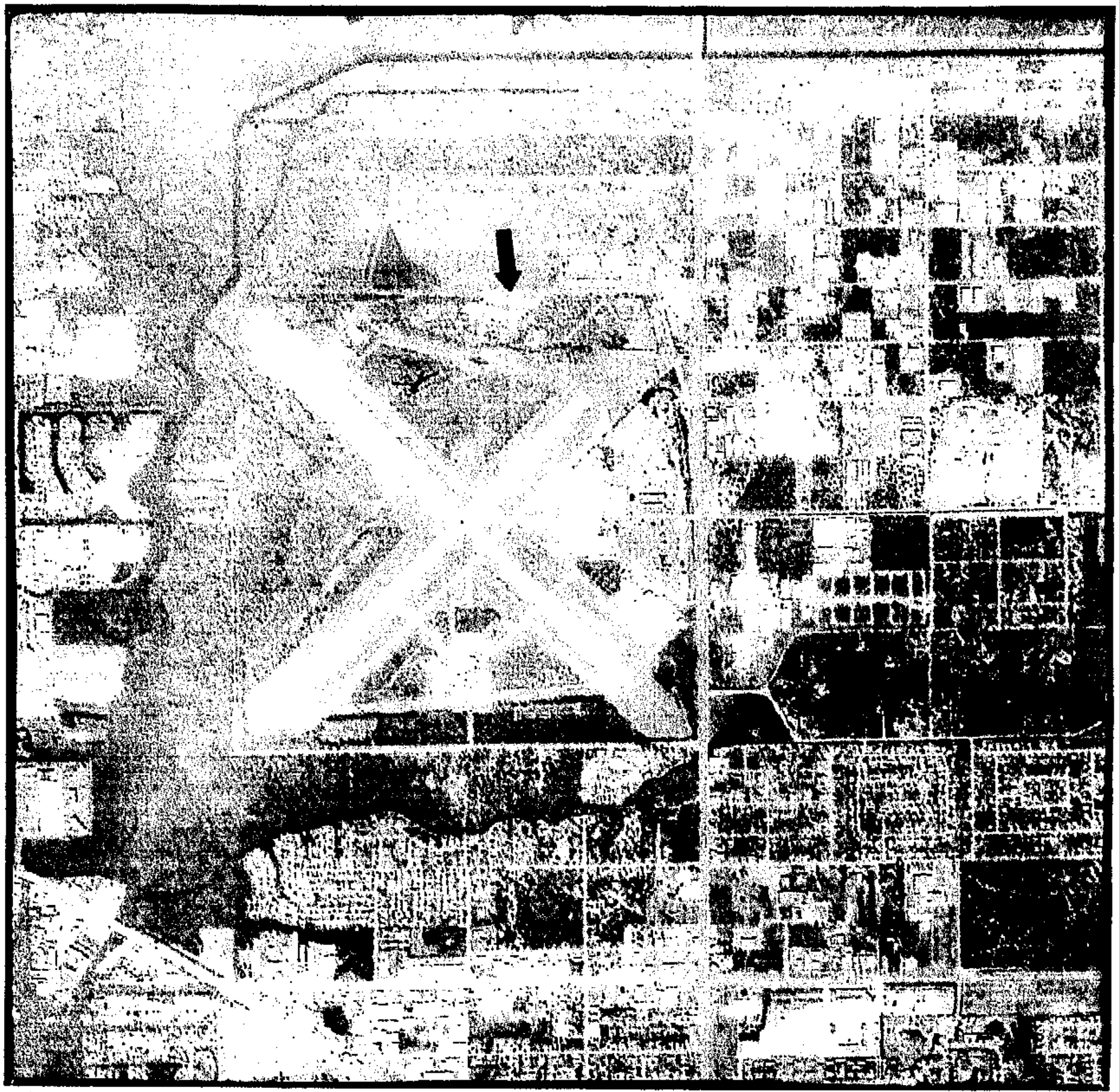
AERIAL PHOTOGRAPH
NAPLES AIRPORT RECYCLING CENTER
2640 W ENTERPRISE AVENUE
NAPLES, COLLIER COUNTY, FLORIDA

| | | | | | | |
|---|---|---|---|---|---|---|
| CHKD. BY: | DRAWN BY: VAS | DATE: 06/29/04 | SCALE: | REVISION: | PROJECT NO.: 552-4G078 | FIGURE NO.: 8 |



AERIAL PHOTOGRAPH DATE: 1985

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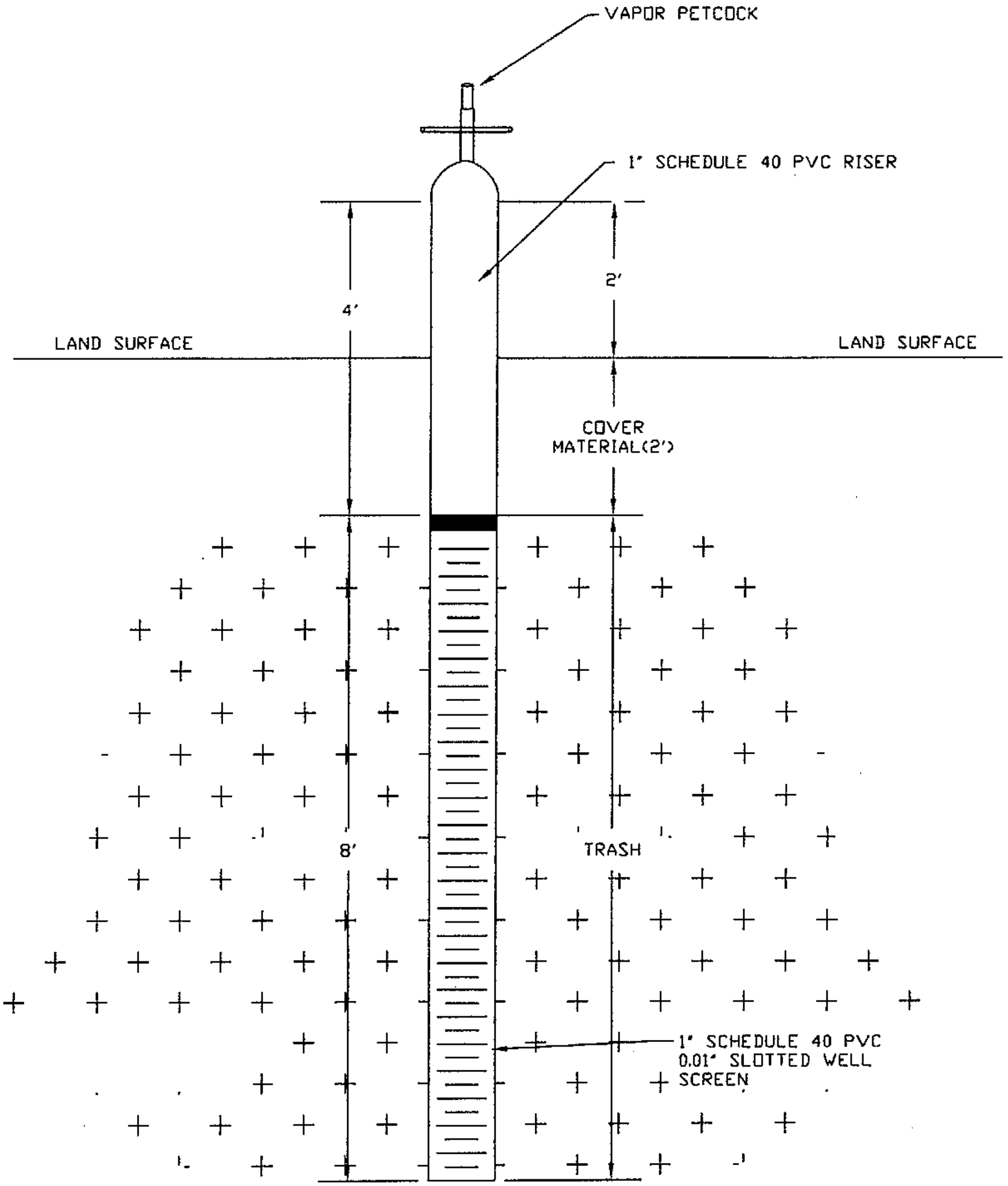
AERIAL PHOTOGRAPH
NAPLES AIRPORT RECYCLING CENTER
2640 W ENTERPRISE AVENUE
NAPLES, COLLIER COUNTY, FLORIDA

| | | | | | | |
|---|---|---|---|---|---|---|
| CHKD. BY: | DRAWN BY: VAS | DATE: 06/29/04 | SCALE: | REVISION: | PROJECT NO.: 552-4G078 | FIGURE NO.: 9 |



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# TYPICAL GAS WELL DIAGRAM

NAPLES AIRPORT RECYCLING CENTER
COLLIER COUNTY SOLID WASTE MANAGEMENT DEPARTMENT
NAPLES, COLLIER COUNTY, FLORIDA

| | | | | | | |
|---|---|---|---|---|---|---|
| CHKD. BY: | DRAWN BY: VAS | DATE: 08/05/04 | SCALE: N.T.S | REVISION: | PROJECT NO.: 552-4G078 | FIGURE NO.: 10 |

# TABLES

## Table 1
## Naples Airport Recycling Center
## Headspace Vapor Analysis Data

**Project: 552-4G078**

**Date: April, 2004**

| Location | OVA Unfiltered (ppm) | OVA Filtered (ppm) | NET OVA (ppm) | LEL (%) | CO (ppm) | $H_2S$ (ppm) | $O_2$ (%) | Odor | Sample Collected |
|---|---|---|---|---|---|---|---|---|---|
| A-1 | 150 | 17 | 133 | 0 | 11 | 0 | 20.0 | musty | |
| A-2 | 350 | 22 | 328 | 100 | 32 | 0 | 18.4 | musty | Sample A-2 |
| A-3 | 0 | 0 | 0 | 0 | 0 | 0 | 20.4 | musty | Sample A-3 |
| A-5 | 2200 | 70 | 2130 | 100 | 57 | 0 | 17.5 | musty | |
| A-7 | 350 | 21 | 329 | 0 | 23 | 0 | 19.2 | musty | |
| A-8 | 0 | 0 | 0 | 0 | 0 | 0 | 20.8 | musty | |
| A-9 | 0 | 0 | 0 | 0 | 0 | 0 | 20.7 | musty | |
| B-1 | 1700 | 60 | 1640 | 100 | 25 | 0 | 19.2 | musty | |
| B-2 | 350 | 25 | 325 | 0 | 16 | 0 | 19.4 | musty | |
| B-3 | 1600 | 31 | 1569 | 0 | 13 | 0 | 19.30 | musty | |
| B-4 | 900 | 17 | 883 | 0 | 72 | 0 | 15.5 | musty | Sample B-4 |
| B-5 | 500 | 60 | 440 | 0 | 31 | 0 | 18.1 | musty | Sample B-5 |
| B-6 | 200 | 35 | 165 | 0 | 10 | 0 | 19.5 | petroleum | Sample B-6 |
| B-7 | 12 | 5 | 7 | 0 | 10 | 0 | 20.0 | musty | |
| B-8 | 150 | 10 | 140 | 0 | 35 | 0 | 19.5 | musty | |
| B-9 | 0 | 0 | 0 | 0 | 0 | 0 | 20.3 | musty | |
| C-1 | 150 | 11 | 139 | 100 | 2 | 0 | 20.3 | musty | Sample C-1 |
| C-2 | 500 | 39 | 461 | 0 | 14 | 0 | 19.9 | musty | Sample C-2 |
| C-3 | 500 | 17 | 483 | 100 | 91 | 0 | 17.60 | musty | |
| C-4 | 50 | 3 | 47 | 0 | 15 | 0 | 19.9 | musty | Sample C-4 |
| C-5 | 1700 | 70 | 1630 | 1 | 74 | 0 | 16.4 | musty | Sample C-5 |
| C-6 | 2000 | 60 | 1940 | 0 | 44 | 0 | 16.6 | creosote | Sample C-6 |
| C-7 | 450 | 16 | 434 | 0 | 25 | 0 | 18.3 | musty | Sample C-7 |
| C-8 | 350 | 20 | 330 | 0 | 32 | 0 | 19.7 | musty | |
| C-9 | 0 | 0 | 0 | 0 | 0 | 0 | 20.4 | musty | |
| D-1 | 150 | 11 | 139 | 100 | 15 | 0 | 20.0 | musty | |
| D-2 | 60 | 8 | 52 | 0 | 8 | 0 | 20.4 | musty | |
| D-3 | 430 | 17 | 413 | 0 | 61 | 0 | 16.5 | musty | |
| D-4 | 800 | 110 | 690 | 0 | 19 | 0 | 19.4 | musty | |
| D-5 | 5000 | 50 | 4950 | 1 | 80 | 0 | 17.1 | musty | |
| D-6 | 60 | 45 | 15 | 0 | 17 | 0 | 19.6 | musty | |
| D-7 | 350 | 16 | 334 | 0 | 35 | 0 | 16.7 | musty | |
| D-8 | 14 | 3 | 11 | 0 | 0 | 0 | 20.8 | musty | |
| D-9 | 13 | 0 | 13 | 0 | 0 | 0 | 20.8 | musty | |
| OP CNTR | 50 | 12 | 38 | 0 | 19 | 0 | 18.7 | musty | Sample Op |

**Table 2**
**Naples Airport Recycling Center**
**Test Pit Characterization**
**PSI Project: 552-4G078**

| Test Pit | Surface Elevation (feet) AMSL | Depth of Cover (feet) | Depth to Base of Debris (feet) | Thickness of Debris (feet) | Depth to Water (feet) | Estimated Soil % | Estimated Debris % | Debris Layer Cleared? | Debris Extend into Water Table? |
|---|---|---|---|---|---|---|---|---|---|
| A-1 | 19.80 | 1.50 | 13 | 11.50 | Unknown | 50 | 50 | Yes | No |
| A-2 | 17.30 | 1.00 | 14 | 13.00 | Unknown | 60 | 40 | Yes | No |
| A-3 | 17.00 | 1.00 | 10 | 9.00 | Unknown | 60 | 40 | Yes | No |
| A-5 | 14.70 | 2.00 | 14 | 12.00 | 14 | 40 | 60 | No | Yes |
| A-7 | 14.80 | 2.00 | 13 | 11.00 | Unknown | 40 | 60 | Yes | No |
| A-8 | 10.80 | 0.50 | 8 | 7.50 | Unknown | 99 | 1 | Yes | No |
| A-9 | 9.70 | 1.00 | 7 | 6.00 | 7.5 | 80 | 20 | Yes | No |
| B-1 | 21.30 | 4.00 | 13 | 9.00 | Unknown | 70 | 30 | Yes | No |
| B-2 | 18.90 | 1.00 | 14 | 13.00 | Unknown | 50 | 50 | No | No |
| B-3 | 19.10 | 0.50 | 15 | 14.50 | Unknown | 35 | 65 | No | No |
| B-4 | 15.00 | 2.00 | 10 | 8.00 | Unknown | 40 | 60 | Yes | No |
| B-5 | 14.70 | 2.00 | 12 | 10.00 | Unknown | 20 | 80 | Yes | No |
| B-6 | 14.90 | 2.00 | 14 | 12.00 | 14 | 50 | 50 | No | Yes |
| B-7 | 14.70 | 2.00 | 14 | 12.00 | 14 | 40 | 60 | No | Yes |
| B-8 | 15.20 | 3.00 | 14 | 11.00 | 14 | 70 | 30 | No | Yes |
| B-9 | 15.30 | 2.00 | 13 | 11.00 | 13 | 30 | 70 | No | Yes |
| C-1 | 19.60 | 1.50 | 16 | 14.50 | Unknown | 70 | 30 | Yes | No |
| C-2 | 18.40 | 2.00 | 14 | 12.00 | Unknown | 30 | 70 | No | No |
| C-3 | 19.40 | 0.50 | 15 | 14.50 | Unknown | 45 | 55 | No | No |
| C-4 | 15.30 | 2.00 | 10 | 8.00 | Unknown | 70 | 30 | Yes | No |
| C-5 | 15.10 | 2.00 | 15 | 13.00 | 15 | 30 | 70 | No | Yes |
| C-6 | 14.90 | 2.00 | 15 | 13.00 | 15 | 30 | 70 | No | Yes |
| C-7 | 15.00 | 2.00 | 15 | 13.00 | 15 | 80 | 20 | No | Yes |
| C-8 | 15.90 | 1.00 | 14 | 13.00 | 14 | 30 | 70 | No | Yes |
| C-9 | 16.10 | 1.50 | 12 | 10.50 | 12 | 30 | 70 | No | Yes |
| D-1 | 20.20 | 1.00 | 10 | 9.00 | Unknown | 65 | 35 | Yes | No |
| D-2 | 18.00 | 1.00 | 17 | 16.00 | 17 | 40 | 60 | No | Yes |
| D-3 | 27.40 | 0.50 | 13 | 12.50 | Unknown | 50 | 50 | No | No |
| D-4 | 27.80 | 0.50 | 14 | 13.50 | Unknown | 40 | 60 | Yes | No |
| D-5 | 27.80 | 0.50 | 15 | 14.50 | 15 | 30 | 70 | No | Yes |
| D-6 | 28.30 | 0.50 | 15 | 14.50 | Unknown | 60 | 40 | No | No |
| D-7 | 17.90 | 2.00 | 15 | 13.00 | 15 | 40 | 60 | No | Yes |
| D-8 | 16.40 | 3.00 | 16 | 13.00 | Unknown | 60 | 40 | No | No |
| D-9 | 15.80 | 3.00 | 14 | 11.00 | 14 | 60 | 40 | No | Yes |
| Op Cntr | 13 | 1.5 | 13 | 11.50 | Unknown | 30 | 70 | Yes | No |

## Table 3
## Naples Airport Recycling Center
## Gas Monitoring Wells Sampling Results
## PSI Project 552-4G078

Date of Sampling April 14, 2004

| Gas Monitoring Well Locations | $O_2$ (%) | CO (ppm) | $H_2S$ (ppm) | LFG (% of LEL) | Pressure in ($H_2O$) |
|---|---|---|---|---|---|
| A-2 | 15.4 | 0 | 0 | 16 | not tested |
| A-3 | 16.7 | 0 | 0 | 0 | not tested |
| B-4 | 13.9 | 0 | 0 | >100 | not tested |
| B-5 | 20.8 | 0 | 0 | 0 | not tested |
| B-6 | 11.3 | 0 | 0 | >100 | not tested |
| C-1 | 14 | 74 | 0 | >100 | not tested |
| C-2 | 16.4 | 0 | 0 | 94 | not tested |
| C-4 | 20.6 | 0 | 0 | 0 | not tested |
| C-5 | 14.7 | 2 | 0 | >100 | not tested |
| Op Center | 16 | 0 | 0 | 1 | not tested |

Date of Sampling May 17, 2004

| Gas Monitoring Well Locations | $O_2$ (%) | CO (ppm) | $H_2S$ (ppm) | LFG (% of LEL) | LFG Pressure in ($H_2O$) |
|---|---|---|---|---|---|
| A-2 | 7.4 | 1 | 0 | 1 | 0 |
| A-3 | 11.3 | 1 | 0 | 1 | 0 |
| B-4 | 0.5 | 6 | 0 | >100 | 0 |
| B-5 | 1 | 3 | 0 | >100 | 0 |
| B-6 | 6.3 | 4 | 1 | 47 | -0.1 |
| C-1 | 0.9 | 5 | 0 | >100 | -0.1 |
| C-2 | 0.7 | 4 | 0 | 1 | 0 |
| C-4 | 0.5 | 8 | 0 | >100 | -0.1 |
| C-5 | 1.7 | 4 | 0 | >100 | 0 |
| Op Center | 0.7 | 1 | 0 | 1 | 0 |

Acronyms:

| | |
|---|---|
| LFG: | Landfill Gas |
| LEL: | Lower Explosive Limit |

# APPENDIX A

# PHOTOGRAPHS

Photo 1. Test Pit A-1

Photo 2. Test Pit A-1

Photo 3. Test Pit D-1

Photo 4. Test Pit A-3

Photo 5. Test Pit B-4

Photo 6. Test Pit C-4

Photo 7. Test Pit C-6

Photo 8. Test Pit D-6

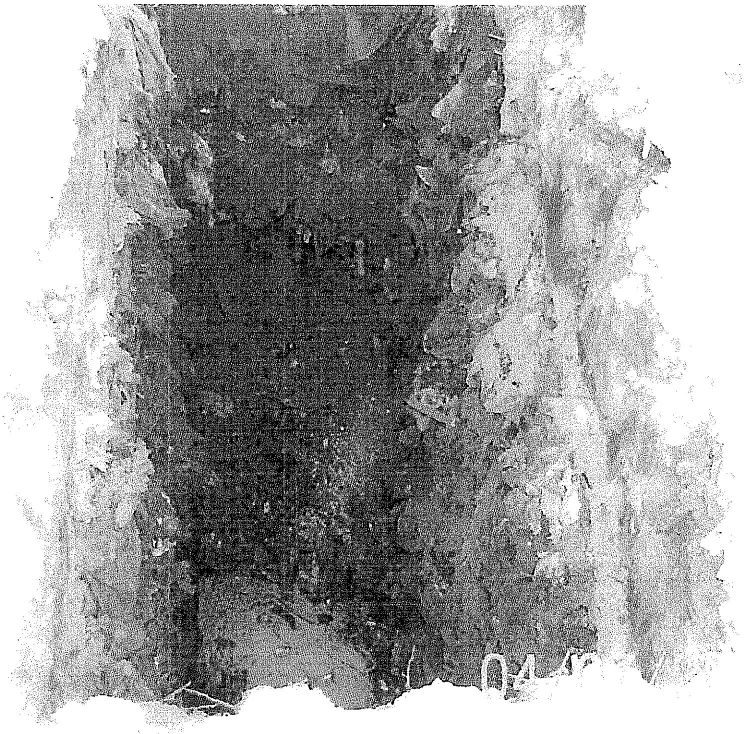

Photo 9. Test Pit C-8

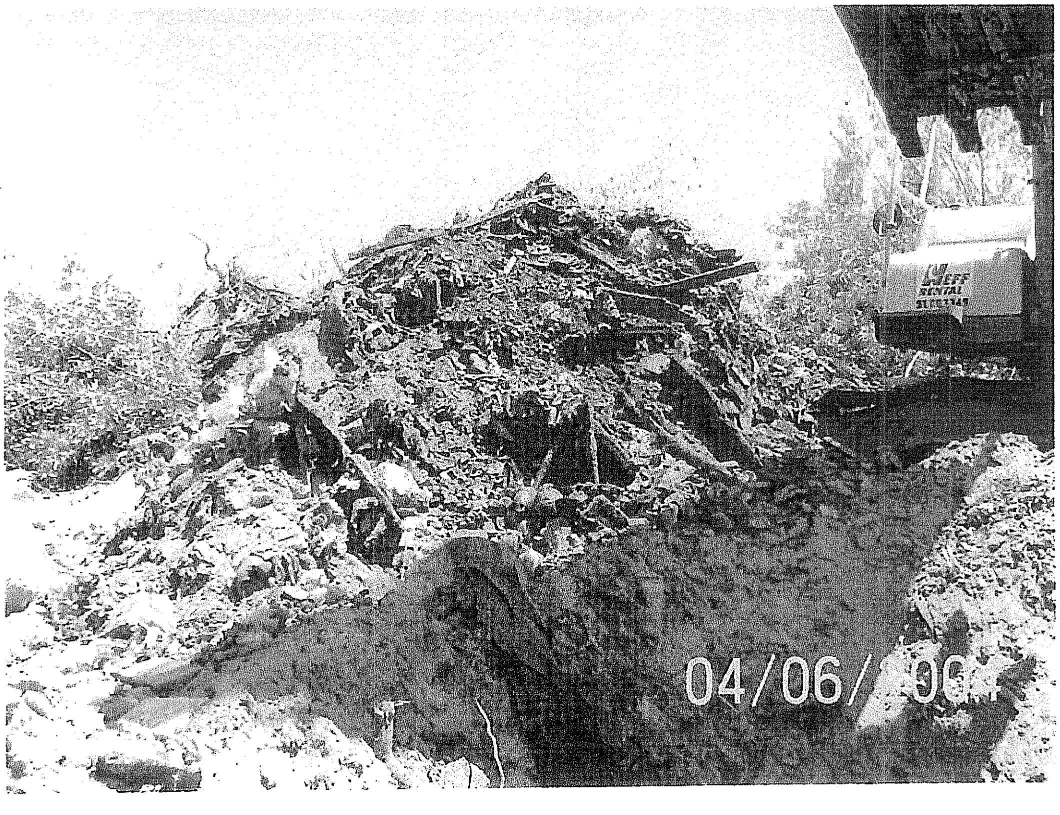

Photo 10. Test Pit B-9

# APPENDIX B

# LABORATORY REPORT AND CHAIN OF CUSTODY

SEVERN TRENT STL

STL Tampa 6712 Benjamin Road, Suite 100 - Tampa FL 33634 Telephone:(813) 885-7427 Fax:(813) 885-7049

# Analytical Report

For: Mr. Grant Haskins
Professional Service Industries,Inc.
5801 Benjamin Center Drive Suite 112
Tampa, FL 33634
CC:

Order Number: B421648
SDG Number:
Client Project ID: 552-4G005-2
Project: Naples Airport
Report Date: 04/22/2004
Sampled By: Client
Sample Received Date: 04/14/2004
Requisition Number:
Purchase Order:

Michael F. Valder, Project Manager
mvalder@stl-inc.com

# Sample Summary

Order: B421648
Date Received: 04/14/2004

Client: Professional Service Industries,Inc.
Project: Naples Airport

| Client Sample ID | Lab Sample ID | Matrix | Date Sampled |
|---|---|---|---|
| B-2 0-1 FT | B421648*1 | Solid | 04/09/2004 10:00 |
| B-2 10 FT | B421648*2 | Solid | 04/09/2004 10:02 |
| C-6 4 FT | B421648*3 | Solid | 04/07/2004 14:25 |
| C-7 6 FT | B421648*4 | Solid | 04/07/2004 11:00 |
| B-6 12 FT | B421648*5 | Solid | 04/07/2004 15:45 |
| C-6 15 FT | B421648*6 | Solid | 04/07/2004 14:20 |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-1 | B-2 0-1 FT | Solid | 04/14/04 | 04/09/04 10:00 | |
| 21648-2 | B-2 10 FT | Solid | 04/14/04 | 04/09/04 10:02 | |
| 21648-3 | C-6 4 FT | Solid | 04/14/04 | 04/07/04 14:25 | |
| 21648-4 | C-7 6 FT | Solid | 04/14/04 | 04/07/04 11:00 | |

B-2

| | | Lab Sample IDs | | | |
|---|---|---|---|---|---|
| Parameter | Units | 21648-1 | 21648-2 | 21648-3 | 21648-4 |
| | | G-1 | B-2<br>10 ft. | C-6<br>4. | C-7<br>6 |
| RCRA Metals (6010) | | | | | |
| Arsenic | mg/kg dw | 0.16U | 0.73I | 1.7I | 2.8 |
| Barium | mg/kg dw | 0.60I | 12 | 12 | 31 |
| Cadmium | mg/kg dw | 0.087U | 0.12I | 0.53U | 0.20U |
| Chromium | mg/kg dw | 0.60I | 5.4 | 18 | 11 |
| Lead | mg/kg dw | 1.3 | 11 | 16 | 24 |
| Selenium | mg/kg dw | 0.43U | 0.92U*F65 | 2.6U*F65 | 0.98U*F65 |
| Silver | mg/kg dw | 0.19U | 0.20U | 1.2U | 0.43U |
| Percent Solids | | 100 | 93 | 82 | 88 |
| Dilution Factor | | 1 | 1 | 5 | 2 |
| Prep Date | | 04/14/04 | 04/14/04 | 04/14/04 | 04/14/04 |
| Analysis Date | | 04/15/04 | 04/15/04 | 04/15/04 | 04/15/04 |
| Batch ID | | 40414A | 40414A | 40414A | 40414A |
| Mercury (7471) | | | | | |
| Mercury | mg/kg dw | 0.0028U | 0.026 | 0.049 | 0.032 |
| Percent Solids | | 100 | 93 | 82 | 88 |
| Dilution Factor | | 1 | 1 | 1 | 1 |
| Prep Date | | 04/20/04 | 04/20/04 | 04/20/04 | 04/20/04 |
| Analysis Date | | 04/20/04 | 04/20/04 | 04/20/04 | 04/20/04 |
| Batch ID | | 40420R | 40420R | 40420R | 40420R |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-5 | B-6 12 FT | Solid | 04/14/04 | 04/07/04 15:45 | |

| | | Lab Sample IDs |
|---|---|---|
| **Parameter** | **Units** | **21648-5** |
| Polynuclear Aromatics (8270) | | |
| Acenaphthene | ug/kg dw | 120 |
| Acenaphthylene | ug/kg dw | 37I |
| Anthracene | ug/kg dw | 73 |
| Benzo(a)Anthracene | ug/kg dw | 54 |
| Benzo(a)Pyrene | ug/kg dw | 37I |
| Benzo(b)fluoranthene | ug/kg dw | 25I |
| Benzo (g,h,i) Perylene | ug/kg dw | 0.88U |
| Benzo (K) Fluoranthene | ug/kg dw | 42 |
| Chrysene | ug/kg dw | 94 |
| Dibenzo (a,h) Anthracene | ug/kg dw | 1.5U |
| Fluoranthene | ug/kg dw | 180 |
| Fluorene | ug/kg dw | 240 |
| Indeno (1,2,3-cd) Pyrene | ug/kg dw | 1.9U |
| Naphthalene | ug/kg dw | 580 |
| Phenanthrene | ug/kg dw | 390 |
| Pyrene | ug/kg dw | 170 |
| 1-Methylnaphthalene | ug/kg dw | 840 |
| 2-Methylnaphthalene | ug/kg dw | 1400 |
| Surrogate, o-Terphenyl * | % | 76 % |
| Percent Solids | | 80 |
| Dilution Factor | | 5 |
| Prep Date | | 04/20/04 |
| Analysis Date | | 04/21/04 |
| Batch ID | | SM04204I |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-5 | B-6 12 FT | Solid | 04/14/04 | 04/07/04 15:45 | |

| Parameter | Units | Lab Sample IDs<br>21648-5 |
|---|---|---|
| Petroleum Range Organics (FL-PRO) (FL-PRO) | | |
| Petroleum Hydrocarbons | mg/kg dw | 1400 |
| Surrogate, o-Terphenyl * | mg/kg dw | *F33 |
| Percent Solids | | 80 |
| Dilution Factor | | 5 |
| Prep Date | | 04/19/04 |
| Analysis Date | | 04/21/04 |
| Batch ID | | 0419I |
| RCRA Metals (6010) | | |
| Arsenic | mg/kg dw | 2.8 |
| Barium | mg/kg dw | 35 |
| Cadmium | mg/kg dw | 1.5 |
| Chromium | mg/kg dw | 10 |
| Lead | mg/kg dw | 78 |
| Selenium | mg/kg dw | 0.54U |
| Silver | mg/kg dw | 0.45I |
| Percent Solids | | 80 |
| Dilution Factor | | 1 |
| Prep Date | | 04/14/04 |
| Analysis Date | | 04/15/04 |
| Batch ID | | 40414A |
| Mercury (7471) | | |
| Mercury | mg/kg dw | 0.056 |
| Percent Solids | | 80 |
| Dilution Factor | | 1 |
| Prep Date | | 04/20/04 |
| Analysis Date | | 04/20/04 |
| Batch ID | | 40420R |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-6 | C-6 15 FT | Solid | 04/14/04 | 04/07/04 14:20 | |

| | | Lab Sample IDs |
|---|---|---|
| **Parameter** | **Units** | **21648-6** |
| RCRA Metals (6010) | | |
| Arsenic | mg/kg dw | 5.5 |
| Barium | mg/kg dw | 190 |
| Cadmium | mg/kg dw | 4.0 |
| Chromium | mg/kg dw | 23 |
| Lead | mg/kg dw | 280 |
| Selenium | mg/kg dw | 0.54U |
| Silver | mg/kg dw | 2.8 |
| Percent Solids | | 80 |
| Dilution Factor | | 1 |
| Prep Date | | 04/14/04 |
| Analysis Date | | 04/15/04 |
| Batch ID | | 40414A |
| Mercury (7471) | | |
| Mercury | mg/kg dw | 0.086 |
| Percent Solids | | 80 |
| Dilution Factor | | 1 |
| Prep Date | | 04/20/04 |
| Analysis Date | | 04/20/04 |
| Batch ID | | 40420R |
| Cyanide, Total (9014) | | |
| Cyanide, Total | mg/kg dw | 0.50U |
| Percent Solids | | 80 |
| Dilution Factor | | 1 |
| Analysis Date | | 04/17/04 |
| Batch ID | | 0417FF |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-7 | Method Blank | Solid | 04/14/04 | | |

| Parameter | Units | Lab Sample IDs<br>21648-7 |
|---|---|---|
| Polynuclear Aromatics (8270) | | |
| Acenaphthene | ug/kg dw | 0.23U |
| Acenaphthylene | ug/kg dw | 0.30U |
| Anthracene | ug/kg dw | 0.43U |
| Benzo(a)Anthracene | ug/kg dw | 0.30U |
| Benzo(a)Pyrene | ug/kg dw | 0.37U |
| Benzo(b)fluoranthene | ug/kg dw | 0.36U |
| Benzo (g,h,i) Perylene | ug/kg dw | 0.14U |
| Benzo (k) Fluoranthene | ug/kg dw | 0.32U |
| Chrysene | ug/kg dw | 0.21U |
| Dibenzo (a,h) Anthracene | ug/kg dw | 0.24U |
| Fluoranthene | ug/kg dw | 0.30U |
| Fluorene | ug/kg dw | 0.24U |
| Indeno (1,2,3-cd) Pyrene | ug/kg dw | 0.30U |
| Naphthalene | ug/kg dw | 0.31U |
| Phenanthrene | ug/kg dw | 0.42U |
| Pyrene | ug/kg dw | 0.33U |
| 1-Methylnaphthalene | ug/kg dw | 0.34U |
| 2-Methylnaphthalene | ug/kg dw | 0.30U |
| Surrogate, o-Terphenyl * | % | 71 % |
| Dilution Factor | | 1 |
| Prep Date | | 04/20/04 |
| Analysis Date | | 04/21/04 |
| Batch ID | | SM04204I |
| Petroleum Range Organics (FL-PRO) (FL-PRO) | | |
| Petroleum Hydrocarbons | mg/kg dw | 4.0U |
| Surrogate, o-Terphenyl * | % | 67 % |
| Dilution Factor | | 1 |
| Prep Date | | 04/19/04 |
| Analysis Date | | 04/20/04 |
| Batch ID | | 0419I |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-7 | Method Blank | Solid | 04/14/04 | | |

| Parameter | Units | Lab Sample IDs<br>21648-7 |
|---|---|---|
| RCRA Metals (6010) | | |
| Arsenic | mg/kg dw | 0.16U |
| Barium | mg/kg dw | 0.16U |
| Cadmium | mg/kg dw | 0.087U |
| Chromium | mg/kg dw | 0.17U |
| Lead | mg/kg dw | 0.42U |
| Selenium | mg/kg dw | 0.43U |
| Silver | mg/kg dw | 0.19U |
| Dilution Factor | | 1 |
| Prep Date | | 04/14/04 |
| Analysis Date | | 04/15/04 |
| Batch ID | | 40414A |
| Mercury (7471) | | |
| Mercury | mg/kg dw | 0.0028U |
| Dilution Factor | | 1 |
| Prep Date | | 04/20/04 |
| Analysis Date | | 04/20/04 |
| Batch ID | | 40420R |
| Cyanide, Total (9014) | | |
| Cyanide, Total | mg/kg dw | 0.50U |
| Dilution Factor | | 1 |
| Analysis Date | | 04/17/04 |
| Batch ID | | 0417FF |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-8 | Lab Control Standard % Recovery | Solid | 04/14/04 | | |
| 21648-9 | Lab Control Standard Duplicate % Recovery | Solid | 04/14/04 | | |
| 21648-10 | Precision (%RPD) of LCS/LCSD | Solid | 04/14/04 | | |
| 21648-11 | LCS Accuracy Control Limit (%R) | Solid | 04/14/04 | | |
| 21648-12 | LCS Precision Control Limit (Advisory) %RPD | Solid | 04/14/04 | | |

| | | Lab Sample IDs | | | | |
|---|---|---|---|---|---|---|
| Parameter | Units | 21648-8 | 21648-9 | 21648-10 | 21648-11 | 21648-12 |
| Polynuclear Aromatics (8270) | | | | | | |
| Acenaphthene | % | 55 % | 65 % | 17 % | 25-105 % | <50 % |
| Benzo(a)Pyrene | % | 70 % | 74 % | 5.3 % | 29-95 % | <50 % |
| Fluorene | % | 55 % | 65 % | 17 % | 33-115 % | <50 % |
| Naphthalene | % | 55 % | 65 % | 15 % | 32-105 % | <50 % |
| Pyrene | % | 71 % | 77 % | 8.3 % | 38-112 % | <50 % |
| Surrogate, o-Terphenyl * | % | 64 % | 67 % | | 30-130 % | |
| Dilution Factor | | 1 | 1 | | | |
| Prep Date | | 04/20/04 | 04/20/04 | | | |
| Analysis Date | | 04/21/04 | 04/21/04 | | | |
| Batch ID | | SM04204I | SM04204I | SM04204I | | |
| Petroleum Range Organics (FL-PRO) (FL-PRO) | | | | | | |
| Petroleum Hydrocarbons | % | 68 % | 79 % | 15 % | 63-153 % | <25 % |
| Surrogate, o-Terphenyl * | % | 94 % | 109 % | | 15-154 % | |
| Dilution Factor | | 1 | 1 | | | |
| Prep Date | | 04/19/04 | 04/19/04 | | | |
| Analysis Date | | 04/20/04 | 04/20/04 | | | |
| Batch ID | | 0419I | 0419I | 0419I | | |
| RCRA Metals (6010) | | | | | | |
| Arsenic | % | 98 % | 95 % | 2.7 % | 75-125 % | <20 % |
| Barium | % | 97 % | 95 % | 2.4 % | 75-125 % | <20 % |
| Cadmium | % | 104 % | 100 % | 4.1 % | 75-125 % | <20 % |
| Chromium | % | 102 % | 98 % | 3.3 % | 75-125 % | <20 % |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-8 | Lab Control Standard % Recovery | Solid | 04/14/04 | | |
| 21648-9 | Lab Control Standard Duplicate % Recovery | Solid | 04/14/04 | | |
| 21648-10 | Precision (%RPD) of LCS/LCSD | Solid | 04/14/04 | | |
| 21648-11 | LCS Accuracy Control Limit (%R) | Solid | 04/14/04 | | |
| 21648-12 | LCS Precision Control Limit (Advisory) %RPD | Solid | 04/14/04 | | |

| | | Lab Sample IDs | | | | |
|---|---|---|---|---|---|---|
| Parameter | Units | 21648-8 | 21648-9 | 21648-10 | 21648-11 | 21648-12 |
| RCRA Metals (6010) | | | | | | |
| Lead | % | 103 % | 100 % | 3.0 % | 75-125 % | <20 % |
| Selenium | % | 96 % | 93 % | 2.8 % | 75-125 % | <20 % |
| Silver | % | 94 % | 92 % | 2.8 % | 75-125 % | <20 % |
| Dilution Factor | | 1 | 1 | | | |
| Prep Date | | 04/14/04 | 04/14/04 | | | |
| Analysis Date | | 04/15/04 | 04/15/04 | | | |
| Batch ID | | 40414A | 40414A | 40414A | | |
| Mercury (7471) | | | | | | |
| Mercury | % | 93 % | 89 % | 4.7 % | 80-120 % | <20 % |
| Dilution Factor | | 1 | 1 | | | |
| Prep Date | | 04/20/04 | 04/20/04 | | | |
| Analysis Date | | 04/20/04 | 04/20/04 | | | |
| Batch ID | | 40420R | 40420R | 40420R | | |
| Cyanide, Total (9014) | | | | | | |
| Cyanide, Total | % | 93 % | 98 % | 4.2 % | 75-125 % | <30 % |
| Dilution Factor | | 1 | 1 | | | |
| Analysis Date | | 04/17/04 | 04/17/04 | | | |
| Batch ID | | 0417FF | 0417FF | 0417FF | | |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-13 | Matrix Spike % Recovery | Solid | 04/14/04 | | |
| 21648-14 | Matrix Spike Duplicate % Recovery | Solid | 04/14/04 | | |
| 21648-15 | Precision (%RPD) MS/MSD | Solid | 04/14/04 | | |
| 21648-16 | MS Accuracy Advisory Limit (%R) | Solid | 04/14/04 | | |
| 21648-17 | MS Precision Advisory Limit (%RPD) | Solid | 04/14/04 | | |

| | | Lab Sample IDs | | | | |
|---|---|---|---|---|---|---|
| Parameter | Units | 21648-13 | 21648-14 | 21648-15 | 21648-16 | 21648-17 |
| Polynuclear Aromatics (8270) | | | | | | |
| Acenaphthene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Acenaphthylene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Anthracene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Benzo(a)Anthracene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Benzo(a)Pyrene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Benzo(b)fluoranthene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Benzo (g,h,i) Perylene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Benzo (k) Fluoranthene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Chrysene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Dibenzo (a,h) Anthracene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Fluoranthene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Fluorene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Indeno (1,2,3-cd) Pyrene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Naphthalene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Phenanthrene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Pyrene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| 1-Methylnaphthalene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| 2-Methylnaphthalene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Surrogate, o-Terphenyl * | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Petroleum Range Organics (FL-PRO) (FL-PRO) | | | | | | |
| Petroleum Hydrocarbons | % | 70 % | 68 % | 3.1 % | 62-204 % | <25 % |
| Surrogate, o-Terphenyl * | % | 94 % | 94 % | | 15-154 % | |
| Dilution Factor | | 1 | 1 | | | |
| Prep Date | | 04/19/04 | 04/19/04 | | | |
| Analysis Date | | 04/20/04 | 04/20/04 | | | |
| Batch ID | | 0419I | 0419I | 0419I | | |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-13 | Matrix Spike % Recovery | Solid | 04/14/04 | | |
| 21648-14 | Matrix Spike Duplicate % Recovery | Solid | 04/14/04 | | |
| 21648-15 | Precision (%RPD) MS/MSD | Solid | 04/14/04 | | |
| 21648-16 | MS Accuracy Advisory Limit (%R) | Solid | 04/14/04 | | |
| 21648-17 | MS Precision Advisory Limit (%RPD) | Solid | 04/14/04 | | |

| Parameter | Units | 21648-13 | 21648-14 | 21648-15 | 21648-16 | 21648-17 |
|---|---|---|---|---|---|---|
| RCRA Metals (6010) | | | | | | |
| Arsenic | % | 96 % | 96 % | 0.41 % | 75-125 % | <20 % |
| Barium | % | 95 % | 93 % | 1.6 % | 75-125 % | <20 % |
| Cadmium | % | 99 % | 100 % | 1.0 % | 75-125 % | <20 % |
| Chromium | % | 97 % | 97 % | 0.26 % | 75-125 % | <20 % |
| Lead | % | 98 % | 99 % | 0.70 % | 75-125 % | <20 % |
| Selenium | % | 93 % | 93 % | 0.19 % | 75-125 % | <20 % |
| Silver | % | 92 % | 92 % | 0.53 % | 75-125 % | <20 % |
| Dilution Factor | | 1 | 1 | | | |
| Prep Date | | 04/14/04 | 04/14/04 | | | |
| Analysis Date | | 04/15/04 | 04/15/04 | | | |
| Batch ID | | 40414A | 40414A | 40414A | | |
| Mercury (7471) | | | | | | |
| Mercury | % | 89 % | 74 %*F73 | 18 % | 80-120 % | <20 % |
| Dilution Factor | | 1 | 1 | | | |
| Prep Date | | 04/20/04 | 04/20/04 | | | |
| Analysis Date | | 04/20/04 | 04/20/04 | | | |
| Batch ID | | 40420R | 40420R | 40420R | | |
| Cyanide, Total (9014) | | | | | | |
| Cyanide, Total | % | 91 % | 89 % | 4.4 % | 75-125 % | <30 % |
| Dilution Factor | | 1 | 1 | | | |
| Analysis Date | | 04/17/04 | 04/17/04 | | | |
| Batch ID | | 0417FF | 0417FF | 0417FF | | |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-18 | Practical Quantitation Limit (PQL) | Solid | 04/14/04 | | |
| 21648-19 | Method Detection Limit (MDL) | Solid | 04/14/04 | | |

| Parameter | Units | Lab Sample IDs<br>21648-18 | 21648-19 |
|---|---|---|---|
| Polynuclear Aromatics (8270) | | | |
| Acenaphthene | ug/kg | 6.7 | 0.23 |
| Acenaphthylene | ug/kg | 6.7 | 0.30 |
| Anthracene | ug/kg | 6.7 | 0.43 |
| Benzo(a)Anthracene | ug/kg | 6.7 | 0.30 |
| Benzo(a)Pyrene | ug/kg | 6.7 | 0.37 |
| Benzo(b)fluoranthene | ug/kg | 6.7 | 0.36 |
| Benzo (g,h,i) Perylene | ug/kg | 6.7 | 0.14 |
| Benzo (k) Fluoranthene | ug/kg | 6.7 | 0.32 |
| Chrysene | ug/kg | 6.7 | 0.21 |
| Dibenzo (a,h) Anthracene | ug/kg | 6.7 | 0.24 |
| Fluoranthene | ug/kg | 6.7 | 0.30 |
| Fluorene | ug/kg | 6.7 | 0.24 |
| Indeno (1,2,3-cd) Pyrene | ug/kg | 6.7 | 0.30 |
| Naphthalene | ug/kg | 6.7 | 0.31 |
| Phenanthrene | ug/kg | 6.7 | 0.42 |
| Pyrene | ug/kg | 6.7 | 0.33 |
| 1-Methylnaphthalene | ug/kg | 6.7 | 0.34 |
| 2-Methylnaphthalene | ug/kg | 6.7 | 0.30 |
| Petroleum Range Organics (FL-PRO) (FL-PRO) | | | |
| Petroleum Hydrocarbons | mg/kg | 10 | 4.0 |
| RCRA Metals (6010) | | | |
| Arsenic | mg/kg dw | 0.50 | 0.16 |
| Barium | mg/kg dw | 1.0 | 0.16 |
| Cadmium | mg/kg dw | 0.50 | 0.087 |
| Chromium | mg/kg dw | 1.0 | 0.17 |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-18 | Practical Quantitation Limit (PQL) | Solid | 04/14/04 | | |
| 21648-19 | Method Detection Limit (MDL) | Solid | 04/14/04 | | |

| Parameter | Units | Lab Sample IDs<br>21648-18 | 21648-19 |
|---|---|---|---|
| RCRA Metals (6010) | | | |
| Lead | mg/kg dw | 0.50 | 0.42 |
| Selenium | mg/kg dw | 1.0 | 0.43 |
| Silver | mg/kg dw | 1.0 | 0.19 |
| Mercury (7471) | | | |
| Mercury | mg/kg dw | 0.020 | 0.0028 |
| Cyanide, Total (9014) | | | |
| Cyanide, Total | mg/kg dw | 1.0 | 0.50 |

Order Number: B421648

Method: EPA SW-846, FDEP
DOH Certification #:E84282

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.
The estimated uncertainty associated with these reported results is available upon request.

I = The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

U = Indicates that the compound was analyzed for but not detected.

STL Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301
Phone #850/878-3994. DOH Certification #E81005.

*F33 = Control limits are established only for surrogate concentration levels specified by EPA methods. Because the sample was diluted prior to analysis, surrogate recoveries are not reported.

*F65 = Elevated detection limits were reported due to sample matrix interference which required sample or extract dilution.

*F73 = Matrix spike recoveries were outside advisory limits due to matrix interference present in the sample.

*F82 = Insufficient sample volume was available to perform a batch-specific matrix spike. However, an LCS analyzed with the sample batch met control criteria.

# APPENDIX B

# LABORATORY REPORT AND CHAIN OF CUSTODY

SEVERN TRENT STL

STL Tampa 6712 Benjamin Road, Suite 100 - Tampa FL 33634 Telephone:(813) 885-7427 Fax:(813) 885-7049

# Analytical Report

For: Mr. Grant Haskins
Professional Service Industries,Inc.
5801 Benjamin Center Drive Suite 112
Tampa, FL 33634
CC:

Order Number: B421648
SDG Number:
Client Project ID: 552-4G005-2
Project: Naples Airport
Report Date: 04/22/2004
Sampled By: Client
Sample Received Date: 04/14/2004
Requisition Number:
Purchase Order:

Michael F. Valder, Project Manager
mvalder@stl-inc.com

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

# Sample Summary

Order: B421648
Date Received: 04/14/2004

Client: Professional Service Industries,Inc.
Project: Naples Airport

| Client Sample ID | Lab Sample ID | Matrix | Date Sampled |
|---|---|---|---|
| B-2 0-1 FT | B421648*1 | Solid | 04/09/2004 10:00 |
| B-2 10 FT | B421648*2 | Solid | 04/09/2004 10:02 |
| C-6 4 FT | B421648*3 | Solid | 04/07/2004 14:25 |
| C-7 6 FT | B421648*4 | Solid | 04/07/2004 11:00 |
| B-6 12 FT | B421648*5 | Solid | 04/07/2004 15:45 |
| C-6 15 FT | B421648*6 | Solid | 04/07/2004 14:20 |

SEVERN TRENT **STL**

STL Tampa 6712 Benjamin Road, Suite 100 - Tampa FL 33634 Telephone:(813) 885-7427 Fax:(813) 885-7049

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-1 | B-2 0-1 FT | Solid | 04/14/04 | 04/09/04 10:00 | |
| 21648-2 | B-2 10 FT | Solid | 04/14/04 | 04/09/04 10:02 | |
| 21648-3 | C-6 4 FT | Solid | 04/14/04 | 04/07/04 14:25 | |
| 21648-4 | C-7 6 FT | Solid | 04/14/04 | 04/07/04 11:00 | |

B-2

| Parameter | Units | Lab Sample IDs<br>21648-1 | 21648-2 | 21648-3 | 21648-4 |
|---|---|---|---|---|---|
| | | 0-1 | B-2<br>10 ft. | C-6<br>4. | C-7<br>6 |
| RCRA Metals (6010) | | | | | |
| Arsenic | mg/kg dw | 0.16U | 0.73I | 1.7I | 2.8 |
| Barium | mg/kg dw | 0.60I | 12 | 12 | 31 |
| Cadmium | mg/kg dw | 0.087U | 0.12I | 0.53U | 0.20U |
| Chromium | mg/kg dw | 0.60I | 5.4 | 18 | 11 |
| Lead | mg/kg dw | 1.3 | 11 | 16 | 24 |
| Selenium | mg/kg dw | 0.43U | 0.92U*F65 | 2.6U*F65 | 0.98U*F65 |
| Silver | mg/kg dw | 0.19U | 0.20U | 1.2U | 0.43U |
| Percent Solids | | 100 | 93 | 82 | 88 |
| Dilution Factor | | 1 | 1 | 5 | 2 |
| Prep Date | | 04/14/04 | 04/14/04 | 04/14/04 | 04/14/04 |
| Analysis Date | | 04/15/04 | 04/15/04 | 04/15/04 | 04/15/04 |
| Batch ID | | 40414A | 40414A | 40414A | 40414A |
| Mercury (7471) | | | | | |
| Mercury | mg/kg dw | 0.0028U | 0.026 | 0.049 | 0.032 |
| Percent Solids | | 100 | 93 | 82 | 88 |
| Dilution Factor | | 1 | 1 | 1 | 1 |
| Prep Date | | 04/20/04 | 04/20/04 | 04/20/04 | 04/20/04 |
| Analysis Date | | 04/20/04 | 04/20/04 | 04/20/04 | 04/20/04 |
| Batch ID | | 40420R | 40420R | 40420R | 40420R |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-5 | B-6 12 FT | Solid | 04/14/04 | 04/07/04 15:45 | |

| Parameter | Units | Lab Sample IDs<br>21648-5 |
|---|---|---|
| Polynuclear Aromatics (8270) | | |
| Acenaphthene | ug/kg dw | 120 |
| Acenaphthylene | ug/kg dw | 37I |
| Anthracene | ug/kg dw | 73 |
| Benzo(a)Anthracene | ug/kg dw | 54 |
| Benzo(a)Pyrene | ug/kg dw | 37I |
| Benzo(b)fluoranthene | ug/kg dw | 25I |
| Benzo (g,h,i) Perylene | ug/kg dw | 0.88U |
| Benzo (K) Fluoranthene | ug/kg dw | 42 |
| Chrysene | ug/kg dw | 94 |
| Dibenzo (a,h) Anthracene | ug/kg dw | 1.5U |
| Fluoranthene | ug/kg dw | 180 |
| Fluorene | ug/kg dw | 240 |
| Indeno (1,2,3-cd) Pyrene | ug/kg dw | 1.9U |
| Naphthalene | ug/kg dw | 580 |
| Phenanthrene | ug/kg dw | 390 |
| Pyrene | ug/kg dw | 170 |
| 1-Methylnaphthalene | ug/kg dw | 840 |
| 2-Methylnaphthalene | ug/kg dw | 1400 |
| Surrogate, o-Terphenyl * | % | 76 % |
| Percent Solids | | 80 |
| Dilution Factor | | 5 |
| Prep Date | | 04/20/04 |
| Analysis Date | | 04/21/04 |
| Batch ID | | SM04204I |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-5 | B-6 12 FT | Solid | 04/14/04 | 04/07/04 15:45 | |

| | | Lab Sample IDs |
|---|---|---|
| Parameter | Units | 21648-5 |
| Petroleum Range Organics (FL-PRO) (FL-PRO) | | |
| Petroleum Hydrocarbons | mg/kg dw | 1400 |
| Surrogate, o-Terphenyl * | mg/kg dw | *F33 |
| Percent Solids | | 80 |
| Dilution Factor | | 5 |
| Prep Date | | 04/19/04 |
| Analysis Date | | 04/21/04 |
| Batch ID | | 0419I |
| RCRA Metals (6010) | | |
| Arsenic | mg/kg dw | 2.8 |
| Barium | mg/kg dw | 35 |
| Cadmium | mg/kg dw | 1.5 |
| Chromium | mg/kg dw | 10 |
| Lead | mg/kg dw | 78 |
| Selenium | mg/kg dw | 0.54U |
| Silver | mg/kg dw | 0.45I |
| Percent Solids | | 80 |
| Dilution Factor | | 1 |
| Prep Date | | 04/14/04 |
| Analysis Date | | 04/15/04 |
| Batch ID | | 40414A |
| Mercury (7471) | | |
| Mercury | mg/kg dw | 0.056 |
| Percent Solids | | 80 |
| Dilution Factor | | 1 |
| Prep Date | | 04/20/04 |
| Analysis Date | | 04/20/04 |
| Batch ID | | 40420R |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-6 | C-6 15 FT | Solid | 04/14/04 | 04/07/04 14:20 | |

| Parameter | Units | Lab Sample IDs<br>21648-6 |
|---|---|---|
| RCRA Metals (6010) | | |
| Arsenic | mg/kg dw | 5.5 |
| Barium | mg/kg dw | 190 |
| Cadmium | mg/kg dw | 4.0 |
| Chromium | mg/kg dw | 23 |
| Lead | mg/kg dw | 280 |
| Selenium | mg/kg dw | 0.54U |
| Silver | mg/kg dw | 2.8 |
| Percent Solids | | 80 |
| Dilution Factor | | 1 |
| Prep Date | | 04/14/04 |
| Analysis Date | | 04/15/04 |
| Batch ID | | 40414A |
| Mercury (7471) | | |
| Mercury | mg/kg dw | 0.086 |
| Percent Solids | | 80 |
| Dilution Factor | | 1 |
| Prep Date | | 04/20/04 |
| Analysis Date | | 04/20/04 |
| Batch ID | | 40420R |
| Cyanide, Total (9014) | | |
| Cyanide, Total | mg/kg dw | 0.50U |
| Percent Solids | | 80 |
| Dilution Factor | | 1 |
| Analysis Date | | 04/17/04 |
| Batch ID | | 0417FF |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-7 | Method Blank | Solid | 04/14/04 | | |

| | | Lab Sample IDs |
|---|---|---|
| Parameter | Units | 21648-7 |
| Polynuclear Aromatics (8270) | | |
| Acenaphthene | ug/kg dw | 0.23U |
| Acenaphthylene | ug/kg dw | 0.30U |
| Anthracene | ug/kg dw | 0.43U |
| Benzo(a)Anthracene | ug/kg dw | 0.30U |
| Benzo(a)Pyrene | ug/kg dw | 0.37U |
| Benzo(b)fluoranthene | ug/kg dw | 0.36U |
| Benzo (g,h,i) Perylene | ug/kg dw | 0.14U |
| Benzo (k) Fluoranthene | ug/kg dw | 0.32U |
| Chrysene | ug/kg dw | 0.21U |
| Dibenzo (a,h) Anthracene | ug/kg dw | 0.24U |
| Fluoranthene | ug/kg dw | 0.30U |
| Fluorene | ug/kg dw | 0.24U |
| Indeno (1,2,3-cd) Pyrene | ug/kg dw | 0.30U |
| Naphthalene | ug/kg dw | 0.31U |
| Phenanthrene | ug/kg dw | 0.42U |
| Pyrene | ug/kg dw | 0.33U |
| 1-Methylnaphthalene | ug/kg dw | 0.34U |
| 2-Methylnaphthalene | ug/kg dw | 0.30U |
| Surrogate, o-Terphenyl * | % | 71 % |
| Dilution Factor | | 1 |
| Prep Date | | 04/20/04 |
| Analysis Date | | 04/21/04 |
| Batch ID | | SM04204I |
| Petroleum Range Organics (FL-PRO) (FL-PRO) | | |
| Petroleum Hydrocarbons | mg/kg dw | 4.0U |
| Surrogate, o-Terphenyl * | % | 67 % |
| Dilution Factor | | 1 |
| Prep Date | | 04/19/04 |
| Analysis Date | | 04/20/04 |
| Batch ID | | 0419I |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-7 | Method Blank | Solid | 04/14/04 | | |

| Parameter | Units | Lab Sample IDs<br>21648-7 |
|---|---|---|
| RCRA Metals (6010) | | |
| Arsenic | mg/kg dw | 0.16U |
| Barium | mg/kg dw | 0.16U |
| Cadmium | mg/kg dw | 0.087U |
| Chromium | mg/kg dw | 0.17U |
| Lead | mg/kg dw | 0.42U |
| Selenium | mg/kg dw | 0.43U |
| Silver | mg/kg dw | 0.19U |
| Dilution Factor | | 1 |
| Prep Date | | 04/14/04 |
| Analysis Date | | 04/15/04 |
| Batch ID | | 40414A |
| Mercury (7471) | | |
| Mercury | mg/kg dw | 0.0028U |
| Dilution Factor | | 1 |
| Prep Date | | 04/20/04 |
| Analysis Date | | 04/20/04 |
| Batch ID | | 40420R |
| Cyanide, Total (9014) | | |
| Cyanide, Total | mg/kg dw | 0.50U |
| Dilution Factor | | 1 |
| Analysis Date | | 04/17/04 |
| Batch ID | | 0417FF |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-8 | Lab Control Standard % Recovery | Solid | 04/14/04 | | |
| 21648-9 | Lab Control Standard Duplicate % Recovery | Solid | 04/14/04 | | |
| 21648-10 | Precision (%RPD) of LCS/LCSD | Solid | 04/14/04 | | |
| 21648-11 | LCS Accuracy Control Limit (%R) | Solid | 04/14/04 | | |
| 21648-12 | LCS Precision Control Limit (Advisory) %RPD | Solid | 04/14/04 | | |

| | | Lab Sample IDs | | | | |
|---|---|---|---|---|---|---|
| Parameter | Units | 21648-8 | 21648-9 | 21648-10 | 21648-11 | 21648-12 |
| Polynuclear Aromatics (8270) | | | | | | |
| Acenaphthene | % | 55 % | 65 % | 17 % | 25-105 % | <50 % |
| Benzo(a)Pyrene | % | 70 % | 74 % | 5.3 % | 29-95 % | <50 % |
| Fluorene | % | 55 % | 65 % | 17 % | 33-115 % | <50 % |
| Naphthalene | % | 55 % | 65 % | 15 % | 32-105 % | <50 % |
| Pyrene | % | 71 % | 77 % | 8.3 % | 38-112 % | <50 % |
| Surrogate, o-Terphenyl * | % | 64 % | 67 % | | 30-130 % | |
| Dilution Factor | | 1 | 1 | | | |
| Prep Date | | 04/20/04 | 04/20/04 | | | |
| Analysis Date | | 04/21/04 | 04/21/04 | | | |
| Batch ID | | SM04204I | SM04204I | SM04204I | | |
| Petroleum Range Organics (FL-PRO) (FL-PRO) | | | | | | |
| Petroleum Hydrocarbons | % | 68 % | 79 % | 15 % | 63-153 % | <25 % |
| Surrogate, o-Terphenyl * | % | 94 % | 109 % | | 15-154 % | |
| Dilution Factor | | 1 | 1 | | | |
| Prep Date | | 04/19/04 | 04/19/04 | | | |
| Analysis Date | | 04/20/04 | 04/20/04 | | | |
| Batch ID | | 0419I | 0419I | 0419I | | |
| RCRA Metals (6010) | | | | | | |
| Arsenic | % | 98 % | 95 % | 2.7 % | 75-125 % | <20 % |
| Barium | % | 97 % | 95 % | 2.4 % | 75-125 % | <20 % |
| Cadmium | % | 104 % | 100 % | 4.1 % | 75-125 % | <20 % |
| Chromium | % | 102 % | 98 % | 3.3 % | 75-125 % | <20 % |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-8 | Lab Control Standard % Recovery | Solid | 04/14/04 | | |
| 21648-9 | Lab Control Standard Duplicate % Recovery | Solid | 04/14/04 | | |
| 21648-10 | Precision (%RPD) of LCS/LCSD | Solid | 04/14/04 | | |
| 21648-11 | LCS Accuracy Control Limit (%R) | Solid | 04/14/04 | | |
| 21648-12 | LCS Precision Control Limit (Advisory) %RPD | Solid | 04/14/04 | | |

| | | Lab Sample IDs | | | | |
|---|---|---|---|---|---|---|
| Parameter | Units | 21648-8 | 21648-9 | 21648-10 | 21648-11 | 21648-12 |
| RCRA Metals (6010) | | | | | | |
| Lead | % | 103 % | 100 % | 3.0 % | 75-125 % | <20 % |
| Selenium | % | 96 % | 93 % | 2.8 % | 75-125 % | <20 % |
| Silver | % | 94 % | 92 % | 2.8 % | 75-125 % | <20 % |
| Dilution Factor | | 1 | 1 | | | |
| Prep Date | | 04/14/04 | 04/14/04 | | | |
| Analysis Date | | 04/15/04 | 04/15/04 | | | |
| Batch ID | | 40414A | 40414A | 40414A | | |
| Mercury (7471) | | | | | | |
| Mercury | % | 93 % | 89 % | 4.7 % | 80-120 % | <20 % |
| Dilution Factor | | 1 | 1 | | | |
| Prep Date | | 04/20/04 | 04/20/04 | | | |
| Analysis Date | | 04/20/04 | 04/20/04 | | | |
| Batch ID | | 40420R | 40420R | 40420R | | |
| Cyanide, Total (9014) | | | | | | |
| Cyanide, Total | % | 93 % | 98 % | 4.2 % | 75-125 % | <30 % |
| Dilution Factor | | 1 | 1 | | | |
| Analysis Date | | 04/17/04 | 04/17/04 | | | |
| Batch ID | | 0417FF | 0417FF | 0417FF | | |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-13 | Matrix Spike % Recovery | Solid | 04/14/04 | | |
| 21648-14 | Matrix Spike Duplicate % Recovery | Solid | 04/14/04 | | |
| 21648-15 | Precision (%RPD) MS/MSD | Solid | 04/14/04 | | |
| 21648-16 | MS Accuracy Advisory Limit (%R) | Solid | 04/14/04 | | |
| 21648-17 | MS Precision Advisory Limit (%RPD) | Solid | 04/14/04 | | |

| | | Lab Sample IDs | | | | |
|---|---|---|---|---|---|---|
| Parameter | Units | 21648-13 | 21648-14 | 21648-15 | 21648-16 | 21648-17 |
| Polynuclear Aromatics (8270) | | | | | | |
| Acenaphthene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Acenaphthylene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Anthracene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Benzo(a)Anthracene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Benzo(a)Pyrene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Benzo(b)fluoranthene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Benzo (g,h,i) Perylene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Benzo (k) Fluoranthene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Chrysene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Dibenzo (a,h) Anthracene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Fluoranthene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Fluorene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Indeno (1,2,3-cd) Pyrene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Naphthalene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Phenanthrene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Pyrene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| 1-Methylnaphthalene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| 2-Methylnaphthalene | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Surrogate, o-Terphenyl * | ug/kg dw | *F82 | *F82 | *F82 | *F82 | *F82 |
| Petroleum Range Organics (FL-PRO) (FL-PRO) | | | | | | |
| Petroleum Hydrocarbons | % | 70 % | 68 % | 3.1 % | 62-204 % | <25 % |
| Surrogate, o-Terphenyl * | % | 94 % | 94 % | | 15-154 % | |
| Dilution Factor | | 1 | 1 | | | |
| Prep Date | | 04/19/04 | 04/19/04 | | | |
| Analysis Date | | 04/20/04 | 04/20/04 | | | |
| Batch ID | | 0419I | 0419I | 0419I | | |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-13 | Matrix Spike % Recovery | Solid | 04/14/04 | | |
| 21648-14 | Matrix Spike Duplicate % Recovery | Solid | 04/14/04 | | |
| 21648-15 | Precision (%RPD) MS/MSD | Solid | 04/14/04 | | |
| 21648-16 | MS Accuracy Advisory Limit (%R) | Solid | 04/14/04 | | |
| 21648-17 | MS Precision Advisory Limit (%RPD) | Solid | 04/14/04 | | |

| | | Lab Sample IDs | | | | |
|---|---|---|---|---|---|---|
| Parameter | Units | 21648-13 | 21648-14 | 21648-15 | 21648-16 | 21648-17 |
| RCRA Metals (6010) | | | | | | |
| Arsenic | % | 96 % | 96 % | 0.41 % | 75-125 % | <20 % |
| Barium | % | 95 % | 93 % | 1.6 % | 75-125 % | <20 % |
| Cadmium | % | 99 % | 100 % | 1.0 % | 75-125 % | <20 % |
| Chromium | % | 97 % | 97 % | 0.26 % | 75-125 % | <20 % |
| Lead | % | 98 % | 99 % | 0.70 % | 75-125 % | <20 % |
| Selenium | % | 93 % | 93 % | 0.19 % | 75-125 % | <20 % |
| Silver | % | 92 % | 92 % | 0.53 % | 75-125 % | <20 % |
| Dilution Factor | | 1 | 1 | | | |
| Prep Date | | 04/14/04 | 04/14/04 | | | |
| Analysis Date | | 04/15/04 | 04/15/04 | | | |
| Batch ID | | 40414A | 40414A | 40414A | | |
| Mercury (7471) | | | | | | |
| Mercury | % | 89 % | 74 %*F73 | 18 % | 80-120 % | <20 % |
| Dilution Factor | | 1 | 1 | | | |
| Prep Date | | 04/20/04 | 04/20/04 | | | |
| Analysis Date | | 04/20/04 | 04/20/04 | | | |
| Batch ID | | 40420R | 40420R | 40420R | | |
| Cyanide, Total (9014) | | | | | | |
| Cyanide, Total | % | 91 % | 89 % | 4.4 % | 75-125 % | <30 % |
| Dilution Factor | | 1 | 1 | | | |
| Analysis Date | | 04/17/04 | 04/17/04 | | | |
| Batch ID | | 0417FF | 0417FF | 0417FF | | |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-18 | Practical Quantitation Limit (PQL) | Solid | 04/14/04 | | |
| 21648-19 | Method Detection Limit (MDL) | Solid | 04/14/04 | | |

| Parameter | Units | Lab Sample IDs<br>21648-18 | 21648-19 |
|---|---|---|---|
| Polynuclear Aromatics (8270) | | | |
| Acenaphthene | ug/kg | 6.7 | 0.23 |
| Acenaphthylene | ug/kg | 6.7 | 0.30 |
| Anthracene | ug/kg | 6.7 | 0.43 |
| Benzo(a)Anthracene | ug/kg | 6.7 | 0.30 |
| Benzo(a)Pyrene | ug/kg | 6.7 | 0.37 |
| Benzo(b)fluoranthene | ug/kg | 6.7 | 0.36 |
| Benzo (g,h,i) Perylene | ug/kg | 6.7 | 0.14 |
| Benzo (k) Fluoranthene | ug/kg | 6.7 | 0.32 |
| Chrysene | ug/kg | 6.7 | 0.21 |
| Dibenzo (a,h) Anthracene | ug/kg | 6.7 | 0.24 |
| Fluoranthene | ug/kg | 6.7 | 0.30 |
| Fluorene | ug/kg | 6.7 | 0.24 |
| Indeno (1,2,3-cd) Pyrene | ug/kg | 6.7 | 0.30 |
| Naphthalene | ug/kg | 6.7 | 0.31 |
| Phenanthrene | ug/kg | 6.7 | 0.42 |
| Pyrene | ug/kg | 6.7 | 0.33 |
| 1-Methylnaphthalene | ug/kg | 6.7 | 0.34 |
| 2-Methylnaphthalene | ug/kg | 6.7 | 0.30 |
| Petroleum Range Organics (FL-PRO) (FL-PRO) | | | |
| Petroleum Hydrocarbons | mg/kg | 10 | 4.0 |
| RCRA Metals (6010) | | | |
| Arsenic | mg/kg dw | 0.50 | 0.16 |
| Barium | mg/kg dw | 1.0 | 0.16 |
| Cadmium | mg/kg dw | 0.50 | 0.087 |
| Chromium | mg/kg dw | 1.0 | 0.17 |

## Analytical Data Report

| Lab Sample ID | Description | Matrix | Date Received | Date Sampled | SDG# |
|---|---|---|---|---|---|
| 21648-18 | Practical Quantitation Limit (PQL) | Solid | 04/14/04 | | |
| 21648-19 | Method Detection Limit (MDL) | Solid | 04/14/04 | | |

| Parameter | Units | Lab Sample IDs<br>21648-18 | 21648-19 |
|---|---|---|---|
| RCRA Metals (6010) | | | |
| Lead | mg/kg dw | 0.50 | 0.42 |
| Selenium | mg/kg dw | 1.0 | 0.43 |
| Silver | mg/kg dw | 1.0 | 0.19 |
| Mercury (7471) | | | |
| Mercury | mg/kg dw | 0.020 | 0.0028 |
| Cyanide, Total (9014) | | | |
| Cyanide, Total | mg/kg dw | 1.0 | 0.50 |

Order Number: B421648

Method: EPA SW-846, FDEP
DOH Certification #:E84282

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.
The estimated uncertainty associated with these reported results is available upon request.

I = The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

U = Indicates that the compound was analyzed for but not detected.

STL Tallahassee, 2846 Industrial Plaza Drive, Tallahassee, FL 32301
Phone #850/878-3994. DOH Certification #E81005.

*F33 = Control limits are established only for surrogate concentration levels specified by EPA methods. Because the sample was diluted prior to analysis, surrogate recoveries are not reported.

*F65 = Elevated detection limits were reported due to sample matrix interference which required sample or extract dilution.

*F73 = Matrix spike recoveries were outside advisory limits due to matrix interference present in the sample.

*F82 = Insufficient sample volume was available to perform a batch-specific matrix spike. However, an LCS analyzed with the sample batch met control criteria.

Serial Number 42 1648

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

STL

● STL Tampa
6712 Benjamin Rd, Suite 100
Tampa, FL 33634

www.stl-inc.com
Phone: (813) 885-7427
Fax: (813) 885-7049

○ Alternate Laboratory Name/Location:
Phone:
Fax:

PAGE 1 of 1

| | | |
|---|---|---|
| PROJECT REFERENCE<br>Naples Airport | PROJECT NO.<br>552-4G005-2 | PROJECT LOCATION<br>Naples, FL |
| STL (LAB) PROJECT MANAGER<br>Michael Valder | P.O. NUMBER<br>N/A | CONTRACT NO.<br>N/A |
| CLIENT (SITE) PM<br>Grant Haskins | CLIENT PHONE<br>(813) 886-1075 | CLIENT FAX<br>(813) 249-0301 |
| CLIENT NAME<br>PSI | CLIENT EMAIL<br>grant.haskins@psiusa.com | |
| CLIENT ADDRESS<br>5801 Benjamin Center Drive, Suite 112, Tampa 33634 | | |
| COMPANY CONTRACTING THIS WORK (if applicable) | SAMPLER'S SIGNATURE | |

STANDARD REPORT DELIVERY ●
DATE DUE ______
EXPEDITED REPORT DELIVERY (SURCHARGE) ○
DATE DUE ______
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

| SAMPLE DATE | SAMPLE TIME | SAMPLE IDENTIFICATION | COMPOSITE (C) OR GRAB (G) INDICATE | AQUEOUS (WATER) | SOLID OR SEMISOLID | AIR | NONAQUEOUS LIQUID (OIL, SOLVENT...) | RCRA 8 metals<br>none | PAH | TPH | CYANIDE | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/9 | 1000 | B-2 0-1 ft | G | | x | | | 1 | | | | | | | | | | |
| 4/9 | 1002 | B-2 10 ft | G | | x | | | 1 | | | | | | | | | | |
| 4/7 | 1545 | B-6 12 ft | G | | x | | | 1 | 1 | 1 | | | | | | | | |
| 4/7 | 1420 | C-6 15 ft | G | | x | | | 1 | | | 1 | | | | | | | |
| 4/7 | 1425 | C-6 4 ft | G | | x | | | 1 | | | | | | | | | | |
| 4/7 | 1100 | C-7 6 ft | G | | x | | | 1 | | | | | | | | | | |
| | | | G | | x | | | 1 | | | | | | | | | | |
| | | | G | | x | | | 1 | | | | | | | | | | |
| | | | G | | x | | | 1 | | | | | | | | | | |
| | | | G | | x | | | 1 | | | | | | | | | | |

NUMBER OF CONTAINERS SUBMITTED

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| RELINQUISHED BY: (SIGNATURE) | DATE<br>4-5-04 | TIME<br>1005 | RELINQUISHED BY: (SIGNATURE) | DATE<br>4-14-04 | TIME<br>12:20 | RELINQUISHED BY: (SIGNATURE) | DATE | TIME |
| RECEIVED BY: (SIGNATURE) | DATE<br>4-5-04 | TIME<br>1230 | RECEIVED BY: (SIGNATURE) | DATE<br>4-14-04 | TIME<br>12:20 | RECEIVED BY: (SIGNATURE) | DATE | TIME |

LABORATORY USE ONLY 4.0

| | | | | | | |
|---|---|---|---|---|---|---|
| RECEIVED FOR LABORATORY BY: (SIGNATURE) | DATE<br>4-14-04 | TIME<br>1350 | CUSTODY INTACT<br>YES<br>NO | CUSTODY SEAL NO.<br>NS | STL LOG NO.<br>B421648 | LABORATORY REMARKS: |

Original - Return to Laboratory with Sample(s)

Information To Build On
Engineering • Consulting • Testing

# GEOTECHNICAL ENGINEERING SERVICES REPORT

## FORMER LANDFILL, NAPLES AIRPORT
## NAPLES, FLORIDA

PSI PROJECT NO. 552-5G141

239-289-9675

# GEOTECHNICAL ENGINEERING SERVICES REPORT
# FORMER LANDFILL, NAPLES AIRPORT
# NAPLES, FLORIDA

**Prepared for:**

**CITY OF NAPLES AIRPORT AUTHORITY**
**160 AVIATION DRIVE NORTH**
**NAPLES, FLORIDA 34104-3568**

**Prepared by:**

**Professional Service Industries, Inc.**
**5801 Benjamin Center Drive**
**Suite 112**
**Tampa, Florida 33634**
**Telephone: (813) 886-1075**
**Fax: (813) 249-0301**

**PSI PROJECT NO. 552-5G141**

**October 19, 2005**

psi Information To Build On
Engineering • Consulting • Testing

Dave Bearce
Staff Engineer GONE

A. G. Haskins
Grant Haskins
Senior Project Engineer GONE

Nana Faulkner
Nana Faulkner, PG, CHMM
Senior Project Manager

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## CERTIFICATION

## FLORIDA REGISTERED PROFESSIONAL GEOLOGIST

In accordance with the provisions of Florida Statutes, Chapter 492, the Site Characterization Study for the Naples Airport Recycling Center, Naples, Collier County, Florida, has been prepared under the direct supervision of a Professional Geologist registered in the State of Florida. This report has been determined to be in accordance with good professional practices pursuant to Chapter 492 of the Florida Statutes as it applies to the work described herein. No other warranties are implied or expressed.

Nana G. Faulkner, PG, CHMM
PG License No. 00001616
Date: 12/1/05

## ACRONYM KEY

| | |
|---|---|
| AMSL | Above Mean Sea Level |
| C&D | Construction and Demolition |
| CGI | Combustible Gas Indicator |
| CO | Carbon Monoxide |
| EPA | United States Environmental Protection Agency |
| FDEP | Florida Department of Environmental Protection |
| GPR | Ground Penetrating Radar |
| $H_2S$ | Hydrogen sulfide |
| LFG | Landfill Gas |
| LEL | Lower Explosive Limit |
| mg/kg | Milligram per kilogram |
| mg/L | Milligram per liter |
| MSL | Mean Sea Level |
| MSW | Municipal Solid Waste |
| $O_2$ | Oxygen |
| OSHA | Occupational Safety and Health Administration |
| OVA | Organic Vapor Analysis |
| PG | Professional Geologist |
| PLS | Professional Land Surveyor |
| PPE | Personal Protective Equipment |
| ppm | parts per million |
| PSI | Professional Service Industries, Inc. |
| SOP | Standard Operating Procedure |
| VOCs | Volatile Organic Compounds |
| TCLP | Toxicity Characteristics Leaching Procedure |
| TP | Test Pit |

# 1.0 PROJECT BACKGROUND

## 1.1 PURPOSE

Professional Service Industries, Inc. (PSI) has been retained by the City of Naples Airport Authority to conduct a geotechnical evaluation of the former landfill located at the north side of the Naples Airport. The purpose of the evaluation is to determine future development issues and recommendations, determine vertical and horizontal extent of the landfill area, and to discuss options for dealing with subsurface conditions.

## 1.2 PROJECT LOCATION AND SITE DESCRIPTION

The former landfill extends along the north boundary of the airport property adjacent to West Enterprise Avenue, Naples, Florida. The former landfill, comprised of approximately 41 acres, is bisected by a canal and Patriot Way as shown on Figure 1. Approximately four acres of the landfill are currently used as a Collier County Recycling Center. Collier County has proposed to construct a larger recycling center in an area totaling approximately 20 acres.

For the purpose of this evaluation the landfill was divided into four zones as shown on Figure 1. Zone I is located near the approach to runway 23 and extends to the proposed eastern boundary of the Collier County Recycling Center. Zone II, not included in this evaluation, consists of the approximate 20 acres proposed for the Collier County Recycling Center. Zone III extends from the west side of the proposed recycling center to Patriot Way. Zone IV is located west of Patriot Way.

Most of the area covered in this evaluation is overgrown with thick foliage and trees. There is a low area providing drainage along the south side of the former landfill. The drainage area enters a canal, which bisects Zone III. Observation of Zone IV, located west of Patriot Way, indicates recent disposal of C & D debris and soil. There is an area in Zone IV that does not contain foliage and appears to be used to deposit fill material.

## 1.3 BACKGROUND INFORMATION

The Naples Airport served as a base of operation for training Army aircrews during World War II. At the end of the war, the military no longer needed the facility and ownership returned to the City of Naples and Collier County in 1947. The City and County operated the airport jointly until the County sold its interest to the City in 1958.

A landfill was operated on the northern end of the airport dating from the 1940s until its closure in the early 1970s. Four acres of the former landfill has been converted into a recycling drop off center and construction and demolition debris (C&D) transfer station operated by Collier County.

Collier County has proposed to develop approximately 16 additional acres into an improved recycling center. During design work on the new facility geotechnical drilling and test pit excavations were conducted by PSI on behalf of Collier County. The results of these studies are contained in reports available from the County.

The test pits were conducted to define the extent of debris in the area where the structures connected with the Naples Recycling Center improvements were to be located. This work provided information to better estimate the costs associated with reclamation and backfilling the footprints of the proposed structures. During the course of the test pit excavations, it became apparent that borrow pits may exist underneath the old landfill, since excavations were revealing the existence of trash beneath the water table. This finding prompted further research into the history of the old landfill, which led to the discovery of aerial photographs and articles published. The details are contained in the aforementioned report.

Additionally, PSI conducted landfill gas (LFG) monitoring in conjunction with the Collier County investigation. The results indicated LFG above 25 percent of the lower explosive limit (LEL) at several of the vapor monitoring points.

In addition to the aerial photographs, and relevant to the environmental aspects of the site, PSI discovered a document entitled *Overview of Groundwater Monitoring Data at the City of Naples Airport Authority Closed Landfill (FDEP Facility # 5211000851)*, authored by Crystal Environmental, Inc., and dated February 21, 1992. This document describes an FDEP permit issued to the City of Naples Airport Authority requiring routine groundwater monitoring at the closed landfill site on Enterprise Road. A total of six monitoring wells were sampled quarterly beginning in October 1987 and ending in December 1991. The wells were closed and the monitoring ceased due primarily to the fact that data from several monitored parameters either failed to be detected in appreciable concentrations, and/or did not produce any notable trends (with respect to background water quality information).

### 1.4 AIRPORT SECURITY

To comply with Airport security provisions during this investigation, PSI placed locks on two gates with access to security areas at the airport. In addition, security badges were obtained for the land clearing crew and project manager. This project involved separate mobilizations for the land clearing crew, the ground penetrating radar operator, the geotechnical drilling crew, and the survey crew. Airport personnel provided security escort during work when the project manager was not on site.

## 1.5 SITE SPECIFIC HEALTH AND SAFETY PLAN

A Site Specific Health and Safety Plan has previously been developed by PSI for use on a similar project conducted for Collier County. With Collier County permission, the safety plan was used for this project. A tailgate safety meeting was conducted each day prior to the beginning of work. The project team signed the Health and Safety Plan following each briefing.

## 1.6 REPORT ORGANIZATION

The report is divided into three major parts. The body of the report covers site background, test pit evaluation, conclusions, and recommendations. Appendix A contains photographs of test pits. A ground penetrating radar report is contained in Appendix B. In addition, the report covering drilling and geotechnical details is contained in Appendix C. It should be noted that each major part of this report has a separate appendix section.

# 2.0 SUBSURFACE SITE CHARACTERIZATION

## 2.1 INTRODUCTION

On August 22, 2005, PSI mobilized to the Naples Airport to begin foliage clearing for access to the former landfill. Foliage clearing provided access for test pits, ground penetrating radar, geotechnical drilling, and surveying. A grid with 200 foot spacing was cleared in Zones I, III, and IV, followed by excavation of a total of 18 test pits in locations shown on Figure 1. Test pits were excavated to conduct site characterization and to explore for borrow pits that may exist beneath the landfill.

Approximate waste composition based on visual observations was estimated to include organic type waste, paper waste, C & D materials, and soil. An Occupational Safety and Health Administration (OSHA) trained crew performed excavation of the test pits. The crew consisted of excavator operator, dozer operator, and project engineer. The excavation of test pits was completed on August 25, 2005.

## 2.2 GENERAL SITE CONDITIONS

Zone I is accessed from Enterprise Avenue through a security gate located near the approach to runway 23. Zone III is accessed from Patriot Way, a non-secure area. Zone IV is accessed through a security gate located on Patriot Way at the west end of Enterprise Avenue. The land surrounding the landfill is at an elevation of approximately 6 - 7 feet above Mean Sea Level (MSL). At the time of the excavations, the water table was at or near its seasonal high elevation of approximately 2 feet above MSL.

Due to heavy foliage in the areas to be investigated, a 200 series excavator with a 21-22 foot dig depth and a John Deere Model 650 HLGP dozer were used for clearing lanes for site access.

## 2.3 TEST PIT INVESTIGATION

Prior to site characterization, the foliage was cleared to create lanes in a grid pattern approximately 200 feet apart. This preliminary work was followed by test pit excavation, a ground penetrating radar survey, geotechnical drilling, and a survey of elevations of project features. Photographs of selected test pits are contained in Appendix A.

Test pits were excavated to various depths as shown on Table 1. Following assessment of excavated materials and measurement of test pit depth, the excavation was backfilled with the removed material. The locations of the test pits are shown on Figure 1. Information recorded for each test pit included the following, which is summarized in Table 1:

- Date of Excavation
- Surface Elevation at location of test pit
- Depth of cover material over debris
- Depth to base of debris
- Thickness of debris
- Depth to water
- Water elevation
- Estimated ratio of soil (percent)
- Estimated ratio of debris (percent)
- Debris into water table
- Comments

Representative photographs are included in Appendix A.

## 2.4 VERTICAL PROFILE

The vertical soil profiles of the test pit excavations for Zone I are shown on Figures 3, 4, and 5. In general, the landfill contained a cover of sandy soil ranging from 6 inches to 2 feet in thickness with an average thickness of 12 inches. The thickness of the debris varied from 1.5 feet to 18.5 feet resulting in an average thickness of debris of approximately 9.8 feet. In some cases, the thickness of the debris layer could not be accurately determined, due to the debris extending below the water table. At the time of the test pit excavations, the average depth of the water table appeared to be approximately two feet above MSL.

## 2.5 CLASSIFICATION OF EXCAVATED MATERIAL

The excavated material was evaluated for general percentages of debris as compared to soil. Debris generally consists of paper, plastic, steel, wood, soil, and fiber. The test pits revealed approximately 69 percent soil and 31 percent municipal solid waste (MSW). The percentage of soil is most likely due to the final and daily cover of applied soil during operation of the landfill. Plastic sheeting from trash bags was evident in most of the test pits. Evidence of historical burning was observed in one of the test pits. Confirming this finding, our research indicates that MSW was burned until the late 1960s.

Other materials found included tires, logs, carpet, rope, steel cable, and hose. The waste consisted primarily of household refuse, with a relatively small amount (5%-10%) of construction and demolition debris.

## 2.6 RESULTS OF TEST PIT EXCAVATIONS

Based on our investigation, the landfill is composed of approximately 70% soil. Organic material apparently has decomposed or been burned to a great extent. Scavenging birds or other vectors such as flies were not observed during the test pit excavations indicating a lack of putrescent material (rotting or decomposing material generally having an offensive odor). No odor was observed associated with the excavations with the exception of Test Pit (TP-17), which had a slight hydrogen sulfide ($H_2S$) odor. Test pit TP-17 is located near the drainage area where the combination of naturally occurring vegetation and water could result in low levels of hydrogen sulfide.

A newspaper found during the excavation was dated 1970. A license plate dated 1955 and a bottle dated 1955 were found in Test Pit 7. Test Pit 7 was unique in that it consisted mostly of rusting cans and no plastic sheeting was observed. The lack of plastic is characteristic of the 1950s, which predates the extensive use of plastic packaging.

Several of the test pits were excavated into the groundwater. Excavation into the groundwater presents two problems. First, the material tends to cave in and second, due to the cave in, it is difficult to determine the extent of the debris. Accordingly, once groundwater is encountered, the test pit may not extend to the full depth of the debris. However, the geotechnical drilling provides additional information on the vertical extent of the debris below the water table.

Landfill debris below the groundwater elevation may indicate the presence of a historical borrow pit explained as follows. The original land elevation in the area of the airport was approximately five feet MSL. The groundwater elevation is approximately two feet MSL. This indicates that surface soil has been removed and the void filled with trash and debris. In four of the test pits the depth of the debris could not be determined.

# 3.0 GROUND PENETRATING RADAR INVESTIGATION

## 3.1 SUMMARY OF INVESTIGATION

Ground penetrating radar (GPR) was used to determine the horizontal extent of the former landfill as covered in detail in Appendix B and as shown on Figure 1.

Moreover, GPR located several anomalies, which may indicate subsurface features such as borrow pits or possibly buried items other than municipal solid waste (MSW). In Zone I the GPR survey generally supported previously identified borrow pits.

Two anomalies were found which may need further identification using excavation. One is located east of Zone I in the open area near the approach to runway 23. The other is located at the northwest corner of the site in Zone IV.

# 4.0 GEOTECHNICAL EVALUATION

## 4.1 SUMMARY

The geotechnical evaluation consisted of eight soil borings to a depth of 35 feet below land surface. The complete geotechnical report is contained in Appendix C. The soil profiles, contained in the report, are plotted at their approximate elevations as determined by a Professional Land Surveyor (PLS). Accordingly, the depth of the landfill material can be determined.

The geotechnical drilling confirmed and identified the depth of the suspected borrow pits. The deepest borrow pit found extends a total of nine feet below the original grade of 5 feet AMSL. These historic borrow pits were filled with trash and debris.

Building on top of old landfills presents risks to the integrity of foundations and structures. The geotechnical report contained in Appendix C covers options to address these risks. In summary, once the landfill material is removed the remaining subsurface is amenable to backfilling and conventional construction techniques.

# 5.0 CONCLUSIONS

## 5.1 GENERAL

Historically, the northern portion of the airport property served as a source of fill material and as a landfill starting in the 1940s. Refuse was burned until 1968, when the Airport Master Plan recommended the immediate halt to further burning. The landfill was closed in the early 1970s. Approximately four acres of the landfill are used for a Collier County C&D transfer station and recycling drop-off facility. Most of the former landfill is now covered by thick foliage including Australian Pine, Brazilian Pepper, maleluca, and other exotic vegetation.

The horizontal extent of the former landfill was determined using ground penetrating radar. As shown in Figure 1 the extent of the landfill generally follows the extensive foliage. Following is a summary of the area of each of the three zones associated with this report as determined on Figure 1. Zone II, location for the proposed recycling center, is also included:

| | | |
|---|---|---|
| Zone I | 8.5 | acres |
| Zone II | 19.9 | acres |
| Zone IIIa | 4.3 | acres |
| Zone IIIb | 1.7 | acres |
| Zone IV | 3.1 | acres |

The landfill covers an area of approximately 37.5 acres. The area available for airport development is approximately 17.6 acres. Of this approximately 3.3 acres are needed for landfill debris storage associated with development resulting in net space for the airport of 14.3 acres. Screening approximately 10 feet of landfill material over 14.3 acres would result in an added height of approximately 15 feet to the debris storage area. The maximum height, would therefore, be 40 feet AMSL.

## 5.2 TEST PITS

The test pits revealed the average thickness of landfill debris and cover to be approximately 9.8 feet. The thickness of the debris varied from 1.5 feet to 18.5 feet. In four test pits the thickness of the debris could not be determined due to the presence of groundwater. Debris extending into the groundwater may indicate the presence of a historical borrow pit. Borrow pits are used to mine material for use in construction and road building.

The borrow pits identified in this report are approximately 6 feet in depth below the water table as determined from the geotechnical borings. Material in the groundwater takes longer to decompose, due to the lack of oxygen. Accordingly, there is a greater potential for settlement for buildings constructed in areas where debris extends into the groundwater.

A survey of the landfill revealed elevations to 24.7 feet above mean sea level (AMSL) with an approximate average elevation of 12 to 16 feet AMSL. The elevation of the landfill, in its present state, may not readily mesh with taxi-ways associated with future development. However, to address geotechnical issues it may be prudent to remove the landfill debris in selected areas, thus bringing the elevation in line with existing airport features.

## 5.3 GROUND PENETRATING RADAR EVALUATION

Ground Penetrating Radar (GPR) confirmed the presence of subsurface anomalies primarily in Zone I, generally supporting the presence of subsurface borrow pits. East of Zone I in the open area an anomaly was found at approximately 16 feet below land surface. This anomaly may represent a change in soil conditions.

In the western most part of Zone IV an area was found that appears to contain well defined autonomously buried objects at a depth of 16 to 24 feet below land surface.

## 5.4 GEOTECHNICAL EXPLORATION REPORT

The geotechnical report provides details on the soil conditions in the former landfill and outlines the risk of building on an old landfill without taking suitable precautions. The risk is associated with the inevitable settling that occurs in old landfills, which can lead to structural damage to buildings and pavement.

Accordingly, there are three approaches that can be taken to develop an old landfill:

1. Remove the trash and debris and replace with structural fill material. The new facilities can then be constructed using conventional foundations and floor slabs without further concern with the old landfill. This option provides finished elevations compatible with existing airport roads and taxiways.
2. Design and construct buildings and floors to be supported on concrete piles driven through the debris into the underlying limestone. This option will result in facilities at elevations above the existing airport.
3. Use deep dynamic compaction to reduce the expected settlement from the debris and use conventional foundations and floor slabs. This option will result in facilities at elevations above the existing airport.

Advantages supporting future construction are as follows:

1. The Florida Department of Environmental Protection (FDEP) has provided confirmation to Collier County allowing construction on the former landfill.
2. Assuming that the FDEP would also allow the same procedure to the Airport Authority, the debris could be screened to separate the usable soil, which could be used elsewhere on airport property provided applicable regulations are followed.
3. The debris resulting from screening or the debris combined with soil can be moved to another location on the landfill provided the debris is covered with two feet of soil upon completion of project.
4. Generally, the excavated and exposed landfill material poses no problems associated with odors or vectors. However, due to the presence of historical borrow pits, some of the debris is below the water table. Upon excavation this material may have an odor until it drains and dries out. The odor is expected to be fairly localized.

## 5.5 Landfill Gas

During assessment of the proposed Collier County facilities, landfill gas (LFG) above 25 percent of the lower explosive limit (LEL) was found in several of the vapor monitoring wells. Moreover, the presence of LFG is typical of old landfills. Accordingly, any future construction on top of the former landfill will require some type of LFG mitigation system for each of the facility structures. If the landfill material is removed prior to construction, LFG mitigation will not be required.

# 6.0 RECOMMENDATIONS

## 6.1 USE OF FORMER LANDFILL

Based upon the findings of this report, approximately 14.3 acres of the former landfill could be used for future airport development. As stated in the *Conclusions* section of this report, the buried organic material will deteriorate over time resulting in settlement of any structures. Deep dynamic compaction (DDC) has been used prior to construction on top of old landfills, and should be evaluated. Even with DDC, some settlement can occur from the deterioration of buried organic material such as wood. It should be noted, the resulting elevation of new facilities would be higher than the surrounding airport property.

Accordingly, it is recommended that the debris be removed from areas where development is planned. This has the added benefit of bringing the elevations in line with the rest of the airport. Each Zone has its own characteristics and will be discussed separately as follows:

**Zone I**

It is recommended that development of the facilities planned near the approach to runway 23 include the removal of landfill debris down to native material. Any borrow pits discovered in this area should be excavated and backfilled with gravel. Fill material could be imported and compacted as needed to achieve desired elevations. The removed material should be transported to an area designated by the Airport Authority for long term storage of material within the former landfill or transported off site for disposal. Most of Zone I could be developed in a similar manner. The ground penetrating radar (GPR) investigation found an anomaly designated as Area H east of Zone I. It is recommended that this area be excavated to determine the nature of the anomaly prior to construction.

**Zone III**

The eastern portion of Zone III has the highest elevations of the entire landfill reaching 24.7 feet AMSL. It is recommended that 3.3 acres of this area be used to deposit material from other areas that could be brought to surrounding grade more economically. Alternatively, the debris berm proposed for the Collier County recycling center could be extended and expanded to accommodate the additional material. The western portion of Zone III is bisected by a canal. The area west of the canal could be developed in a similar manner to Zone I.

**Zone IV**

This area is already in use to deposit material from other projects at the airport. The area of Zone IV that are the original landfill could be developed in a similar manner to Zone I by excavation and transport of the material to another location at the landfill.

## 6.2 EXCAVATION AND TRANSFER OF MATERIAL

To achieve development objectives the landfill material can be excavated, loaded into off-road dump trucks, and transported to a permanent storage area within the landfill. To enhance this process it is recommended that the material be screened using a trommel. The use of a trommel screen separates the material into two streams consisting of debris and soil. PSI has conducted evaluations in a similar landfill, which show the percentage of soil to be approximately 70 percent. By screening out the soil there are three major benefits:

1. The recovered soil can be used to cover the deposited landfill debris thus saving on the purchase of fill material.

2. The recovered soil can be used for other fill material needs within the airport or landfill development.

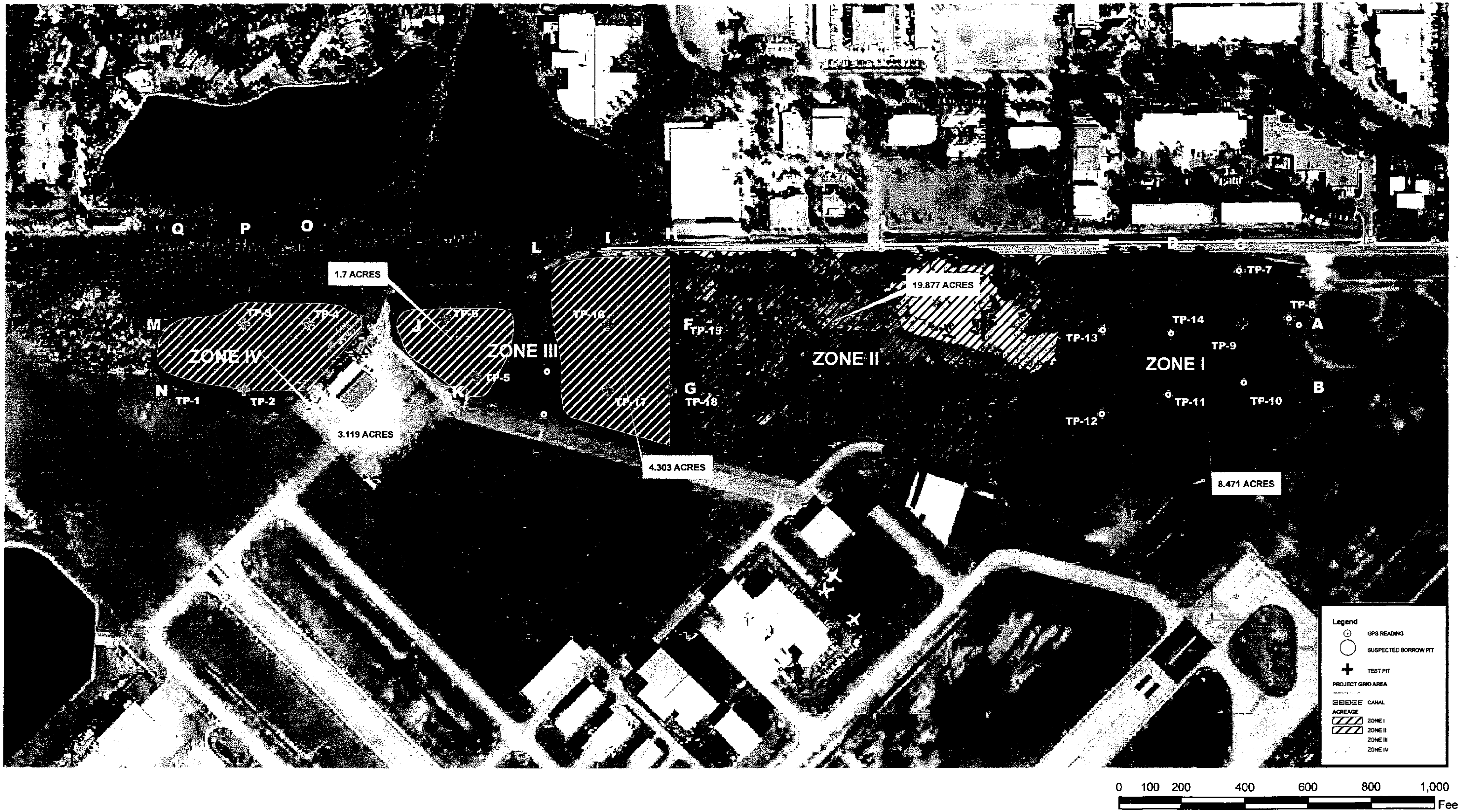
3. The greatly reduced debris volume results in less space needed for storage of the material.

## 6.3 FUTURE LAYOUT OF FACILITIES

It is recommended that the Airport Authority provide proposed locations of facilities, taxiways, roads, and parking areas to PSI.

PSI could then provide a proposal to develop a plan for reclaiming selected portions of the old landfill to meet Airport Authority objectives. The plan will include permitting issues, access, security, odors, blowing debris, safety, excavation, haul roads, letdown area, screening, stockpiling, disposition of recovered soil, construction of new berm, cover of new berm, sodding, backfilling excavated areas, compaction, and groundwater issues. The volume of debris and soil will be estimated. A debris storage area (berm) will be designed. Disposition of foliage will be determined. A cost estimate to complete the reclamation will be provided. A written response from the FDEP allowing future development in accordance with the plan will be requested.

# FIGURES



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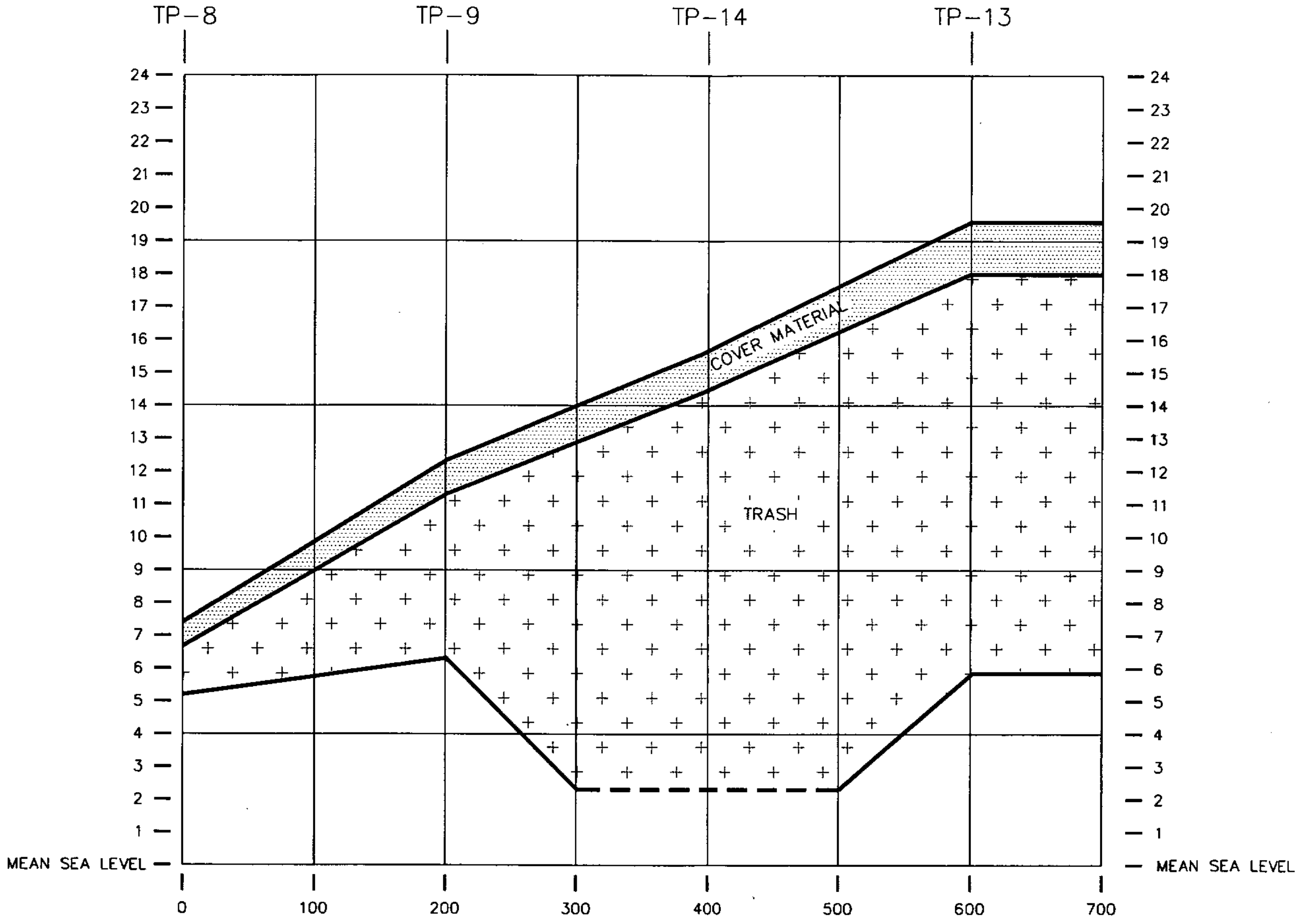
# SITE MAP
# FORMER LANDFILL
# NAPLES AIRPORT
NAPLES, FLORIDA

**FIGURE 1**



HORIZONTAL SCALE: 1"=100'
VERTICAL SCALE: 1"=4'
— — — APPROXIMATE WATER TABLE

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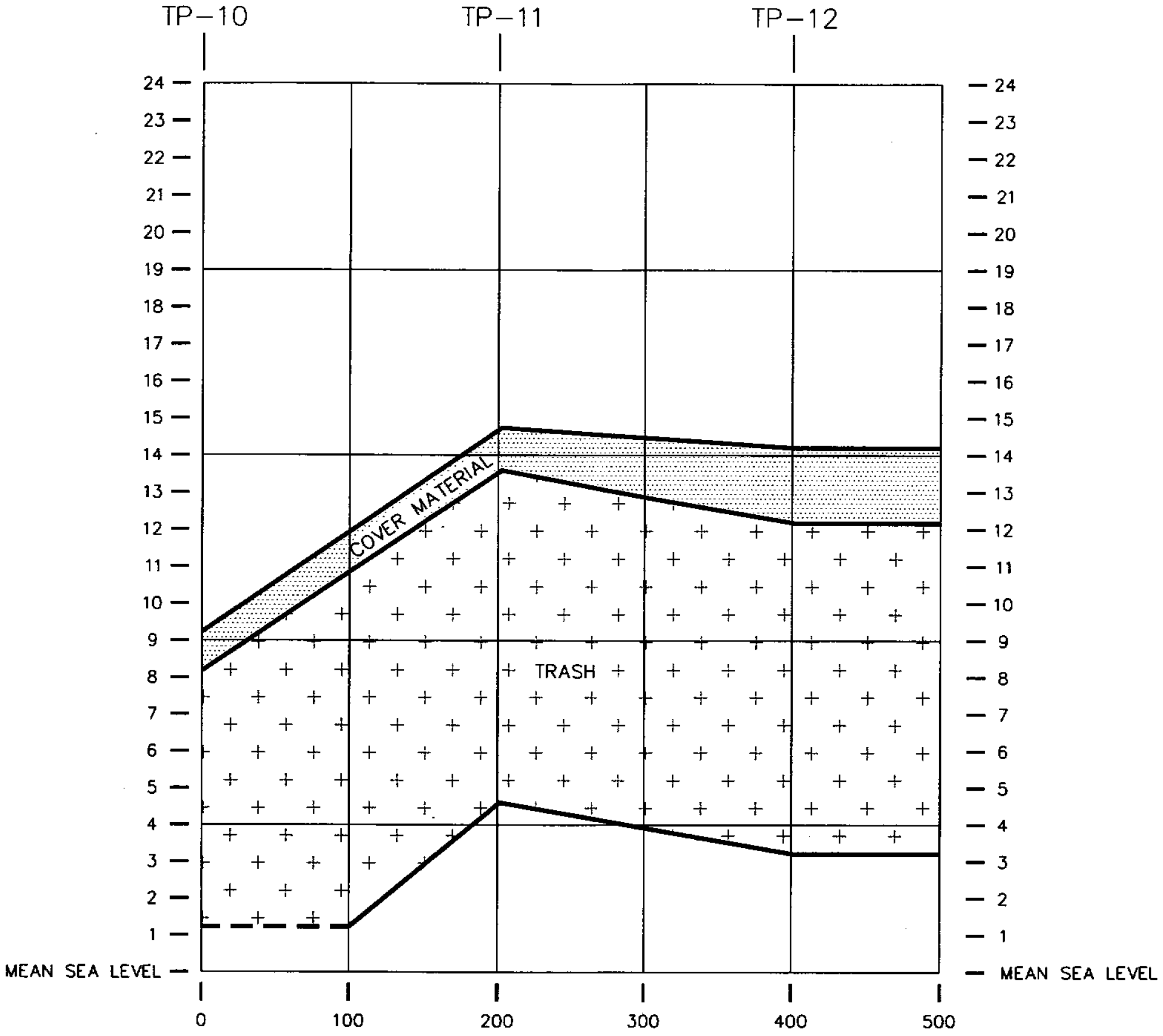
# VERTICAL SOIL PROFILE ROW A
FORMER LANDFILL
NAPLES AIRPORT
NAPLES, COLLIER COUNTY, FLORIDA

| | | |
|---|---|---|
| DRAWN BY: VAS | CHKD. BY: | DATE: 10/14/05 |
| SCALE: NOTED | REVISION | |
| PROJECT NO.: 552-5G141 | | FIGURE NO.: 2 |



HORIZONTAL SCALE: 1"=100'
VERTICAL SCALE: 1"=4'
— — — APPROXIMATE WATER TABLE

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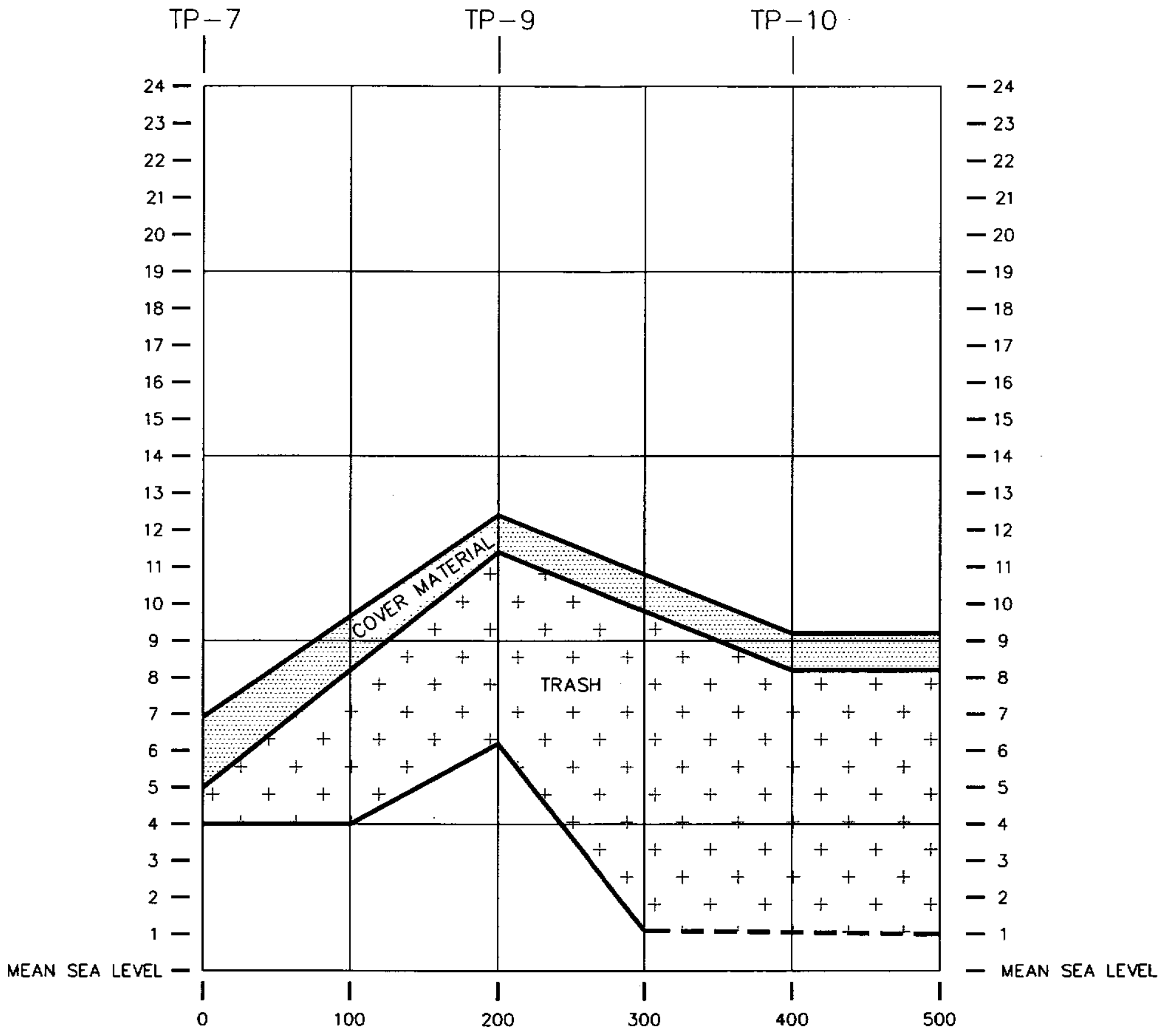
# VERTICAL SOIL PROFILE ROW B
FORMER LANDFILL
NAPLES AIRPORT
NAPLES, COLLIER COUNTY, FLORIDA

| | | |
|---|---|---|
| DRAWN BY: VAS | CHKD. BY: | DATE: 10/14/05 |
| SCALE: NOTED | REVISION | |
| PROJECT NO.: 552-5G141 | | FIGURE NO.: 3 |



HORIZONTAL SCALE: 1"=100'
VERTICAL SCALE: 1"=4'
— — — APPROXIMATE WATER TABLE

# VERTICAL SOIL PROFILE ROW C

FORMER LANDFILL
NAPLES AIRPORT
NAPLES, COLLIER COUNTY, FLORIDA

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| | | |
|---|---|---|
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| SCALE: NOTED | REVISION | |
| PROJECT NO.: 552-5G141 | | FIGURE NO.: 4 |

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# TABLES

**Table 1**

Naples Airport Authority
Test Pit Characterization Conducted August 24 and 25, 2005
PSI Project: 552-5G141

| Test Pit | Surface Elevation (feet) AMSL | Depth of Cover (feet) | Depth to Base of Debris (feet) | Thickness of Debris (feet) | Depth to Water (feet) | Water Elevation (feet) AMSL | Estimated Soil % | Estimated Debris % | Debris Extend into Water Table | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| TP-1 | 14.9 | 1.0 | unknown | unknown | 13.5 | 1.4 | 60 | 40 | Yes | Large rocks, tires, suspect borrow pit |
| TP-2 | 7.5 | 0.5 | 5.0 | 4.5 | 5.0 | 2.5 | 80 | 20 | No | rock layer at 5 feet |
| TP-3 | 8.6 | 0.5 | 10.0 | 9.5 | 14.0 | * | 80 | 20 | No | hit caprock at 14.0' |
| TP-4 | 9.1 | 0.5 | 11.0 | 10.5 | N.O. | * | 75 | 25 | No | layer of dark soil at 7.0' |
| TP-5 | 3.5 | 1.0 | 6.0 | 5.0 | 4.0 | 0 | 70 | 30 | Yes | caprock at 6.0' |
| TP-6 | 6.5 | 2.0 | 11.0 | 9.0 | 8.0 | -2 | 70 | 30 | Yes | caprock at 8.0' |
| TP-7 | 6.9 | 2.0 | unknown | unknown | 3.0 | 3.9 | 20 | 80 | Yes | suspect borrow pit; trash in water at 6.0'; license plate; 1955 bottle |
| TP-8 | 7.2 | 0.5 | 2.0 | 1.5 | N.O. | * | 70 | 30 | No | layer of trash near surface |
| TP-9 | 12.3 | 1.0 | 6.0 | 5.0 | N.O. | * | 75 | 25 | No | clean white sand at 6.0' |
| TP-10 | 9.1 | 1.0 | unknown | unknown | 8.0 | 1.1 | 70 | 30 | Yes | suspect borrow pit; sand layer at 3.0'; possibly edge of borrow pit |
| TP-11 | 14.7 | 1.0 | 10.0 | 9.0 | N.O. | * | 65 | 35 | No | trash, wire, carpet, wood, sand at 10 ft |
| TP-12 | 14.1 | 2.0 | 11.0 | 9.0 | N.O. | * | 70 | 30 | No | trash, logs, clean sand at 11 feet |
| TP-13 | 19.4 | 1.5 | 13.5 | 12.0 | N.O. | * | 80 | 20 | No | very little trash to 8 ft; hit trash at 10 ft |
| TP-14 | 15.7 | 1.0 | unknown | unknown | 13.5 | 2.2 | 70 | 30 | Yes | suspect borrow pit |
| TP-15 | 17.1 | 0.5 | 19.0 | 18.5 | 15.0 | 2.1 | 70 | 30 | Yes | suspect borrow pit |
| TP-16 | 17.3 | 0.5 | 13.5 | 13.0 | N.O. | * | 70 | 30 | No | tires, large boulder |
| TP-17 | 8.1 | 1.0 | 5.0 | 4.0 | N.O. | * | 75 | 25 | No | slight H2S odor |
| TP-18 | 14.7 | 1.5 | 8.0 | 6.5 | N.O. | * | 70 | 30 | No | tires, debris, trash |

**Legend**

| | |
|---|---|
| AMSL | Above Mean Sea Level |
| TP | Test pit |
| N.O. | Not Observed |
| H2S | Hydrogen Sulfide |
| % | Percent |
| * | Elevation Not Available |

# APPENDIX A

# PHOTOGRAPHS

Photo 1. Test Pit TP-5

Photo 2. Test Pit TP-6

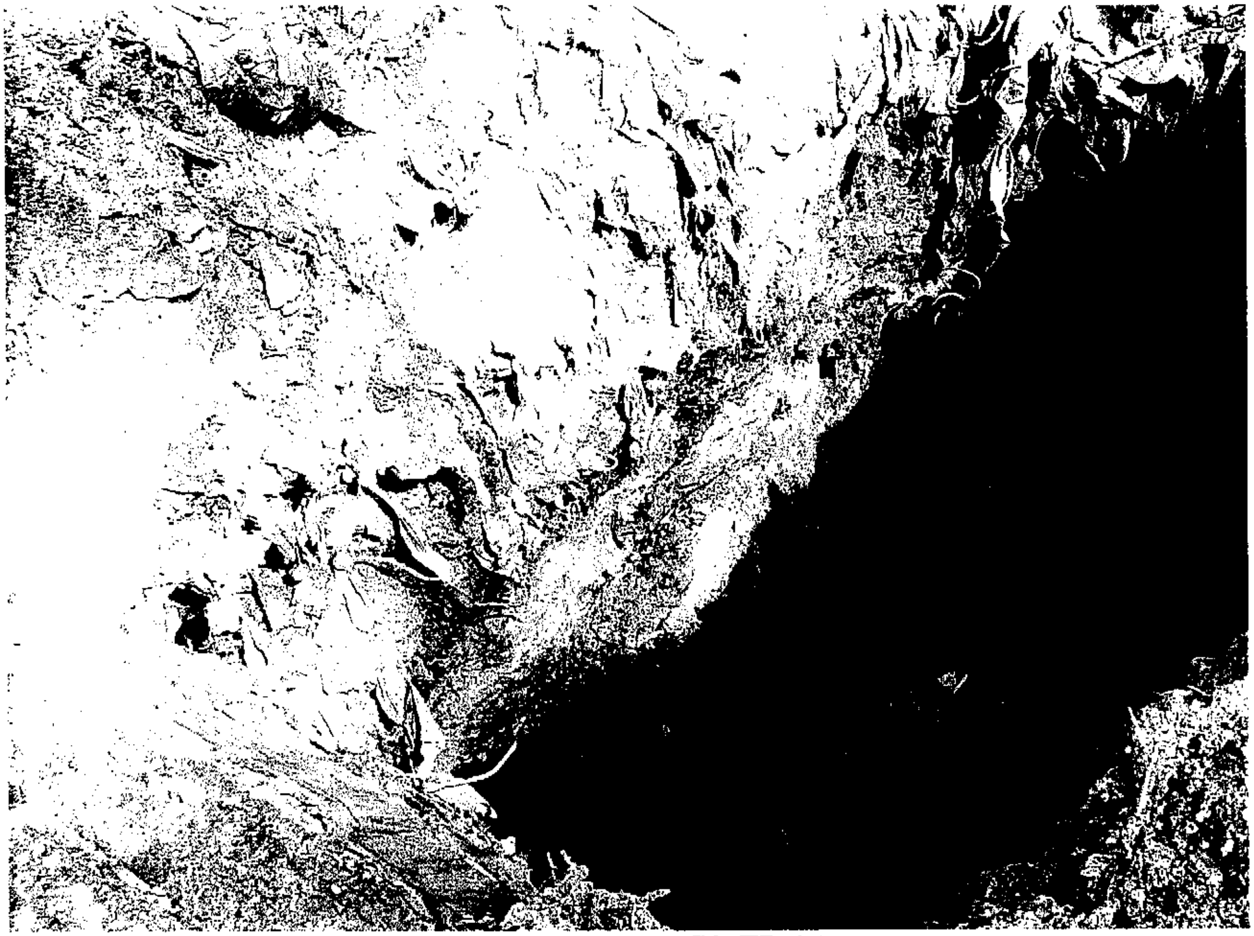

**Photo 3.** **Test Pit TP-15**

**Photo 4.** **Test Pit TP-15**

Photo 5. Test Pit TP-15

Photo 6. Test Pit TP-16

Photo 7. Test Pit TP-16

Photo 8. Test Pit TP-16

Photo 9. Test Pit TP-17

**Photo 10.** **Test Pit TP-18**

**Photo 11.** **Test Pit TP-18**

# APPENDIX B

# GROUND PENETRATING RADAR REPORT

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September 30, 2005

**City of Naples Airport Authority**
160 Aviation Drive North
Naples, Florida 34104-3568

Attention: Mr. Ervin Dehn, Jr.
Director of Planning and Engineering

Subject: Ground Penetrating Radar Report
**City of Naples Airport Expansion**
Potential Lease Sites East and West of the
Collier County Recycling Facility
Naples, Florida
**PSI Project No: 552-5G141**

Dear Mr. Dehn:

As per your authorization, the following report summarizes the field study and results of the limited Ground Penetrating Radar (GPR) study conducted at the Naples Airport in Collier County, Florida on August 30 and 31, 2005. The GPR survey was conducted to assess the subsurface at the site to locate potential areas of buried debris and borrow pits. A description of GPR theory, data acquisition and limitations are located in Appendix C.

## Methods

The GPR survey was performed along accessible 200-foot wide perpendicular transects utilizing a 500-megahertz (MHz) and a 250-MHz shielded antenna. The site map and locations of the GPR transects are located in Plate 1 (Appendix A). Initial calibration tests indicated an optimal time range for the 500-MHz antenna to be set at 70 nanoseconds (ns) and 155 ns for the 250-MHz antenna. This range provided a maximum depth of penetration at approximately 10 feet (ft) and 25 ft below land surface (bls) respectively.

## Results

Four (4) areas potentially related to buried debris were observed on the GPR profiles produced from the data collected at the Naples Airport and are located in Plate 1 (Areas I through IV; Appendix A). Each area is characterized by disrupted, high-amplitude reflectors (Figures 1 and 2; Appendix B). The boundary of each anomaly, crossed by the GPR, was marked in the field using wooden stakes.

Six (6) anomalous areas potentially related to borrow pits were observed on the GPR profiles produced from the data collected at the site and are located in Plate 1 (Areas A through F; Appendix A). Each anomaly is located in Area 1 and is characterized by dipping reflectors and an increase in the depth of penetration (Figure 3; Appendix B). The boundary of each anomaly, crossed by the GPR, was marked in the field using wooden stakes.

One (1) area that appears to contain well defined, autonomously buried objects was observed in the westernmost area of the site (Area G; Plate 1; Appendix A). The potential objects within this area are characterized by high amplitude hyperbolic reflectors (Figure 4; Appendix B). The approximate extent of this area was marked in the field using wooden stakes.

One (1) subsurface anomaly that may represent a change in soil conditions was observed in the easternmost portion of the site (Area H; Plate 1; Appendix A). The anomalous area is characterized by higher amplitude reflectors that exhibit increased depth (Figures 5 and 6; Appendix B). The deepest part of the anomaly is approximately 16 ft bls and the approximate center was marked in the field using a wooden stake.

Please contact me if you have any questions or comments concerning this report.

Sincerely,

**PROFESSIONAL SERVICE INDUSTRIES, INC.**

Kevin D. Hon
Project Geologist

KDH\ykw\5525G141GP1.doc

# Appendix A

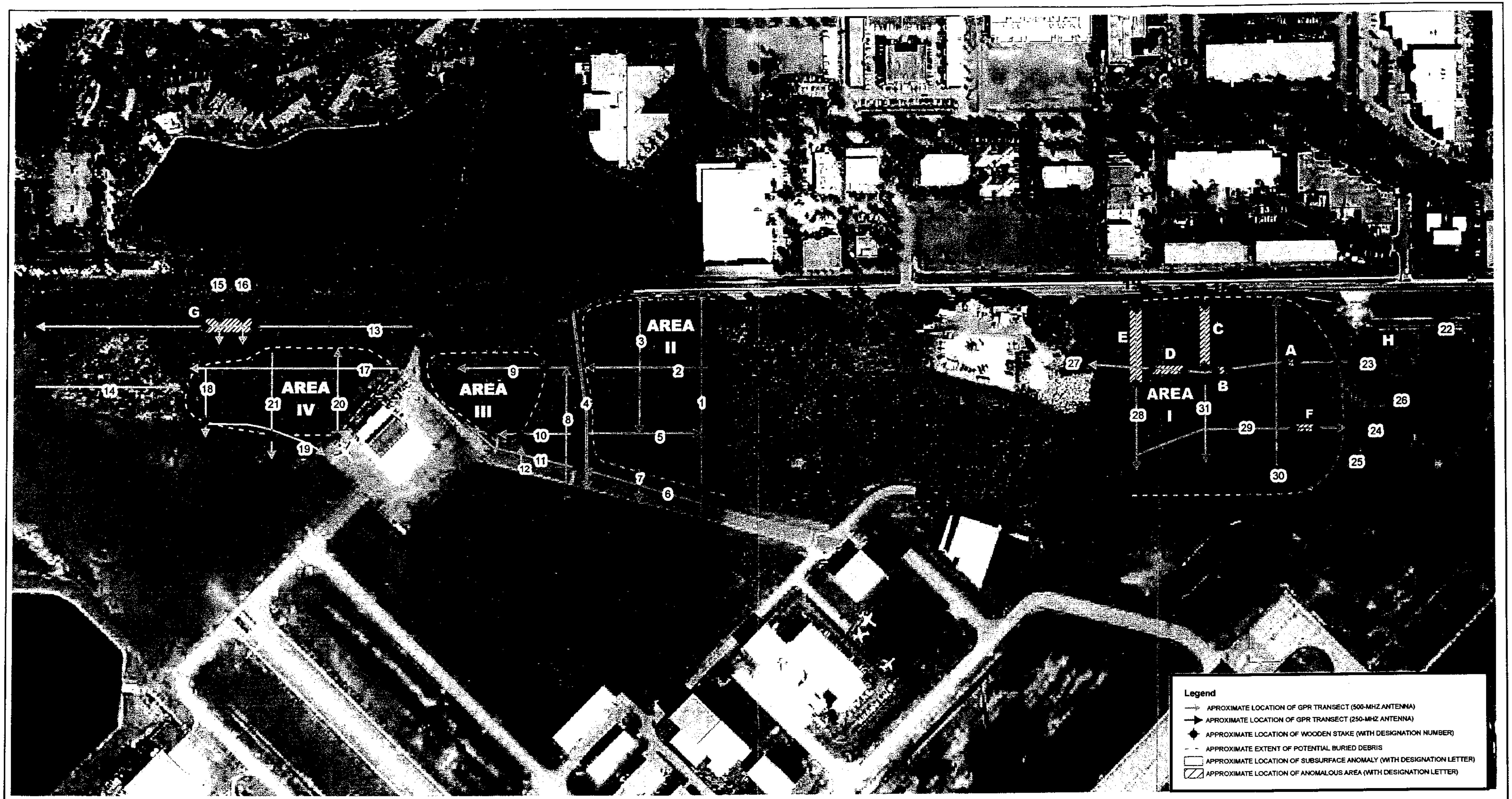
# 7.0 REFERENCES

*Naples Airport Archives Article*, April 20, 2004

*Overview of Groundwater Monitoring Data at The City of Naples Airport Authority Closed Landfill*, Crystal Environmental, Inc., February 1992

*Site Characterization Study, Naples Airport Recycling Center*, Professional Service Industries, Inc., August 2004

*Geotechnical Engineering Services Report, Naples Airport Recycling Center*, Professional Service Industries, Inc., June 2004



REFERENCE: THE AERIAL PHOTOGRAPH WAS OBTAINED FROM LABINS (2004 DOQQ 1MT REST).

SCALE 1: 3,500
1 INCH = 200 FEET

0 100 200 400 600 800 1,000 Feet

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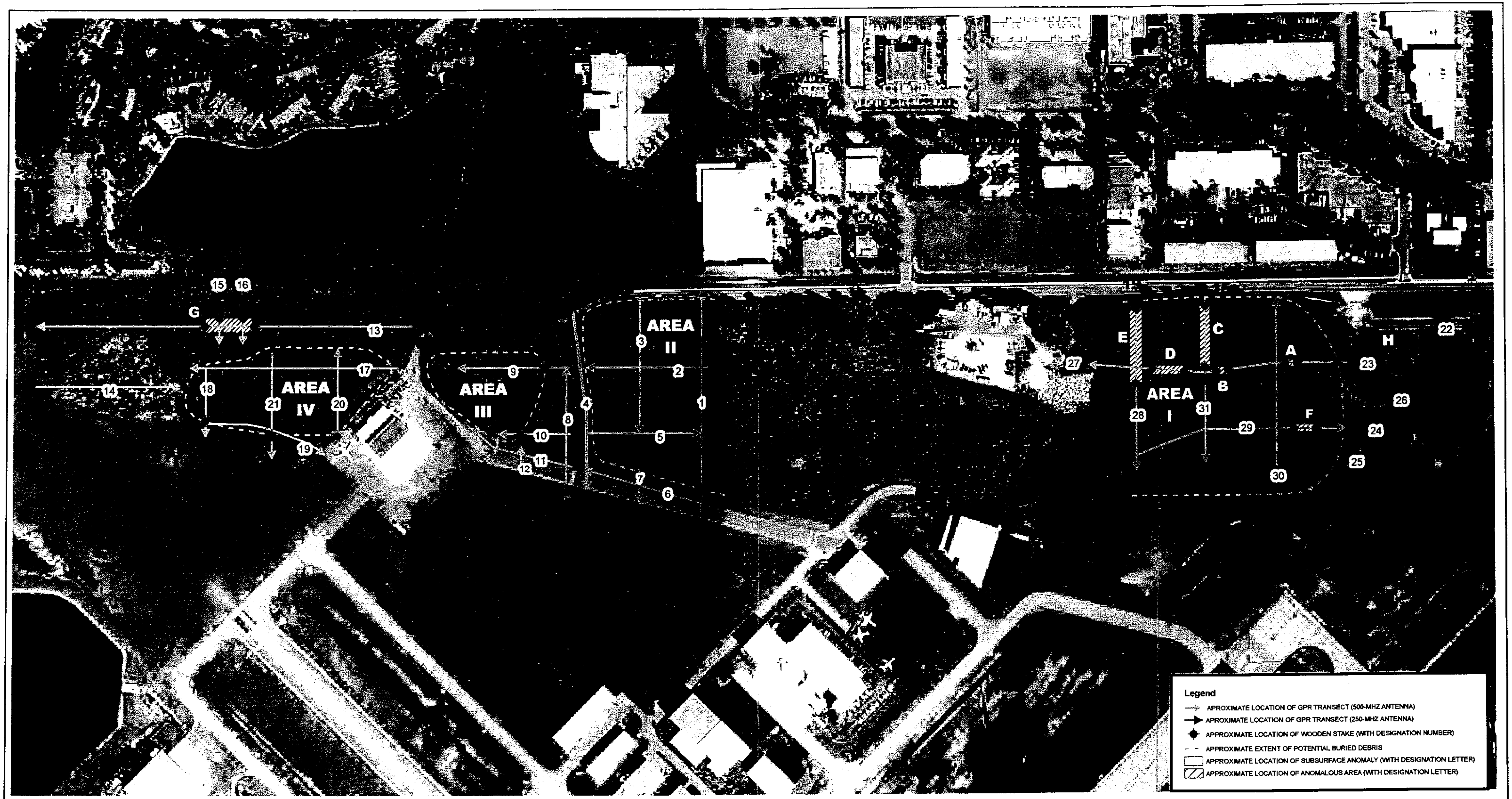
# NAPLES AIRPORT
## GPR SITE PLAN
NAPLES, COLLIER COUNTY, FLORIDA

**PLATE 1**



REFERENCE: THE AERIAL PHOTOGRAPH WAS OBTAINED FROM LABINS (2004 DOQQ 1MT REST).

SCALE 1: 3,500
1 INCH = 200 FEET

0 100 200 400 600 800 1,000 Feet

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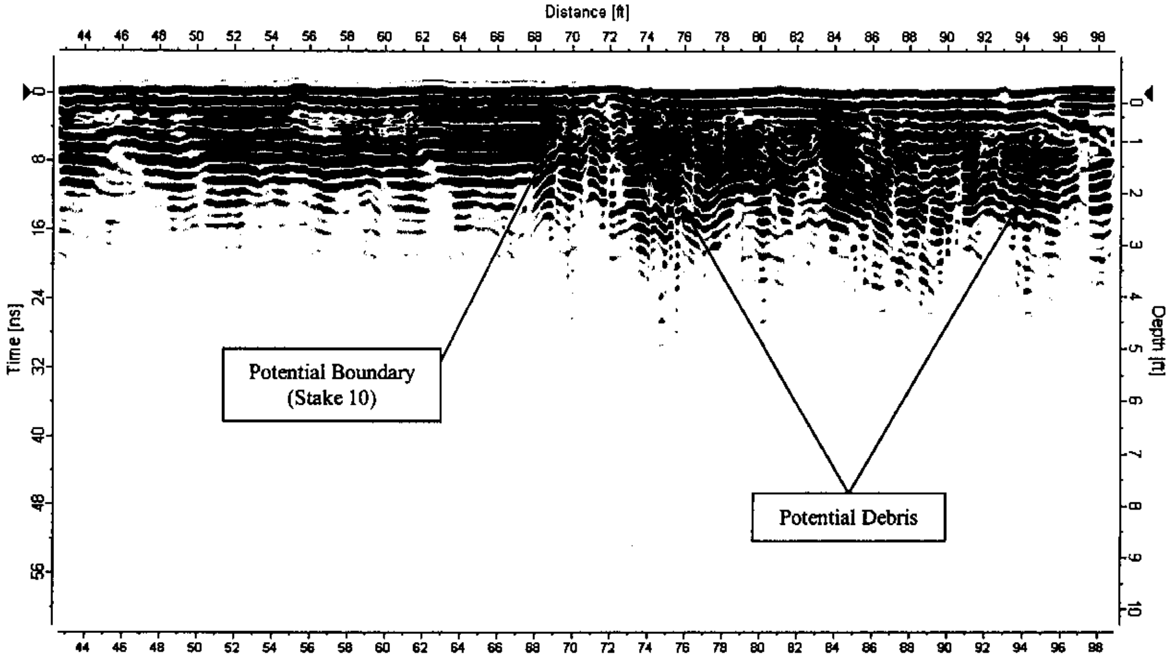
# NAPLES AIRPORT
## GPR SITE PLAN
NAPLES, COLLIER COUNTY, FLORIDA

**PLATE 1**

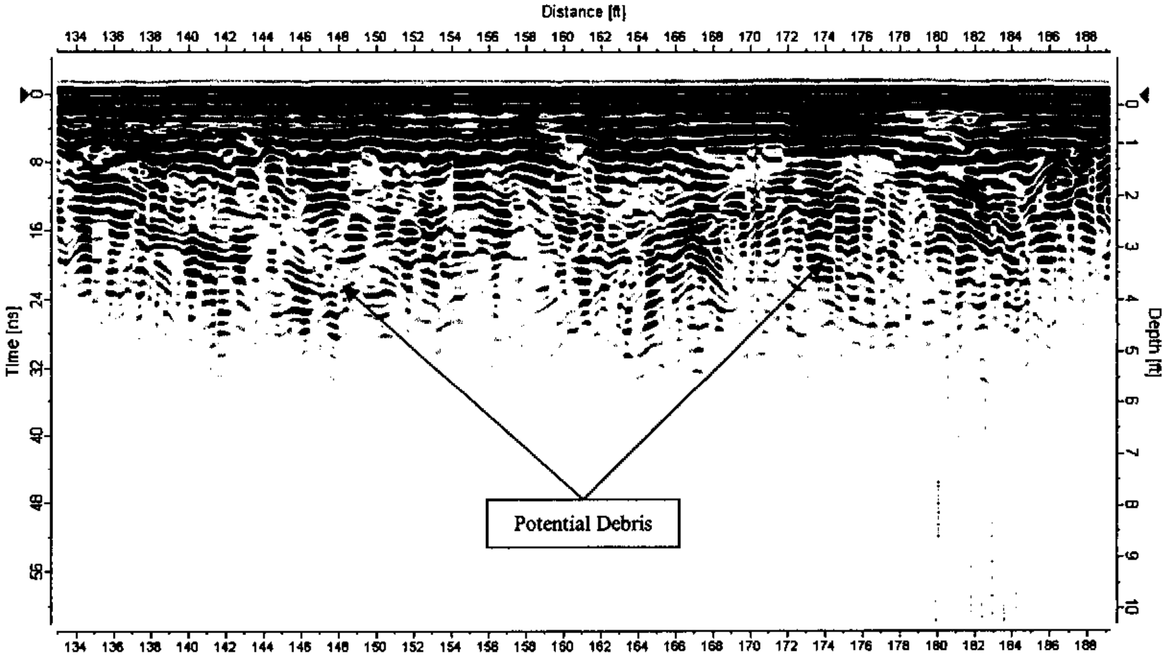
# Appendix B



Potential Boundary (Stake 10)

Potential Debris

Figure 1: GPR profile of potential landfill boundary (Transect 27)



Potential Debris

Figure 2: GPR profile of potential buried debris within landfill (Transect 27)

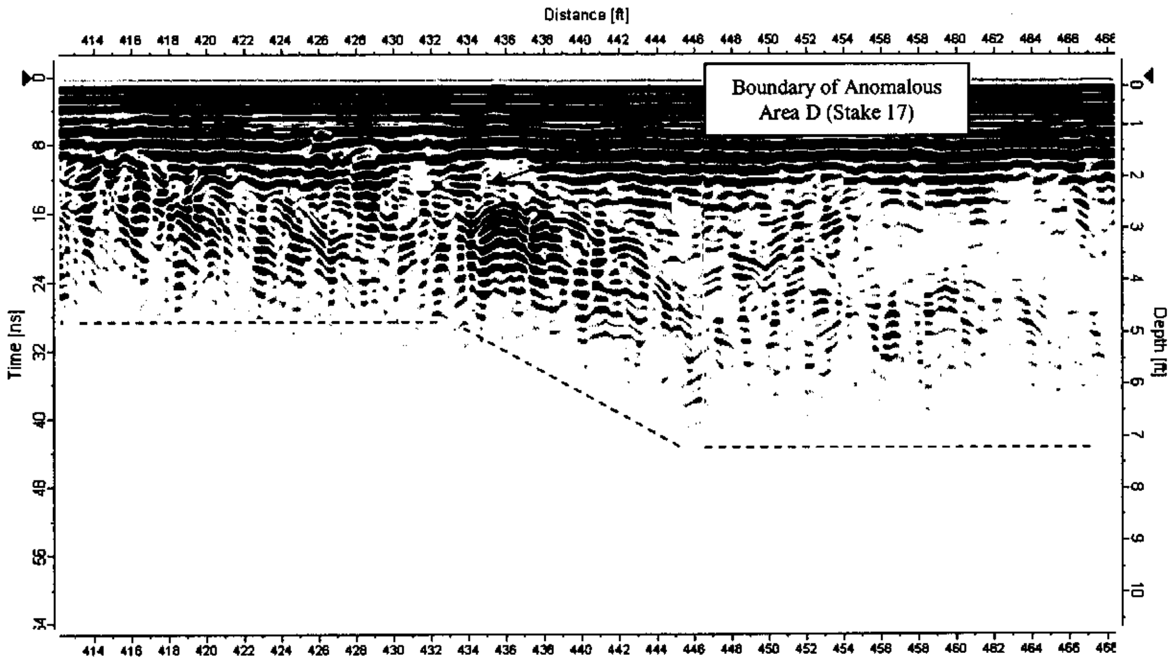


Figure 3: GPR profile of anomalous area within potential landfill (Transect 27)

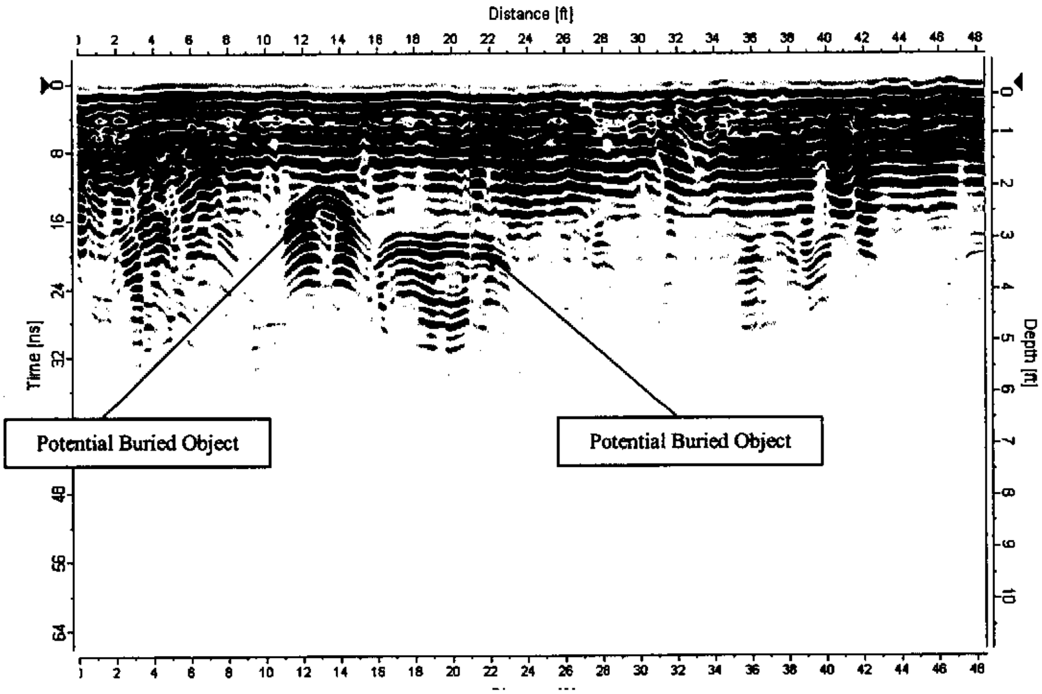


Figure 4: GPR profile of potentially buried objects within western portion of the site (Area G; Transect 16)

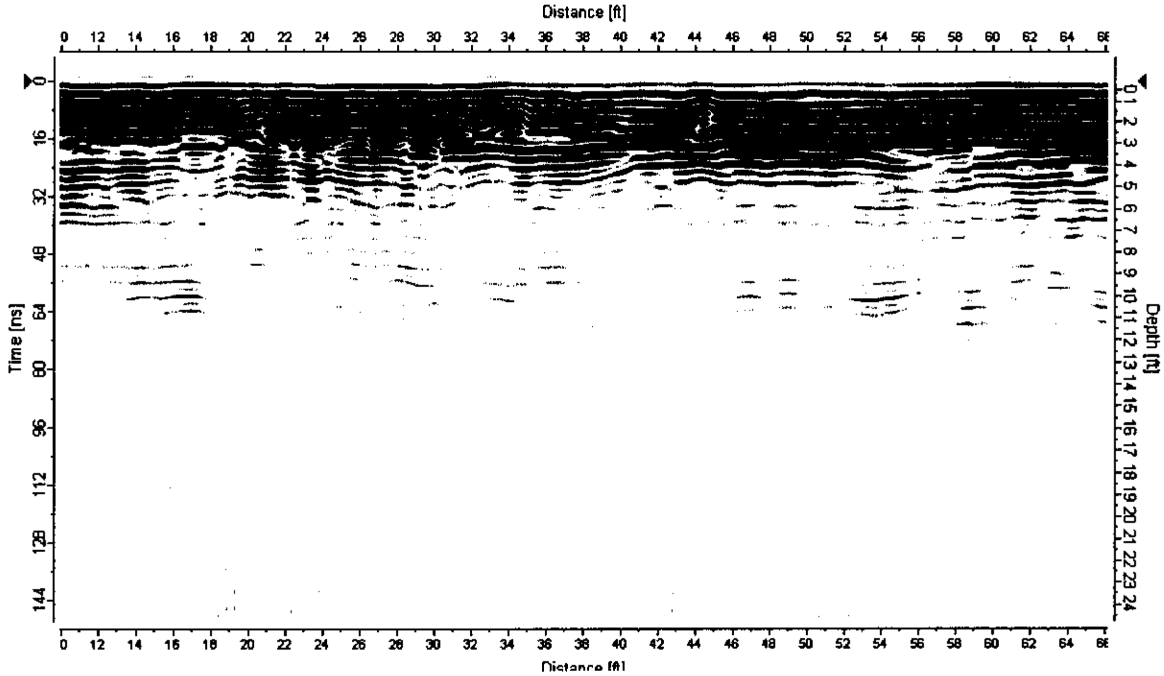


Figure 5: GPR profile of typical subsurface conditions within the easternmost portion of the site (Transect 26)

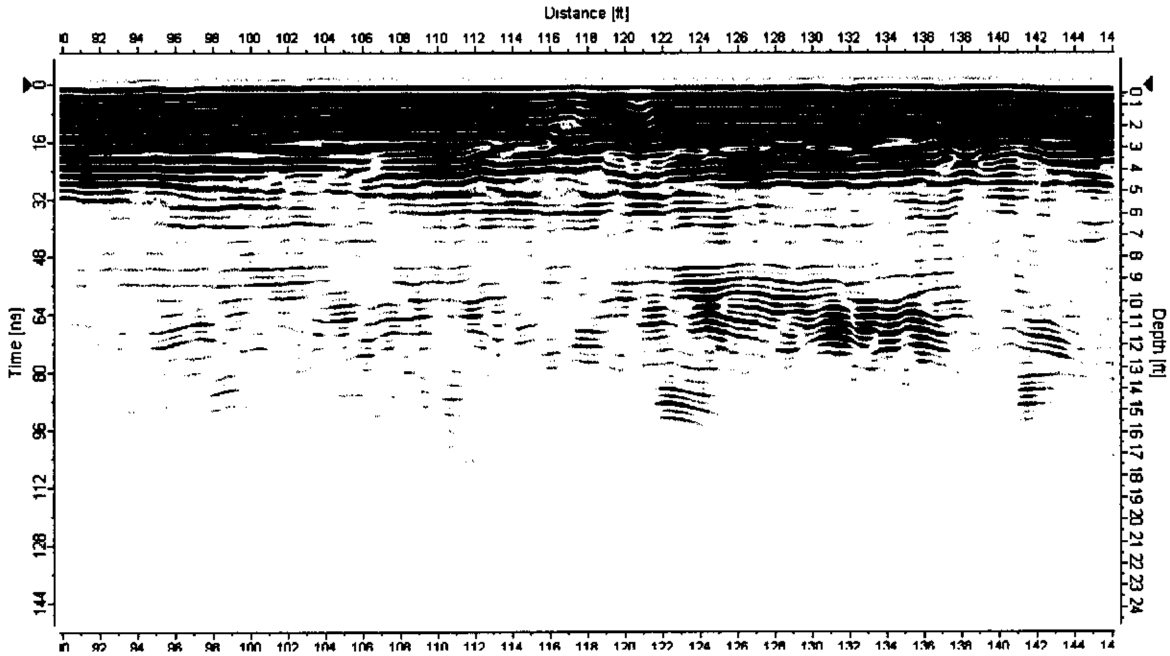


Figure 6: GPR profile of anomalous area within easternmost portion of the site (Area H; Transect 26)

# APPENDIX C

# RESEARCH DOCUMENTS

# Appendix C

## Description

Ground Penetrating Radar (GPR) is a high-resolution non-intrusive geophysical method used to provide a two-dimensional profile of the shallow subsurface. GPR equipment typically consists of an antenna, a radar control unit and a digital recorder. The antenna acts as both a transmitter and a receiver of energy waves, the radar control unit synchronizes the rate at which the waves are propagated into the subsurface and received by the antenna and the digital recorder stores the data. Professional Service Industries (PSI) Inc. uses the MALA RAMAC X3M GPR system with shielded 250-megahertz (MHz) and 500-MHz antennas.

## Theory

While conducting a GPR survey, the antenna converts electric current into electromagnetic waves and then radiates those waves into the subsurface. As the electromagnetic waves (typically from 10-MHz to 1,000-MHz) travel downward into the subsurface, the waves encounter material materials that exhibit varying dielectric permitivities. Dielectric permitivity is a measure of a materials ability to polarize itself when inflicted with an electrical charge. Differences in dielectric permitivities within the subsurface will reflect or scatter part of the electromagnetic wave that is propagating downward. The electromagnetic waves that are reflected back to the surface are received by the antenna and stored by the digital recorder. The remaining non-reflected electromagnetic waves continue to travel downward until other dielectric permitivity contrasts are encountered and the previously mentioned process records those reflected waves as well.

The attenuation of the electromagnetic wave and the frequency of the antenna principally control the depth of penetration for a GPR survey. Attenuation describes how energy is lost or dissipated and is predominantly the result from conversion of the electromagnetic wave to thermal energy (heat) due to relatively high conductivities of certain materials within the subsurface. Consequently, complete dissipation of an electromagnetic wave signifies the extent of penetration depth. Hence, shorter wavelengths emitted by higher frequency antennas (1,000-MHz) have considerably less penetration depth.

Dependent upon the specific goals of a particular survey, the desired resolution must also be considered. As previously mentioned, lower frequency antennas provide much greater depth of penetration, but at the cost of resolution. Lower frequencies from a 10-MHz antenna only obtain resolution of approximately three feet, while higher frequencies from a 1,000-MHz antenna may obtain resolution of an inch.

## Data Acquisition

The acquisition of GPR data is obtained along inline surveys called transects and represents an individually measured and recorded subsurface two-dimensional profile. The survey configuration itself consists of a set of perpendicular transects in order to delineate the typical asymmetry of subsidence related features. Surveys requiring more detail are conducted with 10-foot grid spacing up to 50-foot grid spacing when a general overview is desired. When initial observations indicate a potential subsurface feature, additional transects with closer grid spacing are often executed to acquire greater detail. Each configuration is site specific and limited to the logistical constraints dictated by the property.

## Limitations

While due care has been exercised in the performance of the measurements and their interpretations, PSI can make no representations, warranties or guarantees with respect to latent or concealed conditions, which may exist and that may be beyond the limits of detection with the methods used.

The most predominant limitation for detection is controlled by the dielectric permitivity of the subsurface material. GPR records electromagnetic waves reflected back to the surface when an interface with distinct dielectric permitivity differences is encountered. If there is no significant contrast between materials, a subsurface feature may go undetected. Alternatively, attenuation from near-surface clays and/or fluids with extremely high dielectric permitivity may considerably hinder or prohibit the desired depth of penetration. In addition, GPR is sensitive to local noise such as buildings, vehicles, power lines and cell phones. Shielded antennas are used to limit these particular types of interference.

# APPENDIX C

# REPORT OF PRELIMINARY GEOTECHNICAL EXPLORATION

Information To Build On
Engineering • Consulting • Testing

# REPORT OF PRELIMINARY GEOTECHNICAL EXPLORATION

For the

CITY OF NAPLES AIRPORT EXPANSION
POTENTIAL LEASE SITES EAST AND WEST OF THE
COLLIER COUNTY RECYCLING FACILITY
NAPLES, FLORIDA

Prepared for

**City of Naples Airport Authority**
**160 Aviation Drive North**
**Naples, Florida 34104-3568**

Prepared by

**Professional Service Industries, Inc.**
**5801 Benjamin Center Drive**
**Suite 112**
**Tampa, Florida 33634**
**Telephone (813) 886-1075**
**Fax (813) 888-6514**
**Engineering Business No. 3684**

**PSI Project No. 552-5G141**

**October 18, 2005**

Ruben Sosa, Jr., P.E.
Project Engineer
Florida License No. 61847

10/18/05

Martin E. Millburg, P.E.
Geotechnical Department Manager
Florida License No. 36584

psi Information To Build On
Engineering • Consulting • Testing

October 18, 2005

City of Naples Airport Authority
160 Aviation Drive North
Naples, Florida 34104-3568

Attention: Mr. Ervin Dehn, Jr.
Director of Planning and Engineering

Re: Report of Preliminary Geotechnical Exploration Results
City of Naples Airport Expansion
Potential Lease Sites East and West
of the Collier County Recycling Facility
Naples, Florida
**PSI Project No. 552-5G141**

Dear Mr. Dehn:

Thank you for choosing Professional Service Industries, Inc. (PSI) as your consultant for the referenced project.

Per your authorization, PSI has completed a preliminary geotechnical engineering study for the referenced project. The results of the study are discussed in the accompanying report.

Should there be any questions, please do not hesitate to contact our office at (813) 886-1075. PSI would be pleased to continue providing geotechnical services throughout the implementation of the project, and we look forward to working with you and your organization on this and future projects.

Respectfully submitted,

**Professional Service Industries, Inc.**

Martin E. Millburg, P.E.
Geotechnical Department Manager
Florida License No. 36584

P:\775-Geo\2005\55256 City of Naples Airport Expansion\77555256g01.doc

Enclosures

Professional Service Industries, Inc. • 5801 Benjamin Center Drive, Suite 112 • Tampa, FL 33634 • Phone 813/886-1075 • Fax 813/888-6514
FL Engineering Business 3684

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## LIST OF PLATES

# 1.0 PROJECT INFORMATION

## 1.1 PROJECT AUTHORIZATION

Authorization to proceed with this project was provided on August 17, 2005 by Mr. Ervin N. Dehn, Jr., Director of Engineering and Planning for the Naples Airport Authority, in the form of written agreement to PSI's proposal. This study was conducted in accordance PSI Proposal No. 775-5G0258-R dated June 30, 2005.

## 1.2 PROJECT DESCRIPTION

Briefly, we understand there is interest in developing approximately 20 acres of land located east and west of the existing Collier County Recycling Facility and north of the Naples Airport in Naples, Florida. According to historical information and our experience in the project vicinity, this site encompasses areas containing buried debris. The exact type and location of the development is yet to be determined.

No services were requested or provided regarding existing structures on site. If any of this information is incorrect or incomplete, please contact us at your earliest convenience.

## 1.3 PURPOSE AND SCOPE OF WORK

This study was conducted to obtain information on the general subsurface conditions at the proposed project site for the primary purpose of obtaining preliminary geotechnical information to be used in the planning and budgeting of the proposed development. In this regard, engineering assessments and design parameters for the following items were formulated:

- Subsurface conditions encountered
- Evaluation of the data as it relates to the proposed site development
- Preliminary site preparation recommendations, including placement and compaction of fill soils
- Preliminary geotechnical recommendations to support foundation and pavement design
- Observed geotechnical conditions which could impact development
- Observed and estimated seasonal high groundwater levels at the boring locations

The following services have been provided in order to achieve the preceding objectives:

1. Reviewed readily available published topographic and soils information. This published information was obtained from the "Naples North, Florida." Quadrangle Map published by the United States Geological Survey (USGS) and the "Soil Survey of Collier County, Florida" published by the

United States Department of Agriculture (USDA) Soil Conservation Service (SCS).

2. Executed a program of subsurface exploration consisting of subsurface sampling and field testing.

3. Collected groundwater level measurements and estimated seasonal high groundwater levels at the boring locations.

4. Visually classified representative soil samples in the laboratory using the Unified Soil Classification System (USCS). Conducted a limited laboratory testing program. Identified soil conditions and formed an opinion of the soil stratigraphy at each boring location.

5. The results of the field exploration have been used in the engineering analysis and in the formulation of the recommendations. The results of the subsurface exploration, including the recommendations and the data on which they are based, are presented in this geotechnical report.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands or hazardous or toxic materials. Any statements in this report or on the boring logs regarding odors, unusual or suspicious items or conditions are strictly for the information of our client.

## 2.0 SITE DESCRIPTION AND PUBLISHED INFORMATION

### 2.1 SITE DESCRIPTION

The site is located immediately north of the Naples Airport and is bordered by Enterprise Avenue and two large ponds to the north, Airport Pulling Road to the east and undeveloped land to the west. The majority of the property is undeveloped, currently vacant and primarily comprised of dense mature trees and some open grassed areas.

For the purposes of discussion, the subject area was divided into four zones. Zone I is located near the approach to runway 23 and extends to the proposed eastern boundary of the Collier County Recycling Center. Zone II, not included in this evaluation, consists of approximate 20 acres for the proposed Collier County Recycling Center. Zone III extends from the west side of the proposed recycling center to Patriot Way. Zone IV is located west of Patriot Way.

### 2.2 PUBLISHED INFORMATION

The "Soil Survey of Collier County, Florida" published by the United States Department of Agriculture (USDA) Soil Conservation Service (SCS) was reviewed for general near surface soil information prior to development. This information indicates the primary mapping units are Immokalee fine sand (7), Hallandale fine sand (11), Basinger fine sand (17), and Urban Land/Urban land-Immokalee-Oldsmar, limestone substratum, complex (32/34).

Immokalee fine sand (7) and Basinger fine (17) sand are nearly level, poorly drained soils. The typical profile of these soils is fine sands of varying colors extending from the ground surface to a depth of 80 inches or more. The seasonal high groundwater level for these soils ranges from 6 to 18 inches of the ground surface.

Hallandale fine sand (11) is a nearly level, poorly drained soil. The typical profile for this soil is fine sands of varying colors extending from the ground surface to a depth of approximately 12 inches underlain by limestone. The seasonal high groundwater level for this soil is usually at a depth ranging from 6 to 18 inches below the ground surface.

Urban Land/Urban land-Immokalee-Oldsmar, limestone substratum, complex (32/34) consists of areas of Urban land and nearly level, poorly drained soils. The Urban land portion consists of commercial buildings, houses, parking lots, sidewalks, etc. which obscure the surficial soil conditions. The soil portions of the complex typically consist fines sands of varying colors to a depth of approximately 50 inches. Below is either fine sand or fine sandy loam underlain to a depth of about 60 inches underlain by either fine sands to 80 inches or limestone strata. The seasonal high groundwater level for this soil complex typically ranges from 6 to 18 inches below the ground surface.

The project is located in Section 35, Range 26 East, and Township 49 South. Based on the "Naples North, Florida" USGS topographic map, the natural ground surface occurs at an approximate elevation of +5 feet, based on the National Geodetic Vertical Datum (NGVD) of 1929. This elevation does not agree with currently existing grades and appears to have been measured prior to the placement of the encountered buried debris.

## 3.0 FIELD SERVICES AND SUBSURFACE CONDITIONS

### 3.1 SUBSURFACE EXPLORATION

Subsurface conditions were explored using eight (8) Standard Penetration Test (SPT) borings and eighteen (18) test pits performed within the proposed development areas. The SPT borings were advanced utilizing rotary mud drilling methods to an approximate depth of 35 feet below existing grades. Samples were collected and SPT resistances were measured virtually continuously in the upper 10 feet and on intervals of 5 feet thereafter. Drilling and sampling techniques were accomplished in general accordance with ASTM standards.

The test pits were performed with a backhoe to depths of 1 to 20 feet below the existing ground surface. At regular intervals representative samples were taken from each apparent soil layer.

The boring and test pit depths were recorded from existing ground surface. The boring and test pit depths and locations were established by PSI based on aerial photographs and were located in the field by PSI personnel measuring distances from existing features. Accordingly, the boring and test pit locations are considered approximate. The approximate boring locations are presented on Plate 1 in Appendix C-1.

Select soil samples were transported to our soils and materials testing laboratory for further evaluation. Visual classifications were performed in general accordance with the Unified Soil Classification System (USCS) and are shown on the soil profiles presented on Plates 2 through 5 in Appendix C-1.

### 3.2 GROUND PENETRATING RADAR

A limited Ground Penetrating Radar (GPR) survey conducted at the subject site in Collier County, Florida on August 30 and 31, 2005. The GPR survey was performed to assess the subsurface in an attempt to locate buried debris and/or borrow pits prior to the soil borings. The GPR survey and test pit data were utilized in selecting the locations of the soil borings.

Four (4) areas potentially associated with buried debris were identified during the GPR survey within Zones I, III and IV. These areas were further explored using the soil borings and test pit excavations described herein. A report presenting the findings of the limited GPR survey performed for the subject site along with a discussion of GPR theory and limitations is included as Appendix B in the main report.

### 3.3 SUBSURFACE CONDITIONS

The SPT borings and test pits generally encountered debris-laden material from the ground surface to depths ranging from 1 to over 20 feet below existing grades. The debris included general trash, paper, metal, concrete, wood, plastic, glass, rubber and rock intermixed, in some cases, with layers of clean to silty fine sands (SP/SP-SM/SM). The debris consistency was highly variable with relative densities ranging from very loose to dense with SPT resistances (N-Values) of 1 to 38 blows per foot. Drilling fluid circulation was lost within this debris layer in many of the SPT borings potentially indicating subsurface voids. The debris-laden materials were typically underlain by calcareous clay with completely weathered limestone (CL) found to be generally continuous to the boring termination depth of 35 feet below existing grade. Elevations shown on the profiles were obtained through interpolation using topographic information provided by Rhodes and Rhodes, Inc., Professional Land Surveyors (PLS).

The above description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The soil profiles included on Plates 2 through 5 in Appendix C-1 should be reviewed for specific information at individual boring and test pit locations. These profiles include soil description, stratification, and sample spoon penetration resistances. The stratification shown on the boring profiles represents the conditions only at the actual boring and test pit locations.

Variations may occur and should be expected between boring and test pit locations. The stratification represents the approximate boundary between subsurface materials and the actual transition may be gradual.

### 3.4 GROUNDWATER INFORMATION

At the time of drilling, the ground water was encountered at depths ranging from the existing ground surface to over 14 feet below at the boring and test pit locations. This wide range of measured groundwater levels is likely due to the variability in the subsurface profile and topographic differences across the subject property.

It should be noted that groundwater levels tend to fluctuate during periods of prolonged drought and extended rainfall and may be affected by man-made influences. In addition, a seasonal effect will also occur in which higher groundwater levels are normally recorded in rainy seasons. The seasonal high depth to groundwater at this site is estimated to be 3 feet higher than the depths recorded in the borings. We recommend that the contractor determine the actual groundwater levels at the time of the construction to determine groundwater impacts on the construction procedures.

## 4.0 EVALUATION AND RECOMMENDATIONS

### 4.1 GENERAL

Old fill consisting of general trash, paper, metal, concrete, wood, plastic, glass, rubber and rock was encountered in the soil borings and test pits ranging from 1 to over 20 feet below existing grades. The encountered buried debris was in various stages of consolidation and decomposition with relative densities ranging from very loose to dense. Subsurface voids indicated by the loss of drilling fluid circulation were evident. Zone I appeared to have the largest volume of buried debris with measured thicknesses greater than 10 feet over most of the area. Zone III appeared to have buried debris that was less than 10 feet in thickness in the southwest portion and over ten feet in thickness in the northeast portion. Based on the data, Zone IV had the least amount of buried debris with measured thicknesses generally less than 10 feet.

If these data are representative of buried debris encountered throughout the subject property, there is risk of structurally significant settlement and cracking foundations and floors supported on this material. Therefore, there are four possible options.

1. Relocate the facility to a site free of buried debris.
2. Remove the buried debris and build on structural fill placed in the resulting excavations

3. Design and construct the buildings and floors to be supported on piles and/or other deep foundations extended through the buried debris into the underlying limestone.

4. Deep Dynamic Compaction to reduce the expected settlement from the buried debris and use conventional foundations and floor slabs.

Option 2 above may be feasible but will also be expensive and will need to be compared to other options based on the amount of material that will need to be relocated. Based on the borings it appears there is reasonably competent natural soils near the original ground surface below the buried debris. It may be possible to remove the buried debris down to the natural soils by relocating excavated deleterious materials to another area of the site. If the buried debris is removed and replaced with compacted structural fill, then conventional foundations and floor slabs could be used at the site. Furthermore, it may also be possible to screen the buried debris to recover sands and materials that can be used as structural fill.

Option 3 will be very costly and, in our opinion, is cost prohibitive for the expected development (i.e. structures that are typically constructed using shallow foundations).

Option 4 appears to be the most cost effective process for areas of the site with the greatest volume of buried debris. Deep Dynamic Compaction (DDC) involves using a crane to raise a 14 to 16 ton weigh 40 to 60 feet in the air and free dropping the weight which then compresses the materials. The weight is dropped on a grid pattern to cover more than 50% of the area. The craters are then filled with sandy soils which are compacted using a heavy vibrating roller.

DDC has been used on similar sites in the past with good success by reducing post-construction settlement. However, it must be understood that this option does not remove the possibility of future settlement of the organic components of the buried debris due to decomposition.

The recommendations and conclusions presented below should be considered preliminary in nature since the development type, structure locations and loads were not available at the time of this report. When this information is developed, more borings should be performed at specific depths and locations so that detailed site preparation, foundation design, and pavement design recommendations can be provided for the proposed development. Furthermore, these recommendations do not consider any environmental engineering controls that may be required with regards to adverse environmental and/or public health impacts associated with the buried debris.

It is noted that there are specific regulatory requirements with regards to the construction on or disturbance of former solid waste or buried landfill areas. PSI recommends seeking legal assistance with regard to the potential applicability of the rule for this property. Depending on the applicability of the rule and quantities and types of material identified, on-site additional testing and reporting may be required.

In either case, support of the proposed pavement and floor slabs will be problematic. In the case of a deep foundation system, the floor slab can also be structurally supported by a deep foundation. If substandard pavement and slab performance can be tolerated, the areas can be supported by a reworked upper four feet of soil. This would still require some excavation of debris and old fill materials. We strongly recommend additional subsurface data be obtained prior to the award of the construction contract. The additional information can be obtained by excavating observation pits across the proposed building pavement areas to better define the extent and composition of the old fill.

## 4.2 PAVEMENT RECOMMENDATIONS

Prior to construction of a flexible (limerock, crushed concrete, or shell base) or rigid (Portland cement) type pavement section, appropriate subgrade preparation will be required as follows:

1. It is recommended that areas of proposed pavements should be undercut at least 2 feet. The resulting excavation should be proof-rolled with a heavy vibratory roller. At least 4 roller passes in each direction using a 10 ton or heavier vibratory roller should be used for the proofrolling.

2. It is recommended that an appropriately selected high-strength biaxial geotextile be installed in the under-cut pavement areas prior to fill placement to reduce localized differential settlement following pavement construction. It must be understood that the underlying buried debris may have areas where decomposition may result in future pavement settlement resulting in increased pavement maintenance. If increased future pavement settlement can not be tolerated, then all buried debris within proposed pavement areas should be removed and replaced with compacted structural fill prior to the implementation of the following pavement recommendations.

3. Following satisfactory completion of the proofrolling and geotextile installation, the pavement areas may be brought up to finished subgrade levels using structural fill. Imported structural fill should consist of fine sand with less than 15% passing the No. 200 sieve, free of rubble, organics, clay, debris and other unsuitable material. Fill should be tested and approved prior to acquisition. Structural fill should be placed in loose lifts not exceeding 12 inches in thickness and should be compacted to a minimum density of 95% of the modified Proctor maximum dry density. Density tests to confirm compaction should be performed in each fill lift before the next lift is placed. It is possible that the sand and gravel portions of the existing buried debris can be used as structural fill following the removal of any deleterious materials.

Any fill utilized to elevate the cleared pavement areas to subgrade elevation should consist of clean to slightly silty fine sands (SP/SP-SM) uniformly compacted to a minimum density of 95 percent of the modified Proctor maximum dry density (ASTM D-1557) up to a level representing 12 inches below the pavement section. The upper 12 inches of subgrade immediately beneath the pavement section should be compacted to a density of no less than 98% of the modified Proctor value and should have an LBR of 40%.

### 4.2.1 Base

The choice of pavement base type basically will depend on final pavement grades. If a minimum separation of 18-inches between the bottom of the base and the normal seasonal high groundwater level is maintained, then a limerock, or bank-run shell base can be utilized; otherwise, crushed concrete would be required.

Limerock, bank-run shell base and crushed concrete base materials should meet FDOT requirements including compaction to 98% of its maximum dry density as determined by the modified Proctor test (ASTM D-1557) and a minimum LBR of 100%. Crushed concrete should be graded in accordance with FDOT Standard Specification Section 204.

Based on the expected traffic conditions, we recommend that the base course be a minimum of eight (8) inches thick. The subgrade should be firm and true to line and grade prior to paving. Traffic should not be allowed on the subgrade as the base is placed to avoid rutting.

### 4.2.2 Asphaltic Concrete Pavement

Based on the results of our evaluation, it is recommended that the total asphaltic concrete thickness consist of Type S-1 asphaltic concrete material with a minimum thickness of 1½ to 2 inches after placement. The asphaltic concrete should meet standard FDOT material requirements and placement procedures as outlined in the current FDOT Standard Specifications for Road and Bridge Construction. The asphaltic concrete should be compacted to a minimum of 96% of the Marshall maximum laboratory unit weight.

### 4.2.3 Rigid Concrete Pavement

Rigid (concrete) pavements could also be used. The concrete should have a minimum compressive strength of 4000 psi at 28 days when tested in accordance with ASTM C-39. Based on our experience, a minimal thickness of 7 inches should be utilized. The steel reinforcement within the concrete pavement should be designed by the civil engineer. The subgrade soils should be compacted to a minimum density of 98% of the modified Proctor maximum dry density (ASTM D-1557).

All pavement materials and construction procedures should conform to Florida DOT or appropriate city and/or county requirements.

## 4.3 COMPLETE REMOVAL OF BURIED DEBRIS

To reduce the potential of poor structural performance, debris-laden soils should be completely undercut and removed. The final disposition of the undercut debris-laden materials is an environmental issue and beyond the scope of this geotechnical report. As mentioned above, additional environmental services are required to either remove the debris or build over it. The proposed building and pavement areas can then be supported by spread footings and floor slab constructed on the compacted structural fill. For budgeting purposes a net allowable bearing pressure of 2,500 psf can be used for sizing foundation elements to support reasonably light structural loads (less than 100 kips for individual columns and less than 4 kips per lineal foot for load bearing walls). The depth to groundwater will present additional problems with the replacement of undercut materials. Some form of dewatering will be required to achieve adequate compaction of the structural fill placed in the resulting excavations. Dewatering can be very expensive if the groundwater is contaminated from debris.

Removal of the old fill and debris can be costly; we recommend the client obtain environmental consulting services to determine the costs and process for removal of the old fill and debris. PSI should be retained to monitor the excavation of old fill materials to ensure all deleterious materials are removed. Following the complete removal of all old fill materials additional recommendations regarding site preparation and foundation construction can be provided.

## 4.4 DEEP FOUNDATIONS

A deep foundation system can be installed to support the proposed structure with grade beams and columns. If some risk of future slab cracking can be tolerated, the slab can be supported by a reworked upper five feet of fill. Otherwise, the floor slab also must be structurally supported by deep foundations.

There are several types of deep foundation commonly used in this geographic area. These include auger cast-in-place piles, drilled shafts and steel or concrete driven piles. The construction of auger cast piles and drilled shafts would still result in the removal of some old fill and debris due to the construction process. High SPT resistances or N-values were encountered within the debris-laden soils due to obstructions from the debris. Therefore it is possible high stresses and damage may result during the driving of concrete piling through this strata. The installation of auger-cast piles in debris areas is also problematic. Based on the limited subsurface information obtained from our soil borings, a steel pile foundation may be best suited for the site. Regardless of the foundation type, down-drag forces resulting in the compression of the debris may result and the piling would likely need to penetrate the hard limerock layer approximately 30 to 40 feet below the ground surface. The actual depth to hard limerock will require additional borings performed as part of a non-preliminary geotechnical evaluation.

The design of a deep foundation alternative is beyond the proposed project scope. Additional fees will be required to further evaluated foundation depths, capacities and types. Also, the anticipated structural loads will need to be provided by the project structural engineer.

## 4.5 DEEP DYNAMIC COMPACTION

Building areas and 10 feet outside the building areas should be improved using DDC. The DDC process should be performed on a grid pattern to cover more than 50% of the subject area. Depressed areas resulting from the DDC process should be filled with compacted structural fill material. The grades resulting from the DDC process should be such that a minimum separation of at least 12 inches is maintained between the buried debris and the bottom of building slabs and/or footings following the placement of compacted structural fill.

Following the DDC process, the proposed building areas can then be supported by spread footings and floor slab constructed on the compacted structural fill. For budgeting purposes a net allowable bearing pressure of 2,500 psf can be used for sizing foundation elements to support reasonably light structural loads (less than 100 kips for individual columns and less than 4 kips per lineal foot for load bearing walls).

It is noted that the future settlement of structures built upon DDC-improved buried debris will be dependent on the actual building loads and the final building locations. Furthermore, long term settlement resulting from the decomposition of the buried debris organic constituents is not known and will require further analysis following a final geotechnical exploration for the project.

## 4.6 STORMWATER PONDS

Based on our limited exploration the site is underlain by landfill type materials. Excavating these materials will be problematic as previously mentioned. Also, there may regulatory restrictions associated with discharging stormwater into an existing landfill. It may be required that the stormwater pond be lined and treatment provided through side drain filters inside the liner.

## 4.7 EXCAVATIONS

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, Part 1926, Subpart P". This document was issued to better insure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, basement excavations or footing excavations, be constructed in accordance with the most current OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractors "responsible person", as defined in 29 CFR, Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in all local, state, and federal safety regulations. We are providing this information solely as a service to our client. PSI does not assume responsibility for construction site safety or the contractor's or other party's compliance with local, state, and federal safety or other regulations.

## 5.0 REPORT LIMITATIONS

The Geotechnical Engineer warrants that the findings, recommendations, specifications or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

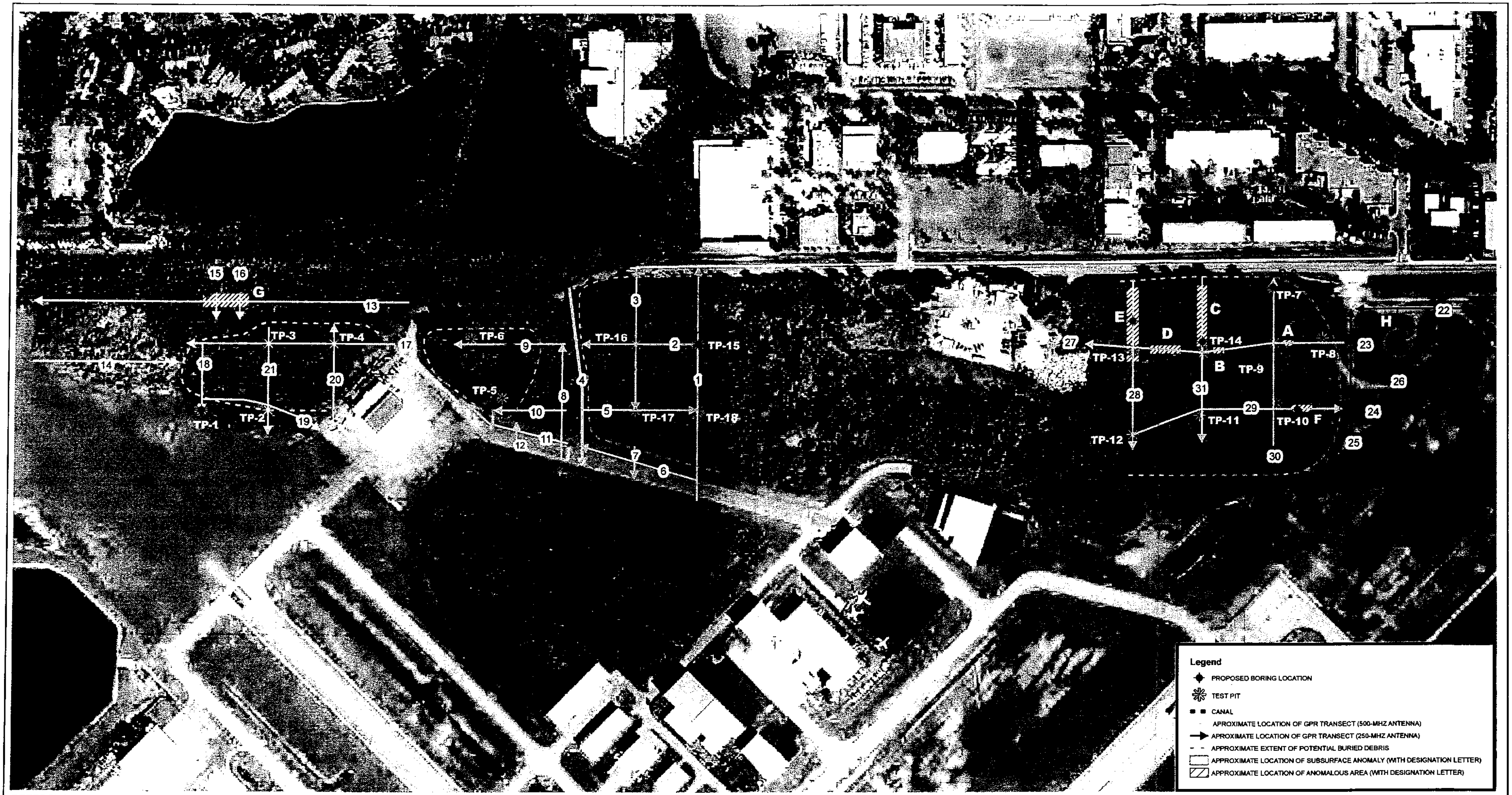
PSI did not provide any service to investigate or detect the presence of moisture, mold or other biological contaminant in or around any structure, or any service that was designed or intended to prevent or lower the risk of the occurrence of the growth of the same. Mold is common to the environment with mold growth occurring when building materials are impacted by moisture. Client acknowledges that site conditions are outside of PSI's control, and that mold growth will likely occur, or continue to occur, in the presence of moisture. As such, PSI cannot and shall not be held responsible for the occurrence or recurrence of mold.

The State of Florida is underlain by a soluble limestone formation. This limestone can dissolve, resulting in subsidence of overlying soils and the formation of sinkholes at the ground surface. PSI's geotechnical study did not include an evaluation of the relative potential for sinkhole development at this site.

The recommendations submitted are based on the available subsurface information obtained by PSI and design details furnished by the Naples Municipal Airport and its consultants for the proposed project. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the recommendations are required. If PSI is not retained to perform these functions, PSI will not be responsible for the impact of those conditions on the geotechnical recommendations for the project.

After the plans and specifications are more complete, the Geotechnical Engineer should be retained to perform a more detailed exploration and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At that time, it may be necessary to submit supplementary recommendations. This report has been prepared for the exclusive use of Naples Municipal Airport and its consultants for the specific application to the proposed Naples Airport Expansion in Collier County, Florida.

# APPENDIX C-1



REFERENCE: THE AERIAL PHOTOGRAPH WAS OBTAINED FROM LABINS (2004 DOQQ 1MT REST).

SCALE 1: 3,500
1 INCH = 200 FEET

0 100 200 400 600 800 1,000 Feet

PROJECT NO.
**552-5G141**

DRAWN BY
**PAV**

DATE CREATED
**10/06/2005**

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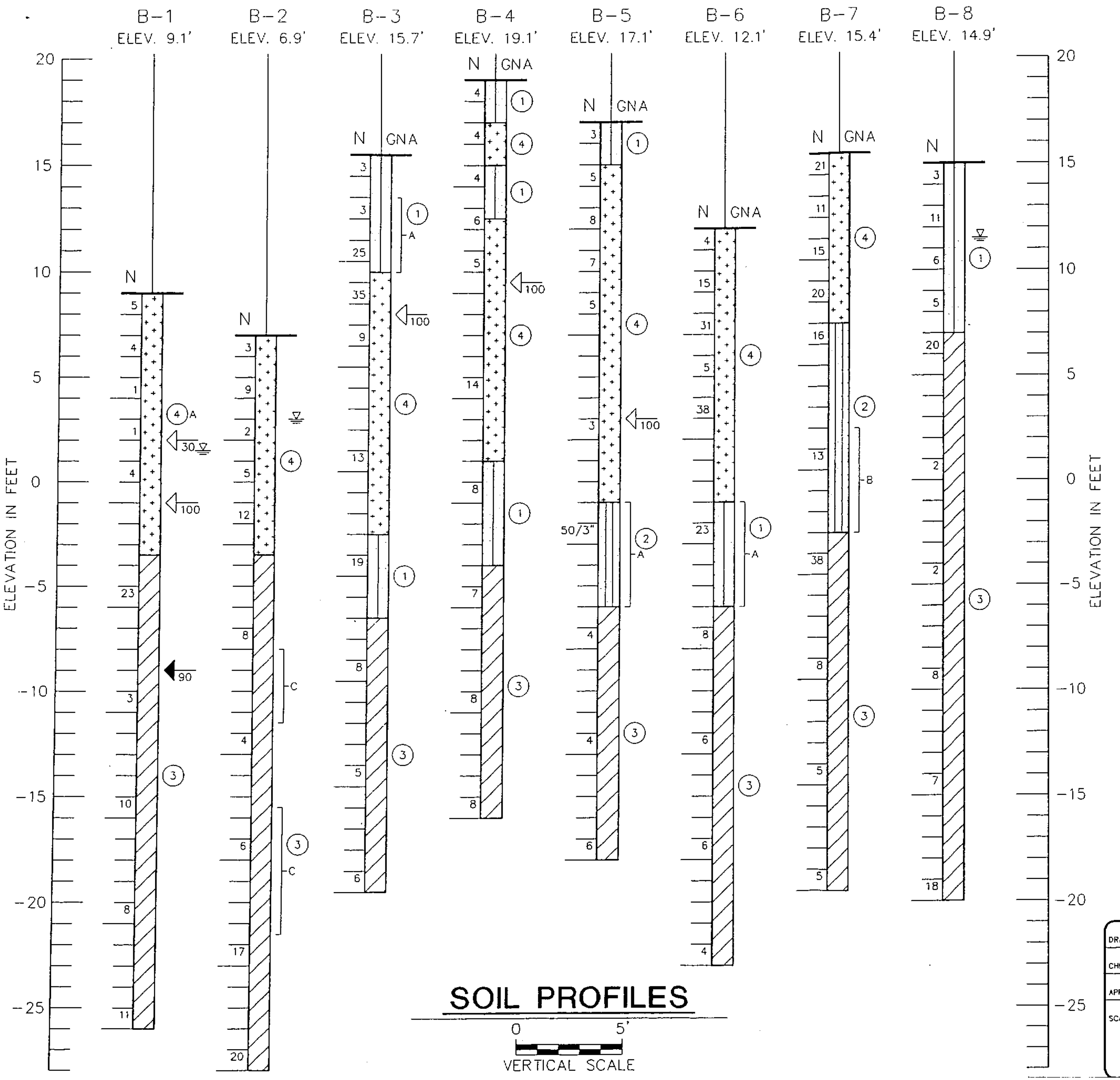
N
W E
S

# NAPLES AIRPORT

## BORING AND TEST PIT LOCATION PLAN

NAPLES, COLLIER COUNTY, FLORIDA



## SOIL PROFILES

0 5'
VERTICAL SCALE

## LEGEND

| | |
|---|---|
| ① | Grayish-brown and dark gray clean to slightly silty fine SAND (SP/SP-SM) |
| ② | Gray silty SAND (SM) |
| ③ | Tan calcareous CLAY with highly weathered limestone (CL) |
| ④ | Debris laiden fill materials: (consisting of paper, metal, wood, concrete, plastic, glass, rubber and rock) |
| ⑤ | Organic silty SAND with muck (SM/OL) |
| A | With rock fragments |
| B | With shell |
| C | With traces of debris |
| BLS | Below Land Surface |
| SP | Unified Soil Classification System (ASTM D 2487) group symbol as determined by visual review |
| N | SPT N-value in blows/foot |
| ⊽ | Groundwater level, September 2005 |
| GNA | Groundwater level not apparent |
| 50/6" | Fifty blows for six inches |
| ◁— | Loss of circulation (%) |
| ◀— | Recovery of circulation (%) |

NOTE: Elevations estimated using topographic information provided by Rhodes and Rhodes, Inc.

| | |
|---|---|
| DRAWN | AN |
| CHECKED | LTL |
| APPROVED | MEM |
| SCALE | NOTED |

GEOTECHNICAL SERVICES
**CITY OF NAPLES**
**AIRPORT EXPANSION**
NAPLES, COLLER COUNTY, FLORIDA

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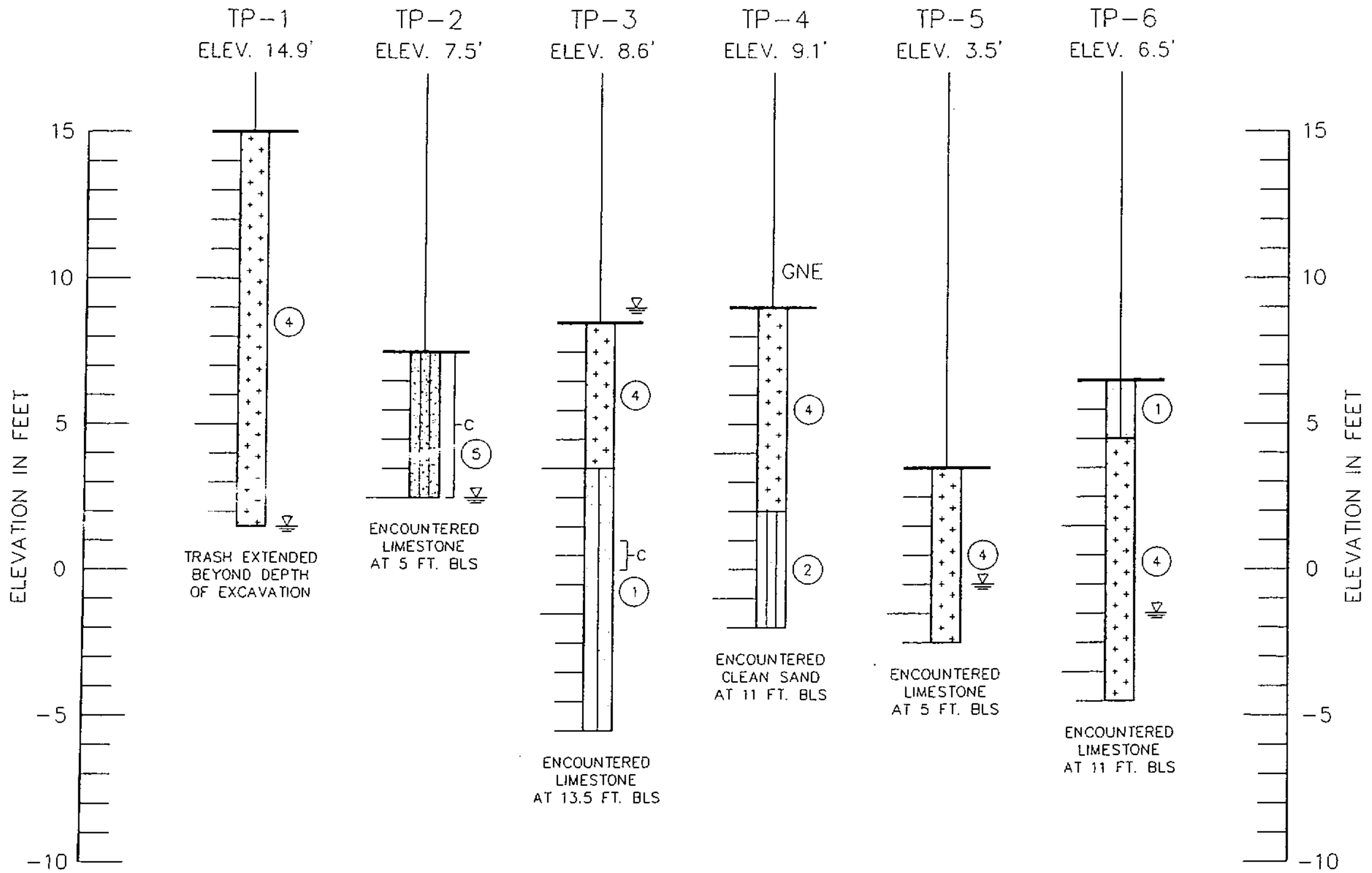
| DATE | PROJ. NO. | |
|---|---|---|
| SEP 05 | 552-5G141 | PLATE 2 |

P:\775-Geo\2005\55256 City of Naples Airport Expansion\5525Gs2



## SOIL PROFILES

0 5'
VERTICAL SCALE

## LEGEND

| | |
|---|---|
| ① ▯ | Grayish-brown and dark gray clean to slightly silty fine SAND (SP/SP-SM) |
| ② ▥ | Gray silty SAND (SM) |
| ③ ▨ | Tan calcareous CLAY with highly weathered limestone (CL) |
| ④ ⁘ | Debris laiden fill materials: (consisting of paper, metal, wood, concrete, plastic, glass, rubber and rock) |
| ⑤ ▥ | Organic silty SAND with muck (SM/OL) |
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| ◀— | Recovery of circulation (%) |

NOTE: Elevations estimated using topographic information provided by Rhodes and Rhodes, Inc.

| | |
|---|---|
| DRAWN | AN |
| CHECKED | LTL |
| APPROVED | MEM |
| SCALE | NOTED |

GEOTECHNICAL SERVICES
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NAPLES, COLLER COUNTY, FLORIDA

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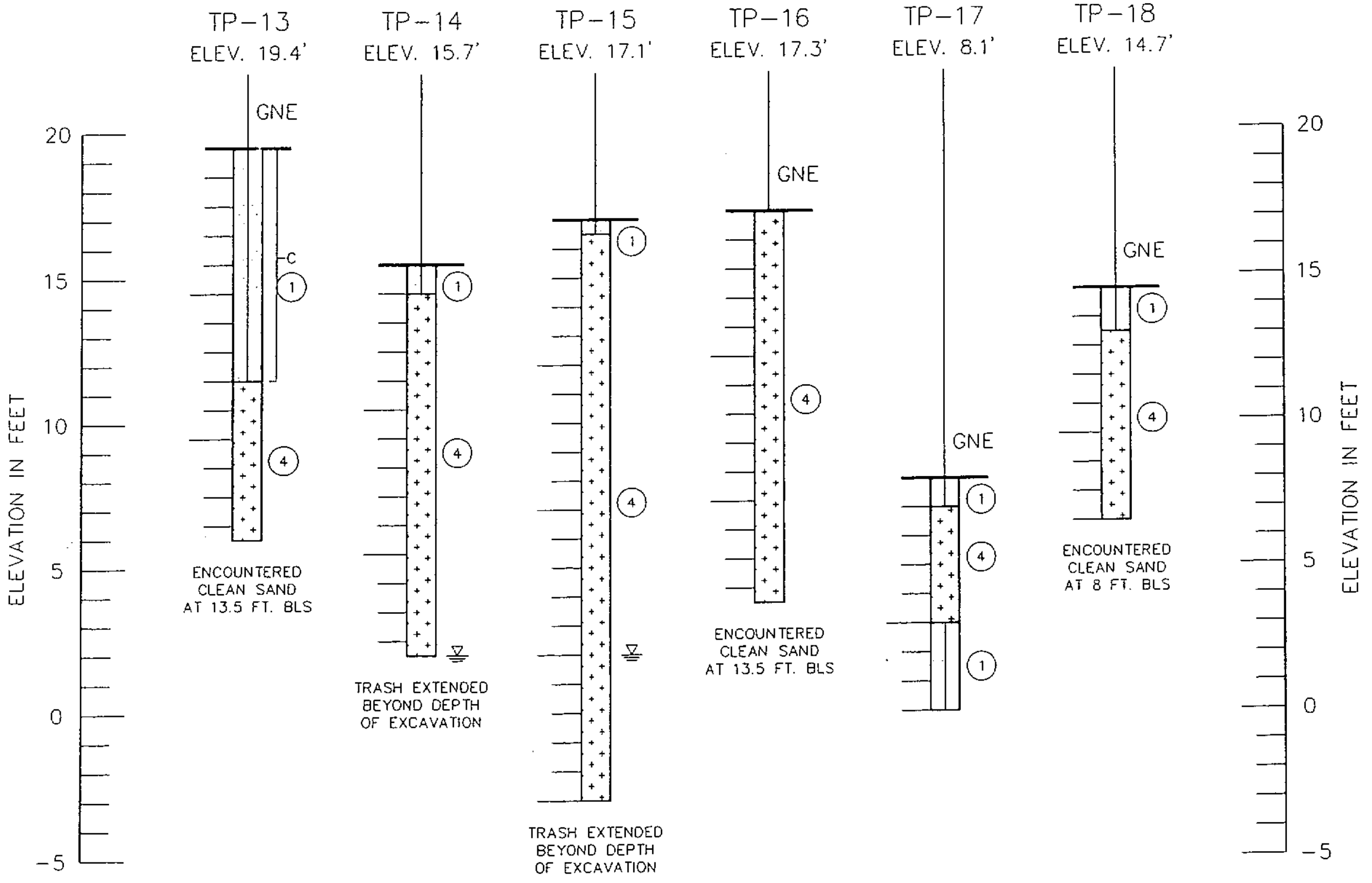
| | | |
|---|---|---|
| DATE SEP 05 | PROJ NO 552-5G141 | PLATE 3 |

P:\775-Geo\2005\55256 City of Naples Airport Expansion\55256s3



# SOIL PROFILES

0 5'
VERTICAL SCALE

# LEGEND

| | |
|---|---|
| ① | Grayish-brown and dark gray clean to slightly silty fine SAND (SP/SP-SM) |
| ② | Gray silty SAND (SM) |
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NOTE: Elevations estimated using topographic information provided by Rhodes and Rhodes, Inc.

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|---|---|
| DRAWN | AN |
| CHECKED | LTL |
| APPROVED | MEM |
| SCALE | NOTED |

GEOTECHNICAL SERVICES
**CITY OF NAPLES**
**AIRPORT EXPANSION**
NAPLES, COLLER COUNTY, FLORIDA

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| DATE | PROJ. NO. | |
|---|---|---|
| SEP 05 | 552-5G141 | PLATE 5 |

\775-Geo\2005\55256 City of Naples Airport Expansion\55256s5

Serial Number 42 1648

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

STL

● STL Tampa
6712 Benjamin Rd, Suite 100
Tampa, FL 33634

www.stl-inc.com
Phone: (813) 885-7427
Fax: (813) 885-7049

○ Alternate Laboratory Name/Location:
Phone:
Fax:

PAGE 1 of 1

PROJECT REFERENCE: Naples Airport
PROJECT NO.: 552-4G005-2
PROJECT LOCATION: Naples, FL
STL (LAB) PROJECT MANAGER: Michael Valder
P.O. NUMBER: N/A
CONTRACT NO.: N/A
CLIENT (SITE) PM: Grant Haskins
CLIENT PHONE: (813) 886-1075
CLIENT FAX: (813) 249-0301
CLIENT NAME: PSI
CLIENT EMAIL: grant.haskins@psiusa.com
CLIENT ADDRESS: 5801 Benjamin Center Drive, Suite 112, Tampa 33634
COMPANY CONTRACTING THIS WORK (if applicable):
SAMPLER'S SIGNATURE:

STANDARD REPORT DELIVERY ●
DATE DUE
EXPEDITED REPORT DELIVERY (SURCHARGE) ○
DATE DUE
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

| SAMPLE DATE | SAMPLE TIME | SAMPLE IDENTIFICATION | COMPOSITE (C) OR GRAB (G) INDICATE | AQUEOUS (WATER) | SOLID OR SEMISOLID | AIR | NONAQUEOUS LIQUID (OIL, SOLVENT...) | RCRA 8 metals<br>none | PAH | TPH | CYANIDE | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/9 | 1000 | B-2 0-1 ft | G | | x | | | 1 | | | | |
| 4/9 | 1002 | B-2 10 ft | G | | x | | | 1 | | | | |
| 4/7 | 1545 | B-6 12 ft | G | | x | | | 1 | 1 | 1 | | |
| 4/7 | 1420 | C-6 15 ft | G | | x | | | 1 | | | 1 | |
| 4/7 | 1425 | C-6 4 ft | G | | x | | | 1 | | | | |
| 4/7 | 1100 | C-7 6 ft | G | | x | | | 1 | | | | |
| | | | G | | x | | | 1 | | | | |
| | | | G | | x | | | 1 | | | | |
| | | | G | | x | | | 1 | | | | |
| | | | G | | x | | | 1 | | | | |

NUMBER OF CONTAINERS SUBMITTED

| RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME |
|---|---|---|---|---|---|---|---|---|
| | 4-5-04 | 1005 | | 4-14-04 | 12:20 | | | |
| **RECEIVED BY: (SIGNATURE)** | **DATE** | **TIME** | **RECEIVED BY: (SIGNATURE)** | **DATE** | **TIME** | **RECEIVED BY: (SIGNATURE)** | **DATE** | **TIME** |
| | 4-5-04 | 1230 | | 4-14-04 | 12:20 | | | |

LABORATORY USE ONLY 4.0

| RECEIVED FOR LABORATORY BY: (SIGNATURE) | DATE | TIME | CUSTODY INTACT YES ○ NO ○ | CUSTODY SEAL NO. | STL LOG NO. | LABORATORY REMARKS: |
|---|---|---|---|---|---|---|
| | 4-14-04 | 1350 | [✓ YES] | NS | B4I648 | |

Original - Return to Laboratory with Sample(s)

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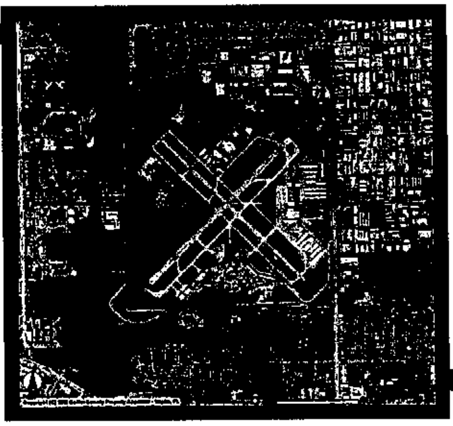

# WORK PLAN

# NAPLES AIRPORT FORMER LANDFILL RECLAMATION
ENTERPRISE AVENUE
NAPLES, FLORIDA

## PSI PROJECT NO. 552-6G026

## PREPARED FOR:

## *City of Naples Airport Authority*

160 AVIATION DRIVE NORTH
NAPLES, FLORIDA 34104-3568

APRIL 2006

psi Information To Build On
Engineering • Consulting • Testing

# WORK PLAN FOR LANDFILL RECLAMATION
# NAPLES AIRPORT FORMER LANDFILL

PREPARED FOR:

CITY OF NAPLES AIRPORT AUTHORITY
160 AVIATION DRIVE
NAPLES, FLORIDA 34104-3568
(239) 643-1827

PREPARED BY:

PROFESSIONAL SERVICE INDUSTRIES, INC.
5801 BENJAMIN CENTER DRIVE
SUITE 112
TAMPA, FLORIDA 33634
TELEPHONE: (813) 886-1075
FAX: (813) 249-0301

PSI PROJECT NO. 552-6G026

APRIL 21, 2006

A. Grant Haskins
Senior Engineer

Nana Faulkner

Nana Faulkner, PG, CHMM
Principal Consultant

Donald R. Polanis, Jr. GC
Vice President

psi Information To Build On
Engineering • Consulting • Testing

April 21, 2006

City of Naples Airport Authority
160 Aviation Drive
Naples, Florida 34104-3568
(239) 643-1827

Attention: Mr. Ervin N. Dehn, Jr.
Director of Engineering & Planning

RE: **Work Plan for Landfill Reclamation**
**Naples Airport Former Landfill**
PSI Project 552-6G026

Dear Mr. Dehn:

Professional Service Industries, Inc. is pleased to submit the Work Plan for the Landfill Reclamation at the City of Naples Airport, Naples, Collier County, Florida. Enclosed please find two copies of the report for your use.

PSI appreciates the opportunity to be of service. We look forward to working with you on this important project.

Sincerely,

Nana Faulkner, PG, CHMM
Principal Consultant

G:\552ENV\Client Master Contracts and Information\City of Naples Airport Authority Landfill\Report\Cover Letter April 21, 2006.doc

Professional Service Industries, Inc. • 5801 Benjamin Center Drive, Suite 112 • Tampa, FL 33634 • Phone 813/886-1075 • Fax 813/888-6514
FL Engineering Business 3684

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## (continued)

**FIGURES**

**APPENDICES**

## CERTIFICATION

## FLORIDA REGISTERED PROFESSIONAL GEOLOGIST

In accordance with the provisions of Florida Statutes, Chapter 492, the Work Plan for the Reclamation of the Naples Airport Former Landfill, Naples, Collier County, Florida for the Naples Airport Authority has been prepared under the direct supervision of a Professional Geologist registered in the State of Florida. This report has been determined to be in accordance with good professional practices pursuant to Chapter 492 of the Florida Statutes as it applies to the work described herein. No other warranties are implied or expressed.

Nana G. Faulkner, PG, CHMM
PG License No. 00001616
Date: 4/24/06

## ACRONYM KEY

| | |
|---|---|
| ACI | American Concrete Institute |
| AMSL | Above Mean Sea Level |
| ASTM | American Society for Testing and Materials |
| C&D | Construction and Demolition |
| CGI | Combustible Gas Indicator |
| CFR | Code of Federal Regulations |
| CO | Carbon Monoxide |
| Cu | Cubic yard |
| DDC | Deep Dynamic Compaction |
| EPA | United States Environmental Protection Agency |
| ERP | Environmental Resource Permit |
| FAA | Federal Aviation Authority |
| FAC | Florida Administrative Code |
| FOD | Foreign object damage |
| FDEP | Florida Department of Environmental Protection |
| GCTL | Groundwater Cleanup Target Level |
| GPR | Ground Penetrating Radar |
| $H_2S$ | Hydrogen sulfide |
| LFG | Landfill Gas |
| LEL | Lower Explosive Limit |
| µg/L | Microgram per liter |
| mg/kg | Milligram per kilogram |
| mg/L | Milligram per liter |
| MSL | Mean Sea Level |
| MSW | Municipal Solid Waste |
| MW | Monitor Well |
| NOI | Notice of Intent |
| $O_2$ | Oxygen |
| OSHA | Occupational Safety and Health Administration |
| OVA | Organic Vapor Analysis |
| psf | Pounds per square foot |
| PG | Professional Geologist |
| PPE | Personal Protective Equipment |
| ppm | Parts per million |
| PSI | Professional Service Industries, Inc. |
| RSA | Runway safety area |
| ROFA | Runway object free area |
| RSM | Recycled screened material |
| SPT | Standard Penetration Test |
| SWPPP | Stormwater Pollution Prevention Plan |
| SFWMD | South Florida Water Management District |
| SOP | Standard Operating Procedure |
| TP | Test Pit |
| US | United States |
| USGS | United States Geologic Survey |

# 1.0 INTRODUCTION

## 1.1 PURPOSE

Professional Service Industries, Inc. (PSI) has developed this Work Plan, contained herein, for Landfill Reclamation on behalf of the City of Naples Airport Authority. The Work Plan for the proposed Reclamation of the Naples Airport Former Landfill is developed to prepare for future utilization of the land along the north boundary of the City of Naples Airport, Naples, Collier County, Florida. The Naples Airport Authority Master Plan includes airport improvements to be located northwest of the approach end of Runway 23. These improvements include new hangers, access road, and a new taxi way. Most of the improvements are within the footprint of the former landfill located on Airport property. In order to construct the improvements it will be necessary to remove all or part of the existing landfill material in order to reclaim the land for development (hereafter termed landfill reclamation or reclamation). The reclamation involves the excavation, screening, and transport of landfill material to a separate location within the existing Airport property. Since the landfill extends below the existing airport elevation, backfill will be required following excavation. This report presents a Work Plan and discussion of options for addressing issues associated with reclamation of the former landfill.

## 1.2 PROJECT LOCATION AND SITE DESCRIPTION

The Naples Airport Landfill extends along the north boundary of the airport property adjacent to West Enterprise Avenue and west of Airport-Pulling Road, Naples, Collier County, Florida. The former landfill, comprised of approximately 41 acres, is bisected by a canal and Patriot Way as shown on Figures 1-1 and 1-2. The landfill is located in Section 35, Township 50 South, Range 25 East. Approximately four acres of the landfill are currently used as a Collier County Recycling Center. For purposes of this report, the landfill consists of four (4) areas, as illustrated on Figure 1-3 and discussed as follows:

- Area 1 – eastern portion, approximately 8.5 acres (operated by the City of Naples Airport Authority hereafter referred to as the Airport)
- Area 2 – middle portion, approximately 19.8 acres (operated by the Collier County Solid Waste Management Department as an existing and proposed Recycling Center)
- Area 3 – mid-western portion, approximately 6 acres (operated by the Airport Authority)
- Area 4 – westernmost portion, 3.1 acres (operated by the Airport Authority)

Most of the former landfill is overgrown with thick foliage and trees, many of which are down due to previous hurricanes. There are drainage features along the south side of the former landfill as shown on Figure 1-4. The drainage features are planned to enter a canal, which bisects Area 3. Observation of Area 4, located west of Patriot Way, indicates recent disposal of C & D debris, landfill debris, and soil. There is an area in Area 4 that does not contain foliage and appears to be used to deposit fill material.

This Reclamation Work Plan addresses the improvements adjacent to Runway 23 shown on the Airport Master Plan shown in Appendix A.

## 1.3 AUTHORIZATION

Authorization to prepare this Work Plan was provided by the City of Naples Airport Authority Amendment No. 1, dated January 6, 2006 under the terms and conditions contained in the Service Agreement dated August 17, 2005.

## 1.4 BACKGROUND

The Naples Airport served as a base of operation for training Army aircrews during World War II. At the end of the war, the military no longer needed the facility and ownership returned to the City of Naples and Collier County in 1947. The City and County operated the airport jointly until the County sold its interest to the City in 1958.

A landfill was operated on the northern end of the airport from the 1940s until its closure in the early 1970s. Four acres of the former landfill have been converted into a recycling drop off center and construction and demolition debris (C&D) transfer station operated by Collier County. This operation is located on top of the former landfill at an elevation of 15 feet above mean sea level (MSL). Collier County has proposed to develop approximately 16 additional acres into an improved recycling center as shown on Figure 1-4. Approximately 8 acres of the 16 would be devoted to the relocation of reject debris from screening operations.

Various investigations have been conducted on behalf of Collier County and the Airport. The results of these studies conducted from 2004 through 2006 are contained in reports available from the County and Airport including geotechnical studies, landfill gas assessment, groundwater assessment, ground penetrating radar survey, and site characterization.

The Geotechnical Report dated October 19, 2005 prepared by PSI for the City of Naples Airport Authority includes test pits and a geotechnical evaluation within the proposed improvement area. Additional investigation of the area was conducted on March 29, 2006.

## 1.5 PROJECT STRATEGY

In order to expand the current Airport facilities, additional space is required. The northern portion of the Airport property is the former landfill. If this area is designated as future available space for development of hangars or office buildings, various design and construction issues must be addressed. Landfills are problematic for new construction due to settlement of the buried material, potential for landfill gas buildup and potential exposure to workers from buried material. Prior to developing the area, the buried landfill material should either be removed or compacted to mitigate any construction problems.

PSI evaluated various options for removal or compaction of the landfill material including the following:

- Option 1 - Remove material and transport to Class I Landfill
- Option 2 - Removal material and incinerate on-site
- Option 3 - Remove material and recycle ferrous materials, concrete materials, tires, and soil.
- Option 4 - Remove material, placement on site, and recover soil. Recommended
- Option 5 - Leave material in place and compact.

Option 1 is cost –prohibitive based on current tipping fees (estimated to be at about $1.3 million not including load and transport and other associated costs). Option 2 is not feasible due to regulatory permitting required for on-site incineration equipment, as well as FAA prohibitions. Option 3 is also cost-prohibitive and unnecessary based on the Florida Department of Environmental Protection (FDEP) approval for relocation of material on-site. Option 5 is not recommended based on technical considerations for stability and settlement concerns.

Therefore, Option 4 is recommended for reclaiming the Naples Airport Former Landfill. Recovering the soil through screening rather than removal of the debris has been selected due to the need for backfill material to achieve design elevations and to eliminate the cost of off site disposal of process residue. Previous investigations have revealed that approximately 70 percent of the material excavated from the landfill is fines suitable for backfill. Consequently, there is significant savings from avoiding the cost of imported fill material. In addition, the process residue can be moved to other locations within the landfill.

This Work Plan addresses the reclamation of a portion of Area 1 to provide space for future Airport improvements as shown on the Airport Master Plan.

# 2.0 PERMITTING

## 2.1 GENERAL

This Work Plan for Landfill Reclamation addresses permitting and regulatory issues. Permitting associated with the Naples Airport Former Landfill reclamation project includes airport operations, storm water control, groundwater (leachate) control, and City of Naples permitting. The Florida Department of Environmental Protection (FDEP) has jurisdiction on former landfills and has been consulted on groundwater control. Moreover, the FDEP has requested a copy of this work plan.

## 2.2 FEDERAL AVIATION ADMINISTRATION (FAA)

The Federal Aviation Administration (FAA) is charged with the safe operation of the nation's airports and maintenance of safe airspace in and around airports. Accordingly, due to the planned use of excavation equipment during the reclamation near the airport runway, the FAA requires the submission of FAA Form 7460-1 (2-99), "Notice of Proposed Construction or Alteration". A copy for your use is contained in Appendix B. For projects located on airport property, the required notification is to be sent to Ms. Ilia Quinones at the FAA Regional Office in Orlando, Florida at least 30 days prior to the earlier of the following dates:

(1) The date the proposed construction or alteration is to begin.
(2) The date an application for a construction permit is to be filed.

To maintain airport security and to provide a barrier for blowing debris a temporary construction fence is to be installed between the proposed reclamation area and Runway 23 and associated taxi ways.

## 2.3 STORM WATER

There are three elements to permitting associated with storm water, namely:

- Storm Water Pollution Prevention Plan (SWPPP).
- Notice of Intent (NOI).
- Letter modification to the Storm Water Master Plan.

A Storm Water Pollution Prevention Plan (SWPPP) must be prepared and implemented in conjunction with planned reclamation work. The SWPPP must be maintained on site and made available to regulatory inspectors. A Construction SWPPP Template is included in Appendix B.

A Notice of Intent (NOI) to use the General Permit is to be submitted to the Florida Department of Environmental Protection (FDEP) prior to the start of work. A blank NOI and a copy of the Generic Permit are included in Appendix B.

The South Florida Water Management District (SFWMD) has jurisdiction over the storm water control and flow from the Naples Airport. There is currently an existing storm water master plan and permit for the Airport. Storm water is directed from the former landfill into drainage features covered by the existing plan. Accordingly, Mr. Bill Foley with the SFWMD has requested a letter modification to the existing plan prior to start of reclamation. The letter modification should include a general discussion of the planned reclamation work and illustrate the proposed berms and drainage features. The letter modification should also refer to the Storm Water Pollution Prevention Plan (SWPPP) and Notice of Intent (NOI).

## 2.4 CITY OF NAPLES

The City of Naples normally requires all permitting from the general contractor who is constructing the proposed improvements. The Naples Airport improvements, however, are separated into two phases consisting of reclamation followed by construction of the new facilities. Representatives of the City of Naples (Paul McAllister and Tom Goodwin) advised PSI that a Site Work Permit will be required for the reclamation project. An application for a Site Work Permit is contained in Appendix B.

Moreover, the City requirement for a 6 foot chain link fence around construction sites is fulfilled due to the existing fence that runs adjacent to Enterprise Avenue. Permits generally take approximately 10 days to obtain.

## 2.5 FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP)

The FDEP maintains jurisdiction over active and former landfills in the state of Florida. The FDEP has been kept appraised of all previous investigations conducted by PSI at the Naples Airport Former Landfill. The FDEP has provided approval, in writing, for reclamation work planned for Collier County at the Airport Recycling Center. It is recommended that this report be submitted to the FDEP with a request for written approval to implement the plan. In addition, the following general guidelines have been established as approvals and requirements during reclamation:

(1) Debris including tires can be excavated and moved to other areas at the former landfill or transported off site for proper disposal. The debris can be screened to separate the debris from the soil. The debris can be placed in new berms on top of the former landfill.

(2) Foliage that has grown on the former landfill can be removed and placed in the berm. The foliage can be chipped, processed through a tub grinder, or can remain intact. The processed foliage can be used elsewhere on Airport property if so desired.

(3) The fines (one inch minus) from screening operations can be used as fill or cover material on the new berms at the former landfill. Imported fill material can also be used.

(4) Upon screening, the process residue can be piled to any height that meets Airport Authority and FAA approval. Process residue that is piled or otherwise exposed must be covered with two feet of soil upon completion of the reclamation work. The soil covering can be fines (reclaimed soil) from the screening operation. The requirements associated with uncovered process reject debris include no odors, no attraction of vectors, and no nuisance from blowing debris.

(5) Based upon demonstrated performance by PSI in meeting the foregoing requirements, the process reject debris can remain uncovered while the berm and construction area are under reclamation. However, any evidence of odors, vectors, or off site blowing debris must be addressed immediately with daily cover or other mitigation methods.

(6) Groundwater (leachate) removal during excavation work has been addressed with the FDEP. Leachate is defined as rainwater that has come in contact with municipal solid waste (MSW). Accordingly, the groundwater beneath the landfill is considered leachate. The excavation of landfill material may extend below the water table in some areas. Following excavation of landfill material, the area must be backfilled to achieve desired elevations. However, excavation below the water table presents the following complications:

- Visibility of debris beneath the water is limited.
- Debris floats off the excavator bucket decreasing production efficiency.
- Wet debris significantly reduces screening production rates. The material must be set aside to dry before further processing.
- Soil backfilled into water creates material that cannot be compacted.

To minimize these problems, the groundwater may require removal prior to excavation of saturated areas. Groundwater removal can be accomplished using submersible pumps in groundwater recovery or extraction wells. Alternatively, dewatering pumps can be placed in pits excavated to below the water table. Water extracted from wells is generally low in suspended solids while water extracted from excavated pits is generally high in suspended solids. This is an important factor when the extracted water is to be treated.

According to the FDEP, any leachate removal must be transported for off site disposal or be discharged to the sanitary sewer in accordance with City of Naples guidelines and requirements.

# 3.0 EVALUATION OF SECURITY REQUIREMENTS

## 3.1 GENERAL

The Federal Aviation Administration and the Naples Airport Authority maintain specific security requirements to prevent unauthorized access and to ensure safe aircraft operations. Security associated with the Naples Airport Former Landfill reclamation project pertains to equipment storage and worker security. Options for adhering to security regulations are contained herein.

## 3.2 FEDERAL AVIATION ADMINISTRATION (FAA)

The FAA requires that aircraft operating areas be enclosed within a 6 foot high fence topped with barbed wire to deter unauthorized access to airport property. Accordingly, there is a security fence running along Enterprise Avenue with a gate located near the approach to runway 23. Moreover, the FAA requires that access to runways and taxi ways be controlled by the tower through two way communications. However, the reclamation work will be in the former landfill area and will not require access to taxi ways or runways.

The FAA has established a runway safety area (RSA) extending 250 feet from the runway centerline and a runway object free area (ROFA) extending 400 feet from the runway centerline. The former landfill extends into both the RSA and the ROFA. Accordingly, the installation of a construction fence and operation in these areas requires the approval of the FAA and coordination with the Airport. It is recommended that excavation work be completed within the ROFA prior to completion of the construction fence.

## 3.3 NAPLES AIRPORT AUTHORITY

### 3.3.1 Access Through Gate

The Naples Airport Authority has established procedures for maintaining security during construction projects on Airport property. One method is to provide an escort to personnel who are working on Airport property. An alternative method is to conduct a security clearance and issue a temporary badge to workers who will be working on Airport property. At the Airport's discretion, one person can be designated as an escort for three or four personnel. This person, so designated, must be on site at all times during reclamation. Moreover, the people must be within eye sight and hearing of the escort.

A double-lock system could also be employed by the reclamation company placing their lock in series with the Airport lock. In this manner, either group has access to the gate. Upon entry to the work zone the gate must be locked or guarded to preclude unauthorized entry to Airport property. The contractor personnel who have airport security clearance must be readily available to provide entry and departure of operations crew, subcontractors, and suppliers such as fuel.

### 3.3.2 Access Through Landfill

The reclamation work area may be accessed through Corporate Flight Drive and Patriot Way. However, since work crew vehicles would have to be parked over 1,000 feet from the work area, unauthorized access to secure areas at the airport could occur. Accordingly, access through the landfill does not appear to be the optimal choice.

### 3.3.4 Installation of Temporary Fence

A temporary construction fence could be installed between the work area and the airport runway and taxi way. The fence would need to be approximately 1,700 feet in length. Access to the processing area, located outside the landfill, would be at the end of Patriot Way. Figure 3-1 shows the approximate location of a proposed construction fence, entry gate, and processing area. This is the recommended method for access.

## 3.4 EQUIPMENT SECURITY

The equipment, material, supplies, and fuel used for the reclamation project require security. This is generally provided by a fenced area for equipment and a locked storage box for material. A gate provided at the end of Patriot Way can adequately secure the processing area and equipment.

# 4.0 MANAGEMENT PLAN FOR DEBRIS AND ODORS

## 4.1 INTRODUCTION

During reclamation work in old landfills there is generally concern over the possibility of odor associated with decaying matter, dust, noise, and landfill gas. The Former Naples Airport Landfill, closed in the mid-70's, was constructed without a liner beneath or as cover. The trash, debris, and municipal solid waste (MSW) was covered with a layer of soil that currently measures between 6 inches and two feet in thickness. Based upon the age of the landfill, any putrescent (decaying) material placed in the landfill has long since decomposed. Following is a discussion of each of these areas as they relate to the Reclamation Work Plan.

## 4.2 POTENTIAL ODORS DURING RECLAMATION

Odor in a landfill is associated with decaying matter. As previously stated, any garbage placed in the landfill has most likely decomposed and does not exhibit the characteristic odor of an active landfill. The lack of any objectionable odors has been verified during the excavation by PSI of approximately 50 test pits to depths of 10 to 15 feet below the surface throughout the former landfill. During excavation of the test pits, odors were monitored constantly and no objectionable odors were recorded. See Table 4-1 for test pit material information.

Groundwater was encountered in a few instances during excavation of the test pits. Material excavated from beneath the water table during test pit installation had the characteristic odor of decaying vegetation in water. However, the odor dissipated within about 10 or, at most, 20 feet from the source. Excavation for reclamation may extend below the water table resulting in potential for limited odor from this source.

An additional concern for landfill reclamation is the presence of vectors which are attracted by odors. Vectors are birds, rodents, or insects that feed on garbage and have the potential to spread germs or disease. During excavation of the approximately 50 test pits at the former landfill, vectors exhibited no interest in the debris piles. This lack of vectors further substantiates that nuisance odors will not be encountered. Similar waste characterization was conducted by PSI at Cells 1 and 2 at the Naples Landfill, with the same results. Cells 1 and 2 were closed in the late-70's. Additionally, an evaluation was conducted by excavating an area of 3,600 square feet and monitoring the exposed debris for a period of over three months. Initially, measurements were taken for the presence of landfill gas. No detectable levels of landfill gas were found. No odors were noted and no vectors were observed at any time.

As a contingency, electric powered foggers are recommended to control any odors that may be encountered. The foggers, used in active landfills to control odor, require electricity, water, and an odor neutralizing material. The odor neutralizing material is mixed with water in a 55-gallon drum. The fogger is placed on top of the drum and connected to a 120 volt power source. A series of at least three foggers are placed between the source of the odor and the receptor.

## 4.3 DUST DURING RECLAMATION

If not properly controlled, fugitive dust can become a nuisance and health threat to site workers, airport tenets, and neighbors. At most landfills, dust originates from the excavation, hauling, and placement of cover soil, and from unpaved access roads. The reclamation project has the added feature of the screening operations, which can potentially create fugitive dust.

Screening operations on a similar project at Cells 1 and 2 at the Naples Landfill did not reveal a problem with blowing dust in spite of dry conditions and moderate wind speed. Most of the dust and blowing debris settled to the ground within 100 yards of the source. However, the close proximity of Runway 23 may require the use of water to control dust. The processing area should be located so as to minimize the potential impact from dust.

A water wagon, recommended to be used to control dust on haul roads, can also be used to spray water on stockpiled material prior to screening. The use of water on material scheduled to be screened must be carefully controlled to avoid loss of production due to plugging of the screen. The foggers, previously mentioned for the control of odors, can also be used to control dust.

It is recommended that the site supervisor record the wind speed and direction three times per day at 9 AM, noon, and 3 PM. This can be done by calling the Airport which provides a continuous recorded weather report including wind direction and velocity. The downwind area is to be inspected at a minimum of hourly and any indication of blowing dust is to be recorded. Patriot Way and Runway 23 are at the greatest risk from dust due to their proximity to the screening work. At any time that dust is observed out of the reclamation work area, corrective action is to be taken. Furthermore, preemptive corrective actions should be taken as needed to avoid nuisance based upon operating experience, material consistency, and wind conditions,

Debris could be generated during berm construction from blowing plastic and other lightweight material, particularly as the berm reaches its maximum height. Blowing debris could also originate from the haul trucks or from the berm. In either event, airport operations are particularly concerned with foreign object damage (FOD) to aircraft. FOD generally refers to solid objects that can cause significant engine or propeller damage, but also includes any debris that could affect aircraft condition or operation.

To mitigate blowing debris from haul trucks it is recommended that the load be wetted down, covered with a tarp, or that wood chips or other dense material be added to the load. To mitigate blowing debris from the berm it is recommended that a 6 foot chain link fence be installed between the reclamation project and airport operating areas. In addition, the debris may need to be wetted down prior to hauling or following placement in the berm. An alternative method is to apply wood chips as daily cover if needed to control blowing debris.

## 4.4 NOISE DURING RECLAMATION

Construction activity involving the operation of heavy equipment will generally produce noise at a lower level than aircraft operations. As there are no residences near the planned reclamation, noise is not anticipated to create neighborhood complaints.

Specifications and protocols for noise control for worker Health and Safety are addressed in Section 5, Site Specific Health and Safety Plan.

## 4.5 LANDFILL GAS

Landfill gas has been detected at the Collier County Recycling Center during previous investigations by PSI. Numerous attempts have been made to record the presence of landfill gas during test pit excavations. The landfill gas encountered during excavation dissipates before it can be detected. The same type of dissipation holds true for larger areas of excavation as previously discussed in Section 4.2 of this report. Accordingly, landfill gas is not expected to be a concern during reclamation work. Buildings constructed on old landfills, conversely, must have gas mitigation systems to preclude the concentration of gas beneath the floor and risk of entry into a confined space. The reclamation planned for future Airport improvements may include an option to leave some debris in place. Accordingly, the risk of landfill gas beneath buildings must be addressed in future designs.

# 5.0 SITE HEALTH AND SAFETY PLAN

## 5.1 INTRODUCTION

This section of the Site Health and Safety Plan (SHSP) document defines general applicability and general responsibilities with respect to compliance with Health and Safety programs.

### 5.1.1 SCOPE AND APPLICABILITY OF THE SITE HEALTH AND SAFETY PLAN

The purpose of this SHSP is to define the requirements and designate protocols to be followed at the Site during investigation, reclamation, and remediation activities. Applicability extends to all Professional Service Industries, Inc. (PSI) employees.

All personnel on site, contractors and subcontractors included, shall be informed of the site emergency response procedures and any potential fire, explosion, health, or safety hazards of the operation. This SHSP summarizes those hazards in Table 5-1 and defines protective measures planned for the site. Terms used in this Plan have the following meanings and applicability:

| | |
|---|---|
| Exclusion Zone: | Pertains to zone where hazardous waste operations are conducted. |
| Contamination Reduction Zone: | Pertains to decontamination zone associated with hazardous waste operations. |

Note: The Health and Safety Plan has been prepared in the event that hazardous material is encountered during reclamation activity. However, the Plan is generally applicable to all operations including non-hazardous.

This plan must be reviewed, and an agreement to comply with the requirements must be signed by all personnel prior to entering the exclusion zone or contamination reduction zone, as applicable. During development of this plan, consideration was given to current safety standards as defined by the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), and the National Institute of Occupational Safety & Health (NIOSH). In addition, health effects and standards for known contaminants and procedures designed to account for the potential for exposure to unknown substances were also considered. Specifically, the following reference sources have been consulted:

- OSHA 29 CFR 1910.120 and 1926.65 and EPA 40 CFR 311
- U.S. EPA, OERR ERT Standard Operating Safety Guides
- NIOSH/OSHA/USCG/EPA Occupational Health and Safety Guidelines
- (ACGIH) Threshold Limit Values

### 5.1.2 VISITOR

All visitors entering the contamination reduction zone and exclusion zone at the Site will be required to read and verify compliance with the provisions of this SHSP. In addition, visitors will be expected to comply with relevant OSHA requirements such as training (Sec. 5.4), medical monitoring (Sec. 5.6), and respiratory protection (if applicable). Visitors will also be expected to provide their own protective equipment.

In the event that a visitor does not adhere to the provisions of the SHSP, he/she will be requested to leave the work area. All nonconformance incidents will be recorded in the site log.

## 5.2 KEY PERSONNEL / IDENTIFICATION OF HEALTH AND SAFETY

### 5.2.1 KEY PERSONNEL

The following personnel and organizations are critical to the planned activities at the Site. The organizational structure will be reviewed and updated periodically.

| Naples Airport | Naples Airport Duty Officer | PSI |
|---|---|---|
| Erv Dehn | (varies) | Nana Faulkner |
| Naples, Florida | Naples, Florida | Tampa, Florida |
| (239) 643-1827 | (239) 643-0404 | (813) 886-1075 |
| | | cell (813) 267-2519 |

### 5.2.2 SITE SPECIFIC HEALTH AND SAFETY PERSONNEL

Health and Safety Personnel

The Site Health and Safety Officer (HSO) has total responsibility for ensuring that the provisions of this SHSP are adequate and implemented in the field. Changing field conditions may require decisions to be made concerning adequate protection programs. Therefore, it is vital that the personnel assigned as the HSO be experienced and meet the additional training requirements specified by OSHA in 29 CFR 1910.120 (see Section 5.4 of this SHSP). The HSO is also responsible for conducting site inspections on a regular basis in order to ensure the effectiveness of this plan.

The HSO at the site is Greg Burgess. The alternate HSO is David Bearce.

### 5.2.3 ORGANIZATIONAL RESPONSIBILITY

In the capacity as Project Manager (PM) for PSI, Grant Haskins is responsible for overall project administration and contractor oversight. As a part of that oversight function, Mr. Haskins will ensure that the Health and Safety of all site personnel is a primary concern.

## 5.3 TASK/OPERATION SAFETY AND HEALTH RISK ANALYSIS

### 5.3.1 HISTORICAL OVERVIEW OF SITE

This SHSP defines the hazards and methods to protect personnel from those hazards as identified in background information.

The Naples Airport Former Landfill extends along the north boundary of the Naples Airport property adjacent to West Enterprise Avenue and west of Airport-Pulling Road, Naples, Collier County, Florida. The former landfill, comprised of approximately 41 acres, is bisected by a canal and Patriot Way as shown on Figure 5-1. Approximately four acres of the landfill are currently used as a Collier County Recycling Center. Collier County has proposed to construct a larger recycling center in an area totaling approximately 20 acres. For purposes of this report, the landfill consists of four (4) areas:

- Area 1 – eastern portion, approximately 8.5 acres (operated by the City of Naples Airport Authority hereafter referred to as the Airport)
- Area 2 – middle portion approximately 19.8 acres (proposed by the Collier County Solid Waste Management Department as an improved Recycling Center)
- Area 3 – mid- western portion approximately 6 acres (operated by the Airport)
- Area 4 – westernmost portion 3.1 acres (operated by the Airport)

Most of the area covered in this plan is overgrown with thick foliage and trees. There is a low area providing drainage along the south side of the former landfill. The drainage area enters a canal, which bisects Area 3. Observation of Area 4, located west of Patriot Way, indicates recent disposal of C & D debris and soil. There is an area in Area 4 that does not contain foliage and appears to be used to deposit fill material.

### 5.3.2 TASK BY TASK RISK ANALYSIS

The evaluation of hazards is based upon the knowledge of site background presented in Section 1, and anticipated risks posed by the specific operation. The following subsections describe each task/operation in terms of the specific hazards associated with it. In addition, the protective measures to be implemented during completion of those operations are also identified.

- Test pits
- Excavate approximately 10 to 15 feet below ground surface to estimate content of waste.
- Photograph waste materials from test pits.
- Backfill test pit area with originating waste material, except for large C & D debris.
- Excavate material
- Load material onto screen
- Load material into trucks
- Transport material onto berms

Table 5-1 provides a summary of potential and known hazards at the Site.

**TABLE 5-1**
**CHEMICAL HAZARDS OF CONCERN**

| Contaminant | Action Levels | Source/ Concentration | Routes of Exposure |
|---|---|---|---|
| Carbon Dioxide Gas | REL: 5000 ppm<br>PEL: 5000 ppm<br>IDLH: 40,000 ppm<br>**Oxygen levels should be** | Decomposition of MSW, not tested.<br>Soil: Not tested<br>Groundwater: Not tested | Inhalation<br>Contact |

**TABLE 5-1**
**CHEMICAL HAZARDS OF CONCERN**

| Contaminant | Action Levels | Source/ Concentration | Routes of Exposure |
|---|---|---|---|
| | **maintained above 19.5%** | | |
| Hydrogen Sulfide Gas | REL: 10 ppm<br>PEL: 10 ppm<br>IDLH: 100 ppm<br>Other: CGI must be below 10% of the LEL (Lower LEL is 4% and Upper UEL is 44%) | Decomposition of MSW, not tested.<br>Soil: Not tested<br>Groundwater: Not tested | Inhalation<br>Contact |
| Methane Gas | REL: NE<br>PEL: N E, methane is a simple asphyxiant.<br>Other: Lower LEL is 5%, Upper UEL is 15%.<br>**Oxygen levels should be maintained above 19.5%** | Decomposition of MSW, not tested.<br>Soil: Not tested<br>Groundwater: Not tested | Inhalation<br>Contact |

TWA = Time Weighted Average
REL = NIOSH Recommended Exposure Limits as TWA concentrations for up to a 10-hour workday
PEL = OSHA Permissible Exposure Limits as TWA for a 8-hour workday
STEL = Short Term Exposure Limit as a 15-minute TWA exposure
NE = Not Established
MSW = Municipal Solid Waste
ppm = parts per million
$mg/m^3$ = milligrams per cubic meter
IDLH = Immediately Dangerous to Life or Health
Ceiling REL/PEL values should not be exceeded at any time.

### 5.3.3 TASK HAZARD DESCRIPTIONS

#### 5.3.3.1 GENERAL SITE VISIT

General hazards associated with site visits include the following:

- Exposure to irritant and toxic plants such as poison ivy and sticker bushes may cause allergic reactions to personnel.
- Surfaces covered with heavy vegetation and undergrowth, and uneven ground surface create a tripping hazard.
- Back strain due to carrying instruments.
- Native wildlife such as rodents, ticks, alligators, mosquitoes, spiders, fire ants and snakes present the possibility of bites and associated diseases such as Lyme disease.
- Driving vehicles on uneven or unsafe surfaces can result in accidents such as overturned vehicles or flat tires.

- Electrical hazard due to fallen lines.

- Heat related illnesses (See Section 5.5).

- On-site chemical hazards depending on contaminant location and contact or disturbances of contaminated areas.

Hazard Prevention

- Wear long sleeved clothing and slacks to minimize contact with irritant and toxic plants and to protect against insect bites. Utilize appropriate first aid measures for personnel with known allergic reactions.

- Be alert and observe terrain while walking to minimize slips and falls. Steel-toed boots provide additional support and stability.

- Use proper lifting techniques to prevent back strain.

- Avoid wildlife when possible and walk loudly with heavy steps. In case of an animal bite, perform first aid and capture the animal, if possible, for rabies testing. Perform a tick check after leaving a wooded or vegetated area.

- Ensure all maintenance is performed on vehicles before going to the field. A site surveillance on foot might be required to choose clear driving paths.

- Ensure fallen power lines are not energized.

- Implement heat stress management techniques such as shifting work hours, fluid intake outside of contamination zone, and monitoring employees, especially high risk workers.

#### 5.3.3.2 COLLECTION OF SOIL SAMPLES

For the purposes of this hazard identification section, surface soil sampling will be considered any soil sampling completed by hand using a trowel, split spoon, shovel, auger, or other type of hand-held tool. General hazards frequently encountered during the soil sample and effluent water sample collection include:

OVA Sampling/Monitoring

- Electrical hazards as a result of power sources to run sampling pumps.

- Placing sampling pumps in elevated areas or areas where slip/trip and fall hazards exist.

- Hazards associated with ambient environment being sampled.

- Readings indicating nonexplosive atmospheres, low concentrations of toxic substances, or other conditions may increase or decrease suddenly, changing the associated risks.

- Air sampling matrix solutions may be acidic or basic, causing a corrosive hazard, and broken glass collection tubes can cut hands if mishandled.

- Heat related illnesses (See Section 5.5).

Soil Boring Installation and Surface/Subsurface Soil Sampling

- Contact with or inhalation of contaminants, potentially in high concentrations in sampling media.

- Back strain and muscle fatigue due to lifting, shoveling and augering techniques.

- Contact with or inhalation of decontamination solutions.

- Heat related illnesses (See Section 5.5).

Hazard Prevention

OVA Sampling/Monitoring

- Grounded plugs must be used on all power sources.

- Generators or air pumps should be used in dry areas, away from possible ignition sources. Do not stand in water or other liquids when handling equipment. Electrical equipment shall conform to 29 Code of Federal Regulation (CFR) Part 1910 Subpart S.

- Ground fault circuit interrupters are to be used at all times at a construction site.

- Extension cords should be protected from damage and maintained in good condition.

- Air pumps should be placed within easy reach using an OSHA approved ladder, elevated platform or by placing the pump on a stake.

- Personnel should be thoroughly familiar with the use, limitations and operating characteristics of the monitoring instruments.

- Perform continuous monitoring in variable atmospheres.

- Use intrinsically safe instruments until the absence of combustible gases or vapors is confirmed.

- Proper protective clothing such as gloves and goggles should be used when handling corrosive substances. A 15-minute eyewash supply and first aid supplies should be available.

- Implement heat stress management techniques such as shifting work hours, fluid intake outside of contamination zone, and monitoring employees, especially high risk workers.

Soil Boring Installation and Surface/Subsurface Soil and Effluent Water Sampling

- To minimize exposure to chemical contaminants, a thorough review of suspected contaminants should be completed and implementation of an adequate protection program.

- Proper lifting (pre-lift weight assessment, use of legs, multiple personnel) techniques will prevent back strain. Use slow easy motions when shoveling, augering, and digging to decrease muscle strain.

- Material Safety Data Sheets (MSDSs) for all decontamination solutions should be included with each Site Health and Safety Plan.

- First aid equipment should be available based on information contained in each MSDS.

- Implement heat stress management techniques such as shifting work hours, fluid intake outside of contamination zone, and monitoring employees, especially high risk workers.

#### 5.3.3.3 INSTALLATION OF TEST PITS

General hazards frequently encountered during test pit activities include:

- Noise levels exceeding the OSHA permissible exposure limit (PEL) of 90 decibels (dBA) are both a hazard and a hindrance to communication.

- Overhead utility wires (i.e., electrical and telephone) can be hazardous when the equipment is in the upright position.

- Operator has limited peripheral vision, keep eye contact with operator at all times. Keep a safe distance away.

- Injury from heavy equipment.

- Slip, trip and fall hazards.

- Falling into the open trenches.

- Pinch points around the heavy equipment.

- Heat related illnesses (See Section 5.5).

Hazard Prevention

- Ear muffs and earplugs effectively reduce noise levels.

- All personnel not directly involved with the heavy equipment must stay away from the heavy equipment and the open trenches. When personnel are required to go into the area of the trenches, the heavy equipment must remain stationary.

- All chains, lines, and/or cables should be inspected daily for weak spots, frays, etc.

- Minimum working voltage range ((phase to phase) kilovolt) and clear hot stick distance:

| | |
|---|---|
| 2.1 to 15.0 | 2 ft. 0 in. |
| 5.1 to 35.0 | 2 ft. 4 in. |
| 35.1 to 46.0 | 2 ft. 6 in. |
| 46.1 to 72.5 | 3 ft. 0 in. |
| 72.6 to 121.0 | 3 ft. 0 in. |
| 138.0 to 145.0 | 3 ft. 6 in. |
| 161.0 to 169.0 | 3 ft. 8 in. |
| 230.0 to 242.0 | 5 ft. 0 in. |
| 345.0 to 362.0 | 7 ft. 0 in. |
| 500.0 to 552.0 | 11 ft. 0 in. |
| 700.0 to 765.0 | 15 ft. 0 in. |

  However, PSI recommends that a minimum of 20 feet be maintained between heavy equipment and overhead power lines.

- Wear long sleeve shirts and pants to prevent skin injuries. Do not wear loose clothing that can get caught in the heavy equipment or on the debris. Wear steel-toed boots, hard hats and safety glasses. Boots need to have non-slip soles.

- Be aware of trip hazards.

- Proper maintenance and use of heavy equipment. Personnel should be thoroughly familiar with the use, limitations and operating characteristics of the heavy equipment.

- Implement heat stress management techniques such as shifting work hours, fluid intake outside of contamination zone, and monitoring employees, especially high risk workers.

- Pursuant to OSHA standards, if proper sloping and/or benching of the sides of a trench are not used, a protective shield (temporary spoil) must be placed between the sides of the excavation and the work area. The temporary spoil must be placed no closer than 2 feet from the surface edge of the excavation, measured from the nearest base of the spoil to the cut. The temporary spoil should be placed so that it channels rainwater and other run-off water away from the excavation. The temporary spoil should be placed so that it cannot accidentally run, slide or fall back into the excavation.

- Monitoring of gases with OVA and CGI. Upon levels reaching target levels of the specific hazard, don personal protection equipment.

- No personnel shall enter into a test pit.

#### 5.3.3.4 LANDFILL EXCAVATION / LOAD, HAUL AND TRANSPORT MATERIAL

General hazards frequently encountered during landfill excavation / load and haul to berm include:

- Noise levels exceeding the OSHA permissible exposure limit (PEL) of 90 decibels (dBA) are both a hazard and a hindrance to communication.

- Overhead utility wires (i.e., electrical and telephone) can be hazardous when the equipment is in the upright position.

- Operator has limited peripheral vision, keep eye contact with operator at all times. Keep a safe distance away.

- Injury from heavy equipment.

- Injury from falling debris from the heavy equipment.

- Impaling and eye hazards due to exposed debris.

- Slip, trip and fall hazards due to exposed debris.

- Falling into the open excavation pit.

- Pinch points around the heavy equipment and the excavated debris.

- Heat related illnesses (See Section 5.5).

- Exposure to landfill gases.

Hazard Prevention

- Ear muffs and earplugs effectively reduce noise levels.

- All personnel not directly involved with the heavy equipment must stay away from the heavy equipment and the open excavation pit. When personnel are required to go into the area of excavation, the heavy equipment must remain stationary.

- All chains, lines, and/or cables should be inspected daily for weak spots, frays, etc.

- Minimum working voltage range ((phase to phase) kilovolt) and clear hot stick distance:

| | |
|---|---|
| 2.1 to 15.0 | 2 ft. 0 in. |
| 5.1 to 35.0 | 2 ft. 4 in. |
| 35.1 to 46.0 | 2 ft. 6 in. |
| 46.1 to 72.5 | 3 ft. 0 in. |
| 72.6 to 121.0 | 3 ft. 0 in. |
| 138.0 to 145.0 | 3 ft. 6 in. |
| 161.0 to 169.0 | 3 ft. 8 in. |
| 230.0 to 242.0 | 5 ft. 0 in. |
| 345.0 to 362.0 | 7 ft. 0 in. |
| 500.0 to 552.0 | 11 ft. 0 in. |
| 700.0 to 765.0 | 15 ft. 0 in. |

However, PSI recommends that a minimum of 20 feet be maintained between heavy equipment and overhead power lines.

- Wear long sleeve shirts and pants to prevent skin injuries. Do not wear loose clothing that can get caught in the heavy equipment or on the debris. Wear steel-toed boots, hard hats and safety glasses. Boots need to have non-slip soles.

- Be aware of exposed debris and trip hazards.

- Proper maintenance and use of heavy equipment. Personnel should be thoroughly familiar with the use, limitations and operating characteristics of the heavy equipment.

- Implement heat stress management techniques such as shifting work hours, fluid intake outside of contamination zone, and monitoring employees, especially high risk workers.

- Pursuant to OSHA standards, if proper sloping and/or benching of the sides of an excavation are not used, a protective shield (temporary spoil) must be placed between the sides of the excavation and the work area. The temporary spoil must be placed no closer than 2 feet from the surface edge of the excavation, measured from the nearest base of the spoil to the cut. The temporary spoil should be placed so that it channels rainwater and other run-off water away from the excavation. The temporary spoil should be placed so that it cannot accidentally run, slide or fall back into the excavation.

- Monitoring of gases with OVA and CGI. Should levels reach target levels of the specific hazard, don personal protection equipment.

- No personnel shall enter the open excavation pit.

### 5.3.4 HAZARDS OF CHEMICALS OF CONCERN

The following chemicals have been identified as potential or known chemicals of concern (COC) at the Site:

- Carbon Dioxide Gas
- Methane Gas
- Hydrogen Sulfide Gas

#### 5.3.4.1 METHANE GAS

General Description

Methane is an odorless, colorless gas and is lighter than air. Methane is an extremely flammable gas and can cause a serious fire hazard when released.

Health Hazards

High concentrations of methane cause oxygen-deficient environments. Breathing in this environment may cause headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting and depression of all senses. At high concentrations, death may occur. If high concentrations of methane are present, water vapor in the air can condense, creating a dense fog.

Fire/Explosion Hazards

Methane will ignite and produce toxic gases including carbon dioxide and carbon monoxide. An extreme explosion hazard exists in areas in which the gas has been released, but the material has not yet ignited.

Fire Fighting

Shut off source of gas. Use water spray to cool fire-exposed containers, structure, and equipment.

Non-Fire Response

Monitor the area for combustible gas and oxygen. The atmosphere must have at least 19.5% oxygen before personnel can be allowed in area without SCBA. Allow gas to dissipate. Use adequate ventilation.

Exposure Prevention

- Provide adequate ventilation.
- Maintain oxygen levels above 19.5%.
- Use supplied air if oxygen levels are below 19.5% or during emergency response to methane gas releases.
- Wear safety goggles.
- Wash skin when contaminated

First Aid

Do not attempt to retrieve victims of exposure to methane without adequate personal protective equipment. At a minimum, SCBA and fire-retardant personal protective equipment should be worn. Adequate fire protection must be provided during rescue situations. Move victim to fresh air and call emergency medical care. If victim is not breathing, give artificial respiration; if breathing is difficult, have trained personnel administer supplemental oxygen.

#### 5.3.4.2 CARBON DIOXIDE GAS

General Description

Carbon Dioxide is a colorless, odorless gas at low concentrations. At high concentrations, carbon dioxide will emit a sharp, acidic odor.

Health Hazards

Carbon dioxide is an asphyxiate. High concentrations can lead to an oxygen deficient environment. At concentrations between 2 and 10%, carbon dioxide can cause nausea, dizziness, headache, mental condition, increased blood pressure and respiratory rate. If gas concentration reaches 10% or higher, suffocation and death can occur within minutes. Moisture in the air could lead to the formation of carbonic acid which can be irritating to the eyes. Carbon dioxide is heavier than air and can accumulate in low-lying areas.

Fire/Explosion Hazards

Carbon Dioxide is non-combustible. Carbon Dioxide does not burn; however, when used in containers may rupture in the heat of fire. Carbon Dioxide is used as an extinguishing agent and therefore should not present a problem with blaze control.

Fire Fighting

Structural fire fighters must wear Self Contained Breathing Apparatus and full protective equipment. Cool carbon dioxide containers with hose stream and protect personnel. Withdraw immediately in case of rising sounds from venting safety device or any discoloration of tanks due to fire.

Non-Fire Response

Allow gas to dissipate. Monitor the surrounding areas for Carbon Dioxide and oxygen levels. Avoid contact with Carbon Dioxide and stay out of low-lying areas where it may accumulate.

Exposure Prevention

- Use adequate ventilation.
- Use SCBA if levels are above 5000 ppm and oxygen levels above 19.5%.
- Wear mechanically-resistant gloves when handling gas cylinders.
- Wear goggles, face-shields, or safety glasses.

First Aid

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

#### 5.3.4.3 HYDROGEN SULFIDE GAS

General Description

Hydrogen Sulfide is a toxic flammable gas and has a "rotten-egg" odor. Contact with rapidly expanding gases may cause frostbite. Poses a serious fire hazard when accidentally released.

Health Hazards

Inhalation of hydrogen sulfide gas can cause dizziness, headache, and nausea. Exposure to higher concentrations can result in respiratory arrest, coma, or unconsciousness. Exposure for more than 30 minutes or at concentrations of greater than 600 ppm have been fatal. Continuous inhalation of low concentrations may cause olfactory fatigue, so that the odor is no longer an effective warning of the presence of Hydrogen Sulfide. Hydrogen sulfide is irritating to the eyes and exposure over several hours can results in "gas eyes" or sore eyes with symptoms of irritation, tearing and burning.

Fire/Explosion Hazards

Hydrogen sulfide is a flammable gas.

Fire Fighting

Shut off the source of gas. Use water spray to cool fire-exposed containers structures, and equipment. Other appropriate extinguishing media are dry chemical, foam, and carbon dioxide. Use water spray to cool fire-exposed containers, structures, and equipment. Other appropriate extinguishing media are dry chemical, foam and carbon dioxide. Hydrogen sulfide is flammable and presents an extreme hazard to firefighters. For large fires, use unmanned hose.

Hydrogen sulfide gas is a flammable, toxic gas and presents an extreme hazard to firefighters. The gas I heavier that air, and can travel along distance to a source of ignition and flash back. Firefighters must wear SCBA and full protective equipment. The best technique may be to let the burning gas escape from the containers. If the fire is extinguished before the leak is sealed, the leaking as could explosively re-ignite without warning and cause extensive damage.

Non-Fire Response

Allow gas to dissipate, Use only non-sparking tools and equipment. Combustible gas concentrations must be below 10% of the LEL (LEL = 4.0%) prior to entry into hydrogen sulfide containing area. The atmosphere must be at least 19.5% oxygen before personnel can be allowed in the area without SCBA.

Exposure Prevention

- Prevent skin contact
- Prevent eye contact
- Wash skin immediately upon contact.
- Flush skin for 15 minutes, at a minimum.
- Remove clothing when wet or contaminated
- Change clothing daily
- Provide eyewash and quick drench,

First Aid

Rescuers should not attempt to retrieve victims of exposure to hydrogen sulfide without adequate personal protective equipment. Use SCBA and gloves. Under some circumstances, fire retardant personal protective equipment should be worn.

Move the victim to fresh air and call emergency medical care. Trained personnel should administer supplemental oxygen and/or cardiopulmonary resuscitation, if necessary.

### 5.3.5 HEAT RELATED ILLNESSES

Exposure to extreme heat can make a person seriously ill. Such exposure is likely to be encountered during this project due to site location (south Florida), level of activity required, donning of PPE in a hot environment, duration of project, and time of project completion (summer).

*Heat cramps, heat exhaustion, and heat stroke* are conditions caused by overexposure to heat. *Heat cramps* are the least severe, and often the first signs that the body is having trouble coping with the heat. Heat cramps are painful muscle spasms that usually occur in the legs and abdomen.
*Heat exhaustion* is a more severe condition than heat cramps. Its signals include cool, moist, pale or flushed skin, headache, nausea, dizziness, weakness, and exhaustion.

*Heat stroke* is the most severe heat emergency. Heat stoke develops when the body systems are overwhelmed by heat and begin to stop functioning. Heat stroke is a serious medical emergency. The signals of heat stroke include red, hot, dry skin; changes in consciousness; and rapid and shallow breathing.

To care for victims of heat related illnesses, the following first aid measures should be followed:

- Remove victim from the heat
- Loosen tight clothing
- Remove perspiration soaked clothing
- Apply cool, wet clothes to the skin
- Fan the victim
- If the victim is conscious, give cool water to drink
- Call for an ambulance if the victim refused water, vomits, or starts to lose consciousness.

### 5.3.6 BIOLOGICAL WASTE, 55-GALLON DRUMS AND MISCELLANEOUS UNKNOWNS

Since the property has been utilized as a landfill, there are many unknowns associated with the excavation of the property. The following procedures should be followed in the event of encountering various unexpected items:

#### Biological Waste

In the event that any biological waste is encountered during the planned project activities at the subject site, no personnel will come in contact with the material. Local authorities, including the local police and/or health services department, will be contacted immediately regarding the proper handling of the biological waste.

#### 55-Gallon Drums

Pursuant to OSHA regulations (CFR 1910.120/1926.65), drums and containers shall be inspected and their integrity shall be assured prior to being moved. Drums or containers that can not be inspected prior to moving (because of being buried), shall be moved to an accessible location and inspected prior to further handling. Unlabeled drums must be considered to contain hazardous substances and handled accordingly until the contents are positively identified and labeled. All activities must be organized to minimize the amount of movement of the drums. Drums that can not be moved without rupturing, leaking or spilling must be emptied into a sound container utilizing a device specified for the material being transferred. Surrounding soil or covering material must be removed with caution to prevent the rupturing of the drum. Fire extinguishing equipment appropriate for the contents of the drums must be maintained on-site while the drums remain on-site. The equipment used to transfer drums shall be selected, positioned and operated to minimize sources of ignition related to the equipment from vapors released from ruptured/leaking drums. Drums containing radioactive wastes will not be handled until such time as their hazard to personnel is properly assessed.

In the event that drums or containers containing shock sensitive wastes, the following special precautions shall be taken when these drums are handled:

- All non-essential employees shall be evacuated from the area of the drums;

- The equipment used to handle the drums must be provided with explosive containment devices or protective shields to protect the equipment operators from exploding drums;
- An alarm system capable of being perceived above the surrounding light and noise conditions must be used to signal the initiation and completion of the explosive waste handling activities;
- Continuous communications (radios, hand signals, etc...) must be maintained between the personnel in charge of the material handling area and the SHO until the material handling activities are completed. These communication tools must be selected such that they can not cause shock sensitive materials to explode;
- All bulging and/or swelling drums (drums under pressure) must not be moved until the cause for the excess pressure is determined and appropriate containment procedures have been implemented to protect all personnel from explosive relief of the drums; and
- Drums containing packaged laboratory wastes shall be considered to contain shock-sensitive or explosive materials until they have been properly characterized.

Drums will not be moved or opened until the contents of the drums are thoroughly and properly characterized. It is appropriate for all personnel handling the drums to wear Level A personal protective equipment until the contents of the drums are properly characterized and the required level of personal protective equipment is determined. It is the responsibility of the project SHO and project manager to determine the appropriate procedures necessary to characterize the contents and to subsequently move the drums from the excavation. After excavation of these drums, the containers must be properly labeled and a licensed transporter must remove them from the site under proper chain-of-custody/manifest. It is the responsibility of the project SHO and project manager to arrange the proper transporting and off-site disposal of the drums under delegated authority and contract with the Airport Authority.

Miscellaneous Unknowns Including Ordnance

In the event that any potentially hazardous and/or dangerous materials or objects other than those specified in this SHSP are encountered, the project HSO, the project manager, and the Airport must be contacted immediately. In the case of buried ordnance, a specialty contractor is to be hired in accordance with Airport contract provisions. Additionally, local authorities are to be notified regarding these unanticipated materials or objects.

## 5.4 PERSONNEL TRAINING REQUIREMENTS

Consistent with OSHA's 29 CFR 1910.120 regulation covering Hazardous Waste Operations and Emergency Response, all site personnel are required to be trained in accordance with the standard. At a minimum, all personnel are required to be trained to recognize the on-site hazards, the provisions of this SHSP, and the responsible personnel.

### 5.4.1 PRE-ASSIGNMENT AND ANNUAL REFRESHER TRAINING

Prior to arrival on site, each employer will be responsible for certifying that his/her employees meet the requirements of pre-assignment training, consistent with OSHA 29 CFR 1910.120

paragraph (e)(3). The employer should be able to provide a document certifying that each general site worker has received 40 hours of instruction off-site, and 24 hours of training for any workers who are on-site only occasionally for a specific task. All personnel must also receive 8 hours of refresher training annually.

### 5.4.2 SITE SUPERVISORS TRAINING

Consistent with OSHA 29 CFR 1910.120 paragraph (e)(8), individuals designated as site supervisors require 8-hour refresher training annually.

The following individuals are identified as site supervisors:

| Name | Title/Responsibility |
|---|---|
| Grant Haskins | Project Manager |
| Nana Faulkner | Contract Manager |
| Steve Meiggs | Senior Engineer |
| Greg Burgess | Site Supervisor/HSO |
| Marty Millburg | Geotechnical Project Engineer |
| Tim Caughy | Certified Industrial Hygienist |
| David Bearce | Project Engineer |

### 5.4.3 TRAINING AND BRIEFING TOPICS

The following items will be discussed by a qualified individual at the site pre-entry briefing(s) or periodic site briefings.

| Training | Frequency |
|---|---|
| Air Monitoring, Sec. 7.0; (29 CFR 1910.120(h) | Daily |
| Personnel protective equipment (Section 5.0) | Daily |
| Chemical hazards, Table 3.1 | Daily |
| Emergency response plan, Sec. 10.0; [29 CFR 1910.120(l)] | Daily |
| Heat Related Illnesses (Section 3.5) | Daily |
| Heavy Equipment | Daily |
| Site Control, Sec. 8.0; [29 CFR 1910.120(d)] | Daily |
| Encountering biological wastes, 55-gallon drums unanticipated materials/objects | Daily |
| Site characterization and analysis, (Section 3.0) | Periodic |
| Medical surveillance requirements (Section 6.0) | Periodic |
| Animal bites and stings | Periodic |
| Pressurized air cylinders, [29 CFR 1910.101(b)] | Periodic |
| Symptoms of overexposure to hazards | Periodic |

## 5.5 PERSONAL PROTECTIVE EQUIPMENT

This section describes the general requirements of the EPA designated Level of Protection (Levels A – D), and the specific levels of protection required for each task at the Site.

### 5.5.1 LEVELS OF PROTECTION

Personnel wear protective equipment when response activities involve known or suspected atmospheric contamination vapors, gases, or particulates that may be generated by site activities, or when direct contact with skin-affecting substances may occur. Full face-piece respirators protect lungs, gastrointestinal tract, and eyes against airborne toxicants. Chemical-resistant clothing protects the skin from contact with skin-destructive and absorbable chemicals.

The specific levels of protection and necessary components for each have been divided into four categories according to the degrees of protection afforded:

| | |
|---|---|
| **Level A:** | Should be worn when the highest level of respiratory, skin, and eye protection is needed. |
| **Level B:** | Should be worn when the highest level of respiratory protection is needed, but a lesser level of skin protection. |
| **Level C:** | Should be worn when the criteria for using air-purifying respirators are met, and a lesser level of skin protection is needed. |
| **Level D:** | Should be worn only as a work uniform and not in any area with respiratory or skin hazards. Level D provides minimal protection against chemical hazards. |

Modifications of these levels are permitted, and routinely employed during site work activities to maximize efficiency. For example, Level C respiratory protection and Level D skin protection may be required for a given task. Likewise the type of chemical protective ensemble (i.e., material, format) will depend upon contaminants and degrees of contact.

The Level of Protection selected is based upon the following:

- Type and measured concentration of the substance in the ambient atmosphere and its toxicity.
- Potential for exposure to substances in air, liquids, or other direct contact with material due to work being done.
- Knowledge of chemicals on-site along with properties such as toxicity, route of exposure, and contaminant matrix.

In situations where the type of chemical, concentration, and possibilities of contact are unknown, the appropriate Level of Protection must be selected based on professional experience and judgment until the hazards can be better identified.

### 5.5.2 LEVEL B PERSONNEL PROTECTIVE EQUIPMENT

- Full face-piece SCBA or pressure demand supplied air respirator with escape SCBA
- Hooded chemical-resistant clothing (overalls; hooded, one-piece or two-piece chemical splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls)
- Gloves (outer), chemical-resistant
- Gloves (inner)
- Boots (outer), chemical-resistant, steel toe and shank
- Boot covers (outer), chemical-resistant (disposable)
- Hard hat (face shield)
- Escape mask

### 5.5.3 LEVEL C PERSONNEL PROTECTIVE EQUIPMENT

- Air-purifying respirator (APR), full-face, cartridge-equipped (MSHA/NIOSH approved)
- Hooded chemical-resistant clothing (overalls; hooded, one-piece or two-piece chemical splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls)
- Gloves (outer), chemical-resistant
- Gloves (inner),
- Boots (outer), chemical-resistant, steel toe and shank
- Boot covers (outer), chemical-resistant (disposable)
- Hard hat (face shield)
- Escape mask
- 2-way radio communications (intrinsically safe)

### 5.5.4 LEVEL D PERSONNEL PROTECTIVE EQUIPMENT

- Gloves
- Boots/shoes, leather or chemical-resistant, steel toe and shank

- Boots, outer, chemical resistant (disposable) (optional).
- Safety glasses or chemical splash goggles
- Hard hat
- Face shield (optional)

### 5.5.5 REASSESSMENT OF PROTECTION PROGRAM

The Level of Protection provided by PPE selection shall be upgraded or downgraded based upon a change in site conditions or findings of investigations. When a significant change occurs, the hazards should be reassessed. Some indicators of the need for reassessment are:

- Commencement of a new work phase, such as the start of drum sampling or work that begins on a different portion of the site.
- Change in job tasks during a work phase.
- Change of season/weather.
- When temperature extremes or individual medical considerations limit the effectiveness of PPE.
- Contaminants other than those previously identified are encountered.
- Change in ambient levels of contaminants.
- Change in work scope, which affects the degree of contact with contaminants.

### 5.5.6 WORK MISSION DURATION

Before the workers actually begin work in their PPE ensembles the anticipated duration of the work mission should be established. Several factors limit mission length, including:

- Air supply consumption (SCBA use)
- Suit/Ensemble permeation and penetration rates for chemicals.
- Ambient temperature and weather conditions (i.e., heat stress, cold stress).
- Capacity of personnel to work in PPE.

### 5.5.7 CHEMICAL RESISTANCE AND INTEGRITY OF PROTECTIVE MATERIAL

The following specific clothing materials are recommended for the site:

- **Collection of Soil Samples**

- **OVA Sampling/CGI Monitoring - Level D (Modified)**

Boots/Boot Covers - Steel Toe (Rubber)

Inner Gloves - Surgical

Outer Gloves – Nitrile

- **Soil Boring Installation and Soil Sampling - Level D (Modified)**

Boots/Boot Covers - Steel Toe (Rubber)

Inner Gloves - Surgical

Outer Gloves – Nitrile

Tyvek Suit

- **Installation of Test Pits– Level C (Modified – as necessary)**

Boots/Boot Covers - Steel Toe (Rubber)

Inner Gloves - Surgical

Outer Gloves - Nitrile

Hard Hat

Tyvek Suit

Air Purifying Respirators

- **Borrow Pit Excavation / Load, Haul and Transport to Berm– Level C (Modified – as necessary)**

(NOTE: In the event that drums containing unknown substances, Level A PPE must be worn by all personnel handling the drums until the contents can be properly characterized and it is determined which level of PPE is appropriate for the contents.)

Boots/Boot Covers - Steel Toe (Rubber)

Inner Gloves - Surgical

Outer Gloves - Nitrile

Hard Hat

Tyvek Suit

Air Purifying Respirators

### 5.5.8 SOP FOR RESPIRATORY PROTECTION DEVICES

The following subsections define standard operating procedures (SOPs) for APRs.

### 5.5.8.1 CLEANING AND DISINFECTING AIR PURIFYING RESPIRATORS

APRs in routine use should be cleaned and disinfected at least daily. Where respirators are used only occasionally or when they are in storage, the cleaning interval is weekly or monthly, as appropriate.

#### 5.5.8.1.1 Daily Cleaning Procedure

The steps to be followed for cleaning and disinfecting daily are as follows:

- Respirator Disassembly - Respirators are to be taken to a clean location where the filters, cartridges, or canisters are removed. Damaged parts are to be disposed to prevent accidental reuse. For thorough cleaning, the inhalation and exhalation valves, speaking diaphragm, and any hoses are removed.

- Cleaning - In most instances, the cleaning and disinfecting solution provided by the manufacturer is used, and is dissolved in warm water in an appropriate tub. Using gloves, the respirator is placed in the tub and swirled for a few moments. A soft brush may be used to facilitate cleaning.

- Rinsing - The cleaned and disinfected respirators are rinsed thoroughly in water to remove all traces of detergent and disinfectant. This is very important for preventing dermatitis.

- Drying - The respirators may be allowed to dry in room air on a clean surface. They may also be hung upside down like drying clothes, but care must be taken not to damage or distort the face-pieces.

- Reassembly and Inspection - The clean, dry respirator face-pieces should be reassembled and inspected in an area separate from the disassembly area to avoid contamination. Special emphasis should be given to inspecting the respirators for detergent or soap residue left by inadequate rinsing. This appears most often under the seat of the exhalation valve, and can cause valve leakage or sticking.

#### 5.5.8.1.2 After Routine Use in Exclusion Zone

The steps to be followed for cleaning and disinfecting in the field are as follows:

- The mask may be washed/rinsed with soap and water.
- At a minimum, the mask should be wiped with disinfectant wipes (benzoalkaloid or isopropyl alcohol), and allowed to air dry in a clean area.

### 5.5.8.2 APR INSPECTION AND CHECKOUT

1. Visually inspect the entire unit for any obvious damages, defects, or deteriorated rubber.
2. Make sure that the face-piece harness is not damaged. The serrated portion of the harness can fragment which will prevent proper face seal adjustment.
3. Inspect lens for damage and proper seal in face-piece.
4. Exhalation Valve - pull off plastic cover and check valve for debris or for tears in the neoprene valve (which could cause leakage).
5. Inhalation Valves (two) - screw off cartridges/canisters and visually inspect neoprene valves for tears. Make sure that the inhalation valves and cartridge receptacle gaskets are in place.
6. Make sure a protective cover lens is attached to the lens.
7. Make sure the speaking diaphragm retainer ring is hand tight.
8. Make sure that you have the correct cartridge.
9. Don and perform negative pressure test.

### 5.5.8.3 STORAGE OF AIR PURIFYING RESPIRATORS

OSHA requires that respirators be stored to protect against:

Dust
Sunlight
Heat
Extreme cold

Excessive moisture
Damaging chemicals
Mechanical damage

Storage of respirators should be in a clean location, which minimizes the chance for contamination or unsanitary conditions.

## 5.5.9 SOP FOR PERSONAL PROTECTIVE EQUIPMENT

### 5.5.9.1 INSPECTION

Proper inspection of PPE features several sequences of inspection depending upon specific articles of PPE and it's frequency of use. The different levels of inspection are as follows:

- Inspection and operational testing of equipment received from the factory distributor.
- Inspection of equipment as it is issued to workers.
- Inspection after use or training and prior to maintenance.
- Periodic inspection of stored equipment.
- Periodic inspection when a question arises concerning the appropriateness of the selected equipment, or when problems with similar equipment arise.

The primary inspection of PPE in use for activities at the Site will occur prior to immediate use and will be conducted by the user. This ensures that the specific device or article has been checked-out by the user and that the user is familiar with its use.

## SAMPLE PPE INSPECTION CHECKLISTS

### CLOTHING

**Before Use:**

- Determine that the clothing material is correct for the specified task at hand.
- Visually inspect for:
  - imperfect seams
  - non-uniform coatings
  - tears
  - malfunctioning closures
- Hold up to light and check for pinholes.
- Flex product:
  - observe for cracks
  - observe for other signs of shelf-life deterioration
- If the product has been used previously, inspect inside and out for signs of chemical attack:
  - discoloration
  - swelling
  - stiffness

**During the Work Task:**

- Evidence of chemical attack such as discoloration, swelling, stiffening and softening. Keep in mind, however, that chemical permeation can occur without any visible effects.
- Closure failure.
- Tears.
- Punctures.
- Seam discontinuities.

### GLOVES

**Before Use:**

- Visually inspect for:
  - imperfect seams
  - tears
  - non-uniform coating
  - pressurize glove with air; listen for pinhole leaks

### 5.5.10 SPECIFIC LEVELS OF PROTECTION PLANNED FOR THE SITE

The following levels of protection will be utilized during activities at the site:

- **Level D – Modified**
- **Level C – Modified**
- **Level B – Modified (if Hydrogen Sulfide Levels reach action levels)**
- **Level A** (in the event that drums of unknown contents are encountered)

Based upon professional judgment: Concur: Nana Faulkner or Grant Haskins

**SPECIFIC LEVELS OF PROTECTION PLANNED FOR THE TASK ASSIGNMENTS AT THE SITE**

**LEVEL A Tasks**

- In the event that drums of unknown contents are encountered.

**LEVEL B Tasks (Modified)**

- In the event that Hydrogen Sulfide, Carbon Dioxide, or Methane levels reach action levels, don level B protection and exit area immediately.

**LEVEL C and C (Modified) Tasks**

- Installation of Test Pits (as necessary)
- Landfill Excavation (as necessary)

**LEVEL D Tasks**

- None

**LEVEL D (Modified) Tasks**

- Collection of Soil and Effluent Water Samples
  - OVA Sampling/ CGI Monitoring
  - Soil Boring Installation and Soil Sampling
- Installation of Test Pits (when Level C modified is determined unnecessary)
- Landfill Excavation (when Level C modified is determined unnecessary)
- Material Screening
- Load, Haul and Transport

### 5.6 MEDICAL SURVEILLANCE REQUIREMENTS

Medical monitoring programs are designed to track the physical condition of employees on a regular basis as well as survey pre-employment or baseline conditions prior to potential exposures. The medical surveillance program is a part of each employers Health and Safety program.

### 5.6.1 BASELINE OR PRE-ASSIGNMENT MONITORING

Prior to being assigned to a hazardous or a potentially hazardous activity involving exposure to toxic materials employee must receive a pre-assignment or baseline physical. The contents of the physical are to be determined by the employer's medical consultant. As suggested by NIOSH/OSHA/USCG/EPA's Occupational Safety & Health Guidance Manual for Hazardous Waste Site Activities, the minimum medical monitoring requirements for work at the Site are as follows:

- Complete medical and work histories
- Physical examination
- Pulmonary function tests (FVC and FEV1)
- Chest X-ray (every 2 years)
- EKG (every 2 years)
- Eye examination and visual acuity
- Audiometry
- Urinalysis
- Blood chemistry and heavy metals toxicology

The pre-assignment physical should categorize employees as fit-for-duty and able to wear respiratory protection.

### 5.6.2 PERIODIC MONITORING

In addition to a baseline physical, all employees require a periodic physical within the last 12 months unless the advising physician believes a shorter interval is appropriate. The employer's medical consultant should prescribe an adequate medical examination, which fulfills OSHA 29 CFR 1910.120 requirements. The pre-assignment medical outlined above may be applicable.

All personnel working in contaminated or potentially contaminated areas at the Site will verify currency (within 12 months) with respect to medical monitoring. These records will be kept by the employer's Health and Safety Officer.

### 5.6.3 SITE SPECIFIC MEDICAL MONITORING

For activities at the Site, the following specific tests will be required prior to individuals entering the Exclusion Zone or Contamination Reduction Zone.

- No additional site specific tests.

### 5.6.4 EXPOSURE/INJURY/MEDICAL SUPPORT

As a follow-up to an injury or possible exposure above established exposure limits, all employees are entitled to and encouraged to seek medical attention and physical testing. Depending upon the type of exposure, it is critical to perform follow-up testing within 24-48 hours. It will be up to the employer's medical consultant to advise the type of test required to accurately monitor for exposure effects.

### 5.6.5 EXIT PHYSICAL

At termination of employment or reassignment to an activity or location, which does not represent a risk of exposure to hazardous substances, an employee shall require an exit physical. If his/her last physical was within the last 6 months, the advising medical consultant has the right to determine adequacy and necessity of exit exam.

## 5.7 FREQUENCY AND TYPES OF AIR MONITORING / SAMPLING

This section explains the general concepts of an air-monitoring program and specifies the surveillance activities that will take place during project completion at the Site.

The purpose of air monitoring is to identify and quantify airborne contaminants in order to verify and determine the level of worker protection needed. Initial screening for identification is often qualitative, i.e., the contaminant, or the class to which it belongs, is demonstrated to be present but the determination of its concentration (quantification) must await subsequent testing. Two principal approaches are available for identifying and/or quantifying airborne contaminants:

- The on-site use of direct reading instruments.
- Laboratory analysis of air samples obtained by gas sampling bag, collection media (i.e., filter, sorbent), and/or wet-contaminant collection methods.

### 5.7.1 DIRECT-READING MONITORING INSTRUMENTS

Unlike air sampling devices, which are used to collect samples for subsequent analysis in a laboratory, direct-reading instruments provide information at the time of sampling, enabling rapid decision-making. Data obtained from the real-time monitors are used to assure proper selection of PPE, engineering controls, and work practices. Overall, the instruments provide the user the capability to determine if site personnel are being exposed to concentrations which exceed exposure limits or action levels for specific hazardous materials.

Of significant importance, especially during initial entries, is the potential for IDLH conditions or oxygen deficient atmospheres. Real-time monitors can be useful in identifying any IDLH conditions, toxic levels of airborne contaminants, flammable atmospheres, or radioactive hazards. Periodic monitoring of IDLH conditions is critical, especially if exposures may have increased since initial monitoring or if new site activities have commenced.

The following summary was obtained from the Occupational Safety and Health Guidelines for Hazardous Waste Site Activities, and provides an overview of available monitoring instrumentation and their specific operating parameters.

#### SUMMARY OF DIRECT-READING INSTRUMENTS FOR GENERAL SURVEY

**Combustible Gas Indicator (CGI)**

**Hazard Monitored:** Combustible gases and vapors.

**Application:** Measures the concentration of a combustible gas or vapor in air.

**Detection Method:** A filament, usually made of platinum, is heated by burning the combustible gas of vapor. The increase in heat is measured. Gases and vapors are ionized in a flame. A current is produced in proportion to the number of carbon atoms present.

**General Care/Maintenance:** Recharge or replace battery. Calibrate immediately before use.

**Typical Operating Time:** Can be used for as long as the battery lasts, or for the recommended interval between calibrations, whichever is less.

### Carbon Dioxide Detector

**Hazard Monitored:** Carbon dioxide levels

**Application:** Detects concentrations of carbon dioxide (GT Series of Gas Tech brand can monitor oxygen, carbon monoxide, carbon dioxide, and hydrogen sulfide). During operations, the GT brand will provide alert with visual and audible alarms whenever a monitored gas reaches the preset alarm level.

**Typical Operating Time:** 7 hours

### Organic Vapor Analyzer With Flame Ionization Detector (OVA/FID)

**Hazard Monitored:** Many organic gases and vapors.

**Application:** In survey mode, detects the concentration of many organic gases and vapors. In gas chromatography (GC) mode identifies and measures specific compounds. In survey mode, all the organic compounds are ionized and detected at the same time. In GC mode, volatile species are separated.

**General Care/Maintenance:** Recharge or replace battery. Monitor fuel and/or combustion air supply gauges. Perform routine maintenance and calibration checks as described in the manual. Check for leaks.

**Typical Operating Time:** 8 hours; 3 hours with strip chart recorder.

### Gas Tester

**Hazard Monitored:** Gases and vapors (hydrogen sulfide, carbon monoxide, oxygen)

**Application:** Measures gas concentrations

**General Care/Maintenance:** Recharge or replace battery. Perform routine maintenance and calibration checks as described in the manual.

**Typical Operating Time:** 8 to 10 hours.

**Oxygen Meter**

**Substance Monitored:** Oxygen ($O_2$)

**Application:** Measures the percentage of $O_2$ in the air.

**Detection Method:** Uses an electrochemical sensor to measure the partial pressure of $O_2$ in the air, and converts that reading to $O_2$ concentration.

**General Care/ Maintenance:** Replace detector cell according to manufacturer's recommendations. Recharge or replace batteries prior to expiration of the specified interval. If the ambient air is more than 0.5% carbon dioxide ($CO_2$), replace the detector cell frequently.

**Typical Operating Time**: 8-12 hours.

### 5.7.2 PERSONNEL SAMPLING STRATEGY AT THE SITE

After site reclamation activities have commenced, the selective monitoring of high-risk workers (i.e., those who are closest to the source of contaminant generation) is essential. Personal monitoring samples should be collected in the breathing zone and, if workers are wearing respiratory protective equipment, outside the face-piece.

Those employees working closest to the source have the highest likelihood of being exposed to concentrations which exceed established exposure limits. Representative sampling approaches emphasizing worst case conditions, for those employees with the greatest risk of exposure, is acceptable. However, the sampling strategy may change if the operation or tasks change on-site or if exposures potentially increase.

Table 5.2 presents a summary of the air monitoring requirements, methods and respirator cartridge information.

**TABLE 5.2 AIR MONITORING REQUIREMENTS**

| Contaminant | Method | Respirator Cartridge | Monitoring Notes |
|---|---|---|---|
| Carbon dioxide | NIOSH S249 | Supplied Air; any self-contained breathing apparatus with full face-piece and positive pressure | Gas Collection Bag, Gas Chromatography with thermal conductivity detection |
| Hydrogen Sulfide | NIOSH 6013 | Any power air-purifying respiratory protection; any | Charcoal; ammonium hydroxide; hydrogen peroxide |

| TABLE 5.2 AIR MONITORING REQUIREMENTS | | | |
|---|---|---|---|
| **Contaminant** | **Method** | **Respirator Cartridge** | **Monitoring Notes** |
| | | self contained breathing apparatus with full face-piece | |
| Methane | Not listed | Oxygen must be maintained above 19.5% | Not Applicable |

mm = millimeters
μ = micron
cc = cubic centimeters
L = liters
NA = None Available

### 5.7.3 SPECIFIC CONTAMINANTS TO BE MONITORED AT THE SITE

The following checklist provides a summary of the contaminants to be monitored for and frequency/schedule of monitoring. The air-sampling checklist will serve as a site-monitoring plan.

- Organic Vapors and Gases
- Inorganic Vapors and Gases
- Dusts and airborne particulate matter

#### 5.7.3.1 Site Air Monitoring and Sampling Program

#### A. Air Monitoring Instruments

<u>OVA-FID Monitoring</u>

Frequency: Continuous monitoring

Locations: Breathing Zones
Down wind Of Work Zone

<u>Carbon Dioxide Detector</u>

Frequency: Continuous monitoring

Locations: Breathing Zones
Down wind Of Work Zone

<u>Combustible Gas Indicator (CGI)</u>

Frequency: Continuous monitoring

Locations: Breathing Zones
Down wind Of Work Zone

<u>Gas Tester</u>

Frequency: Continuous monitoring

Locations: Breathing Zones
Down wind Of Work Zone

## B. Action Levels

<u>Organic gases and vapors</u>:

Action Level: Depends on Contaminant

Action: Consult standard reference manuals for air concentration/toxicity data. Action level depends on PEL/REL/TLV. Action Level is 1/2 the current standard. See Table 3.1. If action level is attained - LEAVE WORK AREA IMMEDIATELY. Remonitor to verify action level is not exceeded to resume activities.

<u>Inorganic gases and vapors</u>:

Action Level: Depends on Contaminant

Action: Consult standard reference manuals for air concentration/toxicity data. Action Level depends on PEL/REL/TLV. Action Level is 1/2 the current standard. See Table 3.1.

## C. Reporting Format

- Field notebook

## 5.8 SITE CONTROL MEASURES

The following section defines measures and procedures for maintaining site control. Site control is an essential component in the implementation of the site health and safety program.

### 5.8.1 BUDDY SYSTEM

During all activities, the implementation of a buddy system is mandatory. A buddy system requires at least two people who work as a team; each looking out for each other.

### 5.8.2 SITE COMMUNICATIONS PLAN

Successful communications between field teams and contact with personnel in the support zone is essential. The following communications systems will be available during activities at the Site.

- Hand Signals

| Signal | Definition |
|---|---|
| Hands clutching throat | Out of air/cannot breath |
| Hands on top of head | Need assistance |
| Thumbs up | OK/I am all right/I understand |
| Thumbs down | No/negative |
| Arms waving upright | Send backup support |
| Grip partners wrist | Exit area immediately |

- Two-Way Radio (As needed)

### 5.8.3 WORK ZONE DEFINITION

The three general work zones established at the Site are the Exclusion Zone, Contamination Reduction Zone, and Support Zone.

The Exclusion Zone is defined as the area where contamination is either known or likely to be present, or because of activity, will provide a potential to cause harm to personnel. Entry into the Exclusion Zone requires the use of PPE.

The Contamination Reduction Zone is the area where personnel conduct personal and equipment decontamination. It is essentially a buffer zone between contaminated areas and clean areas. Activities to be conducted in this zone will require personal protection as defined in the decontamination plan.

The Support Zone is situated in clean areas where the chance to encounter hazardous materials or conditions is minimal. PPE is therefore not required. The support zone will be manned at all times.

### 5.8.4 NEAREST MEDICAL ASSISTANCE

Attachment A provides a map of the route to the nearest medical facility, which can provide emergency care for individuals who may experience an injury or exposure on-site. The route to the hospital should be verified by the HSO, and should be familiar to all site personnel.

### 5.8.5 SAFE WORK PRACTICES

The following is a summary of safe work practices that will be implemented at the Site.

**SAFE WORK PRACTICE REQUIREMENTS**

| Task | Control Measures |
|---|---|
| Site walk through/general site visit | Buddy system |
| Collection of soil and effluent water samples | Buddy system |
| Installation of groundwater collection trenches | Buddy system |
| Borrow pit excavation | Buddy system |
| Screen material | Buddy system |
| Load, Haul and Transport | Buddy system |
| Stockpile on Berm | Buddy system |

### 5.8.6 EMERGENCY ALARM PROCEDURES

The warning signals described in section 5.10.4 "Evacuation Routes and Procedures" will be deployed in the event of an emergency.

## DIRECTIONS TO EMERGENCY MEDICAL FACILITIES

| | |
|---|---|
| **Primary Hospital** | **Naples Community Hospital** |
| Hospital Address | 350 7th Street, North, Naples, Florida |
| Telephone Number | (239) 436-5000 |

**Route to Primary Hospital (See map in Attachment)**

From Naples Airport Landfill, turn east on W. Enterprise Avenue to Airport Pulling Road
Turn left (north) onto Airport Pulling road. Continue north to Golden Gate Parkway
Turn left (west) onto Golden Gate Parkway. Continue west to US 41 (Tamiami Trail)
Turn left (south) on US 41. Continue south to 4th Avenue, North.
Turn right (west) on 4th Avenue, North. Turn left (south) on 7th Street, North.
Naples Community Hospital is on the left at 350 7th Street, North.

**Secondary Hospital** **N/A**

## EMERGENCY TELEPHONE NUMBERS

| | |
|---|---|
| Local Police Department | 911 |
| Local Fire Department | 911 |
| Local Rescue Department | 911 |
| Environmental Medical Resources<br>24-Hour Telephone | (404) 455-0818 |

| | |
|---|---|
| | ID Ext. 5125 |
| National Poison Control Center | (800) 282-3171 |
| Chemical Manufacturing Assn. | (800) 262-8200 |
| National Response Center | (800) 424-8802 |

## STANDING ORDERS FOR EXCLUSION ZONE

- No smoking, eating, or drinking in this zone.
- No horse play.
- No matches or lighters in this zone.
- Check-in on entrance to this zone.
- Checkout on exit from this zone.
- Implement the communications system.
- Line of sight must be in position.
- Wear the appropriate level of protection as defined in the SHSP

## STANDING ORDERS FOR CONTAMINATION REDUCTION ZONE

- No smoking, eating, or drinking in this zone.
- No horse play.
- No matches or lighters in this zone.
- Wear the appropriate level of protection.

## 5.9 DECONTAMINATION PLAN

Section 5.5.1 lists the tasks and specific levels of protection required for each task. These procedures should be modified to suit site conditions and protective ensembles in use.

### 5.9.1 STANDARD OPERATING PROCEDURES

Decontamination involves the orderly controlled removal of contaminants. All site personnel should minimize contact with contaminants in order to minimize the need for extensive decontamination.

### 5.9.2 LEVELS OF DECONTAMINATION PROTECTION REQUIRED FOR PERSONNEL

The levels of protection required for personnel assisting with decontamination will be Level D – modified.

The HSO is responsible for monitoring decontamination procedures and determining their effectiveness.

### 5.9.3 PERSONNEL EQUIPMENT DECONTAMINATION

Sampling equipment will be decontaminated in accordance with procedures as defined in Section 4.1 of the FDEP Standard Operating Procedures for Laboratory Operations and Sample Collection Activities.

### LEVEL B and C DECONTAMINATION STEPS

| | |
|---|---|
| Step 1 | Segregated equipment drop |
| Step 2 | Boot cover and glove wash |
| Step 3 | Boot cover and glove rinse |
| Step 4 | Tape removal |
| Step 5 | Boot cover removal |
| Step 6 | Outer glove removal |
| Step 7 | Suit/safety boot wash |
| Step 8 | Suit/safety boot rinse |
| Step 9 | Safety boot removal |
| Step 10 | Splash suit removal |
| Step 11 | Inner glove wash |
| Step 12 | Inner glove rinse |
| Step 13 | Face piece removal |
| Step 14 | Inner glove removal |
| Step 15 | Inner clothing removal |
| Step 16 | Field wash |
| Step 17 | Redress |

### LEVEL D DECONTAMINATION STEPS

| | |
|---|---|
| Step 1 | Remove outer garments (i.e., coveralls) |
| Step 2 | Remove gloves |
| Step 3 | Wash hands and face |

### 5.9.4 HEAVY EQUIPMENT DECONTAMINATION

Heavy equipment will be decontaminated as necessary in accordance with the following procedures:

| | |
|---|---|
| Step 1 | Construct a decontamination area/zone |
| Step 2 | Utilizing power washing equipment, Liquinox and water, decontaminate the heavy equipment |
| Step 3 | Perform the decontamination procedures following each incident of excavation in areas of known and suspected contamination, and at the end of each work day |
| Step 4 | Keep all non-essential personnel out of the decontamination area |
| Step 5 | Perform a thorough decontamination of all heavy equipment prior to their removal from the site |

## 5.10 EMERGENCY RESPONSE/CONTINGENCY PLAN

This section describes contingencies and emergency planning procedures to be implemented at the Site. This plan is compatible with local, state and federal disaster and emergency management plans as appropriate.

### 5.10.1 PRE-EMERGENCY PLANNING

During the site briefings held periodically/daily, all employees will be trained in and reminded of provisions of the emergency response plan, communication systems, and evacuation routes. The plan will be reviewed and revised if necessary, on a regular basis by the HSO. This will ensure that the plan is adequate and consistent with prevailing site conditions.

### 5.10.2 PERSONNEL ROLES AND LINES OF AUTHORITY

The Site Supervisor has primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measure to ensure the safety of site personnel and the public. Possible actions may involve evacuation of personnel from the site area, and evacuation of adjacent residents. He/she is additionally responsible for ensuring that corrective measures have been implemented, appropriate authorities notified, and follow-up reports completed. The HSO may be called upon to act on the behalf of the site supervisor, and will direct responses to any medical emergency. The individual contractor organizations are responsible for assisting the project manager in his/her mission within the parameters of their scope of work.

The Site Supervisor is Greg Burgess
Alternates: Grant Haskins, Nana Faulkner, Dave Bearce.
The HSO is Greg Burgess
Alternate: Dave Bearce

### 5.10.3 EMERGENCY RECOGNITION/PREVENTION

Table 5.1 provides a listing of chemical hazards on-site. Personnel will be familiar with techniques of hazard recognition from pre-assignment training and site specific briefings. The HSO is responsible for ensuring that prevention devices or equipment is available to personnel.

**EMERGENCY RECOGNITION/CONTROL MEASURES**

| HAZARD | PREVENTION/CONTROL | LOCATION |
|---|---|---|
| Fire/Explosion | Fire Extinguisher | TRUCK |
| Spill | Berms/Dikes | TRUCK |
| | Sorbent Materials | TRUCK |
| Air Release | Alarm System (Air Horn) | TRUCK |
| | Evacuation Routes | TRUCK |

### 5.10.4 EVACUATION ROUTES/PROCEDURES

In the event of an emergency that necessitates an evacuation of the site, the following alarm procedures will be implemented:

- Evacuation alarm notification should be made using three short blasts of the air horn. All personnel should evacuate upwind of any activities. Insure that a predetermined location is identified off-site in case of an emergency, so that all personnel can be accounted for.

- Personnel will be expected to proceed to the closest exit with your buddy, and mobilize to the safe distance area associated with the evacuation route. Personnel will remain at that area until the re-entry alarm is sounded or an authorized individual provides further instructions.

### 5.10.5 EMERGENCY CONTACT/NOTIFICATION SYSTEM

The following list provides names and telephone numbers for emergency contact personnel. In the event of a medical emergency, personnel will take direction from the HSO and notify the appropriate emergency organization. In the event of a fire or spill, the site supervisor will notify the appropriate local, state, and federal agencies.

| ORGANIZATION | CONTACT | TELEPHONE |
|---|---|---|
| Ambulance | Local | 911 |
| Police | Local | 911 |
| Fire | Local | 911 |
| Hospital | Naples Community Hospital | (239) 436-5000 |
| National Response Center | | 800-424-8802 |
| Center for Disease Control | | 404-488-4100 |
| Chemtrec | | 800-424-9555 |

### 5.10.6 EMERGENCY MEDICAL TREATMENT PROCEDURES

Any person who becomes ill or injured in the exclusion zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket). First aid should be administered while awaiting an ambulance or paramedics. All injuries and illnesses must immediately be reported to the project manager.

Any person being transported to a clinic or hospital for treatment should take with them information on the chemical(s) they have been exposed to at the site. This information is included in Table 7.1.

Any vehicle used to transport contaminated personnel will be treated and cleaned as necessary.

### 5.10.7 FIRE OR EXPLOSION

In the event of a fire or explosion, the Airport and local fire department should be summoned immediately. Upon their arrival, the Site Supervisor or designated alternate will advise the fire commander of the location, nature, and identification of the hazardous materials on site.

If it is safe to do so, site personnel may:

- Use fire fighting equipment available on site to control or extinguish the fire; and,
- Remove or isolate flammable or other hazardous materials, which may contribute to the fire.

### 5.10.8 SPILL OR LEAKS

In the event of a spill or a leak, site personnel will:

- Inform their supervisor immediately;
- Locate the source of the spillage and stop the flow if it can be done safely; and,
- Begin containment and recovery of the spilled materials.

### 5.10.9 EMERGENCY EQUIPMENT/FACILITIES

The following emergency equipment shall be made available at the Site:

- First aid kit
- Fire extinguisher
- Mobile telephone
- Eye wash

## 5.11 SPILL CONTAINMENT PROGRAM

The procedures defined in this section comprise the spill containment program in place for activities at the Site.

- All drums and containers used during the clean up shall meet the appropriate DOT, OSHA, and EPA regulations for the waste that they will contain.
- Drums and containers shall be inspected and their integrity assured prior to being moved. Drums or containers that cannot be inspected before being moved because of storage conditions, shall be positioned in an accessible location and inspected prior to further handling.
- Operations on site will be organized so as to minimize the amount of drum or container movement.
- Employees involved in the drum or container operations shall be warned of the hazards associated with the containers.
- Where spills, leaks, or ruptures may occur, adequate quantities of spill containment equipment (absorbent, pillows, etc.) will be stationed in the immediate area. The spill

containment program must be sufficient to contain and isolate the entire volume of hazardous substances being transferred.

- Drums or containers that cannot be moved without failure, shall be emptied or over-packed into a sound container.
- Fire extinguishing equipment meeting 29 CFR Part 1910. Subpart L shall be on hand and ready for use to control fires.

## 5.12 HAZARD COMMUNICATION

In order to comply with 29 CFR 1910.1200, Hazard Communication, the following written Hazard Communication Program has been established. All employees will be briefed on this program, and have a written copy for review.

### 5.12.1 CONTAINER LABELING

All containers received on-site will be inspected to ensure the following: (1) all containers will be clearly labeled as to the contents; (2) the appropriate hazard warnings will be noted; and (3) the name and address of the manufacturer will be listed.

All secondary containers will be labeled with either an extra copy of the original manufacturer's label or with generic labels, which have a block for identification and hazard warnings.

### 5.12.2 MATERIAL SAFETY DATA SHEETS (MSDS)

Copies of MSDSs for all hazardous chemicals known or suspected on site are included in this SHSP as in the Appendix. MSDS will be available to all employees for review during each work shift.

### 5.12.3 EMPLOYEE TRAINING AND INFORMATION

Prior to starting work, each employee will attend a health and safety orientation and will receive information and training on the following: (1) an overview of the requirements contained in the Hazard Communication Standard, 29 CFR 1910.1200; (2) chemicals present in their workplace operations; (3) location and availability of a written hazard program; (4) physical and health effects of the hazardous chemicals; (5) methods and observation techniques used to determine the presence or release of hazardous chemicals; (6) how to lessen or prevent exposure to these hazardous chemicals through usage of control/work practices and personal protective equipment; (7) emergency procedures to follow if they are exposed to these chemicals; (8) how to read labels and review MSDSs to obtain appropriate hazard information; and (9) location of the MSDS file.

## 5.13 PLAN PREPARATION

PREPARED BY:________________________ DATE:_______________
Nana Faulkner, PG, CHMM
Project Manager

APPROVED BY:________________________ DATE:_______________
Donald R. Polanis, Jr.
Vice President
Environmental Services

APPROVED BY:________________________ DATE:_______________
Tim Caughey, CIH.
PSI Health and Safety Officer

**NOTICE**

**This Site Health and Safety Plan is produced for the use of PSI on the specific Project indicated herein. This Site Health and Safety Plan is not intended or represented to be suitable for use by others on the Project, or for reuse on extensions of the Project, or for use on any other project. Any use without written verification or adaptation by PSI will be at the user's sole risk and without liability or legal exposure to PSI.**

### 5.13.1 PLAN DISTRIBUTION

The plan will be distributed to each team member by the Site Supervisor. A master copy with any corrections will be maintained by the Site Supervisor.

### 5.13.2 CERTIFICATIONS

(Note: This page should be retained by the Site Health and Safety Officer and incorporated into the project file.)

By my signature, I certify that:

1. I have read,
2. I understand, and
3. I will abide by

the Site Health and Safety Plan for the Naples Airport Former Landfill Site Reclamation Project.

| | Printed Name | Signature | Date | Affiliation |
|---|---|---|---|---|
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# 6.0 DESIGN OF WASTE MATERIAL BERM

## 6.1 GENERAL

The reclamation of the former landfill to provide space for Airport improvements involves the excavation, screening, and transport of process reject material to another location at the landfill. The reject material will be placed in a berm which will extend to a predetermined height based upon the slope of the sides and space available. Figure 1-4 shows a general layout of space set aside by the Airport Authority for future berms. It is noteworthy that Collier County has plans to reclaim an area for Recycling Center improvements and will need to use a portion of the area set aside for berms.

## 6.2 MATERIAL TO BE TRANSPORTED TO BERM

There are several different types of material that will be transported to the new berm. Foliage consisting mostly of trees will be crushed or chipped prior to transport to the berm. Wood chips may be set aside for use in future landscaping or for use as daily cover on the new berm if needed. Chipping of foliage will reduce the volume of material placed in the berm.

Process reject debris resulting from screening operations will provide the bulk of the new berm. The amount of reject debris will depend on several factors including:

- Surface area undergoing reclamation.
- Thickness of the debris layer, which varies across the landfill, and is dependent on the depth of excavation.
- Percentage of reject debris compared to fines.

Finally, upon completion of the berm two feet of soil must be installed to cover the debris. Sod or other landscaping can be applied as desired.

## 6.3 BERM DIMENSIONS

The side slope of the berm is determined from planned future use of the berm and the volume of reject material to be relocated. A shallow slope will facilitate mowing but will reduce the capacity of the berm. Steep slopes provide greater capacity but are difficult to mow. For the purpose of this project, the sides of the berm will have a four to one slope to facilitate mowing. Mowing is needed to keep exotic foliage from growing. The toe of the berm must be a minimum of ten feet from the nearest fence to facilitate mowing. A drainage swale must be established at the toe of berm to direct runoff to an established storm water system. Once the footprint area of a berm is determined from available space, the top elevation can be calculated using a 4 to 1 slope for the sides. The top of the berm is to have a flat area or be rounded. Since the base elevation of the berm is irregular, an average elevation for the base will be used in this report.

## 6.4 BERM VOLUME

Approximately one-half of the 208,000 square foot berm shown on Figure 1-4 will be needed for the process reject material from the screening operation. The proposed berm covers an area of approximately 2.3 acres. The average approximate base elevation in this area is 17 feet above mean sea level (MSL). The berm has an approximate vertical dimension of 19 feet and rises to a height of 36 feet MSL. Based upon the previously discussed requirements, the berm will have a volume of process reject debris of approximately 30,000 cubic yards. The surface area of the berm will be approximately 110,000 square feet.

For the excavation without screening option the berm must contain 73,568 cubic yards. This will result in more space required for the berm, more silt fencing, more land clearing, longer hauling distance, more cover material, more sod, and more lime rock to maintain the haul road.

## 6.5 BERM COVER MATERIAL

Based upon the berm surface area of 110,000 square feet and a cover thickness of 2 feet, approximately 9,780 cubic yards of cover material will be required. This figure takes into account a 1.2 compaction factor, which is the loss of thickness of the cover due to compaction from the dozer that is placing the material. The cover material can be fines (reclaimed soil) from the screening operation or imported fill material. Bahia sod can be placed on top of the soil cover. Depending on the season when the sod is placed, supplemental watering may be required to get the sod established.

As an alternative to the two feet of soil cover requirement, the processed foliage can replace up to six inches of soil in the berm cover.

# 7.0 AMOUNT OF DEBRIS

## 7.1 GENERAL

The amount of material to be excavated and processed can be determined from site maps showing the boundaries of the landfill and planned improvements as shown on Figure 7-1. Of the five zones shown on Figure 7-1 Zones 1A, 1B, and 1C contain material to be excavated. Zone 1D is set aside for relocation of process reject material. Zone 1E is the area set aside for process screening operations. The cost of reclamation is directly proportional to the amount of material to be processed. Accordingly, the excavation plan can be tailored to reduce the volume of material to be processed. Following is a discussion on methods to minimize the amount of material to be processed.

## 7.2 ZONE 1A

Zone 1A with an approximate area of one acre is located southeast of the planned improvements. This area is not needed for taxi-ways or any other improvements. The foliage is to be removed and the finished elevation lowered to five feet above mean sea level (MSL). Following excavation the area is to be covered with two feet of soil and sodded with bahia grass.

Approximately five feet of debris will need to be removed to achieve the planned elevations. This will result in 9,680 cubic yards of material to be processed. Upon screening the landfill material will be divided into fines and process reject material. Based upon PSI experience at similar landfills the ratio between fines and process reject material is 70 percent fines and 30 percent residue. Using this ratio there will be approximately 6,776 cubic yards of fines and 2,904 cubic yards of reject material.

Zone 1A can be completed with approximately 3,227 cubic yards of cover material and 43,560 square feet of sod.

## 7.3 ZONE 1B

The total estimated landfill area in Zone 1B is 2.5 acres. This area will have open areas and taxi ways leading to the hangers. Accordingly, Zone 1B can be excavated to an elevation of 3 feet MSL. This results in a volume of 24,200 cubic yards (in place). The material will expand upon excavation by a factor of approximately 1.2 resulting in a volume of 29,040 cubic yards.

Upon screening the landfill material will be divided into soil and debris. Based upon PSI experience at similar landfills the ratio between fines and reject material is 70 percent fines and 30 percent reject. Using this ratio there will be approximately 20,328 cubic yards of fines and 8,712 cubic yards of reject material. The amount of backfill required to achieve the target elevation of 5 feet MSL is estimated at 9,679 cubic yards for the 2.5 acre area.

The taxi ways will require geotechnical design as discussed in the PSI Geotechnical Engineering Services Report dated October 19, 2005. Approximately 20,000 square feet of geotextile fabric will be needed.

## 7.4 Zone 1C

Zone 1C includes the area for the hangers, ramps, access road, and parking. The hangers are 60 foot by 60 foot relatively light weight steel buildings. There are three options for preparing this area for construction.

- Remove all landfill material to native soil and backfill with the fines from the screening operation. This will involve dewatering to produce the desired results. This is the most costly option with the best long term results.
- Remove a portion of landfill material, dewater, and conduct dynamic compaction. Fines from screening or imported fill material will be needed.
- Remove a portion of landfill material and conduct pressure grouting into the landfill material located below the water table.
- Remove a portion of the landfill material, install appropriately selected high-strength biaxial geotextile material followed by compacted suitable fill material. This is the least costly option and should produce satisfactory results based on the planned usage.

Of these options the use of geotextile material is the most cost effective. It must be understood that the underlying buried debris may have areas where decomposition may result in future pavement and/or hanger settlement resulting in increased maintenance cost. Approximately 130,000 square feet of geotextile fabric will be needed.

The total estimated landfill area in Zone 1C is 3.0 acres. This area will have hangers, ramps, access road, and parking. Zone 1C can be excavated to an elevation of 3 feet MSL. This results in a volume of 29,040 cubic yards (in place). The material will expand upon excavation by a factor of approximately 1.2 resulting in a volume of 34,848 cubic yards.

Upon screening the landfill material will be divided into fines and reject material. Based upon PSI experience at similar landfills the ratio between fines and reject material is 70 percent fines and 30 percent reject. Using this ratio there will be approximately 24,394 cubic yards of fines and 10,454 cubic yards of reject material. The amount of backfill required to achieve the target elevation of 5 feet MSL is estimated at 11,616 cubic yards for the 3.0 acre area.

Approximately 30,000 cubic yards of debris can be placed in the adjacent berm as calculated in Section 6.

## 7.5 Material Balance

A material balance for fines and process reject material from the various zones is summarized as follows:

| | |
|---|---|
| Fines from Zone 1A | 6,776 |
| Fines from Zone 1B | 20,328 |
| Fines from Zone 1C | 24,394 |
| **Total Fines** | **51,498 cubic yards** |
| | |
| Reject from Zone 1A | 2,904 |
| Reject from Zone 1B | 8,712 |
| Reject from Zone 1C | 10,454 |
| **Total Reject** | **22,070 cubic yards** |
| | |
| Backfill Zone 1A | 3,227 cubic yards |
| Backfill Zone 1B | 9,679 cubic yards |
| Backfill Zone 1C | 11,616 cubic yards |
| Soil for Berm cover | 8,150 cubic yards |
| **Total** | **32,672 cubic yards** |

Based on this summary the estimated 51,498 cubic yards of soil will be sufficient for backfill and cover with 18,826 cubic yards remaining. However, there are several variables that could reduce the volume of soil material thus causing the target elevation to be less than 5 feet MSL. One major variable is the ratio of soil to debris. If the ratio of fines drops below 70 percent there may not be sufficient soil to achieve a 5 foot elevation following excavation.

## 7.6 Deep Dynamic Compaction (DDC)

For the areas where the debris extends into the water table there are options available to eliminate the need for excavation and screening of wet material. One of these is dynamic compaction. Another option is grout stabilization that will be discussed in Section 7.7.

Dynamic Compaction involves the repeated dropping of large steel weights by means of crawler cranes on a predetermined grid pattern. In general, the steel weights range from 6 to 25 tons, and are dropped repeatedly from heights ranging from 40 to 70 feet. The repeated application of high energy impacts at the same point causes densification/compaction of the soil mass to depths ranging from 10 to 25 feet. Energy is typically applied in several passes, with the initial pass on a 10 to 20 foot grid, followed by either additional area passes, or a tight grid at footing locations.

The estimated cost for dynamic compaction is $.50 to $.75 per square foot. To be included is two feet of fill material to be placed prior to the application of dynamic compaction. It is estimated that the hanger footprints plus 10 feet on all sides could benefit from dynamic compaction. This would result in an area of 45,000 square feet. The ground water (leachate) must be removed prior to the dynamic compaction. The cost will be approximately $33,750 for 45,000 square feet not including the cost to process the leachate into the City sewer. Leachate extraction, treatment, and disposal will double the cost to approximately $70,000. It should be noted that there will still be some settling over time due to decomposition of organic material. In addition, approximately 35,000 square feet of geotextile fabric will be needed for roads, ramps, and taxi ways.

## 7.7 Grout Stabilization

The landfill debris located beneath the water table presents a design challenge. One option is the use of grout stabilization. Grout stabilization involves injecting grout into the space between the debris estimated at approximately 25 percent. For information on this method Hayward Baker in Tampa, Florida was contacted. According to Hayward Baker, for an injection zone of four feet, the cost is $15 to $20 per square foot. For an area of 45,000 square feet this results in an estimated cost of $787,000. Due to variations in the landfill as discussed in the Geotechnical Report, this is a high risk solution and is not recommended.

## 7.8 Geotextile Fabric

The Geotechnical Report recommended the use of biaxial geotextile fabric for paved areas and dynamic compaction for buildings. Due to the lightweight nature of the proposed hangers, geotextile fabric could be considered in place of dynamic compaction. The use of this material could be used for driveways, parking areas, ramps, and aircraft hangers. An estimated total of 7,000 feet of 15 foot wide material will be needed. This takes into account unavoidable waste and 24-inch overlap. The exact specification and design of geotextile fabric is not included in the reclamation plan scope of work.

# 8.0 WORK STAGING AREA

## 8.1 GENERAL

The screening equipment and material stockpiles should be placed in a staging area that meets the following objectives:

- Sufficient distance from aircraft operations
- Accessible to work crew and vendors
- Close proximity to area to be excavated
- Area that can be stabilized with minimum amount of excavation

## 8.2 STAGING AREA LOCATION

From site reconnaissance, aerial photographs, and discussion with Mr. Erv Dehn of the Airport, the recommended location for staging operations is the area south of Area 1 designated as 1E on Figure 7-1. This area is not part of the landfill, but will require clearing of existing foliage except for a buffer between the process area and the adjacent hanger. The processing area and access road will need a lime rock base. This area was selected due to access from the end of Patriot Way, its location out of the ROFA, and its proximity to the landfill. The proposed processing area is south of a ditch which defines the southern boundary of the landfill.

## 8.3 STAGING AREA DESIGN

The design of the staging area must meet the following criteria:

- Elevation must allow suitable drainage.
- Must have sufficient area for trommel screen, loader, excavator, and material stockpiles.
- Must have space for parking, construction trailer, fueling facilities, portable toilets, and equipment storage.
- Lime rock base must be thick enough for planned operations.
- Provisions are needed for two ditch crossings.

Due to the sandy soil conditions a lime rock base will be needed. The processing area, access road, and parking areas will total approximately 50,000 square feet and the lime rock thickness should be a minimum of six inches. This will result in 926 cubic yards of lime rock.

One or more 24-inch diameter by 24 foot culvert pipes will be needed to provide access between the reclamation and processing areas. Two ditch crossings and associated access roads are recommended for optimum traffic flow and safety.

In addition an estimated 400 cubic yards of lime rock will be needed to maintain the haul road from the processing area to the berm.

Following is a summary of the estimated lime rock requirement:

| | |
|---|---|
| Process area | 741 |
| Access road and parking | 185 |
| Ditch crossing and access road | 338 |
| Maintain haul road | 400 |
| Total | 1,664 cubic yards |

# 9.0 TRAFFIC FLOW PATTERN

## 9.1 GENERAL

Traffic flow pertains to reclamation work crew, parking areas, haul trucks, and vendors. Of utmost importance in traffic flow is safety. Another factor is roadway degradation and dust.

## 9.2 SITE ACCESS

Site access is via Enterprise Avenue, Corporate Flight Drive, Patriot Way, and a proposed lime rock access road to be constructed between the end of Patriot Way and the processing area.

## 9.3 PARKING AREA

Parking, a field office trailer, portable toilets, equipment storage, and fueling facilities are to be located adjacent to the processing area on a lime rock base.

## 9.4 HAUL TRUCKS

Off road haul trucks will move material to the processing area by crossing the ditch where a culvert is to be installed (east crossing). Haul trucks moving reject material to the berm will use the west culvert (west crossing). The use of two crossings will help eliminate congestion and potential accidents.

## 9.5 HAUL ROAD MAINTENANCE

The haul roads may become extremely uneven due to uneven settlement of the landfill material, thus reducing hauling efficiency. Lime rock may need to be added to the haul roads to maintain desired efficiency.

## 9.6 VENDORS

Vendors and other visitors must enter by Patriot Way and check in at the office trailer.

# 10.0 FUEL UTILIZATION EVALUATION

## 10.1 GENERAL

Diesel fuel represents a major portion of the cost of the reclamation. Accordingly, an analysis of fuel utilization, delivery, and storage is appropriate.

## 10.2 CONSUMPTION

Fuel consumption is proportional to the heavy equipment used and the hours of operation. Table 10-1, included in Appendix C, shows the estimated fuel consumption for excavation with imported fill material. Table 10-2 shows the fuel consumption for the material removal option with screening.

## 10.3 FUEL COST

Fuel cost is somewhat unpredictable since the price varies widely from month to month. Therefore, a contingency must be built into the project cost estimate to account for the anticipated variations in fuel price. As of this report, off-road diesel is selling for $2.25 per gallon according to Dennis Combs, of Combs Oil.

## 10.4 STORAGE

Fuel suppliers will provide temporary diesel storage vessels for a deposit. A portion of the deposit is refunded upon return of the vessels. The storage tank(s) must be located in a bermed area as a means of secondary containment. Fuel dispenser pumps using a 12 volt DC power supply must be used. The dispensing equipment should have a fuel filter. The tanks must be located so there is access for the heavy equipment and the fuel supplier. The reclamation contractor may have a portable means of dispensing fuel when screening equipment is used. Alternatively, a tank can be located adjacent to the screening equipment.

## 10.5 DELIVERY

The two suppliers located near the airport are Combs Oil and Evans Oil. The selected supplier will deliver into the storage tanks as required.

# 11.0 FOLIAGE DISPOSITION PLAN

## 11.1 GENERAL

The former landfill is over-grown with foliage consisting of exotics including Brazilian Pepper, Australian Pine, Melaleuca, and weeds. Prior to the start of reclamation work the foliage needs to be removed from the excavation area, the berm area, and the processing area. These areas total approximately 10 acres.

## 11.2 GRUBBING

Grubbing is conducted using a large excavator with thumb, a dozer with a root rake, a front end loader with fork, and off-road dump trucks. The material is brought to a central location for further processing.

## 11.3 DEBRIS REDUCTION

The next step in the foliage removal process is the use of a tub grinder or chipper. The tub grinder is preferred because its use will reduce all the foliage including stumps to mulch. The tub grinder should discharge to an area not included in the proposed improvements and near the proposed berm.

## 11.4 MULCH DISPOSAL

The mulch can be held in reserve for use as daily cover on the berm in the event of blowing debris. Any mulch remaining at the completion of the berm can be used as cover material up to 6-inches in thickness.

# 12.0 COST ESTIMATE AND SCHEDULE

## 12.1 GENERAL

Alternative approaches to reclamation were discussed in Section 7 of this report. The two least costly options will be presented in this section. For both options it is assumed that excavation will extend to an elevation of 3 feet MSL so as to remain above the water table. This will avoid the cost of dewatering and handling of wet material and will reduce the volume of material to be processed.

## 12.2 EXCAVATION WITH IMPORTED FILL MATERIAL

The excavated material can be transported by off-road dump truck for relocation at the landfill. To accommodate additional material associated with this option the side slopes of the constructed berm could be 2 to 1. However, the side slopes could not be maintained with conventional mowing equipment. Exotic vegetation would most likely take root in areas that are not maintained. The berm must be covered with two feet of soil. Bahia sod or ground cover can be placed on the berm.

As shown in Appendix D, the estimated cost for this option is $1,647,631. A major portion of this estimate is for imported fill and cover material which could cost more than the estimate. Fill material in southwest Florida is currently escalating on a regular basis.

## 12.3 EXCAVATION AND SCREENING

Screening of the excavated material results in fines (soil) and reject material (debris). The ratio is approximately 70 percent soil and 30 percent reject material. The soil can be used for backfill to achieve desired elevations and to cover the reject material. This option is recommended for the following reasons:

- The space required for the reject material is approximately one-third the space required for disposal of all of the excavated material. The additional space can be used by the Airport for future development or by Collier County for disposal of reject material from the proposed Recycling Center improvements.
- The cost of imported fill material continues to escalate and may be higher at the time of the project than the $16.00 per cubic yard used in this report. Approximately 50,000 cubic yards of imported fill and cover material will be needed if screening is not selected.
- The cost of screening is approximately $240,000 less than relocating the material without screening.

As shown in Appendix D the estimated cost for this option is $1,407,678.

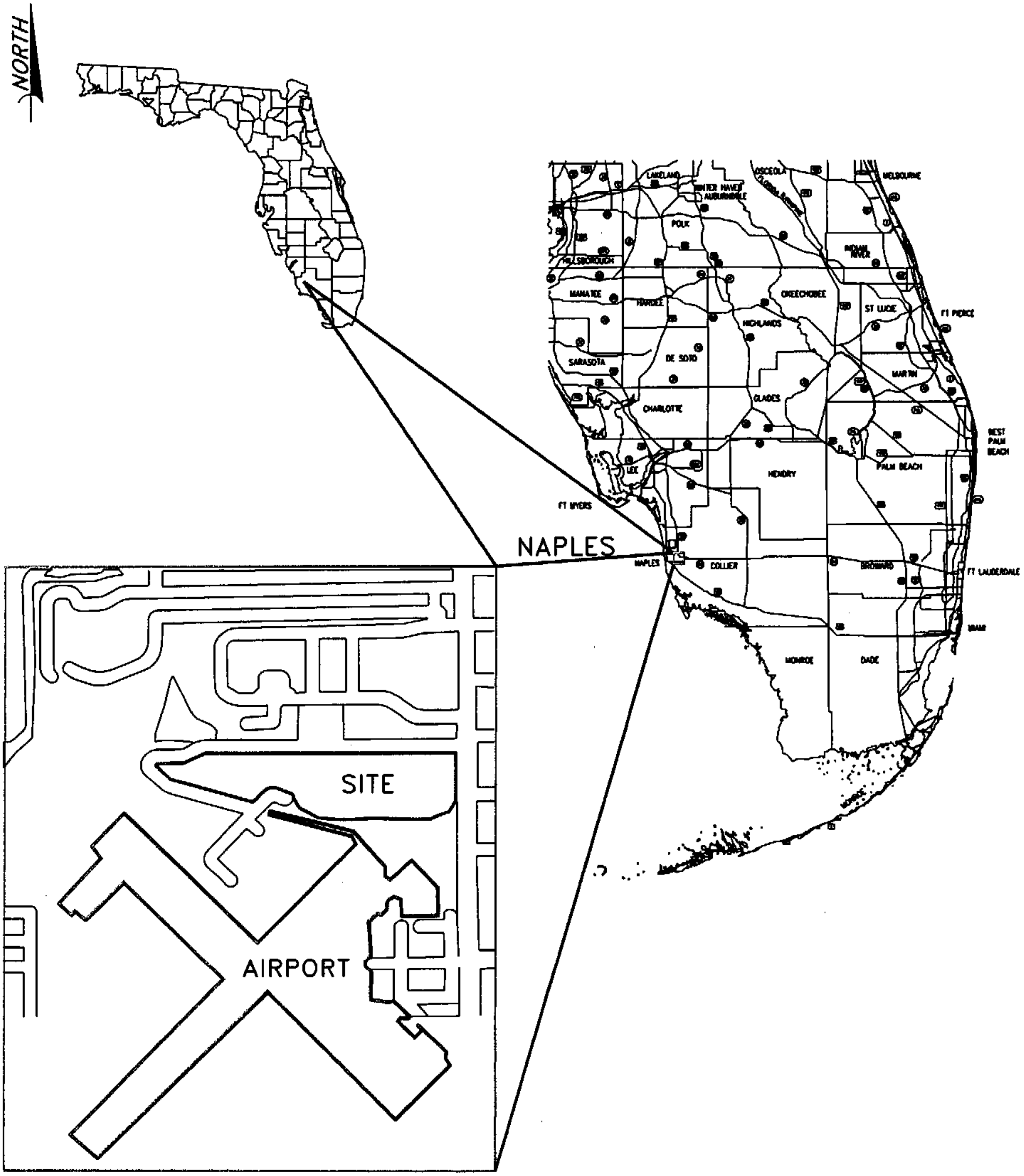
## 12.4 SCHEDULE

### 12.4.1 Excavation with Imported Fill Material

The project duration for this option is approximately three months. One major variable with this approach is transport within the site by on-road dump trucks. Another variable is delays caused by electrical storms.

### 12.4.2 Excavation with Screening

This option will take approximately four months. The major variable affecting the duration of the project is weather conditions. Electrical storms delay production and wet conditions reduce the screening efficiency. Rainy weather, however, generally eliminates concerns with blowing dust.



**psi** *Information To Build On*
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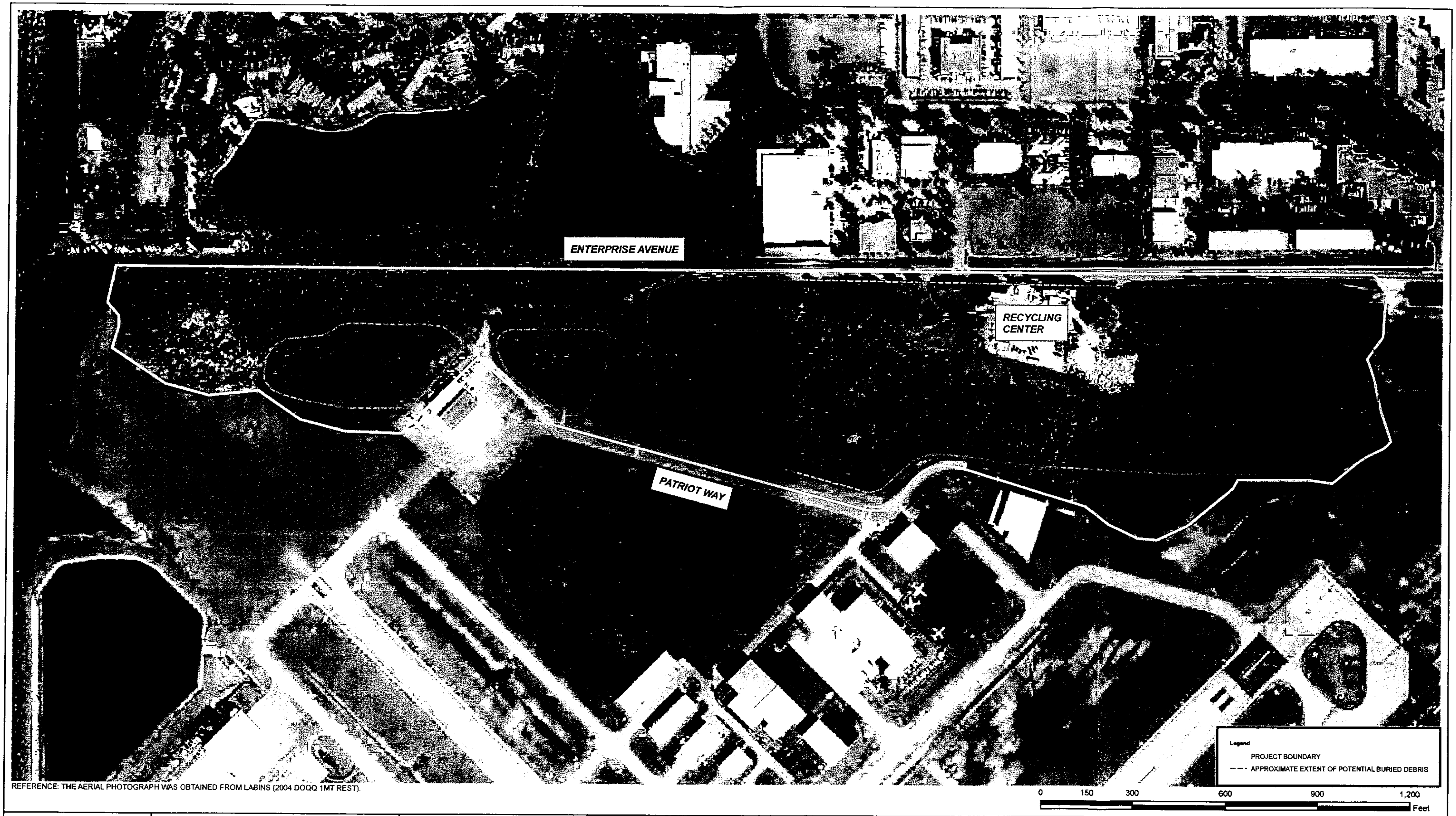
# PROJECT LOCATION MAP
# NAPLES AIRPORT FORMER LANDFILL

NAPLES, COLLIER COUNTY, FLORIDA

| | | | | | | |
|---|---|---|---|---|---|---|
| CHKD. BY: | DRAWN BY: VAS | DATE: 02/26/06 | SCALE: NOTED | REVISION: | PROJECT NO.: 552-6G026 | FIGURE 1-1 |

P:\552-Env\2006\G- Reports 06\6G026 Naples Airport Reclamation Plan\CAD\6g026.dwg



REFERENCE: THE AERIAL PHOTOGRAPH WAS OBTAINED FROM LABINS (2004 DOQQ 1MT REST).

PROJECT NO.
**552-6G026**

DRAWN BY
**PAV**

DATE CREATED
**04/12/06**
SCALE 1: 3,500

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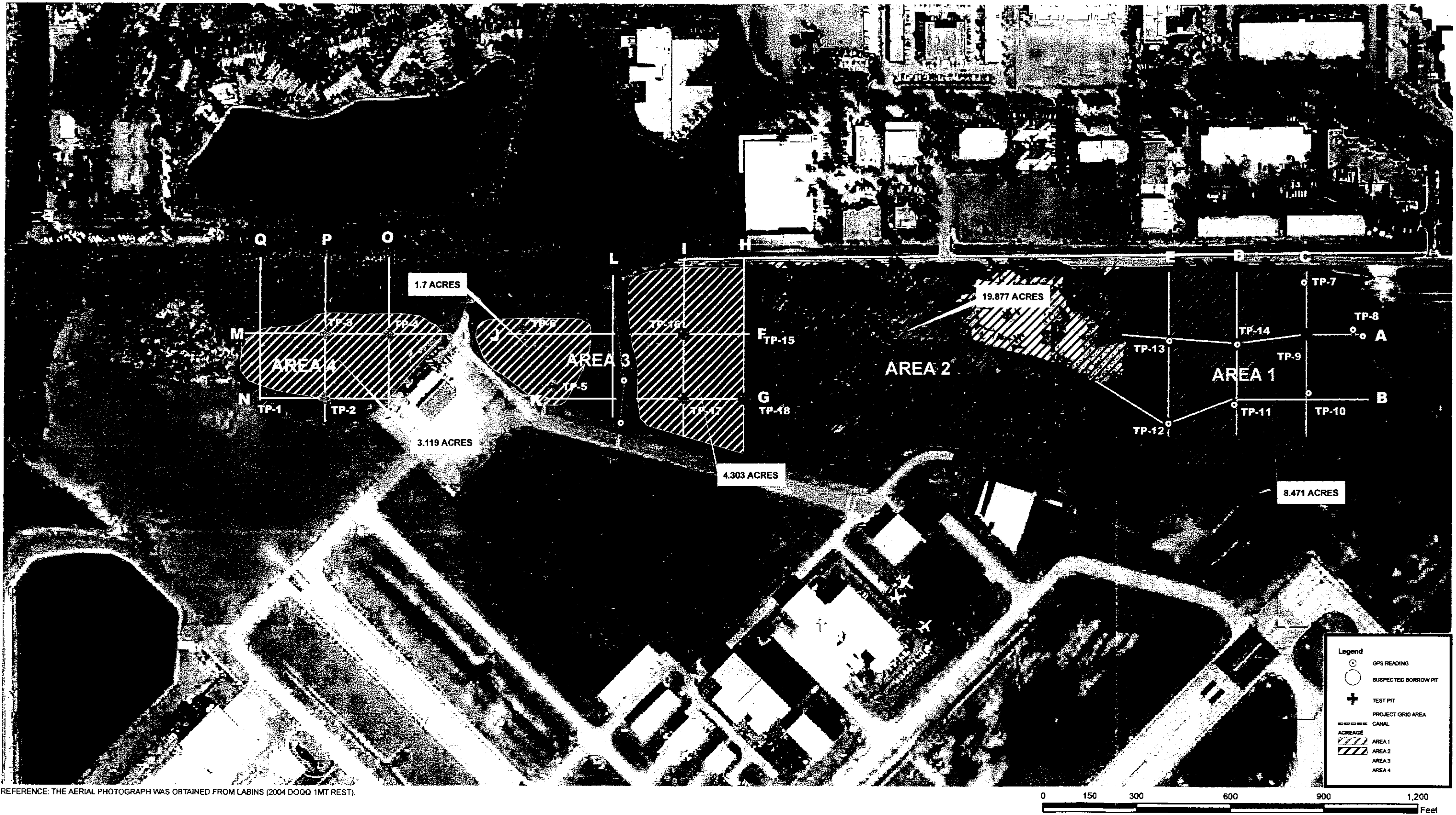
*Engineering • Consulting • Testing*
5801 Benjamin Center Drive Suite 112
Tampa, Florida 33634
(813)886-1075
(813)249-0301 fax

N
W E
S

# SITE MAP
# NAPLES AIRPORT FORMER LANDFILL
## NAPLES, COLLIER COUNTY, FLORIDA

**FIGURE 1-2**

P:\552-Env\2006\G- Repor 026 Naples Airport Reclamation Plan\GIS\552-6G026-FIG-1-2.MXD



REFERENCE: THE AERIAL PHOTOGRAPH WAS OBTAINED FROM LABINS (2004 DOQQ 1MT REST).

PROJECT NO.
**552-6G026**

DRAWN BY
**PAV**

DATE CREATED
**04/12/06**
SCALE 1:3,500

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Tampa, Florida 33634
(813)886-1075
(813)249-0301 fax

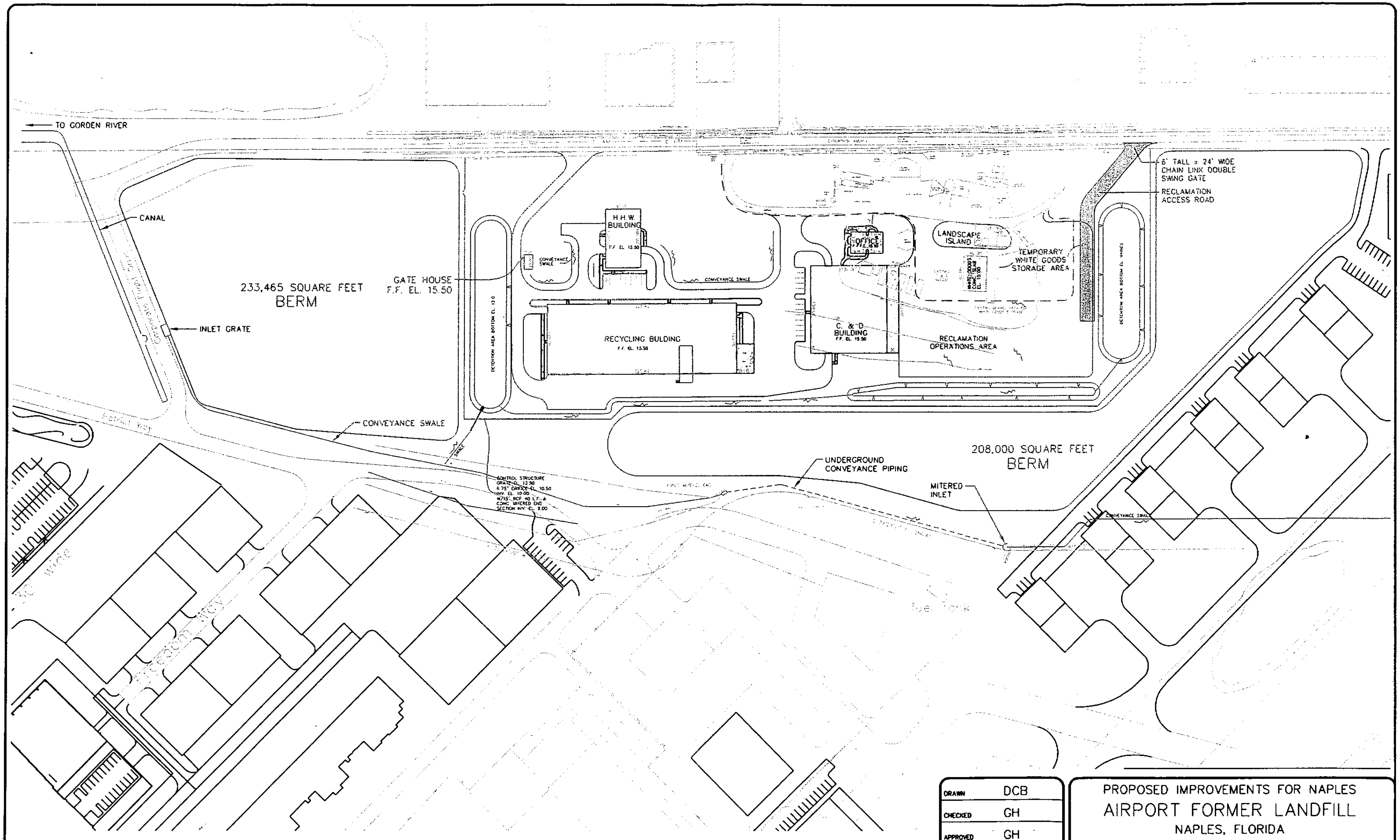
N
W E
S

## AREA MAP
## NAPLES AIRPORT FORMER LANDFILL

**NAPLES, COLLIER COUNTY, FLORIDA**

**FIGURE 1-3**

P:\552-Env\2006\G- Repo 026 Naples Airport Reclamation Plan\GIS\552-6G026-FIG-1-3.MXD



**SITE PLAN**

*Scale: 1" = 150'-0"*

N

| | |
|---|---|
| DRAWN | DCB |
| CHECKED | GH |
| APPROVED | GH |
| SCALE | 1"=150' |

PROPOSED IMPROVEMENTS FOR NAPLES
AIRPORT FORMER LANDFILL
NAPLES, FLORIDA

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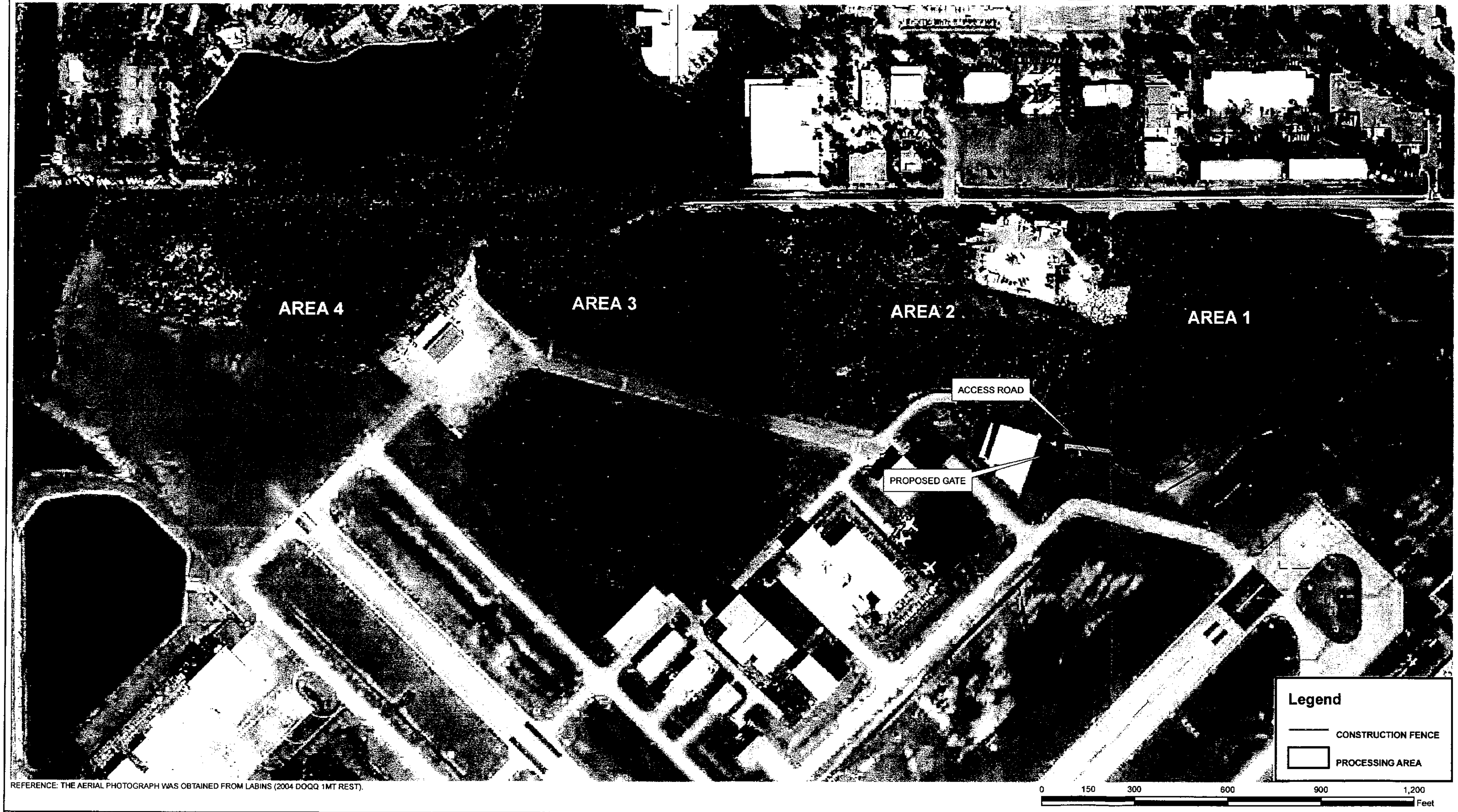
| DATE | PROJ. NO. | |
|---|---|---|
| FEB 06 | 552-6G026 | FIG. 1-4 |



REFERENCE: THE AERIAL PHOTOGRAPH WAS OBTAINED FROM LABINS (2004 DOQQ 1MT REST).

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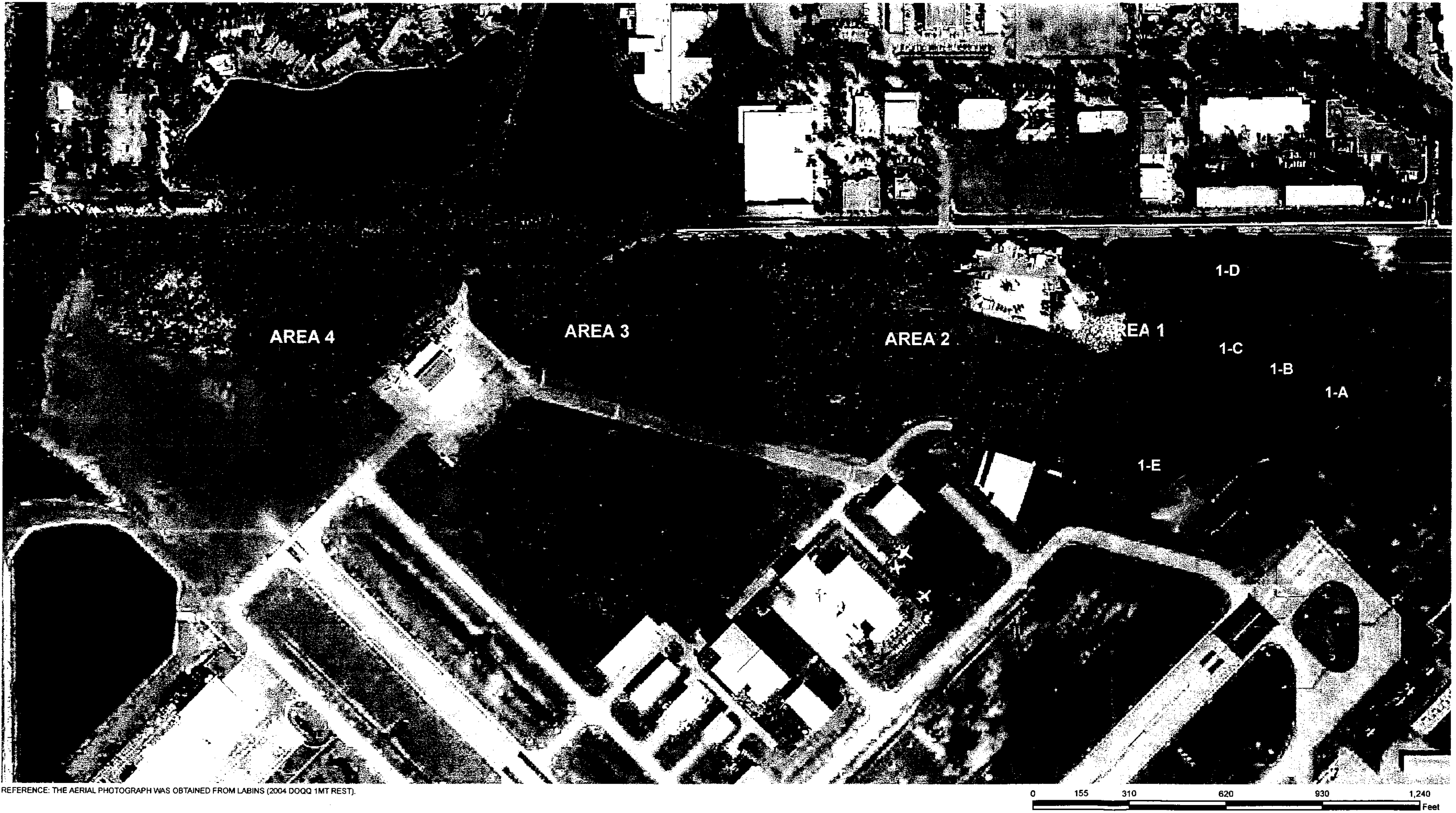
## SITE MAP
## FORMER LANDFILL
## NAPLES AIRPORT
NAPLES, FLORIDA

**FIGURE 3-1**

P:\552-Env\2006\[illegible] Rep[illegible] 6026 Naples Airport Reclamation Plan\GIS\552-6G026 FIG 3-1.MXD

# APPENDIX A
# AIRPORT MASTER PLAN



REFERENCE: THE AERIAL PHOTOGRAPH WAS OBTAINED FROM LABINS (2004 DOQQ 1MT REST).

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**04/12/2006**
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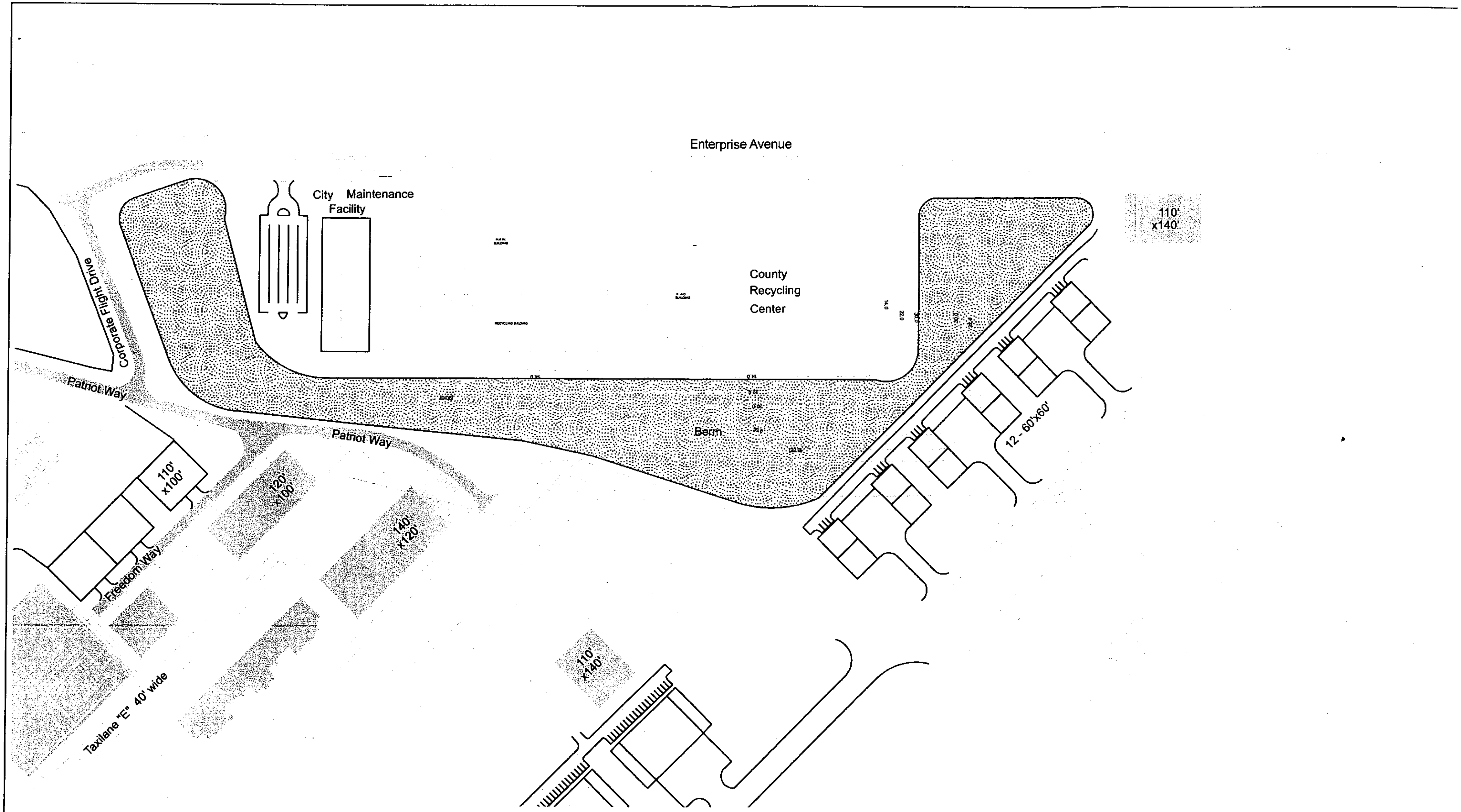
**FIGURE 7-1**

## RECLAMATION AREAS
## NAPLES AIRPORT FORMER LANDFILL
NAPLES, FLORIDA

P:\552 Env\2006\G - Repo 026 Naples Airport Reclamation Plan\GIS\552-6G026-FIG-7-1



**APPENDIX A**

PROJECT NO.
**552-6G026**

DRAWN BY
**PAV**

DATE CREATED
**04/12/06**

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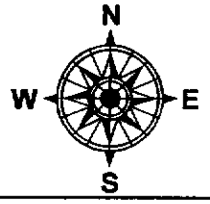

# AIRPORT MASTER PLAN
# NAPLES AIRPORT FORMER LANDFILL
## NAPLES, COLLIER COUNTY, FLORIDA

# APPENDIX B
# PERMITTING

Form Approved OMB No.2120-00
Expiration Date: 7/31/07

*Please Type or Print on This Form*

**FOR FAA USE ONLY**

*Aeronautical Study Number*

U.S. Department of Transportation
**Federal Aviation Administration**

***Failure To Provide All Requested Information May Delay Processing of Your Notice***

# Notice of Proposed Construction or Alteration

1. **Sponsor** *(person, company, etc. proposing this action)*:

Attn. of: ______________________

Name: ______________________

Address: ______________________

______________________

City: ______________ State: ______ Zip: ______________

Telephone: ______________ Fax: ______________

2. **Sponsor's Representative** *(if other than #1)*:

Attn. of: ______________________

Name: ______________________

Address: ______________________

______________________

City: ______________ State: ______ Zip: ______________

Telephone: ______________ Fax: ______________

3. **Notice of:** ☐ New Construction ☐ Alteration ☐ Existing

4. **Duration:** ☐ Permanent ☐ Temporary ( ______ months, ______ days)

5. **Work Schedule:** Beginning ______________ End ______________

6. **Type:** ☐ Antenna Tower ☐ Crane ☐ Building ☐ Power Line
☐ Landfill ☐ Water Tank ☐ Other ______________

7. **Marking/Painting and/or Lighting Preferred:**
☐ Red Lights and Paint ☐ Dual - Red and Medium Intensity White
☐ White - Medium Intensity ☐ Dual - Red and high Intensity White
☐ White - High Intensity ☐ Other

8. **FCC Antenna Structure Registration Number** *(if applicable)*:

______________________

9. **Latitude:** ______ ° ______ ' ______ . ______ "

10. **Longitude:** ______ ° ______ ' ______ . ______ "

11. **Datum:** ☐ NAD 83 ☐ NAD 27 ☐ Other

12. **Nearest:** City: ______________ State ______

13. **Nearest *Public-use*** *(not private-use)* or Military Airport or Heliport:

______________________

14. **Distance from #13.** to Structure: ______________

15. **Direction from #13.** to Structure: ______________

16. **Site Elevation** *(AMSL)*: ______ ft.

17. **Total Structure Height** *(AGL)*: ______ ft.

18. **Overall Height** (#16 + #17) *(AMSL)*: ______ ft.

19. **Previous FAA Aeronautical Study Number** *(if applicable)*:

______________________-OE

20. **Description of Location:** *(Attach a USGS 7.5 minute Quadrangle Map with the precise site marked and any certified survey)*

21. Complete Description of Proposal:

| Frequency/Power (kW | |
|---|---|
| | |
| | |
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| | |
| | |
| | |
| | |
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| | |

Notice is required by 14 Code of Federal Regulations, part 77 pursuant to 49 U.S.C., Section 44718. Persons who knowingly and willingly violate the notice requirements of part 77 are subject to a civil penalty of $1,000 per day until the notice is received, pursuant to 49 U.S.C., Section 46301(a)

**I hereby certify that all of the above statements made by me are true, complete, and correct to the best of my knowledge. In addition, I agree to mark and/or light th structure in accordance with established marking & lighting standards as necessary.**

| Date | Typed or Printed Name and Title of Person Filing Notice | Signature |
|---|---|---|
| | | |

FAA Form 7460-1 (2-99) Supersedes Previous Edition

Electronic Version (Adobe)

NSN: 0052-00-012-

# NOTICE OF PROPOSED CONSTRUCTION OR ALTERATION

## §77.13 Construction or alteration requiring notice.

(a) Except as provided in §77.15, each sponsor who proposes any of the following construction or alteration shall notify the Administrator in the form and manner prescribed in §77.17.

(1) Any construction or alteration of more than 200 feet in height above the ground level at its site.

(2) Any construction or alteration of greater height than imaginary surface extending outward and upward at one of the following slopes:

(i) 1 00 to 1 for horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport specified in paragraph (a)(5) or this section with at least one runway more than 3,200 feet in actual length, excluding heliports.

(ii) 50 to 1 for horizontal distance of 10,000 feet from the nearest point of the nearest runway of each airport specified in paragraph (a)(5) of this section with its longest runway no more than 3,200 feet in actual length, excluding heliports.

(iii) 25 to 1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area of each heliport specified in paragraph (a)(5) of this section.

(3) Any highway, railroad, or other traverse way for mobile objects, of a height which, if adjusted upward 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance, 16 feet for any other public roadway, 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road, 23 feet for a railroad, and for a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it, would exceed a standard of paragraph (a)(1) or (2) of this section.

(4) When requested by the FAA, any construction or alteration that would be in an instrument approach area (defined in the FAA standards governing instrument approach procedures) and available information indicates it might exceed a standard of Subpart C of this part.

(5) Any construction or alteration on any of the following airports (including heliports):

(i) An airport that is available for public use and is listed in the Airport Directory of the current Airman's Information Manual or in either the Alaska or Pacific Airman's Guide and Chart Supplement.

(ii) An airport under construction, that is the subject of a notice or proposal on file with the Federal Aviation Administration, and except for military airports, it is clearly indicated that airport will be available for public use.

(iii) An airport that is operated by an armed force of the United States.

(b) Each sponsor who proposes construction or alteration that is the subject of a notice under paragraph (a) of this section and is advised by an FAA regional office that a supplemental notice is required shall submit that notice on a prescribed form to be received by the FAA regional office at least 48 hours before the start of construction or alteration.

(c) Each sponsor who undertakes construction or alteration that is the subject of a notice under paragraph (a) of this section shall, within 5 days after that construction or alteration reaches its greatest height, submit a supplemental notice on a prescribed form to the FAA regional office having jurisdiction over the region involved, if –

(1) The construction or alteration is more than 200 feet above the surface level of its site; or

(2) An FAA regional office advises him that submission of the form is required.

## §77.15 Construction or alteration not requiring notice.

No person is required to notify the Administrator for any of the following construction or alteration:

(a) Any object that would be shielded by existing structures of a permanent and substantial character or by natural terrain or topographic features of equal or greater height, and would be located in the congested area of a city, town, or settlement where it is evident beyond all reasonable doubt that the structure so shielded will not adversely affect safety in air navigation.

(b) Any antenna structure of 20 feet or less in height except one that would increase the height of another antenna structure.

(c) Any air navigation facility, airport visual approach or landing air, aircraft arresting device, or meteorological device, of a type approved by the Administrator, or an appropriate military service on military airports, the location and height of which is fixed by its functional purpose.

(d) Any construction or alteration for which notice is required by any other FAA regulation.

## §77.17 Form and time of notice

(a) Each person who is required to notify the Administrator under §77.13 (a) shall send one executed form set of FAA Form 7460-1, Notice of Proposed Construction or Alteration, to the Manager, Air Traffic Division, FAA Regional Office having jurisdiction over the area within which the construction or alteration will be located. Copies of FAA Form 7460-1 may be obtained from the headquarters of the Federal Aviation Administration and the regional offices.

(b) The notice required under §77.13 (a)(1) through (4) must be submitted at least 30 days before the earlier of the following dates –

(1) The date the proposed construction or alteration is to begin.

(2) The date an application for a construction permit is to be filed.

However, a notice relating to proposed construction or alteration that is subject to the licensing requirements of the Federal Communications Act may be sent to the FAA at the same time the application for construction is filed with the Federal Communications Commission, or at any time before that filing.

(c) A proposed structure or an alteration to an existing structure that exceeds 2,000 feet in height above the ground will be presumed to be a hazard to air navigation and to result in an inefficient utilization of airspace and the applicant has the burden of overcoming that presumption. Each notice submitted under the pertinent provisions of this part 77 proposing a structure in excess of 2,000 feet above ground, or an alteration that will make an existing structure exceed that height, must contain a detailed showing, directed to meeting this burden. Only in exceptional cases, where the FAA concludes that a clear and compelling showing has been made that it would not result in an inefficient utilization of the airspace and would not result in a hazard to air navigation, will a determination of no hazard be issued.

(d) In the case of an emergency involving essential public services, public health, or public safety that required immediate construction or alteration, the 30 day requirement in paragraph (b) of this section does not apply and the notice may be sent by telephone, telegraph, or other expeditious means, with an executed FAA Form 7460-1 submitted within five (5) days thereafter. Outside normal business hours, emergency notices by telephone or telegraph may be submitted to the nearest FAA Flight Service Station.

(e) Each person who is required to notify the Administrator by paragraph (b) or (c) of §77.13, or both shall send an executed copy of FAA Form 7460-2, Notice of Actual Construction or Alteration, to the Manager, Air Traffic Division, FAA Regional Office having jurisdiction over the area involved.

---

## ADDRESSES OF THE REGIONAL OFFICES

### Alaska Region
AK
Alaskan Regional Office
Air Traffic Division, AAL-530
222 West An Avenue
Anchorage, AK 99513
Tel: 907-271-5893

### Central Region
IA, KS, MO, NE
Central Regional Office
Air Traffic Division, ACE-520
60 East 12th Street
Kansas City, MO 64106
Tel: 816-426-3408 or 3409

### Eastern Region
DC, DE, MD, NJ, NY, PA, VA, WV
Eastern Regional Office
Air Traffic Division, AEA-520
JFK International Airport
Fitzgerald Federal Building
Jamaica, NY 11430
Tel: 718-553-2616

### Great Lakes Region
IL, IN, MI, MN, ND, OH, SD
Great Lakes Regional Office
Air Traffic Division, AGL-520
2300 East Devon Avenue
Des Plaines, IL 60018
Tel: 847-294-7568

### New England Region
CT, MA, ME, NH, RI, VT
New England Regional Office
Air Traffic Division, ANE-520
12 New England Executive Park
Burlington, MA 01803-5299
Tel: 781-238-7520

### Northwest Mountain Region
CO, ID, MT, OR, UT, WA, WY
Northwest Mountain Regional Office
Air Traffic Division, ANM-520
1601 Lind Avenue, SW
Renton, WA 98055-4056
Tel: 425-227-2520

### Southern Region
AL, FL, GA, KY, MS, NC, PR
SC, TN, VI
Southern Regional Office
Air Traffic Division, ASO-520
1701 Columbia Avenue
College Park, GA 30337
Tel: 404-305-5685

### Southwest Region
AR, LA, NM, OK, TX
Southwest Regional Office
Air Traffic Division, ASW-520
2601 Meacham Boulevard
For Worth, TX 76137-0520
Tel: 817-222-5531

### Western Pacific Region
HI, CA, NV, AZ, GU
Western-Pacific Regional Office
Air Traffic Division, AWP-520
15000 Aviation Boulevard
Hawthorne, CA 90260
Tel: 310-725-6557

FAA Form 7460-1 (2-99) Superseded Previous Edition    Electronic Version (Adobe)    NSN: 0052-00-012-0009

# INSTRUCTIONS FOR COMPLETING FAA FORM 7460-1

***PLEASE TYPE or PRINT***

**ITEM #1.** Please include the name, address and phone number of a personal contact point as well as the company name.

**ITEM #2.** Please include the name, address and phone number of a personal contact point as well as the company name.

**ITEM #3.** New Construction would be a structure that has not yet been built.

Alteration is a change to an existing structure such as the addition of a side mounted antenna, a change to the marking and lighting, a change to power and/or frequency, or a change to the height. The nature of the alteration shall be included in **ITEM #21** "Complete Description of Proposal".

Existing would be a correction to the latitude and/or longitude, a correction to the height, or if filing on an existing structure which has never been studied by the FAA. The reason for the notice shall be included in **ITEM #21** "Complete Description of Proposal".

**ITEM #4.** If Permanent, so indicate. If Temporary, such as a crane or drilling derrick, enter the estimated length of time the temporary structure will be up.

**ITEM #5.** Enter the date that construction is expected to start and the date that construction should be completed.

**ITEM #6.** Please indicate the type of structure. **DO NOT LEAVE BLANK.**

**ITEM #7.** In the event that obstruction marking and lighting is required, please indicate type desired. If no preference, check "other" and indicate "no preference" **DO NOT LEAVE BLANK.** ***NOTE:*** *High Intensity lighting shall be used only for structures over 500' AGL.* In the absence of high intensity lighting for structures over 500' AGL, marking is also required.

**ITEM #8.** If this is an existing tower that has been registered with the FCC, enter the FCC Antenna Structure Registration number here.

**ITEM #9 and #10.** Latitude and longitude must be geographic coordinates, accurate to within the nearest second or to the nearest hundredth of a second if known. Latitude and longitude derived solely from a **hand-held GPS instrument is NOT acceptable.** A hand-held GPS is only accurate to within 100 meters (328 *feet*) 95 percent of the time. This data, when plotted, should match the site depiction submitted under **ITEM #20.**

**ITEM #11.** NAD 83 is preferred; however, latitude and longitude may be submitted in NAD 27. Also, in some geographic areas where NAD 27 and NAD 83 are not available other datums may be used. It is important to know which datum is used. **DO NOT LEAVE BLANK.**

**ITEM #12.** Enter the name of the nearest city and state to the site. If the structure is or will be in a city, enter the name of that city and state.

**ITEM #13.** Enter the **full** name of the nearest public-use ***(not private-use)*** airport or heliport or military airport or heliport to the site.

**ITEM #14.** Enter the distance **from** the airport or heliport listed in **#13 to the structure.**

**ITEM #15.** Enter the direction **from** the airport or heliport listed in **#13 to the structure.**

**ITEM #16.** Enter the site elevation above mean sea level and expressed in whole feet rounded to the nearest foot (e.g. 17'3" rounds to 17', 17'6" rounds to 18'). This data should match the ground contour elevations for site depiction submitted under **ITEM #20.**

**ITEM #17.** Enter the total structure height **above ground level in whole feet** rounded to the **next highest foot** (e.g. 17'3" rounds to 18'). **The total structure height shall include anything mounted on top of the structure, such as antennas, obstruction lights, lightning rods, etc.**

**ITEM #18.** Enter the overall height above mean sea level and expressed in **whole feet.** This will be the total of **ITEM #16 + ITEM #17.**

**ITEM #19.** If an FAA aeronautical study was previously conducted, enter the previous study number.

**ITEM #20.** Enter the relationship of the structure to roads, airports, prominent terrain, existing structures, etc. Attach an 8-1/2" x 11" non-reduced copy of the appropriate 7.5 minute U.S. Geological Survey *(USGS)* Quadrangle Map MARKED WITH A PRECISE INDICATION OF THE SITE LOCATION. To obtain maps, contact USGC at 1-800-435-7627 or via internet at "http://mapping.usgs.gov". If available, attach a copy of a documented site survey with the surveyor's certification stating the amount of vertical and horizontal accuracy in feet.

**ITEM #21.**

- For transmitting stations, include maximum effective radiated power *(ERP)* and all frequencies.
- For antennas, include the type of antenna and center of radiation *(Attach the antenna pattern, if available).*
- For microwave, include azimuth relative to true north.
- For overhead wires or transmission lines, include size and configuration of wires and their supporting structures *(Attach depiction).*
- For **each** pole/support, include coordinates, site elevation, and structure height above ground level or water.
- For buildings, include site orientation, coordinates of **each** corner, dimensions, and construction materials.
- For alterations, explain the alteration thoroughly.
- For existing structures, thoroughly explain the reason for notifying the FAA *(e.g. corrections, no record or previous study, etc.).*

**Filing this information with the FAA does not relieve the sponsor of this construction or alteration from complying with any other federal, state or local rules or regulations. If you are not sure what other rules or regulations apply to your proposal, contact local/state aviations and zoning authorities.**

**Paperwork Reduction Work Act Statement:** This information is collected to evaluate the effect of proposed construction or alteration on air navigation and is not confidential. Providing this information is mandatory for anyone proposing construction or alteration that meets or exceeds the criteria contained in 14 CFR, part 77. We estimate that the burden of this collection is an average 19 minutes per response. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control number for this collection is 2120-0001.

# CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN TEMPLATE

The following template may be used as a general guide for development of a Stormwater Pollution Prevention Plan (SWPPP) for construction activities. This template may not contain all applicable requirements for all construction sites. Please refer to the Department's Generic Permit for Stormwater Discharge from Large and Small Construction Activities, DEP Document 62-621.300(4)(a) to verify that you are meeting all permit requirements. Part V of the above referenced generic permit specifically lists requirements of the Stormwater Pollution Prevention Plan.

- The SWPPP shall be completed prior to the submittal of the Notice of Intent (NOI) to be covered under the Department's Generic Permit for Stormwater Discharge from Large and Small Construction Activities.

- The SWPPP shall be amended whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for discharge of pollutants to surface waters of the state or a Municipal Separate Storm Sewer System (MS4). The SWPPP also shall be amended if it proves to be ineffective in significantly reducing pollutants from sources identified in Part V.D.1. of the permit. The SWPPP also shall be amended to indicate any new contractor and/or subcontractor that will implement any measure of the SWPPP. All amendments shall be signed, dated, and kept as attachments to the original SWPPP.

# Stormwater Pollution Prevention Plan

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

Name (Operator and/or Responsible Authority) ______________________ Date ____________

| | |
|---|---|
| **Project Name and location information**: | |

**A site map must be developed and must contain, at a minimum, the following information:**

1. Drainage patterns,
2. Approximate slopes after major grading activities,
3. Areas of soil disturbance,
4. Outline all areas that are not to be disturbed,
5. Location of all major structural and non-structural controls,
6. The location of expected stabilization practices,
7. Wetlands and surface waters, and
8. Locations where stormwater may discharge to a surface water or MS4.

**Site Description**

| | |
|---|---|
| Describe the nature of the construction activity: | |
| Describe the intended sequence of major soil disturbing activities: | |
| Total area of the site: | Acres |
| Total area of the site to be disturbed: | Acres |
| Existing data describing the soil or quality of any stormwater discharge from the site: | |
| Estimate the drainage area size for each discharge point: | |
| Latitude and longitude of each discharge point and identify the receiving water or MS4 for each discharge point: | |

Give a detailed description of all controls, Best Management Practices (BMPs) and measures that will be implemented at the construction site for each activity identified in the intended sequence of major soil disturbing activities section. Provide time frames in which the controls will be implemented. NOTE: All controls shall be consistent with performance standards for erosion and sediment control and stormwater treatment set forth in s. 62-40.432, F.A.C., the applicable Stormwater or Environmental Resource Permitting requirements of the Department or a Water Management District, and the guidelines contained in the Florida Development Manual: A Guide to Sound Land and Water Management (DEP, 1988) and any subsequent amendments.

Describe all temporary and permanent stabilization practices. Stabilization practices include temporary seeding, mulching, permanent seeding, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, vegetative preservations, etc.

Describe all structural controls to be implemented to divert stormwater flow from exposed soils and structural practices to store flows, retain sediment on-site or in any other way limit stormwater runoff. These controls include silt fences, earth dikes, diversions, swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, coagulating agents and temporary or permanent sediment basins.

| |
|---|
| Describe all sediment basins to be implemented for areas that will disturb 10 or more acres at one time. The sediment basins (or an equivalent alternative) should be able to provide 3,600 cubic feet of storage for each acre drained. Temporary sediment basins (or an equivalent alternative) are recommended for drainage areas under 10 acres. |
| |
| Describe all permanent stormwater management controls such as, but not limited to, detention or retention systems or vegetated swales that will be installed during the construction process. |
| |

**Describe in detail controls for the following potential pollutants**

| | |
|---|---|
| Waste disposal, this may include construction debris, chemicals, litter, and sanitary wastes: | |
| Offsite vehicle tracking from construction entrances/exits: | |

| | |
|---|---|
| The proper application rates of all fertilizers, herbicides and pesticides used at the construction site: | |
| The storage, application, generation and migration of all toxic substances: | |
| Other: | |

| Provide a detailed description of the maintenance plan for all structural and non-structural controls to assure that they remain in good and effective operating condition. |
|---|
| |

| |
|---|
| Inspections: Describe the inspection and inspection documentation procedures, as required by Part V.D.4. of the permit. Inspections must occur at least once a week and within 24 hours of the end of a storm event that is 0.50 inches or greater (see attached form). |
| |

| |
|---|
| Identify and describe all sources of non-stormwater discharges as allowed in Part IV.A.3. of the permit. Flows from fire fighting activities do not have to be listed or described. |
| |

**This SWPPP must clearly identify, for each measure identified within the SWPPP, the contractor(s) or subcontractor(s) that will implement each measure. All contractor(s) and subcontractor(s) identified in the SWPPP must sign the following certification:**

"I certify under penalty of law that I understand, and shall comply with, the terms and conditions of the State of Florida Generic Permit for Stormwater Discharge from Large and Small Construction Activities and this Stormwater Pollution Prevention Plan prepared thereunder."

| **Name** | **Title** | **Company Name, Address and Phone Number** | **Date** |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

# Stormwater Pollution Prevention Plan Inspection Report Form

**Inspections must occur at least once a week and within 24 hours of the end of a storm event that is 0.50 inches or greater.**

Project Name:______________________________________ FDEP NPDES Stormwater Identification Number: FLR10______

| Location | Rain data | Type of control (see below) | Date installed / modified | Current Condition (see below) | Corrective Action / Other Remarks |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Condition Code:

G = Good M = Marginal, needs maintenance or replacement soon P = Poor, needs immediate maintenance or replacement

C = Needs to be cleaned O = Other

Control Type Codes

| | | | |
|---|---|---|---|
| 1. Silt Fence | 10. Storm drain inlet protection | 19. Reinforced soil retaining system | 28. Tree protection |
| 2. Earth dikes | 11. Vegetative buffer strip | 20. Gabion | 29. Detention pond |
| 3. Structural diversion | 12. Vegetative preservation area | 21. Sediment Basin | 30. Retention pond |
| 4. Swale | 13. Retention Pond | 22. Temporary seed / sod | 31. Waste disposal / housekeeping |
| 5. Sediment Trap | 14. Construction entrance stabilization | 23. Permanent seed / sod | 32. Dam |
| 6. Check dam | 15. Perimeter ditch | 24. Mulch | 33. Sand Bag |
| 7. Subsurface drain | 16. Curb and gutter | 25. Hay Bales | 34. Other |
| 8. Pipe slope drain | 17. Paved road surface | 26. Geotextile | |
| 9. Level spreaders | 18. Rock outlet protection | 27. Rip-rap | |

Inspector Information:

____________________ ______________________________________ ________

Name Qualification Date

The above signature also shall certify that this facility is in compliance with the Stormwater Pollution Prevention Plan and the State of Florida Generic Permit for Stormwater Discharge from Large and Small Construction Activities if there are not any incidents of non-compliance identified above.

* * * * * *

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

____________________ __________

Name (Responsible Authority) Date

# NOTICE OF INTENT
# TO USE
# GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES
## (RULE 62-621.300(4), F.A.C.)

This Notice of Intent (NOI) form is to be completed and submitted to the Department before use of the Generic Permit for Stormwater Discharge From Large and Small Construction Activities provided in Rule 62-621.300(4), F.A.C. The type of project or activity that qualifies for use of the generic permit, the conditions of the permit, and additional requirements to request coverage are specified in the generic permit document [DEP Document 62-621.300(4)(a)]. **The appropriate generic permit fee, as specified in Rule 62-4.050(4)(d), F.A.C., shall be submitted with this NOI in order to obtain permit coverage. <u>Permit coverage will not be granted without submittal of the appropriate generic permit fee.</u>** You should familiarize yourself with the generic permit document and the attached instructions before completing this NOI form. **Please print or type information in the appropriate areas below.**

**I. IDENTIFICATION NUMBER:** Project ID ______________________________

**II. APPLICANT INFORMATION:**

| | | |
|---|---|---|
| A. Operator Name: | | |
| B. Address: | | |
| C. City: | D. State: | E. Zip Code: |
| F. Operator Status: | G. Responsible Authority: | |
| | H. Phone No.: | |

**III. PROJECT/SITE LOCATION INFORMATION:**

| | | |
|---|---|---|
| A. Project Name: | | |
| B. Project Address/Location: | | |
| C. City: | D. State: | E. Zip Code: |
| F. County: | G. Latitude: ° ′ ″ | Longitude: ° ′ ″ |
| H. Is the site located on Indian lands? ☐ Yes ☐ No | I. Water Management District: | |
| J. Project Contact: | K. Phone No.: | |

## IV. PROJECT/SITE ACTIVITY INFORMATION:

| | |
|---|---|
| **A. Indicate whether Large or Small Construction (check only one):** | ☐ Large Construction (Project will disturb five or more acres of land.)<br>☐ Small Construction (Project will disturb one or more acres but less than five acres of land.) |

B. Approximate total area of land disturbance from commencement through completion of construction: _________ Acres

**C. SWPPP Location** ☐ Address in Part II above ☐ Address in Part III above ☐ Other address (specify below)

D. SWPPP Address:

E. City: F. State: G. Zip Code:

**H. Construction Period** Start Date: Completion Date:

## V. DISCHARGE INFORMATION

A. MS4 Operator Name (if applicable):

B. Receiving Water Name:

## VI. CERTIFICATION[1]:

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

**Name and Official Title (Type or Print):**

Signature: Date Signed:

---

[1] Signatory requirements are contained in Rule 62-620.305, F.A.C.

# INSTRUCTIONS – DEP FORM 62-621.300(4)(b)
# NOTICE OF INTENT (NOI) TO USE GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES

## Who Must File an NOI:

Federal law at 40 CFR Part 122 prohibits the point source discharge of pollutants, including the discharge of stormwater associated with large construction activities as defined at 40 CFR 122.26(b)(14)(x) or small construction activities as defined at 40 CFR 122.26(b)(15), to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit. Under the State of Florida's authority to administer the NPDES stormwater program at 403.0885, F.S., operators that have stormwater discharge associated with large or small construction activities to surface waters of the State, including through a Municipal Separate Storm Sewer System (MS4), must obtain coverage either under a generic permit issued pursuant to Chapter 62-621, F.A.C., or an individual permit issued pursuant to Chapter 62-620, F.A.C.

## Where to File NOI:

NOIs for coverage under this generic permit must be sent to the following address:

NPDES Stormwater Notices Center, MS #2510
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

## Permit Fee:

Permit fees for large and small construction activities to be covered under the generic permit are specified in Rule 62-4.050(4)(d), F.A.C. The appropriate generic permit fee (either for large or small construction activities) must be submitted along with the completed NOI in order to obtain coverage under the generic permit. **Generic permit coverage will not be granted without payment of the appropriate permit fee.**

The permit fee shall be paid by either check or money order made payable to: "Florida Department of Environmental Protection"

## Part I – Identification Number

Enter the project's DEP identification number (generic permit coverage number) if known. If an ID number has not yet been assigned to this project (i.e., if this is a new project), leave this item blank.

## Part II – Applicant Information

Item A.: Provide the legal name of the person, firm, contractor, public organization, or other legal entity that owns or operates the construction activity described in this NOI. The operator is the legal entity that has authority to control those activities at the project necessary to ensure compliance with the terms and conditions of the generic permit.

Items B. – E.: Provide the complete mailing address of the operator, including city, state, and zip code.

Item F.: Enter the appropriate one letter code from the list below to indicate the legal status of the operator:

F = Federal; S = State; P = Private; M = Public (other than federal or state); O = Other

Items G. – H.: Provide the name and telephone number (including area code) of the person authorized to submit this NOI on behalf of the operator (e.g., Jane Smith, President of Smith Construction Company on behalf of the operator, Smith Construction Company; John Doe, Public Works Director on behalf of the operator, City of Townsville; etc.). This should be the same person as indicated in the certification in Part VI.

**Part III – Project/Site Location Information**

Items A. – E.: Enter the official or legal name and complete street address, including city, state, and zip code of the project. Do not provide a P.O. Box number as the street address. If it lacks a street address, describe the project site location (e.g., intersection of State Road 1 and Smith Street).

Item F.: Enter the county in which the project is located.

Item G.: Enter the latitude and longitude, **in degrees-minutes-seconds format**, of the approximate center of the project.

Item H.: Indicate whether the project is located on Indian lands.

Item I.: Enter the appropriate five or six letter code from the list below to indicate the Water Management District the project is located within:

NWFWMD = Northwest Florida Water Management District
SRWMD = Suwannee River Water Management District
SFWMD = South Florida Water Management District
SWFWMD = Southwest Florida Water Management District
SJRWMD = St. John's River Water Management District

Items J. – K.: Give the name, title, and telephone number (including area code) of the project contact person. The project contact is the person who is thoroughly familiar with the project, with the facts reported in this NOI, and who can be contacted by the Department if necessary.

**Part IV – Project/Site Activity Information:**

Item A.: Check the appropriate box to indicate whether the project involves large construction activity or small construction activity. **Check one box only.**

"Large Construction Activity" means construction activity that results in the disturbance of five (5) or more acres of total land area. Large construction activity also includes the disturbance of less than five acres of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb five acres or more.

"Small Construction Activity" means construction activity that results in the disturbance of equal to or greater than one (1) acre and less than five (5) acres of total land area. Small construction activity also includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than one acre and less than five acres.

Item B.: Provide the approximate total area of land disturbance in acres that the project will involve from commencement of construction through completion.

Items C. - G..: Indicate the location where the Stormwater Pollution Prevention Plan (SWPPP) can be viewed. Provide the address where the SWPPP can be viewed if other than as provided in Parts II or III of the NOI. **Note that to be eligible for coverage under the generic permit, the SWPPP must have been prepared prior to filing this NOI.**

Item H.: Enter the estimated construction start and completion dates in the MM/DD/YY format.

## Part V – Discharge Information

Item A.: If stormwater from the project discharges to a municipal separate storm sewer system (MS4), enter the name of the operator of the MS4 (e.g., City of Tallahassee MS4, Orange County MS4, FDOT MS4, etc.). If stormwater from the project does not discharge to an MS4 but rather discharges to surface waters of the State, leave this item blank or indicate "N/A" and skip to Item B of this part. **Please note that if the project discharges stormwater to an MS4, you must provide the MS4 operator with a copy of the completed NOI.**

Item B.: If the project discharges stormwater to surface waters of the State, and not to an MS4, enter the name of the receiving water body to which the stormwater is discharged. Please provide the first named water body to which the stormwater from the project is discharged (e.g., Cypress Creek, Tampa Bay, unnamed ditch to St. Johns River, Tate's Hell Swamp, etc.).

## Part VI – Certification

Type or print the name and official title of the person signing the certification. Please note that this should be the same person as indicated in Item II.G. as the Responsible Authority. Sign and date the certification.

Section 403.161, F.S., provides severe penalties for submitting false information on this application (NOI) or any reports or records required by a permit. There are both civil and criminal penalties, in addition to the revocation of permit coverage for submitting false information.

Rule 62-620.305, F.A.C., requires that the NOI and any reports required by the permit to be signed as follows:

A. For a corporation, by a responsible corporate officer as described in Rule 62-620.305, F.A.C.;
B. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or,
C. For a municipality, state, federal or other public facility, by a principal executive officer or elected official.

# State of Florida

# Department of Environmental Protection

# Generic Permit

# For

# Stormwater Discharge from Large and Small Construction Activities

May 2003

This permit is issued under the provisions of Section 403.0885, Florida Statutes, and applicable rules of the Florida Administrative Code pursuant to the Department's federally-approved National Pollutant Discharge Elimination System (NPDES) stormwater regulatory program. Stormwater discharge associated with large construction activity, as defined at 40 CFR Part 122.26(b)(14)(x) and herein, is regulated pursuant to Section 402(p)(2) of the federal Clean Water Act (CWA). Stormwater discharge associated with small construction activity, as defined at 40 CFR 122.26(b)(15) and herein, is regulated pursuant to Section 402(p)(6) of the CWA. This permit constitutes authorization to discharge stormwater associated with large and small construction activities to surface waters of the State, including through a Municipal Separate Storm Sewer System (MS4). Until this permit is terminated, modified, or revoked, permittees that have properly obtained coverage under this permit are authorized to discharge to surface waters of the State, including through an MS4, in accordance with the terms and conditions of this permit.

## Part I. General Provisions

### A. Applicability and Coverage

1. Federal law prohibits the point source discharge of pollutants, including the discharge of stormwater associated with large or small construction activities pursuant to 40 CFR Part 122 and as defined in Part II of this permit, to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit. Under the State of Florida's authority to administer the NPDES stormwater program at 403.0885, F.S., operators that have stormwater discharge associated with large or small construction activities to surface waters of the State, including through a Municipal Separate Storm Sewer System (MS4), must obtain coverage either under a generic permit issued pursuant to Chapter 62-621, F.A.C., or an individual permit issued pursuant to Chapter 62-620, F.A.C.

2. Coverage under this generic permit is available for stormwater discharges from large and small construction activities to surface waters of the State as defined in Section 403.031, F.S., including stormwater discharges associated with construction activity to surface waters of the State through an MS4.

3. This generic permit does not constitute authorization under Part IV of Chapter 373, F. S., for the construction, alteration, operation, maintenance, abandonment, or removal of any stormwater management system, dam, impoundment, reservoir, or appurtenant work or works, including dredging or filling, in, on or over wetlands and other surface waters, as determined by the methodology authorized in Subsection 373.421(1), F. S.

4. This generic permit authorizes the discharge of stormwater associated with construction activity under the State's federally-approved NPDES stormwater program only and does not supercede the requirement to obtain a stormwater discharge permit under Chapter 62-25, F.A.C.; environmental resource permit (ERP) under Part IV, Chapter 373, F.S.; stormwater discharge permit from a Department-approved delegated local government; or any other required federal, state, or local government permit.

### B. Eligibility

1. This permit authorizes the discharge of stormwater associated with large and small construction activity, as defined in Part II of this permit, occurring after the effective date of this permit.

2. This permit authorizes stormwater discharge associated with construction activity that is mixed with stormwater discharges associated with industrial activity other than construction, where:

   a. the industrial source other than construction is located on the same site as the construction activity;

   b. stormwater discharges associated with industrial activity from the areas of the site where construction activities are occurring are in compliance with the terms of this permit; and

   c. stormwater discharges associated with industrial activity from the areas of the site where industrial activity other than construction are occurring are in compliance with the terms of a different generic permit (e.g., Multi-Sector Generic Permit for Stormwater Discharge Associated with Industrial Activitiy) or individual permit authorizing such discharges.

3. Limitations on Coverage. The following stormwater discharges from construction sites are not authorized by this permit:

a. stormwater discharges that originate from the site after construction activities have been completed and the site has undergone final stabilization;

b. discharges that are mixed with sources of non-stormwater, other than discharges identified in Part IV.A.3. of this permit;

c. stormwater discharge associated with construction activity that is covered under an existing generic or individual permit. Such discharges may be authorized under this permit after the existing individual permit or generic permit term of coverage expires, provided the existing permit did not establish numeric limitations for such discharges; or

d. stormwater discharge associated with construction activity that the Department has determined to be or may reasonably be expected to be causing or contributing to a violation of a surface water quality standard.

C. Obtaining Authorization

1. In order for stormwater discharge associated with construction activity to be authorized under this generic permit, an operator must:

a. Meet the eligibility requirements in Part I.B. of this permit;

b. Develop and implement a stormwater pollution prevention plan (SWPPP) in accordance with the requirements of Part V of this permit; and

c. Submit a completed Notice of Intent (NOI) in accordance with the requirements of Part III. of this permit, including submittal of the appropriate processing fee as established in Rule 62-4.050(4)(d), F.A.C.

2. The Department may deny coverage under this permit or require submittal of a revised NOI based on the Department's determination that the NOI is incomplete, the permit fee has not been paid, or the submittal otherwise is not in accordance with the requirements of this generic permit.

## Part II. Definitions

For the purposes of this generic permit, the following definitions shall apply, unless otherwise indicated:

1. "Best Management Practices" or "BMPs" means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of surface waters. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

2. "Construction Activity" means the act or process of developing or improving land which involves the disturbance of soils and includes clearing, grading, and excavation.

3. "Commencement of Construction" means the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.

4. "Department" or "DEP" means the Florida Department of Environmental Protection.

5. "Final Stabilization" means that all soil disturbing activities at the site have been completed, and that a uniform (e.g., evenly distributed, without large bare areas) perennial

vegetative cover with a density of at least 70% for all unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures (e.g., geotextiles) have been employed.

6. "Large Construction Activity" means construction activity that results in the disturbance of five (5) or more acres of total land area. Large construction activity also includes the disturbance of less than five acres of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb five acres or more.

7. "Municipal Separate Storm Sewer System" or "MS4" means a large, medium, or small MS4 as defined in Chapter 62-624, F.A.C.

8. "NOI" means notice of intent to be covered by this permit (see Part III of this permit.)

9. "NOT" means notice of termination (see Part VIII of this permit).

10. "NPDES" means the Department's federally-approved National Pollutant Discharge Elimination System program.

11. "Operator" means the person, firm, contractor, public organization, or other legal entity that owns or operates the construction activity and that has authority to control those activities at the project necessary to ensure compliance with the terms and conditions of this permit.

12. "Qualified Inspector" means a person that:

a. has successfully completed and met all requirements necessary to be fully certified through the DEP Stormwater, Erosion, and Sedimentation Control Inspector Training Program;

b. has successfully completed an equivalent formal training program; or

c. that is qualified by other training or practical experience in the field of stormwater pollution prevention and erosion and sedimentation control.

13. "Small Construction Activity" means construction activity that results in the disturbance of equal to or greater than one (1) acre and less than five (5) acres of total land area. Small construction activity also includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than one acre and less than five acres.

14. "Stormwater" means the flow of water which results from, and which occurs immediately following, a rainfall event.

15. "Stormwater discharge associated with construction activity" means the discharge of stormwater from large or small construction activities, including areas where soil disturbing activites; construction materials handling or storage; or, equipment storage or maintenance are located.

16. "Surface Waters of the State" means those surface waters that are defined in section 403.031, F. S.

17. "Water Management District" or "WMD" means the Northwest Florida Water Management District, the Suwannee River Water Management District, the St. Johns River Water Management District, the Southwest Florida Water Management District, or the South Florida Water Management District.

## Part III. Notice of Intent Requirements

A. Deadlines for Notification.

1. Operators seeking coverage under this generic permit to authorize stormwater discharge associated with construction activity for new large or small construction activities, for which commencement of construction begins after the effective date of this permit, shall file an NOI for coverage under this permit at least two (2) days before commencement of construction.

2. Operators of small construction activity, where commencement of construction occurred prior to the effective date of this permit, seeking coverage under this permit to authorize stormwater discharge associated with construction activity after the effective date of this permit shall file an NOI for coverage within 31 days of the effective date of this permit.

3. Permittees that previously obtained coverage under the State of Florida Generic Permit for Construction Activities That Disturb Five or More Acres of Land, issued and effective October 22, 2000, for large construction activity shall remain covered under that generic permit until permit coverage is terminated, revoked, or the permittee's five year term of coverage expires. Permittees covered under the October 2000 generic permit indicated above that will have stormwater discharge associated with construction activity beyond their initial five year term of coverage under the October 2000 generic permit shall submit an NOI for coverage under this generic permit at least two (2) days before expiration of coverage under the October 2000 generic permit.

4. For construction activities where the operator changes, the new operator shall file an NOI for coverage under this permit at least two (2) days before assuming control of the project and the previous operator shall file an NOT to terminate permit coverage in accordance with Part VIII of this permit.

B. Contents of Notice of Intent.

1. In order to obtain coverage under this permit, an operator of the stormwater discharge associated with construction activity shall submit a completed Notice of Intent to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activites, DEP Form 62-621.300(4)(b), effective May 1, 2003, including the applicable permit processing fee as specified in Rule 62-4.050(4)(d), F.A.C. By completing, signing, and submitting an NOI, the operator is certifying that they meet all eligibility requirements of this permit and are informing the Department of their intent to be covered by, and comply with, the terms and conditions of this generic permit. The Notice of Intent shall be signed in accordance with Part VII.C. of this permit by the operator.

C. Where to Submit.

1. NOIs are to be submitted to the following address:

NPDES Stormwater Notices Center, MS# 2510
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

2. A copy of the NOI or letter from DEP confirming coverage under this generic permit shall be posted at the construction site in a prominent place for public viewing (such as alongside a building permit).

D. Additional Notification.

1. Projects that discharge stormwater associated with construction activity to a municipal separate stormwater system (MS4) shall submit a copy of the NOI to the operator of the MS4.

E. Period of Coverage

1. Coverage under this generic permit is effective two (2) days after the date of submittal of a complete NOI to the Department.

2. Coverage under this generic permit is limited to a term not to exceed five years from the effective date of coverage.

F. Permit Coverage Renewal

1. If the project will continue to have stormwater discharge associated with construction activity beyond the initial five year term of coverage, the operator shall submit a new NOI at least two (2) days before expiration of the current term of coverage under this permit.

## Part IV. Special Conditions, Management Practices, and Other Non-numeric Limitations

A. Prohibition on Non-stormwater Discharges.

1. Except as provided in paragraphs I.B.2. and IV.A.3., all discharges covered by this permit shall be composed entirely of stormwater associated with construction activity.

2. Except as specified in IV.A.3. below, discharges of material other than stormwater associated with construction activity must be in compliance with a Department permit (other than this permit) issued for the discharge, or be exempt therefrom.

3. The following non-stormwater discharges may be authorized by this permit provided the non-stormwater component of the discharge is in compliance with paragraph V.D.5.: discharges from fire fighting activities; fire hydrant flushings; waters used to spray off loose solids from vehicles (wastewaters from a more thorough cleaning, including the use of detergents or other cleaners is not authorized by this part) or control dust in accordance with Part V.D.2.c.(2); potable water sources including waterline flushings; irrigation drainage; routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; springs; and foundation or footing drains where flows are not contaminated with process materials such as solvents.

4. Discharges resulting from ground water dewatering activities at construction sites are not covered by this permit. Applicants for these discharges must obtain coverage under the Department's Generic Permit for the Discharge of Produced Ground Water from any Non-contaminated Site Activity pursuant to Rule 62-621.300(2), F.A.C.

B. Releases in Excess of Reportable Quantities.

1. The discharge of hazardous substances or oil in the stormwater discharge(s) from a facility or activity shall be prevented or minimized in accordance with the applicable stormwater pollution prevention plan for the facility or activity. This permit does not relieve the operator of the reporting requirements of 40 CFR part 117 and 40 CFR part 302. Where a release containing a hazardous substance in an amount equal to or in excess of a reporting quantity established under either 40 CFR 117 or 40 CFR 302, occurs during a 24 hour period:

a. The operator is required to notify the State Warning Point (800-320-0519 or 850-413-9911) as soon as he or she has knowledge of the discharge;

b. The operator shall submit within 14 calendar days of knowledge of the release a written description of: the release (including the type and estimate of the amount of material released), the date that such release occurred, the circumstances leading to the release, and remedial steps to be taken, to the Florida Department of Environmental Protection, NPDES Stormwater Section, Mail Station 2500, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and

c. The stormwater pollution prevention plan required under Part V of this permit must be modified within 14 calendar days of knowledge of the release to: provide a description of the release, the circumstances leading to the release, and the date of the release. In addition, the plan must be reviewed to identify measures to prevent the reoccurrence of such releases and to respond to such releases, and the plan must be modified where appropriate.

2. This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill.

## Part V. Stormwater Pollution Prevention Plan

A. A stormwater pollution prevention plan shall be developed and implemented for each construction site covered by this permit. Stormwater pollution prevention plans shall be prepared in accordance with good engineering practices. Equivalent erosion and sediment control plans prepared as a permit requirement under Part IV, Chapter 373, F.S., or Chapter 62-25, F.A.C., may serve as the pollution prevention plan provided all of the elements of this section are included in such an alternative plan. The plan shall identify potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharge associated with construction activity. In addition, the plan shall describe and ensure the implementation of best management practices which will be used to reduce the pollutants in stormwater discharge associated with construction activity and to assure compliance with the terms and conditions of this permit. Facilities must implement the provisions of the stormwater pollution prevention plan required under this part as a condition of this permit. Failure to develop and implement a stormwater pollution prevention plan in accordance with the requirements of this part shall be deemed a violation of this permit and may result in enforcement action.

B. Deadlines for Plan Preparation and Compliance.

1. The pollution prevention plan shall:

a. Be completed (including certification by the operator in accordance with Part VII.C.) prior to the submittal of an NOI to be covered under this permit and updated as appropriate;

b. The plan shall provide for compliance with the terms and schedule of the plan beginning with the initiation of construction activities.

C. Keeping Plans Current.

1. The permittee shall amend the plan whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to surface waters of the State or an MS4, including the addition of or change in location of stormwater discharge points, and which has not otherwise been addressed in the plan. The permittee also shall amend the plan if it proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified under Part V.D.1. of this permit, or in otherwise achieving the general objectives of controlling pollutants in stormwater discharge associated with construction activity. In addition, the plan shall be amended to identify any new contractor and/or subcontractor that will implement a measure of the stormwater pollution prevention plan (see Part V.D.6.). Amendments to the plan shall be prepared, signed, dated, and kept as attachments to the original plan.

D. Contents of Plan.

1. Site Description. Each plan shall provide a description of pollutant sources and other information as indicated:

a. A description of the nature of the construction activity;

b. A description of the intended sequence of major activities which disturb soils for major portions of the site (e.g. grubbing, excavation, grading);

c. Estimates of the total area of the site and the total area of the site that is expected to be disturbed by excavation, grading, or other construction activities;

d. Existing data describing the soil or the quality of any discharge from the site and an estimate of the size of the drainage area for each discharge point;

e. A site map indicating drainage patterns and approximate slopes anticipated after major grading activities, areas of soil disturbance, an outline of areas which may not be disturbed, the location of major structural and nonstructural controls identified in the plan, the location of areas where stabilization practices are expected to occur, surface waters, wetlands, and locations where stormwater is discharged to a surface water or MS4; and,

f. The latitude and longitude of each discharge point and the name of the receiving water(s) for each discharge point.

2. Controls. Each plan shall include a description of appropriate controls, BMPs, and measures that will be implemented at the construction site. The plan shall clearly describe for each major activity identified in Part V.D.1.b. appropriate control measures and the timing during the construction process that the measures will be implemented. For example, perimeter controls for one portion of the site will be installed after the clearing and grubbing necessary for installation of the measure, but before the clearing and grubbing for the remaining portions of the site. Perimeter controls shall be actively maintained until final stabilization of those portions of the site upward of the perimeter control. Temporary perimeter controls shall be removed after final stabilization. All controls shall be consistent with the performance standards for erosion and sediment control and

stormwater treatment as set forth in Rule 62-40.432, F.A.C., the applicable stormwater or environmental resource permitting requirements of the DEP or appropriate WMD, and the guidelines contained in the Florida Development Manual: A Guide to Sound Land and Water Management (DEP, 1988) and any subsequent amendments.

a. Erosion and Sediment Controls.

(1) Stabilization Practices. Each plan shall provide a description of interim and permanent stabilization practices, including site-specific scheduling of the implementation of the practices. Site plans should ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized. Stabilization practices may include: temporary seeding, permanent seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures. A record of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site and when stabilization measures are initiated shall be included in the plan. Stabilization measures shall be initiated as soon as practicable, but in no case more than 7 days, in portions of the site where construction activities have temporarily or permanently ceased.

(2) Structural Practices. Each plan shall include a description of structural practices, to divert flows from exposed soils, store flows, retain sediment on-site, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Such practices may include silt fences, earth dikes, diversions, swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, coagulating agents and temporary or permanent sediment basins. Structural BMPs shall be placed on upland soils unless a State of Florida wetland resource management permit or environmental resource permit issued pursuant to Chapter 373, F.S., and applicable regulations of the DEP or WMD authorize otherwise.

(3) Sediment Basins.

(a) For drainage basins with 10 or more disturbed acres at one time, a temporary (or permanent) sediment basin providing 3,600 cubic feet of storage per acre drained, or equivalent control measures, shall be provided where attainable until final stabilization of the site. The 3,600 cubic feet of storage area per acre drained does not apply to flows from offsite areas and flows from onsite areas that are either undisturbed or have undergone final stabilization where such flows are diverted around both the disturbed area and the sediment basin. For drainage basins with 10 or more disturbed acres at one time and where a temporary sediment basin providing 3,600 cubic feet of storage per acre drained, or equivalent controls is not attainable, a combination of smaller sediment basins and/or sediment traps and other BMPs should be used. At a minimum, silt fences, or equivalent sediment controls are required for all sideslope and downslope boundaries of the construction area.

(b) For drainage basins of less than 10 acres, sediment basins and/or sediment traps are recommended but not required. At a minimum, silt fences or equivalent sediment controls are required for all sideslope and downslope boundaries of the construction area.

(c) Areas that will be used for permanent stormwater infiltration treatment (e.g., stormwater retention ponds) should not be used for temporary sediment basins unless appropriate measures are taken to assure removal of accumulated fine sediments, which may cause premature clogging and loss of infiltration capacity, and to avoid excessive compaction of soils by construction machinery or equipment.

b. Permanent Stormwater Management Controls.

Each plan shall include a description of stormwater management controls or BMPs (e.g., stormwater detention or retention systems, vegetated swales, velocity dissipation devices at discharge points) that will be installed during the construction process to control pollutants in stormwater discharges that will occur during construction and after construction operations have been completed. This generic permit only addresses the installation of stormwater management controls and not the ultimate operation and maintenance of such controls after the construction activities have been completed and the site has undergone final stabilization. Under this generic permit, permittees are only responsible for the installation and maintenance of stormwater management BMPs prior to final stabilization of the site, and are not responsible for maintenance after stormwater discharges associated with construction activity have been eliminated from the site. However, all stormwater management systems and BMPs shall be operated and maintained in perpetuity after final stabilization in accordance with requirements set forth in the State of Florida stormwater or environmental resource permit issued under Chapter 62-25, F.A.C., or Part IV, Chapter 373, F.S.

c. Controls for Other Potential Pollutants.

(1) Waste Disposal. The plan shall assure that waste, such as discarded building materials, chemicals, litter, and sanitary waste are properly controlled in accordance with all applicable state, local, and federal regulations. This permit does not authorize the discharge of solid materials, including building materials, to surface waters of the State or an MS4.

(2) The plan shall assure that off-site vehicle tracking of sediments and the generation of dust is minimized.

(3) The plan shall be consistent with applicable State and local waste disposal, sanitary sewer or septic system regulations.

(4) The plan shall address the proper application rates and methods for the use of fertilizers, herbicides and pesticides at the construction site and set forth how these procedures will be implemented and enforced. Nutrients shall be applied only at rates necessary to establish and maintain vegetation.

(5) The plan shall ensure that the application, generation, and migration of toxic substances is limited and that toxic materials are properly stored and disposed.

3. <u>Maintenance.</u> The plan shall include a description of procedures that will be followed to ensure the timely maintenance of vegetation, erosion and sediment controls, stormwater management practices, and other protective measures and BMPs so they will remain in good and effective operating condition.

4. <u>Inspections.</u> A qualified inspector (provided by the operator) shall inspect all points of discharge into surface waters of the State or an MS4; disturbed areas of the construction site that have not been finally stabilized; areas used for storage of materials that are exposed to precipitation; structural controls; and, locations where vehicles enter or exit the site, at least once every seven calendar days and within 24 hours of the end of a storm that is 0.50 inches or greater as follows:

a. Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the stormwater system. The stormwater management system and erosion and sediment control measures identified in the plan shall be observed to ensure that they are operating correctly. Discharge locations or points shall be inspected to ascertain whether erosion and sediment control and stormwater treatment measures are effective in preventing or minimizing the discharge of pollutants, including retaining sediment onsite pursuant to Rule 62-40.432, F.A.C. Locations where vehicles enter or exit the site shall be inspected for evidence of offsite sediment tracking.

b. Based on the results of the inspection, all maintenance operations needed to assure proper operation of all controls, BMPs, practices, or measures identified in the stormwater pollution prevention plan shall be done in a timely manner, but in no case later than 7 calendar days following the inspection. If needed, pollution prevention controls, BMPs, and measures identified in the plan shall be revised as appropriate, but in no case later than 7 calendar days following the inspection. Such modifications shall provide for timely implementation of any changes to the plan within 7 calendar days following the inspection.

c. A report summarizing the scope of the inspection; name(s) and qualifications of personnel making the inspection; the date(s) of the inspection; rainfall data; major observations relating to the implementation of the stormwater pollution prevention plan; and actions taken in accordance with paragraph V.D.4.b. of this permit, shall be made and retained, in accordance with Part VI of this permit, as part of the stormwater pollution prevention plan. Such reports shall identify any incidents of non-compliance. Where a report does not identify any incidents of non-compliance, the report shall contain a certification that the facility is in compliance with the stormwater pollution prevention plan and this permit. The report shall be signed in accordance with Part VII.C of this permit.

5. Non-Stormwater Discharges. Except for flows from fire fighting activities, sources of non-stormwater listed in Part IV.A.3 of this permit that are combined with stormwater discharges associated with construction activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention and treatment measures for the non-stormwater component(s) of the discharge.

6. Contractor/Subcontractor Certification.

a. The stormwater pollution prevention plan must clearly identify, for each measure identified in the plan, the contractor(s) and/or subcontractor(s) that will implement the measure. All contractors and subcontractors identified in the plan must sign a copy of the certification statement in Part V.D.6.b. of this permit. All certifications must be included in the stormwater pollution prevention plan.

b. Certification Statement for Contractors/Subcontractors. All contractors and subcontractors identified in a stormwater pollution prevention plan in accordance with Part V.D.6.a. of this permit shall sign a copy of the following certification statement before conducting any activities at the site:

"I certify under penalty of law that I understand, and shall comply with, the terms and conditions of the State of Florida Generic Permit for Stormwater Discharge from Large and Small Construction Activities and this Stormwater Pollution Prevention Plan prepared thereunder."

The certification must include the name and title of the person providing the signature in accordance with Part VII.C of this permit; the name, address and telephone number of the contracting firm; and the date the certification is made.

## Part VI. Retention of Records

A. The permittee shall retain copies of stormwater pollution prevention plans and all reports required by this permit, and records of all data used to complete the Notice of Intent to be covered by this permit, for a period of at least three years from the date that the site is finally stabilized.

B. The permittee shall retain a copy of the stormwater pollution prevention plan and all reports, records and documentation required by this permit at the construction site, or an appropriate alternative location as specified in the NOI, from the date of project initiation to the date of final stabilization.

## Part VII. Standard Permit Conditions

A. Any permit noncompliance constitutes a violation of Section 403.0885, F. S. and is grounds for enforcement action; for permit coverage termination, or revocation; or for denial of permit coverage renewal.

B. All of the general conditions listed in Rule 62-621.250, F.A.C., are adopted herein by reference.

C. Signatory Requirements.

1. All Notices of Intent, Notices of Termination, stormwater pollution prevention plans, reports, certifications or information either submitted to the Department or the operator of a municipal separate storm sewer system, or that this permit requires be maintained by the permittee, shall be signed as set forth in Rule 62-620.305, F.A.C.
2. Inspection reports prepared pursuant to Part V.D.4.c. of this permit shall be signed by the qualified inspector that prepared them as well as by a responsible authority for the operator as specified in Part VII.C.1. above.
3. Any person signing documents under this permit, except contractor/subcontractor certifications under Part V.D.6., shall make the following certification:

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

## Part VIII. Termination of Coverage

A. Notice of Termination.

1. Where a site has been finally stabilized (see Part II for the definition of final stabilization) and all stormwater discharges authorized by this permit are eliminated, the permittee shall submit a completed Notice of Termination (DEP Form 62-621.300(6)), signed in accordance

with Part VII.C. of this permit, within 14 days of final stabilization of the site to terminate coverage under this permit.

2. Elimination of stormwater discharges associated with construction activity means that all disturbed soils at the site have been finally stabilized and temporary erosion and sediment control measures have been removed or will be removed at an appropriate time, or that all stormwater discharges associated with construction activity from the site that are authorized by this generic permit have otherwise been eliminated.

3. For construction activities where the operator changes, the existing operator shall file an NOT in accordance with this Part within 14 days of relinquishing control of the project to a new operator.

B. Where to Submit.

1. A permittee shall submit a Notice of Termination to the following address:

NPDES Stormwater Notices Center, MS# 2510
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

2. Projects that discharged stormwater associated with construction activity to a municipal separate storm sewer system (MS4) shall submit a copy of the NOT to the operator of the MS4.

CITY OF NAPLES, FLORIDA
ON THE GULF

# SITE WORK PERMIT APPLICATION

**Job Information**

Permit #:________________

Property Owner:________________

Tax/Folio #:________________

Tenant name:________________

Job address:________________

Owner's mailing address: ________________

Square footage:________________

Est. cost:$________________

Permit expiration date:________________

Check permits needed:

______ Fountain
______ Pond
______ Excavate & fill vacant land
______ Tank removal
______ Lawn Sprinkler
______ Deck
______ Well
______ Landscaping
______ Sidewalks

On City Water (circle) Yes/No_____

Other:________________

Description of work:________________

**Contractor Information**

Contractor:________________

State Cert/CC Comp Card #:________________

Qualifier's name:________________

Job rep:________________

Address:________________

Phone #:________________

City:________________

State:__________ Zip:__________

*Sub-Contractor information must be supplied if other work will be performed*

Electrical:________________

State Cert/CC Comp Card #:________________

Address:________________

**The following must be included with the application:**

______ Two copies of a site plan

## Regulations and Information

1. Plan size should be 24X 36 or smaller, on standard sized paper. Plans must be to scale.
2. Owner-builders must sign an affidavit and supply homeowners insurance.
3. One application must be filled out with the original signature of qualifier pulling the permit.
4. Check with the respective property owners association for deed restrictions.
5. Work performed on sites located west of the Coastal Construction Control Line requires a Coastal Construction Variance from the Natural Resource Officer. A permit from the State of Florida is also required.
6. The fee for this permit is $0.02 per square foot of the gross square footage of the structure. The minimum fee shall be $70.00.A plan check fee of 15% of the building permit fee will be charged at the time of application. This fee is not refundable nor is it credited to any other fee.

RECORDED NOTICE OF COMMENCEMENT MUST BE POSTED IF THE PROJECT VALUATION EXCEEDS **$2,500.00**

**WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.**

## Contractor's Affidavit

I certify that all the foregoing information is accurate and that all work must be done in compliance with all applicable laws regulating construction and zoning. I understand **THERE WILL BE A FINAL INSPECTION** of the work permitted herein. Compliance will be strictly enforced. **No work whatsoever will commence until the building permit has been issued.**

- The permit fee will be quadrupled if work is started without an approved permit.
- The permittee further understands that only licensed contractors may be employed and that the structure shall not be used or occupied until a Certificate of Occupancy/Completion is issued.
- See Section 94-71 of the Comprehensive Development Code for information regarding the permit expiration date.

____________________ ____________________
Print Name of Qualifier Signature of Qualifier

State of Florida
County of____________________
The foregoing instrument was acknowledged before me this ______ day of ____________________, 200______

by ________________________________________, who is personally known to me or has produced

________________________________________ as identification.

____________________ (Seal)
Signature, Notary Public – State of Florida

____________________
Printed, Typed, or Stamped Name of Notary

CITY OF NAPLES, FLORIDA ON-THE-GULF

# FENCE PERMIT APPLICATION

### Job Information

Permit #: ____________________

Property Owner: ____________________

Tax/Folio #: ____________________

Tenant name: ____________________

Job address: ________________________________________

Owner's mailing address: ________________________________________

Est. cost:$ ____________________

Permit expiration date: ____________________

Material type: ____________________

Linear feet: ____________________

Actual setbacks (in feet) from property line. If the fence is on property line fill in with PL

Front: ________ Rear: ________ LSide: ________ RSide ________

Description of work: ________________________________________

### Contractor Information

Contractor: ____________________

State Cert/CC Comp Card #: ____________________

Qualifier's name: ____________________

Job rep: ____________________

Address: ____________________

Phone #: ____________________

City: ____________________

State: ____________ Zip: ____________

Sub-contractor information must be supplied if other work will be performed

Sub-Contractor ____________________

License# ____________________

Address ____________________

Phone# ____________________

### The following must be included with the application:

______ Two copies of a survey/site plan indicating where the fence will be installed, height, and type of material used

### Regulations and Information

1. Installation of a fence under 50 feet long does not require a permit.
2. The maximum permitted fence or wall height in all zone districts, except Commercial and Industrial, are as follows A-Side, rear yards and adjacent building envelope is 6'. B- Front yard within building envelope is 6'. C-Front yard outside building envelope is 3'
3. The maximum permitted fence or wall height in all Commercial and Industrial zone districts is 6 feet, in side and rear yards. Front yards is 6 feet in the building envelope. Three feet outside the building envelope.
4. All fences and walls shall be measured from the lower of the crown of the adjacent street or the natural grade of the subject property.
5. No chain link or similar type fence is permitted in any front yard area in any zone district except Commercial and Industrial zone districts.
6. Owner-builders must sign an affidavit and supply homeowners insurance.
7. Check with the respective property owners association for deed restrictions.
8. One application must be filled out with the original signature of qualifier pulling the permit.

# APPENDIX C
# FUEL CONSUMPTION

Table 10-1

## Fuel Consumption

**Naples Airport Former Landfill Reclamation - Area 1**
**Excavation with Imported Fill Material**
**PSI Project Number: 552-6G023**

| Equipment | Fuel Consumption (gal/hr) | Number of Units | Number of Days | Hours Per Day | Total Fuel (gal/day) |
|---|---|---|---|---|---|
| Power Grid | 2 | 0 | 1 | 8.5 | 0 |
| Trommel Screen | 15 | 0 | 1 | 8.5 | 0 |
| Excavator (model 300) | 15 | 1 | 1 | 8.5 | 127.5 |
| Excavator (model 200 w/ thumb) (1) | 9 | 1 | 1 | 2 | 18 |
| Loader (Model 950) (1) | 5 | 1 | 1 | 2 | 10 |
| Dozer (D6) | 7 | 2 | 1 | 8.5 | 119 |
| Off Road Dump | 9 | 4 | 1 | 8.5 | 306 |
| Dust Control Tanker | 8 | 1 | 1 | 8.5 | 68 |
| 84" Compactor | 7 | 1 | 1 | 8.5 | 59.5 |
| | **Total Fuel Burn Rate Per Day (gallons) =** | | | | **708** |

Notes:

(1) To be used during foliage removal

Table 10-2

## Fuel Consumption

**Naples Airport Former Landfill Reclamation - Area 1**
**Excavation and Screening**
**PSI Project Number: 552-6G026**

| Equipment | Fuel Consumption (gal/hr) | Number of Units | Number of Days | Hours Per Day | Total Fuel (gal/day) |
|---|---|---|---|---|---|
| Power Grid | 2 | 1 | 1 | 8.5 | 17 |
| Trommel Screen | 15 | 1 | 1 | 8.5 | 127.5 |
| Excavator (model 300) | 15 | 2 | 1 | 8.5 | 255 |
| Excavator (model 200 w/ thumb) | 9 | 1 | 1 | 8.5 | 76.5 |
| Loader (Model 950) | 5 | 1 | 1 | 8.5 | 42.5 |
| Dozer (D6) | 7 | 1 | 1 | 8.5 | 59.5 |
| Off Road Dump | 9 | 4 | 1 | 8.5 | 306 |
| Dust Control Tanker | 8 | 1 | 1 | 8.5 | 68 |
| 84" Compactor | 7 | 1 | 1 | 8.5 | 59.5 |

**Total Fuel Burn Rate Per Day (gallons) = 1012**

9. The fee for this permit is $70.00. A plan check fee of 15% of the building permit fee will be charged at the time of application. This fee is not refundable nor is it credited to any other fee. Plan review fees less than $10.00 will be collected when the permit is issued or billed to the applicant if the application is withdrawn.
   *More information can be found in Section 110-37 of the Comprehensive Development Code.*

**RECORDED NOTICE OF COMMENCEMENT MUST BE POSTED IF THE PROJECT VALUATION EXCEEDS $2,500.00**

**WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.**

## Contractor's Affidavit

I certify that all the foregoing information is accurate and that all work must be done in compliance with all applicable laws regulating construction and zoning. I understand **THERE WILL BE A FINAL INSPECTION** of the work permitted herein. Compliance will be strictly enforced. **No work whatsoever will commence until the building permit has been issued.**

- The permit fee will be quadrupled if work is started without an approved permit.
- The permittee further understands that only licensed contractors may be employed and that the structure shall not be used or occupied until a Certificate of Occupancy/Completion is issued.
- See Section 94-71 of the Comprehensive Development Code for information regarding the permit expiration date.

______________________________ ______________________________
Print Name of Qualifier Signature of Qualifier

State of Florida
County of__________________
The foregoing instrument was acknowledged before me this __________ day, of ________________, 200_______

by ________________________________,who is personally known to me or has produced

________________________________________ as identification.

______________________________ (Seal)
Signature, Notary Public – State of Florida

______________________________
Printed, Typed, or Stamped Name of Notary

# APPENDIX D
# COST ESTIMATE

**Naples Airport Former Landfill Reclamation (6.5 Acres With Screening)**
**Area 1**
Project Cost Estimate
PSI Project No.: 552-6G026

| Item | Number | | Duration | | Hours/Day | Rate | Total |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| **Labor** | | | | | | | |
| Excavator Operator | 3 | | 75 | days | 10 | 55 | 123,750 |
| Loader Operator | 1 | | 75 | days | 10 | 55 | 41,250 |
| Off-Road Dump Operator | 4 | | 75 | days | 10 | 55 | 165,000 |
| Dozer operator | 1 | | 75 | days | 10 | 55 | 41,250 |
| Water Wagon | 0.5 | | 75 | days | 10 | 45 | 16,875 |
| Compactor Operator | 0.5 | | 75 | days | 10 | 45 | 16,875 |
| Supervisor | 1 | | 75 | days | 10 | 80 | 60,000 |
| Project Manager | 1 | | 10 | days | 8 | 100 | 8,000 |
| Project Accountant | 1 | | 10 | days | 8 | 45 | 3,600 |
| Field Controls | 1 | | 30 | days | 10 | 75 | 22,500 |
| Project Engineer | 1 | | 10 | days | 8 | 90 | 7,200 |
| Senior Review | 1 | | 8 | hours | 1 | 120 | 960 |
| | | | | | | | |
| **Subtotal** | 11 | | | | | | **$ 507,260** |
| | | | | | | | |
| **Other Direct Cost** | | | | | | | |
| Power Grid 1200 | 1 | | 4 | mo | 1 | 6800 | 27,200 |
| Power Grid Mobe/Demobe | 2 | | 1 | trips | | 800 | 1,600 |
| Taurus Trommel | 1 | | 4 | mo | 1 | 10000 | 40,000 |
| Trommel Mobe/Demobe | 2 | | | trips | 1 | 800 | 1,600 |
| Excavator (19-21 MT) | 1 | | 4 | mo | 1 | 7500 | 30,000 |
| Excavator (30-33 MT) | 1 | | 4 | mo | 1 | 9925 | 39,700 |
| Excavator (40-48 MT) | 1 | | 4 | mo | 1 | 10500 | 42,000 |
| Loader (4 CY Bucket) | 1 | | 4 | mo | 1 | 7500 | 30,000 |
| Dozer (D6) | 1 | | 4 | mo | 1 | 8300 | 33,200 |
| Off Road Dump (27 ton) | 4 | | 4 | mo | 1 | 9300 | 148,800 |
| Water Wagon (2000 gal truck) | 1 | | 4 | mo | 1 | 5000 | 20,000 |
| 84-Inch Vibratory Compactor | 1 | | 3 | mo | 1 | 5000 | 15,000 |
| Equipment Mobe/Demobe | 22 | | | trips | | 350 | 7,700 |
| Generator (14-15 kW) | 1 | | 4 | mo | 1 | 850 | 3,400 |
| Per Diem plus Lodging | 11 | | 60 | days | | 90 | 59,400 |
| Per Diem plus Lodging | 1 | | 38 | days | 1 | 90 | 3,420 |
| Per Diem | 11 | | 15 | days | | 30 | 4,950 |
| Trucks | 4 | | 75 | days | | 85 | 25,500 |
| Vehicle | 1 | | 40 | days | 1 | 85 | 3,400 |
| Fueling Equipment | 1 | | 1 | Lot | 1 | 2500 | 2,500 |
| Fuel | 1012 | | 75 | days | 1 | $2.25 | 170,775 |
| Oil/Grease | 5 | | 75 | days | 1 | 5.5 | 2,063 |
| Water/Ice | 1 | | 75 | days | 1 | 20 | 1,500 |
| Safety Equipment | 12 | | 75 | days | 1 | 2 | 1,800 |
| Crushed Limestone | 1 | | 250 | CY | 1 | 16 | 4,000 |
| Soil (backfill) | 1 | | 0 | CY | 1 | 8.5 | 0 |
| Soil Transport | 1 | | 0 | CY | 1 | 6 | 0 |
| Construction Trailer 32' x 8' | 1 | | 1 | Unit | 1 | 1500 | 1,500 |
| Conex Material Storage | 1 | | 1 | Unit | 1 | 1500 | 1,500 |
| Sod for Berm (110,000 sf) | 1 | | 275 | Pallets | 1 | 60 | 16,500 |
| Jobsite Toilet | 2 | | 4 | mos | 1 | 300 | 2,400 |
| Toilet delivery/pickup | 4 | | | trips | | 10 | 40 |
| | | | | | | | |
| **Subtotal** | | | | | | | **$ 741,448** |
| | | | | | | | |
| **Subcontractors** | | | | | | | |
| Silt Fence | 1 | | 1 | Lot | 1 | 6000 | 6,000 |
| Const Fence | 1 | | 1 | Lot | 1 | 8,000 | 8,000 |
| Surveyor | 1 | | 1 | unit | 1 | 5000 | 5,000 |
| Tub Grinder/Chipper | 1 | | 1 | Unit | 1 | 12000 | 12,000 |
| **Subtotal** | | | | | | | **$ 31,000** |
| | | | | | | | |
| **Total** | | | | | | | **$ 1,279,708** |
| | | | | | | | |
| **Contingency (10 %)** | | | | | | | **$127,971** |
| | | | | | | | |
| | | | | | | | |
| **GRAND TOTAL** | | | | | | | **$ 1,407,678** |

**Notes:**

1. Total project is 73,568 cubic yards

2. Project duration estimate is 15 weeks

3. Backfill assumes use of RSM.

l has been projected at an estimated cost of $2.25/gallon for off-road diesel.

Naples Airport Former Landfill Reclamation (6.5 Acres Without Screening and Import Fill Material)
Area 1
Project Cost Estimate
PSI Project No.: 552-6G026

| Item | Number | Duration | | Hours/Day | Rate | Total |
|---|---|---|---|---|---|---|
| | | | | | | |
| **Labor** | | | | | | |
| Excavator Operator | 1 | 47 | days | 10 | 55 | 25,850 |
| Loader Operator | 1 | 10 | days | 10 | 55 | 5,500 |
| Off-Road Dump Operator | 4 | 47 | days | 10 | 55 | 103,400 |
| Dozer operator | 2 | 47 | days | 10 | 55 | 51,700 |
| Water Wagon | 1 | 47 | days | 10 | 45 | 21,150 |
| Compactor Operator | 1 | 47 | days | 10 | 45 | 21,150 |
| Supervisor | 1 | 47 | days | 10 | 80 | 37,600 |
| Project Manager | 1 | 10 | days | 8 | 100 | 8,000 |
| Project Accountant | 1 | 10 | days | 8 | 45 | 3,600 |
| Field Controls | 1 | 20 | days | 10 | 75 | 15,000 |
| Project Engineer | 1 | 10 | days | 8 | 90 | 7,200 |
| Senior Review | 1 | 8 | hours | 1 | 120 | 960 |
| | | | | | | |
| **Subtotal** | **11** | | | | | **$301,110** |
| | | | | | | |
| **Other Direct Cost** | | | | | | |
| Power Grid 1200 | 1 | 0 | mo | 1 | 6800 | 0 |
| Power Grid Mobe/Demobe | 2 | 0 | trips | | 800 | 0 |
| Taurus Trommel | 1 | 0 | mo | 1 | 10000 | 0 |
| Trommel Mobe/Demobe | 2 | | trips | 1 | 800 | 0 |
| Excavator (19-21 MT) | 1 | 0 | mo | 1 | 7500 | 0 |
| Excavator (30-33 MT) | 1 | 1 | mo | 1 | 9925 | 9,925 |
| Excavator (40-48 MT) | 1 | 3 | mo | 1 | 10500 | 31,500 |
| Loader (4 CY Bucket) | 1 | 1 | mo | 1 | 7500 | 7,500 |
| Dozer (D6) | 2 | 3 | mo | 1 | 8300 | 49,800 |
| Off Road Dump (27 ton) | 4 | 3 | mo | 1 | 9300 | 111,600 |
| Water Wagon (2000 gal truck) | 1 | 3 | mo | 1 | 5000 | 15,000 |
| 84-inch Vibratory Compactor | 1 | 3 | mo | 1 | 5000 | 15,000 |
| Equipment Mobe/Demobe | 15 | 1 | trips | 1 | 350 | 5,250 |
| Generator (14-15 kW) | 1 | 3 | mo | 1 | 850 | 2,550 |
| Per Diem plus Lodging | 11 | 40 | days | 1 | 90 | 39,600 |
| Per Diem plus Lodging | 1 | 24 | days | 1 | 90 | 2,160 |
| Per Diem | 11 | 10 | days | 1 | 30 | 3,300 |
| Trucks | 4 | 47 | days | 1 | 85 | 15,980 |
| Vehicle | 1 | 40 | days | 1 | 85 | 3,400 |
| Fueling Equipment | 1 | 1 | Lot | 1 | 2500 | 2,500 |
| Fuel | 708 | 47 | days | 1 | $2.25 | 74,871 |
| Oil/Grease | 5 | 47 | days | 1 | 5.5 | 1,293 |
| Water/Ice | 1 | 47 | days | 1 | 20 | 940 |
| Safety Equipment | 12 | 47 | days | 1 | 2 | 1,128 |
| Crushed Limestone | 1 | 500 | CY | 1 | 16 | 8,000 |
| Soil (backfill) | 1 | 50000 | CY | 1 | 8.5 | 425,000 |
| Soil Transport | 1 | 50000 | CY | 1 | 6 | 300,000 |
| Construction Trailer 32' x 8' | 1 | 1 | Unit | 1 | 1500 | 1,500 |
| Conex Material Storage | 1 | 1 | Unit | 1 | 1500 | 1,500 |
| Sod for Berm (110,000 sf) | 1 | 500 | Pallets | 1 | 60 | 30,000 |
| Jobsite Toilet | 2 | 4 | mos | 1 | 300 | 2,400 |
| Toilet delivery/pickup | 1 | 4 | trips | 1 | 10 | 40 |
| | | | | | | |
| **Subtotal** | | | | | | **$1,161,737** |
| | | | | | | |
| **Subcontractors** | | | | | | |
| Silt Fence | 1 | 1 | Lot | 1 | 9000 | 6,000 |
| Const Fence | 1 | 1 | Lot | 1 | 8,000 | 8,000 |
| Surveyor | 1 | 1 | unit | 1 | 5000 | 5,000 |
| Tub Grinder/Chipper | 1 | 1 | Unit | 1 | 12000 | 16,000 |
| **Subtotal** | | | | | | **$35,000** |
| | | | | | | |
| Total | | | | | | **$1,497,847** |
| | | | | | | |
| Contingency (10 %) | | | | | | $149,785 |
| | | | | | | |
| | | | | | | |
| GRAND TOTAL | | | | | | **$1,647,631** |

**Notes:**

1. Total project is 73,568 cubic yards
2. Proje[illegible]mate is 10 weeks
3. Back[illegible]e of imported fill material.
4. Fuel has been projected at an estimated cost of $2.25/gallon for off-road diesel.

# GEOTECHNICAL EXPLORATION AND ENGINEERING SERVICES REPORT

## *CONDUCTED FOR:*

Proposed City of Naples Recycle Transfer Facility
Enterprise Avenue
Naples, Collier County, Florida

## *PREPARED FOR:*

Mr. Justin Frederiksen, P.E.
Deputy Utilities Director
City of Naples
380 Riverside Circle
Naples, Florida 34102

30 May 2012
YPC Project No. 12GY130

***YPC Consulting Group, PL***
***5701 Country Lakes Drive, Suite #3***
***Fort Myers, Florida 33905***
***Phone (239) 693-7700***
***Fax (239) 690-0271***

YPC Consulting Group, PL

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*Fort Myers, Florida 33905*
*Phone (239) 693-7700*
*Fax (239) 690-0271*
*Florida Certificate of Authorization No. 28233*

Mr. Justin Frederiksen, P.E.
Deputy Utilities Director
City of Naples
380 Riverside Circle
Naples, Florida 34102

30 May 2012

***Subject:*** ***Geotechnical Exploration and Engineering Services Report***
***Proposed City of Naples Recycle Transfer Facility***
***Enterprise Avenue***
***Naples, Collier County, Florida***

***YPC Project No. 12GY130***

Dear Mr. Frederiksen:

***YPC Consulting Group, P.L. (YPC)*** is pleased to submit the *Geotechnical Exploration and Engineering Services Report* for the project referenced above.

It has been a pleasure to work for you on this project. Please contact us should you have any questions or if you require additional information.

Respectfully Submitted,

**YPC Consulting Group, P.L.**

Gregory A. Stephan, P.E.
Senior Project Manager

## TABLE OF CONTENTS

# 1.0 INTRODUCTION

## 1.1 Terms of Reference

***YPC Consulting Group, P.L. (YPC)*** was retained by the Client to provide geotechnical exploration and engineering services for the proposed City of Naples Recycle Transfer Facility project located off Enterprise Avenue in Naples, Collier County, Florida (hereafter referred to as the "project site"). Please refer to **Figure 1** for a Project Site Location and Vicinity Map. These services were performed in general accordance with YPC Proposal No. 12036YFM-Revised dated 12 March 2012, and subsequent written authorization by the Client in City of Naples Purchase Order No. 060839 dated 2 April 2012.

## 1.2 Project Description

The proposed project includes construction of a recycle transfer facility. Information provided by the Client indicates that the facility will include construction of a pre-engineered metal building. The structural engineer is reportedly planning to support the structure on a monolithic reinforced concrete ground slab with perimeter thickened edge footings and thickened sections beneath columns. The ground slab is anticipated to be 8″ thick in the Sorting Area, 6″ thick at the Storage Area, and 4″ thick at the Office Area. The structural engineer has indicated that the maximum anticipated column load for the structure is 80 kips, and that maximum allowable total and differential settlements are 1.0″ and 0.5″, respectively. The project will also include some other improvements such as paved parking lots and roadways.

Previously compiled subsurface soils information made available to YPC by the Client indicates that the site was utilized as a landfill. Test borings by others show trash and debris at the site to depths up to 17-ft below grade at the time of the field exploration program. The Client has indicated that the trash and debris will be removed and replaced with suitable and compacted backfill material at the building area, and has stated a desire to partially undercut the paved parking/roadway areas and reinforce the subgrade with a geotextile product prior to construction of the pavement sections. The purpose of the geotechnical exploration was to better define the depths to and thicknesses of trash and debris at the site.

The Request for Proposal (RFP) for the project indicated that the scope of the geotechnical exploration for the building area was to be proposed by the geotechnical consultant. Accordingly, YPC recommended that a total of four (4) Standard Penetration Test (SPT) borings be performed within the building footprint area. For the associated pavement and roadway areas, two (2) SPT boring locations were selected and specified by the Client and deemed to be required in the RFP. Based on the test boring information compiled by others and provided to YPC by the Client, YPC recommended test borings to depths of 25-ft below grade.

## 1.3 Purpose and Scope of Work

The purpose of the geotechnical exploration and engineering services completed by YPC for the project was to describe, in general terms, soil and groundwater conditions encountered at the project site. To achieve this purpose, the scope of services has included the elements listed below.

- obtaining a Collier County Clearing Permit to partially remove heavy vegetation at the site, and then clearing pathways to the test boring locations;
- obtaining a Collier County Test Boring Permit;
- exploring subsurface soil and groundwater conditions at the site by advancing six (6) Standard Penetration Test (SPT) borings to depths of 25-ft below the existing grade surface (egs);
- estimating groundwater levels in the test borings;
- evaluating generalized boring data and groundwater conditions;
- performing an engineering evaluation and providing foundation design recommendations for the proposed structure and geotextile recommendations for the proposed paved parking/roadway areas; and,
- compiling the field exploration data, laboratory testing data, and engineering recommendations in this report of findings.

## 2.0 FIELD EXPLORATION AND LABORATORY TESTING/INSPECTION PROGRAMS

## 2.1 Field Exploration Program

The field exploration program, consisting of the elements described in Section 1.3 above, was performed in general accordance with relevant portions of applicable testing procedures during the period from 10 to 14 May 2012.

The test borings were advanced by a drilling subcontractor, under the supervision of an YPC engineer, using a wet-rotary procedure. Representative soil samples were obtained using split-barrel sampling procedures. In this procedure, a 2-in. outer-diameter, split-barrel sampler is driven into the soil by a 140-lb hammer with a free-fall of 30-in. The number of blows required to drive the sampler through a 12-in. interval is termed the Standard Penetration Resistance, or "N", value, and is indicated for each sample on the boring logs. The "N" value is an indication of the relative density of granular soils in-situ.

Samples obtained during the field exploration program were sealed immediately in the field and brought to YPC's laboratory for further examination and testing. The test boring locations were staked in the field by YPC using a handheld Global Positioning System (GPS) unit based on GPS coordinates provided by Stantec, the project civil engineer. The test borings were advanced at the approximate locations illustrated in the Project Layout and Test Location Plan presented in **Figure 2**. The GPS coordinates of the boring locations are presented in the table below. It is noted that test boring SB-1 was relocated slightly in the field from the originally planned location due to field conditions.

| YPC ID | SURVEYOR ID | LATITUDE | | LONGITUDE | |
|---|---|---|---|---|---|
| SB-6 | 201 | 26°09.5725' | N | 81°46.4917' | W |
| SB-5 | 202 | 26°09.5641' | N | 81°46.4918' | W |
| SB-3 | 203 | 26°09.5599' | N | 81°46.4746' | W |
| SB-4 | 204 | 26°09.5555' | N | 81°46.4806' | W |
| SB-2 | 205 | 26°09.5617' | N | 81°46.4455' | W |
| SB-1 | 206 | 26°09.5607' | N | 81°46.4287' | W |

## 2.2 Laboratory Testing and Inspection Program

Laboratory inspection of soil samples is generally performed to assist in the classification of soils based on their mechanical and physical behavior. It is noted that the indicated boundaries between soil types are approximate, and that actual transition between soil types may be gradual. Tests were performed on selected samples retrieved for this project to determine moisture contents and partial particle size distribution consisting of the percent passing a #200 U. S. standard sieve (i.e., percent silt and/or clay particles) and organic content test. All soil samples were visually inspected by a geotechnical engineer and classified in general accordance with the Unified Soil Classification System (USCS). Laboratory test results are indicated on the individual boring log profiles presented in **Figures 3A & 3B.**

## 3.0 SITE, GROUNDWATER, AND SOIL CONDITIONS

### 3.1 Site Features

The project site is located off Enterprise Avenue near the Naples Airport in Naples, Collier County, Florida. The site is covered with heavy vegetation. The topography varies significantly across the site. Scattered trash and debris were observed at the ground surface throughout the site prior to clearing and during the field exploration program.

### 3.2 Groundwater Conditions

At the time of the field exploration program, groundwater level was recorded at approximately 17-ft to 19-ft below the egs in the test borings. It is noted that any groundwater table will be subject to fluctuation due to seasonal climatic changes, tidal influences, construction and development activities, rainfall variations, surface-water runoff, extent of artificial drainage, and other site-specific factors. Since groundwater level variations are anticipated, design drawings and specification should incorporate such possibilities and provide for dewatering, as required, during construction.

### 3.3 Subsurface Soils

General subsurface soil conditions at the boring locations are described below (please refer to **Figure 2** for the Project Layout and Test Location Plan and **Figures 3A and 3B** for boring log profiles).

- ➢ Subsurface soils encountered in test borings SB-1 through SB-3 generally consist of trash and debris mixed with sand from the egs to the boring termination depths 25-ft below the egs.

- ➢ Subsurface soils encountered in test borings SB-4 through SB-6 generally consist of trash and debris mixed with sand from the egs to depths approximately 8-ft to 18-ft below the egs, underlain with poorly-graded sand (SP) and silty sand (SM) to the boring termination depths 25-ft below the egs.

## 4.0 OBSERVATIONS AND RECOMMENDATIONS

The project site was previously used as a landfill and contains trash and debris mixed with sand throughout the explored area. The trash/debris is variable but appears to contain predominantly materials that will not degrade over time. No biodegradable products such as horticultural waste were observed in the test borings performed by YPC at the site.

The high (i.e., >100) Standard Penetration Test (SPT) resistance, or "N", numbers included in the boring log profiles in **Figures 3A and 3B** in the trash/debris zone should not be construed as indicating the presence of a dense and/or solid homogeneous layer. Rather, the high "N" numbers represent the presence of not easily penetrable materials such as concrete rubble, steel, etc. It is noted that use of augering equipment was necessary to penetrate this material due to the trash content.

Due to the presence of trash/debris throughout the site, YPC recommends that the trash and debris in the building area be completely removed and replaced with suitable and compacted backfill material as described in Section 4.1 of this report. Furthermore, YPC recommends that all proposed paved parking/roadway areas be undercut and reinforced with a geotextile material as described in Section 4.2 of this report.

### 4.1 Building Foundation

The entire building area should be excavated down to the base of the debris. The trash-laden soils should be discarded. However, the material can be screened to separate the sand from the trash/debris, and the sand fraction can then be re-used in the backfill operation.

The removal operation should extend to a lateral distance outside building lines at least equal to the depth of the excavation required to remove the trash. The sides of the excavation should be sufficiently sloped based on the stability of the material for safety reasons. If necessary, sheet piles can be used around the perimeter of the excavation to facilitate the excavation and removal of the trash/debris. After the debris is completely removed beneath the building footprint as indicated above, the backfill can be placed in accordance with the following procedures:

- Backfill should be placed in loose lift thicknesses not greater than 12-in. if using vibratory compaction methods. If compaction in static mode is used, or if a bulldozer is used, loose lift thicknesses of 4-in. should be maintained. Each lift should be placed, compacted, and tested prior to placement of the next lift. Field density tests should be performed for each 1.0-ft lift of fill placed. Any areas not in compliance with the compaction requirements should be reworked and re-tested prior to placement of the next lift of fill. It is recommended that a field density test be performed on each 12-in. lift for each 2,000 $ft^2$ of building pad area, or fraction thereof, or a minimum of 5 tests per lift, whichever is greater.

- All fill material in the proposed building pad area should be compacted to at least 95 percent of the maximum dry density determined from ASTM D1557, *Test Method for Compaction Characteristics Using Modified Effort.*

- Fill materials required to achieve building pad elevation should consist of select fill containing less than 12 percent fines (i.e., less than 12 percent passing the #200 sieve). It is noted that select fill towards the upper end of this limit (i.e., 7 to 12 percent fines) may require strict moisture control during compaction. Additionally, select fill would be free of organics, rock pieces greater than 2.0-in. in diameter, and other deleterious materials.

- The backfill operation should be performed in the dry. Depending on the depth of the excavation and the groundwater level at the time of construction, an effective dewatering operation may be necessary to place the backfill material in dry conditions.

- It is noted that the base of the trash/debris was not found in test borings SB-1 through SB-3 above the 25-ft deep boring termination depths. Accordingly, the excavation operation will have to extend to the base of the trash/debris as observed in the field during the removal and backfill operation.

After satisfactory completion of the excavation and replacement operation in the building area as described above, the structure can be satisfactorily supported on a conventional spread footing foundation system. The foundation system should be designed in general accordance with Sections 4.1.1 through 4.1.5 of this report.

### 4.1.1 Bearing Pressure

An allowable net soil bearing pressure of 2,500 psf should be used in conventional spread footing foundation design or monolithic slab foundation design. This allowable bearing pressure is based on a total load corresponding to a total settlement of 1.0-in. or less. Net bearing pressure is defined as the soil bearing pressure at the foundation bearing level in excess of natural overburden pressure at that level. The foundations should be designed based on the maximum load which could be imposed by all loading conditions.

### 4.1.2 Foundation Size

The minimum width recommended for continuous wall footings is 18-in. The minimum dimension recommended for any isolated column pad footings is 30-in. Even though the maximum allowable soil bearing pressure may not be achieved, these width recommendations should control the size of the foundations.

### 4.1.3 Bearing Depth

Continuous strip footings should bear at least 1.5-ft below the lowest adjacent grade. Isolated column pad footings, if any, should bear at least 2.0-ft below the lowest adjacent grade. These are the minimum bearing depths to the bottom of the foundations.

### 4.1.4 Bearing Material

The foundations may bear in either the compacted suitable natural sandy soils or compacted structural fill. The bearing level soils, after compaction, should exhibit densities equivalent to at least 95 percent of the modified proctor maximum dry density as determined from ASTM D1557 to a depth at least 1.0-ft below the foundation bearing levels.

### 4.1.5 Settlement

Subsoil movements at the site will occur as a consequence of several interrelated stress conditions. The amount of movement which the foundation will experience is a function of the footing size and the imposed pressure intensity as well as the in-situ stress conditions within the zone influenced by the footing. Foundations designed and proportioned as recommended above are capable of tolerating a total settlement of 1.0-in., half of which is the allowable differential settlement. A significant amount of the anticipated settlement at this site will occur during the site preparation and fill placement phases of construction.

## 4.2 Paved Parking and Roadway Areas

YPC understands that the paved parking and roadway areas will utilize typical pavement sections consisting of stabilized subgrade course, base course, and asphalt course. Due to the presence of trash and debris throughout the site, YPC recommends that all paved parking and roadway areas be undercut to a depth at least 2-ft below the planned bottom of the stabilized subgrade course. After the areas are undercut the excavations should be backfilled with suitable and compacted backfill soils in general accordance with the recommendations presented in Section 4.1 of this report for the building area, except that soils should be compacted to at least 98 percent of the maximum dry density determined from ASTM D1557, *Test Method for Compaction Characteristics Using Modified Effort.* Based on the test boring information it is anticipated that the bottom of the excavation will be sufficiently dense to allow for compaction of the backfill soils for the undercut.

After the undercut areas are backfilled up to the bottom of the stabilized subgrade course elevation, a biaxial geogrid product (Tensar BX-1100 or equal) should be placed. Biaxial geogrid products are often used beneath pavement sections to distribute traffic loads over wider areas, reinforce the pavement section, and minimize settlement related to the variable subsurface conditions. Biaxial geogrid products have been used extensively to compensate for week subsurface soil conditions where removal and replacement operations are not possible or are cost-prohibitive.

The biaxial geogrid product should be installed in accordance with the manufacturer's recommendations. The geogrid should be overlapped at least 18-in. at joints and should extend at least 18-in. beyond the outside perimeters of the pavement limits. The stabilized subgrade course and base course should be constructed above the geogrid. It is noted that construction equipment should never travel directly on top of the geogrid material. The stabilized subgrade material, therefore, should be backdumped and spread such that the construction equipment does not come into direct contact with the geogrid product.

YPC strongly recommends that asphalt placement not proceed until the stabilized subgrade and base courses are placed and compacted and subjected to construction traffic for the maximum amount of time allowed by the construction schedule. Construction traffic will help load the geogrid and put the material into tension prior to placement of asphalt. Furthermore, after the geogrid is loaded, the base course can be re-leveled and recompacted to correct any potholes or low areas resulting from unseen weak subgrade conditions within the paving limits. The base course should be primed after placement for protection during this waiting period.

## 4.3 Construction Considerations

The geotechnical engineering design does not end with the advertisement of the construction documents. The design is an on-going process throughout construction. Because of our familiarity with the site conditions and the intent of the engineering design, we are most qualified to address problems that might arise during construction in a timely and cost-effective manner.

Due to the soil-structure interaction limitations associated with the construction of foundations and related earthwork at this site, it is imperative that YPC be retained to provide construction testing and monitoring for this project. *Alternately, no responsibility can or will be assumed by YPC for any difficulty or modifications occurring during the construction phase of this project.*

## 5.0 LIMITATIONS

This geotechnical services report has been prepared for the exclusive use of the Client. No other warranty is expressed nor implied. It is noted that the information presented in this report address only soils and deposits that would normally be influenced by the proposed construction. The scope of services does not include an evaluation of deep soil or rock conditions where limestone cavities may exist due to sinkhole activity. Deep borings/ soundings, geophysical exploration, and/or resistivity surveys would be required in order to evaluate the structural condition and stability of deep soil and rock formations, and is beyond the scope of services for this project.

This report has been prepared to aid in the evaluation of the property and to assist the owner and/or engineer in planning and design of this project. The scope of services is limited to the specific project and locations described herein, and the description of the project as described herein represents YPC's understanding of significant project aspects related to soil characteristics. In the event that any changes in the design or location of the structures as outlined in the report are planned, YPC must be informed so that the changes can be reviewed and the conclusions of this report modified or approved in writing. **Any conclusions or recommendations made by others based on the data contained herein are not the responsibility of YPC, unless we are advised of the same in writing and given the opportunity to review those conclusions and recommendations.**

The analyses and recommendations submitted in this report are based upon the data obtained from field exploration program at locations indicated in the Project Layout and Test Location Plan presented in **Figure 2**, as well as any other information discussed in this report. In the performance of a subsurface exploration, specific information is obtained at specific locations at specific times. However, it is known that site and subsurface conditions can change over time. Additionally, variations in soil and rock exist on most sites between test locations. The nature and extent of such variations may not become evident until after the start of construction. If variations appear, it will be necessary to re-evaluate the recommendations of this report after performing on-site observations during the construction period and/or performing supplemental tests.

It is the responsibility of the Client to see that the recommendations in this report are brought to the attention of all concerned parties. Because of the possibility of unanticipated subsurface conditions occurring, it is recommended that a "changed condition" clause be provided in contracts with the general contractor and with subcontractors involved in foundations or earthwork construction. Furthermore, it is necessary that YPC be retained to review the site preparations and foundation phases of construction. Otherwise, no responsibility for construction compliance with the design concepts, plans, specifications, and recommendations presented herein can be assumed.

The reproduction of any portion of this report in plans or other engineering documents supplied to parties other than the Client or assigned parties must bear the language indicating that the information contained in the report is for general information only, and that neither the Client nor YPC are liable to such parties.

## 6.0 ACKNOWLEDGMENT

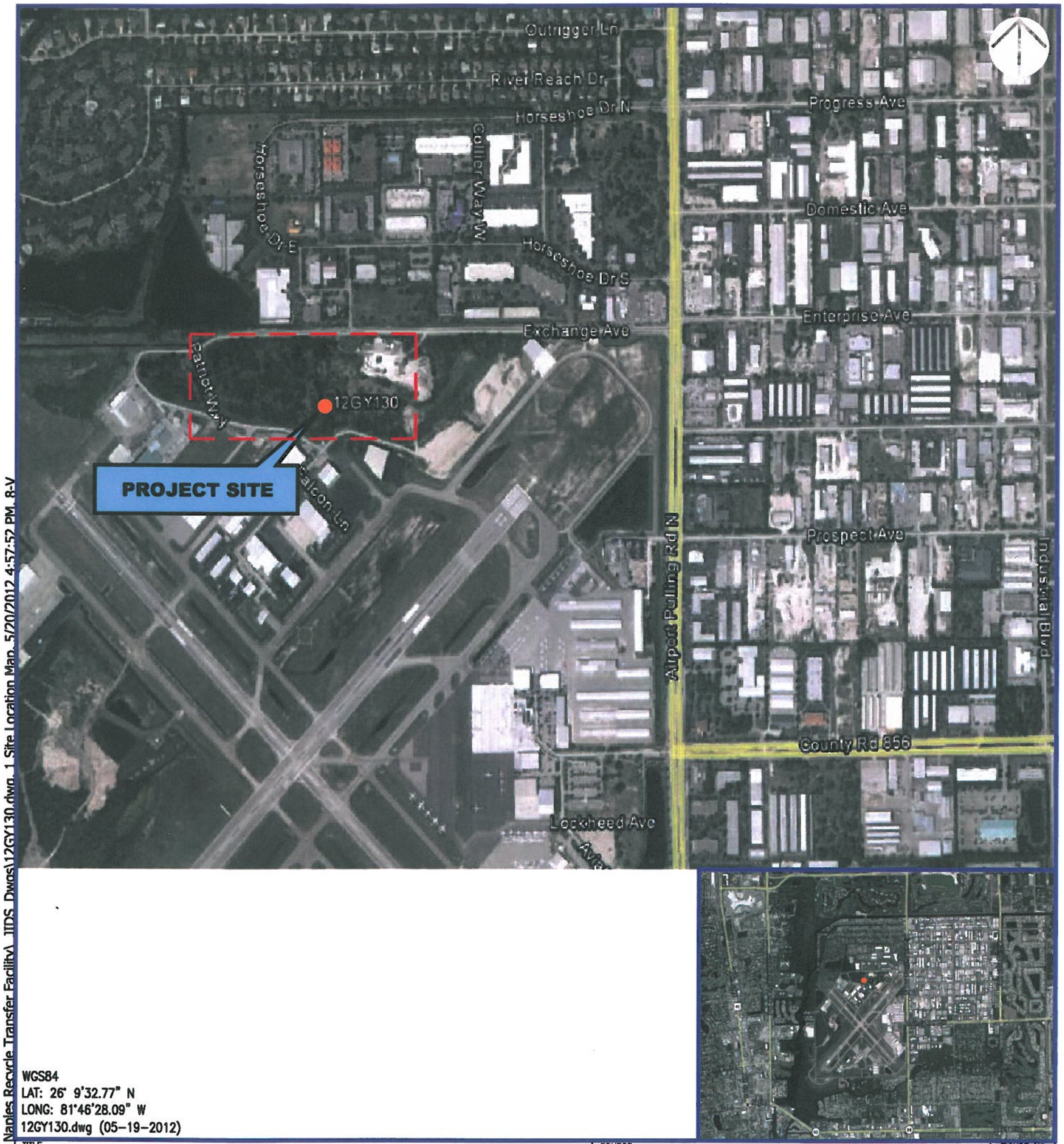
YPC appreciates the opportunity to work with you on this project. Please contact us should you have any questions concerning this report or if you require additional information.

Respectfully Submitted,
**YPC Consulting Group, P.L.**
Florida Certificate of Authorization No. 28233

GREGORY A. STEPHAN
LICENSE No. 49195

5/30/12

Gregory A. Stephan, P.E.
Senior Project Manager
Florida Registration No. 49195



WGS84
LAT: 26° 9'32.77" N
LONG: 81°46'28.09" W
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| TITLE | SOURCE | FIGURE NO. |
|---|---|---|
| Project Site Location and Vicinity Map | Google Earth | 1 |

YPC Consulting Group, PL

| | |
|---|---|
| DATE | 19 May 2012 |
| DRAWN BY | JIDS |
| CHECKED BY | YPC |
| SCALE | nts |
| PROJECT NO. | 12GY130 |

Geotechnical Exploration and
Engineering Services Report
***City of Naples Recycle Transfer Facility***
Enterprise Avenue
Naples, Collier County, Florida
for:
Mr. Justin Frederiksen, P.E.
City of Naples
Naples, Florida

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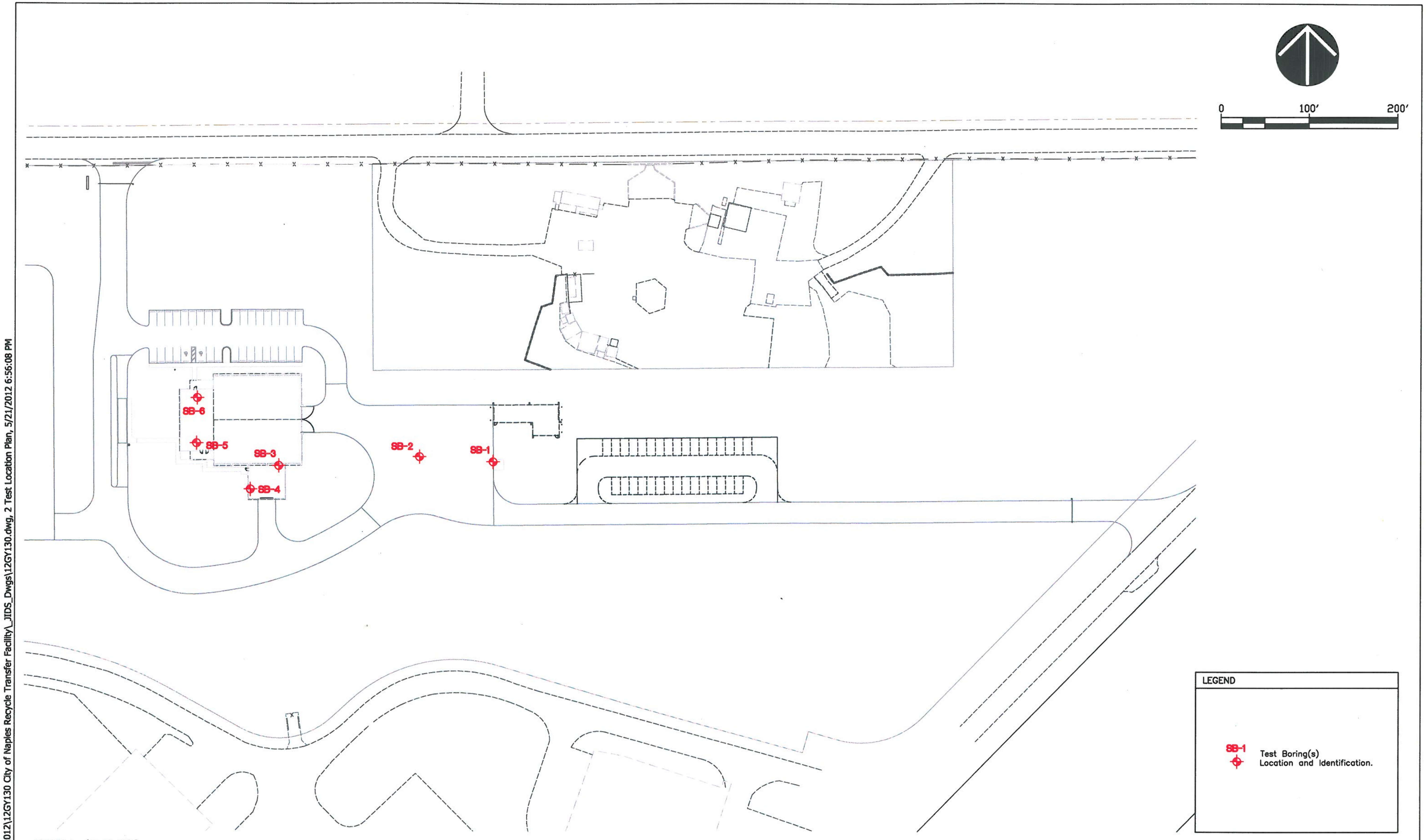

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| | | | | CHECKED | YPC | 05/12 |
| | | | | APPROVED | YPC | 05/12 |

YPC Consulting Group, PL

SEAL

PROJECT NAME
Geotechnical Exploration and
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***City of Naples Recycle Transfer Facility***
Enterprise Avenue
Naples, Collier County, Florida

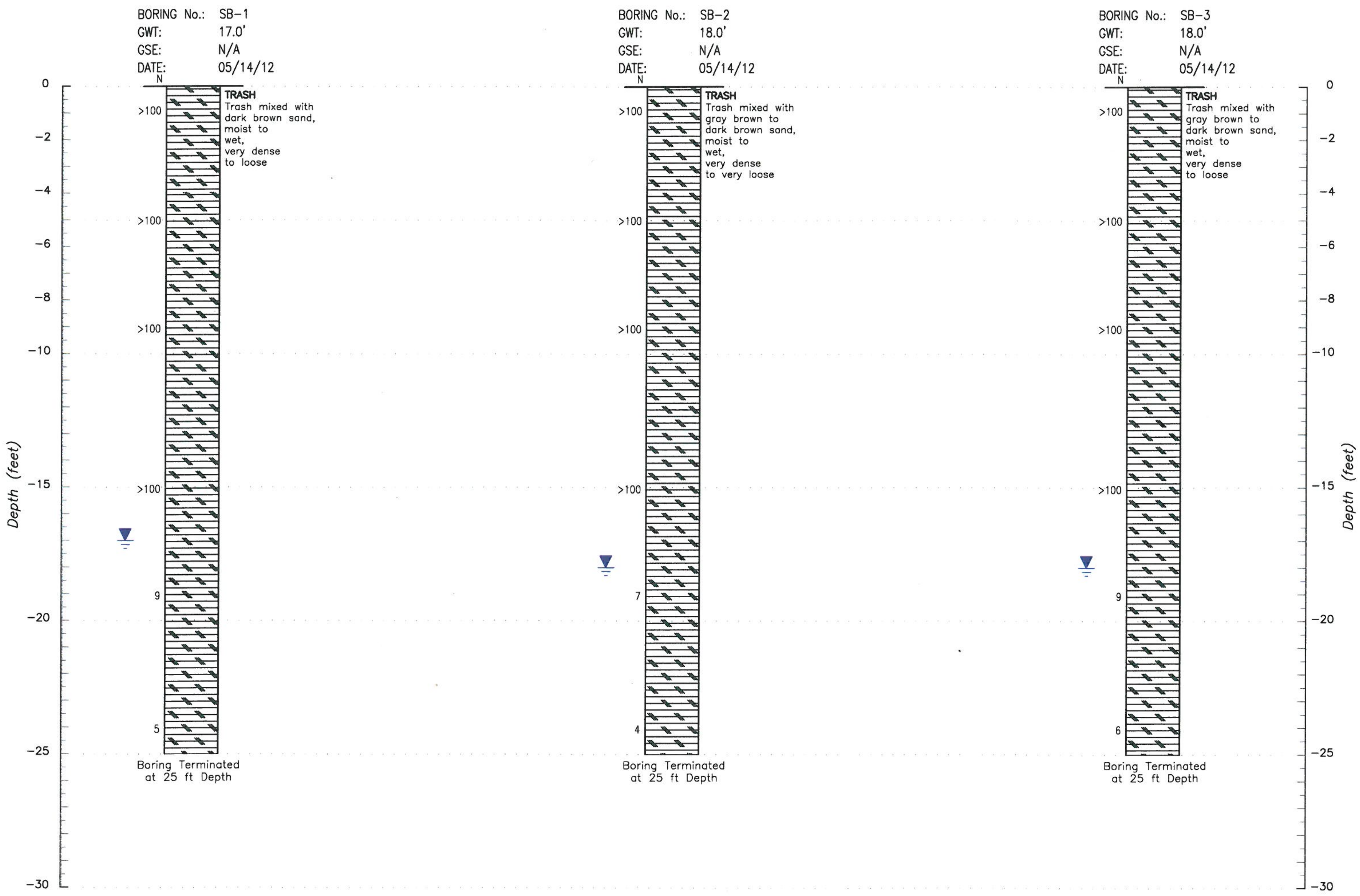
CLIENT
Mr. Justin Frederiksen, P.E.
City of Naples
Naples, Florida

SHEET TITLE
Project Layout and Test Location Plan

Figure No.
2

SOURCE
Base plan acquried from:
Stantec

PROJECT NO.
12GY130



## LEGEND

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ▨ | SP SAND | ▨ | ML SILT | ▨ | MH ELASTIC SILT |
| ▨ | SM SILTY SAND | ▨ | CL LEAN CLAY | ▨ | CH FAT CLAY |
| ▨ | SC CLAYEY SAND | ▨ | SH SHELL | ▨ | PT MUCK/PEAT |
| ▨ | LS HARD LIMESTONE | ▨ | -- SHELLY-GRAVEL | ▨ | -- CONCRETE |
| ▨ | WLS WEATHERED OR SOFT LIMESTONE | ▨ | -- SHELLY-SAND | ▨ | AS ASPHALT |
| ▨ | SP-SC | ▨ | -- SHELLY-CLAY | ▨ | LB LIMEROCK BASE |
| ▨ | SP-SM | ▨ | -- SOIL/CEMENT | ▨ | -- DEBRIS |
| ▨ | WD WOOD | ▨ | OL ORGANIC SILTS | ▨ | OH ORGANIC CLAY |
| ▨ | GM SILTY-GRAVEL | ▨ | GC GRAVELLY-CLAY | ▨ | GP GRAVEL |

## SOIL PROPERTIES

GRANULAR SOILS (COHESIONLESS)

| DESCRIPTIVE TERM FOR RELATIVE DENSITY | SPT N-VALUE (blows per ft) |
|---|---|
| very loose | 0 - 4 |
| loose | 5 - 10 |
| medium dense | 11 - 30 |
| dense | 31 - 50 |
| very dense | over 50 |

FINE GRAINED SOILS (COHESIVE)

| DESCRIPTIVE TERM FOR CONSISTENCY | UNCONFINED COMPRESSIVE STRENGTH (ksf) | SPT N-VALUE (blows per ft) |
|---|---|---|
| very soft | 0.5 | 0 - 2 |
| soft | 0.5 - 1.0 | 3 - 4 |
| firm | 1.0 - 2.0 | 5 - 8 |
| stiff | 2.0 - 4.0 | 9 - 15 |
| very stiff | 4.0 - 8.0 | 16 - 30 |
| hard | 8.0-10.0 | 31-50 |
| very hard | 10.0+ | over 50 |

## MOISTURE DESCRIPTION

dry - absence of moisture, dusty, dry to the touch
moist - damp, but no visible water
wet - visible free water, usually soil is below water table

| | |
|---|---|
| GNE | GROUND WATER NOT ENCOUNTERED |
| GNM | GROUND WATER NOT MEASURED |
| LL | LIQUID LIMIT |
| PL | PLASTIC LIMIT |
| PI | PLASTICITY INDEX |
| -200 | PERCENT PASSING NO. 200 U.S. STANDARD SIEVE (%) |
| MC | NATURAL MOISTURE CONTENT (%) |
| WR | WEIGHT OF ROD |
| WOH | WEIGHT OF HAMMER |
| N | STANDARD PENETRATION RESISTANCE IN BLOWS PER 1ft (2ft SPOON - ASTM D-1586) |
| 100+ | REFUSAL CRITERIA |
| ORG | ORGANIC CONTENT |
| TOD | TIME OF DRILLING |
| GSE | GROUND SURFACE ELEVATION |
| N | CASING USED |
| SP | USCS SOIL CLASSIFICATION |
| ◀ | LOSS OF CIRCULATION |
| N/R | NO RECOVERY |
| ▼ | GWT or GROUND WATER TABLE LEVEL (OBSERVED) |
| ▽ | SHWL or SEASONAL HIGH WATER LEVEL (ESTIMATED) |

TYPE OF RIG: AD-2 (Manual Hammer)

## NOTES:

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2. REFER TO PROJECT LAYOUT AND TEST LOCATION PLAN FOR TEST LOCATIONS.

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| | | | | CHECKED | YPC | 05/12 |
| | | | | APPROVED | YPC | 05/12 |

YPC Consulting Group, PL

SEAL

PROJECT NAME
Geotechnical Exploration and
Engineering Services Report
***City of Naples Recycle Transfer Facility***
Enterprise Avenue
Naples, Collier County, Florida

CLIENT
Mr. Justin Frederiksen, P.E.
City of Naples
Naples, Florida

SHEET TITLE
Boring Log Profiles

Figure No.
3A

SOURCE
Standard Penetration Test Boring Logs

PROJECT NO.
12GY130

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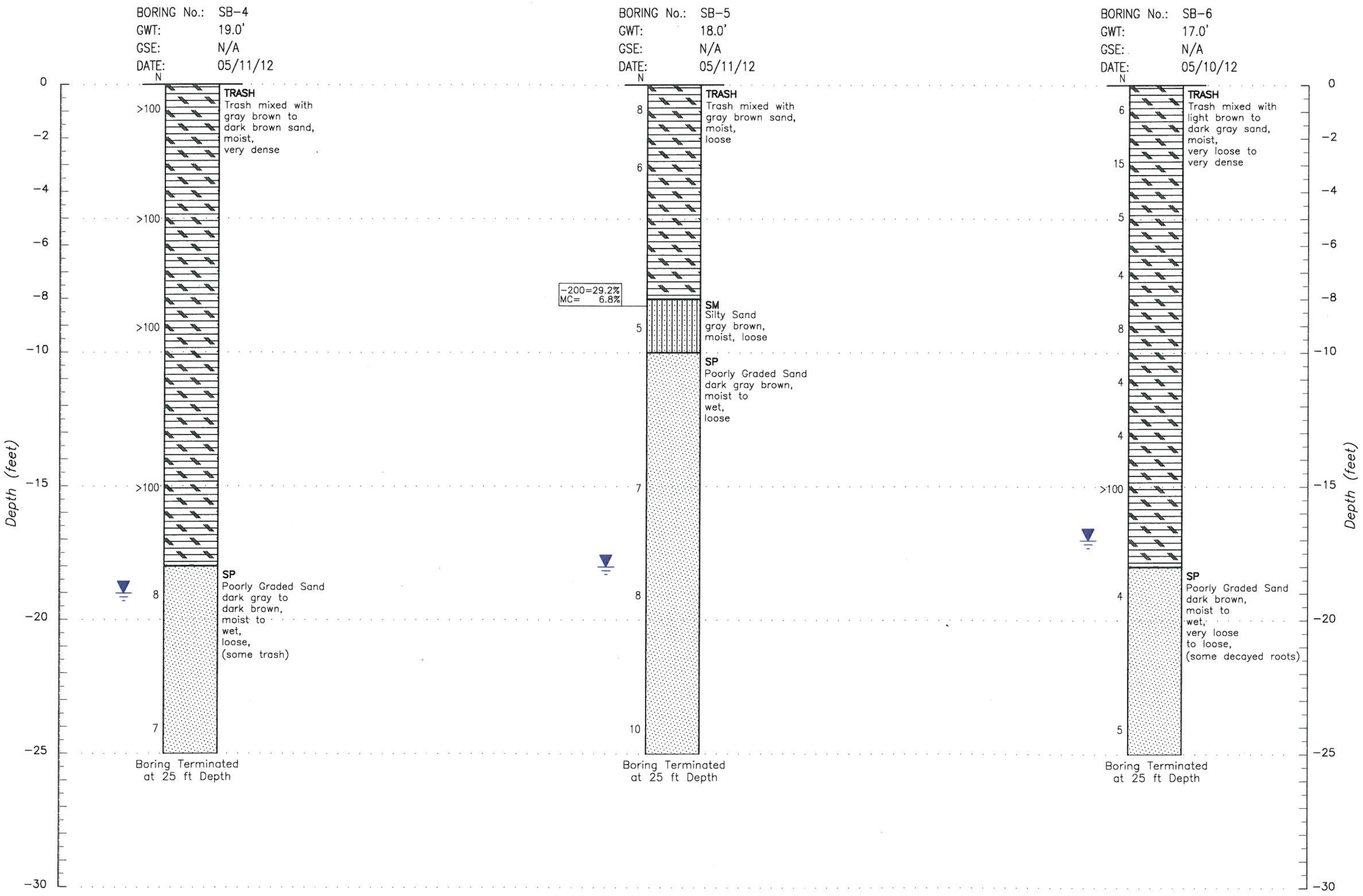

## LEGEND

| | | | | | | | | |
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| | | | | CHECKED | YPC | 05/12 |
| | | | | APPROVED | YPC | 05/12 |

YPC Consulting Group, PL

SEAL

PROJECT NAME
Geotechnical Exploration and
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***City of Naples Recycle Transfer Facility***
Enterprise Avenue
Naples, Collier County, Florida

CLIENT
Mr. Justin Frederiksen, P.E.
City of Naples
Naples, Florida

SHEET TITLE
Boring Log Profiles

Figure No.
3B

SOURCE
Standard Penetration Test Boring Logs

PROJECT NO.
12GY130

Consulting Group, PL

***YPC Consulting Group, P.L.***
***5701 Country Lakes Drive, Suite #3***
***Fort Myers, Florida 33905***
***Phone (239) 693-7700***
***Fax (239) 690-0271***
***Florida Certificate of Authorization No. 28233***

---

Mr. Justin Frederiksen, P.E.
Deputy Utilities Director
City of Naples
380 Riverside Circle
Naples, Florida 34102

15 June 2012

***Subject:*** ***Supplemental Geotechnical Engineering Services Report***
***Proposed City of Naples Recycle Transfer Facility***
***Enterprise Avenue***
***Naples, Collier County, Florida***

***YPC Project No. 12GY130***

Dear Mr. Frederiksen:

***YPC Consulting Group, P.L. (YPC)*** previously provided geotechnical services for the above-referenced project, as described in our *Geotechnical Exploration and Engineering Services Report* dated 30 May 2012. The original report recommended that all trash and debris within the building footprint be removed and replaced with suitable and compacted backfill material. After further discussion with the design team it has been decided to limit the vertical extent of the removal and replacement operation and to compensate by stiffening the concrete mat-slab foundation and using a goetexile product to provide reinforcement and separation between the backfill soils and the underlying soil-trash landfill materials.

Our supplemental scope of services includes providing recommendations associated with 3 main elements as summarized below:

- Provide comments for use by the structural engineer to stiffen the concrete mat-slab foundation system.
- Commenting on the horizontal and vertical extent of the excavation and replacement operation.
- Providing recommendations for geotextile products that can provide the necessary reinforcement and separation between the backfill soils and the underlying soil-trail materials.

## STIFFENING OF THE CONCRETE SLAB-MAT FOUNDATION SYSTEM

YPC has reviewed structural drawings prepared by Liebl & Barrow Structural Engineering dated 22 March 2012 (Drawing Sheets S1, S2, and S3). The slab-mat foundation system design is preliminary at this time. YPC recommends that consideration be given to the following to provide additional stiffness to the slab foundation system:

- The #4 bars at the top of the slab at 18″ center-to-center spacing as shown in detail C/S3 should be lengthened to extend further into the slab sections. Lengthening of these bars will allow for stress transfer between the footing sections and slab sections. Since the FT-1 and FT-2 footings sections are 5′ and 4′ wide, respectively, the bars should be lengthened to provide adequate embedment into the slab section.

- Consideration should be given to placing # 4 reinforcing bars across the footing at Line 2. No connection is shown between the 6″ thick slab between Lines G and F and the 8″ thick slab for the sorting area. Consideration should be given to placing dowels across the FT-1 footing at that location extending into both the 6″ and 8″ concrete slabs.

## VERTICAL AND LATERAL EXTENT OF EXCAVATION/REPLACEMENT OPERATION

Based on our additional evaluation of the subsurface conditions and the type of slab foundation system being utilized, YPC recommends that the excavation extend to 15-ft below the bottom of the slab. The removal operation should extend to a lateral distance outside building lines at least equal to the depth of the excavation required to remove the trash (i.e., 15-ft outside building lines). The sides of the excavation should be sufficiently sloped based on the stability of the material for safety reasons. If necessary, sheet piles can be used around the perimeter of the excavation to facilitate the excavation and removal of the trash/debris. After the debris is completely removed beneath the building footprint as indicated above, the backfill can be placed in accordance with the recommendations provided in our original report. However, a reinforcement and separation geotextile product should be placed near the bottom of the excavation as indicated below.

## GEOTEXTILE RECOMMENDATIONS FOR BUILDING AREA

The design team has requested recommendations for two different types of geotextile materials, one impermeable to control possible landfill gases and one permeable that would not control landfill gases but would allow the transfer of groundwater. These products are described below:

- **Impermeable Geotextile Product:** DURA-SKRIM 12W, or equal. This product is impermeable and can be utilized to provide reinforcement and separation.

- **Permeable Geotextile Product:** ACF Environmental HSP-4 woven high strength polypropylene geotextile, or equal. This product is permeable and can be utilized to provide reinforcement and separation.

The selected geotextile product should be installed in accordance with the manufacturer's recommendations. If the DURA-SKRIM product is selected for landfill gas control, the seams must be sealed to prevent gas transfer through the product. The permeable product should simply be overlapped 24-in. at the seams. The geotextile should be installed near the bottom of the excavation, but placement of a 12-in. thick layer of clean sand between the bottom of the excavation and the geotextile is recommended to prevent punctures from any sharp objects protruding from the bottom of the excavation. The geotextile should be installed to the sides of the excavation (i.e., approximately 15-ft beyond building lines).

It has been a pleasure to work for you on this project. Please contact us should you have any questions or if you require additional information.

Respectfully Submitted,

**YPC Consulting Group, P.L.**
**Florida Certificate of Authorization No. 28233**

No. 49195

6/15/12

Gregory A. Stephan, P.E.
Senior Project Manager
Florida Registration No. 49195

Copies: 2 originals to Client and send electronically via e-mail

Consulting Group, PL

*YPC Consulting Group, P.L.*
*5701 Country Lakes Drive, Suite #3*
*Fort Myers, Florida 33905*
*Phone (239) 693-7700*
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Mr. Justin Frederiksen, P.E.
Deputy Utilities Director
City of Naples
380 Riverside Circle
Naples, Florida 34102

15 June 2012

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***Proposed City of Naples Recycle Transfer Facility***
***Enterprise Avenue***
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It has been a pleasure to work for you on this project. Please contact us should you have any questions or if you require additional information.

Respectfully Submitted,

**YPC Consulting Group, P.L.**
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GREGORY A. STEPHAN
No. 49195

6/15/12

Gregory A. Stephan, P.E.
Senior Project Manager
Florida Registration No. 49195

Copies: 2 originals to Client and send electronically via e-mail

# PHASE II ENVIRONMENTAL SITE ASSESSMENT
# PROPOSED NAPLES AIRPORT
# RECYCLING FACILITY
# NAPLES, COLLIER CO., FLORIDA

**Ardaman & Associates, Inc.**

**OFFICES**

**Orlando,** 8008 S. Orange Avenue, Orlando, Florida 32809, Phone (407) 855-3860
**Bartow,** 1525 Centennial Drive, Bartow, Florida 33830, Phone (863) 533-0858
**Cocoa,** 1300 N. Cocoa Blvd., Cocoa, Florida 32922, Phone (321) 632-2503
**Fort Myers,** 9970 Bavaria Road, Fort Myers, Florida 33913, Phone (239) 768-6600
**Miami,** 2608 W. 84th Street, Hialeah, Florida 33016, Phone (305) 825-2683
**Port Charlotte,** 740 Tamiami Trail, Unit 3, Port Charlotte, Florida 33954, Phone (941) 624-3393
**Port St. Lucie,** 460 Concourse Place NW, Unit 1, Port St. Lucie, Florida 34986, Phone (772) 878-0072
**Sarasota,** 2500 Bee Ridge Road, Sarasota, Florida 34239, Phone (941) 922-3526
**Tallahassee,** 3175 West Tharpe Street, Tallahassee, Florida 32303, Phone (850) 576-6131
**Tampa,** 3925 Coconut Palm Drive, Suite 115, Tampa, Florida 33619, Phone (813) 620-3389
**West Palm Beach,** 2200 North Florida Mango Road, Suite 101, West Palm Beach, Florida 33409, Phone (561) 687-8200

**MEMBERS:**
A.S.F.E.
American Concrete Institute
American Society for Testing and Materials
Florida Institute of Consulting Engineers

Ardaman & Associates, Inc.

Geotechnical, Environmental and
Materials Consultants

# LIMITED PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT

## FOR

## PROPOSED NAPLES AIRPORT RECYCLING FACILITY
## NAPLES, COLLIER COUNTY, FLORIDA

## PREPARED FOR

JOHNSON ENGINEERING, INC.
P.O. BOX 1550
FORT MYERS, FL 33902-1550

## PREPARED BY

ARDAMAN & ASSOCIATES, INC.
9970 BAVARIA ROAD
FORT MYERS, FLORIDA 33913

ARDAMAN PROJECT NO. 11-37-4323

JUNE 29, 2011

# TABLE OF CONTENTS

## 1.0 INTRODUCTION AND PROJECT INFORMATION

As requested by Johnson Engineering, Inc. (JEI), Ardaman & Associates, Inc. (Ardaman) has performed a limited Phase II Environmental Site Assessment (ESA) for the proposed Naples Airport Recycling Facility in Naples, Collier County, Florida. This report summarizes our field exploration and laboratory analysis programs, and presents our conclusions.

### 1.1 Purpose and Scope

The City of Naples is working with the Naples Airport Authority to obtain about 21 acres of land around the existing Collier County Recycling Center. The City is planning to use this property for a City recycle transfer site and storm debris transfer site. This property is an old closed landfill with limited access because of dense vegetation and hilly (trash heaps) terrain. The City is requested that a Phase II ESA be performed on the property for the purpose of establishing existing groundwater conditions.

To address this request, Ardaman prepared a scope of services where four permanent monitoring wells were recommended to be installed at accessible locations around the perimeter of the property. Each well was sampled and analyzed for the following parameters and EPA Test Methods:

1. RCRA 8 metals and mercury (EPA Method 200.8 and 7470);
2. volatile and semi-volatile organic compounds (EPA Method 8260B and 8270C);
3. organochlorine pesticides (EPA Method 8081);
4. organophosphorus pesticides (EPA Method 8141);
5. herbicides (EPA Method 8151).

### 1.2 Site Location

The property proposed for use by the City of Naples for a recycling facility consists of a 21-acre portion of the Naples Municipal Airport property within Section 35, Township 49 South, Range 25 East in Naples, Collier County, Florida. The property is bound by Enterprise Avenue on the north, Corporate Flight Drive on the west, Patriot Way and Citation Point on the south and hangars on the east. A 2010 aerial photograph of the site from the Collier County Property Appraiser's website is presented as **Figure 1**.

## 2.0 GROUNDWATER INVESTIGATION

### 2.1 Monitoring Well Installation

Ardaman installed four monitoring wells labeled MW-1 through MW-4 around the perimeter of the proposed Recycling Facility property at the locations shown on the attached **Figure 1**. Monitoring well locations are also shown on a Boundary Survey of the site prepared by JEI (not included in this report).

On June 14 and 15, 2011, the boreholes for MW-1 through MW-4 were advanced using a hollow stem auger to depths of 13 feet. The 2-inch diameter monitoring wells were then constructed by inserting a 10-foot length of machine slotted 0.010 inch PVC well screen to near the bottom of the borehole and then backfilling the annular space with 6/20-grade silica sand to just above the slotted section. A 1-foot thick layer of bentonite chips was then placed above the 6/20 silica sand and then grout was backfilled to the surface. The PVC casings were connected to the screened section using a flush threaded joint. Each monitoring well was secured with a lockable 5-ft long 4-inch square aluminum well cover embedded within a 2-foot square concrete pad. The monitoring well installation records are included in **Appendix I** of this report.

After monitoring well installation, surveyors from JEI located the monitoring wells and determined elevation of the top of each well, so that groundwater flow direction could be estimated. This information is summarized in **Table 1**. Groundwater flow is estimated to be westerly to southwesterly.

### 2.2 Groundwater Assessment

Groundwater sampling was performed on June 16, 2011 in general conformance with the Florida Department of Environmental Protection (FDEP) field sampling and laboratory analysis quality assurance protocol codified in Chapter 62-160 FAC Standard Operation Procedures for Field Activities (FDEP SOP-001/01). The standing volume of groundwater within each well casing was first calculated, then a total of 3 standing volumes of water were removed from the well casing prior to sample collection. Samples were then collected using field sampling technique with a peristaltic pump. Samples were placed in laboratory supplied vials, capped, labeled, packed on ice and transported to Jupiter Laboratories in Jupiter, Florida. The chain-of-custody form and laboratory analysis are included in **Appendix II** of this report.

Groundwater samples collected from MW-1 through MW-4 were analyzed for the parameters and EPA Methods listed above (Section 1.1). As indicated in the laboratory analysis results, all constituents were below Laboratory Detection Limits except for low concentrations of heavy metals in all the wells, and very low concentrations of chlorobenzene in MW-2 and 3. Concentrations of each detected contaminant were below their respective Groundwater Cleanup Target Levels (GCTLs) as listed in FDEP's 2005 Final Technical Report; Development of Cleanup Target Levels (CTLs) for Chapter 62-777 FAC. **Table 2** has been prepared summarizing the analytical lab data where detection of a parameter occurred. For a list of all tested parameters, review the laboratory analysis report in **Appendix II**.

## 3.0 CONCLUSIONS

The results of the laboratory analysis of the groundwater sampled from MW-1 through MW-4 revealed all constituents were below the laboratory detection limits or below the FDEP GCTLS.

## 4.0 CLOSURE

The conclusions and recommendations submitted in this report are based on the data obtained during our field exploration program. This study is a focus study limited to the specific methods of exploration and our proposed scope of services. Our findings do not warrant the site against other hazardous substance contamination in areas not explored.

## 5.0 SIGNATURE OF ENVIRONMENTAL PROFESSIONAL

Gary A. Drew, P.E.
Vice President/Branch Manager

(signature)

## 6.0 TABLE(S)

## TABLE 1

## GROUNDWATER ELEVATIONS

PROPOSED NAPLES AIRPORT RECYCLING FACILITY
NAPLES, COLLIER COUNTY, FLORIDA

| Monitoring Well No. | Latitude/Longitude | Elevation Top of Well (feet, NAVD 88) | Depth to Groundwater Table (6/16/11) | GW Table Elevation (feet, NAVD 88) |
|---|---|---|---|---|
| 1 | N26° 09.591' / W-081°46.225' | 7.43 | 6.48' | 0.95 |
| 2 | N26° 09.540' / W-081°46.556' | 5.85 | 6.00' | -0.15 |
| 3 | N26° 09.629' / W-081°46.350' | 9.92 | 8.93' | 0.99 |
| 4 | N26° 09.618' / W-081°46.593' | 6.86 | 6.81' | 0.05 |

## TABLE 2

## GROUNDWATER SAMPLING-LABORATORY ANALYSIS

### PROPOSED NAPLES AIRPORT RECYCLING FACILITY
### NAPLES, COLLIER COUNTY, FLORIDA

PARAMETERS

| SAMPLE NO. | UNIT | Chlorobenzene | Chromium | Arsenic | Cadmium | Lead | Barium |
|---|---|---|---|---|---|---|---|
| MW-1 | ug/l | U | 17 | 2.9i | U | 0.33i | 210 |
| MW-2 | ug/l | 1.82 | 61 | 1.4i | 2.8i | 0.14i | 100 |
| MW-3 | ug/l | 0.470i | 26 | 2.4i | U | U | 32 |
| MW-4 | ug/l | U | 28 | 0.91i | U | 0.22i | 130 |
| Groundwater Cleanup Target Levels* | ug/l | 100 | 100 | 10 | 5 | 15 | 2000 |

0.0 Above Groundwater Cleanup Target Level

*Groundwater Cleanup Target Levels – Chapter 62-777 FAC (April 17, 2005)

Sample No. I.D. – MW-1 (Monitoring Well Number)

Sample Date(s)–June 16, 2011

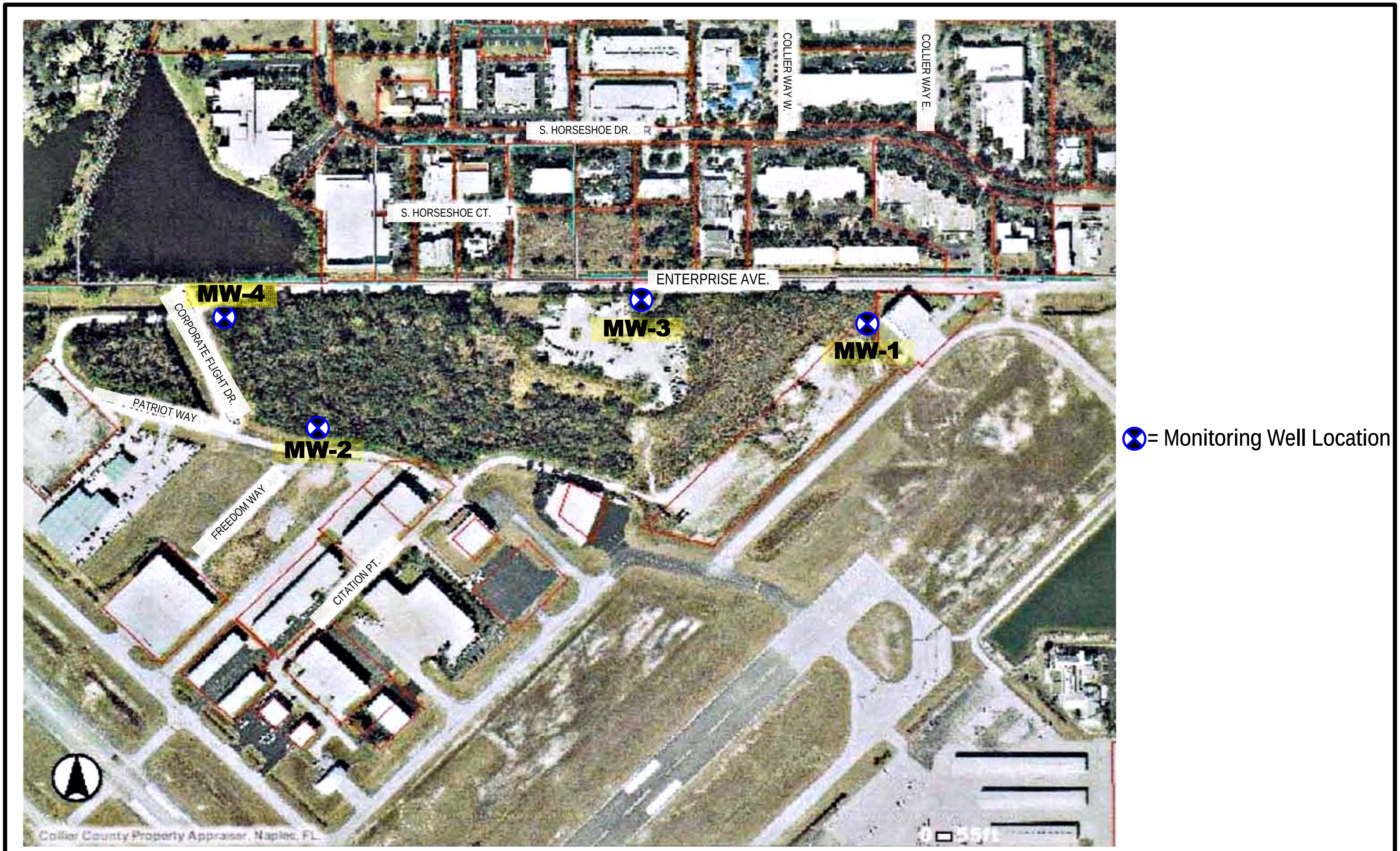
ug/l – micrograms per liter

i – A value flagged with an "i" indicates that the reported value is between the lab method detection limit and the practical quantitation limit.

U – below detection limits

## 7.0 FIGURE

Figure No. 1—Monitoring Well Location Plan



# FIGURE 1

# MONITORING WELL LOCATION PLAN

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

PHASE II ESA
PROPOSED NAPLES AIRPORT
RECYCLING FACILITY
NAPLES, COLLIER CO., FL

| | | |
|---|---|---|
| Drawn By: ES | Checked By: GD | Date: 29-JUN-11 |
| File No. 11-37-4323 | Approved By: Gary A. Drew, P.E. | Figure No. 1 |

## 8.0 APPENDICES

Appendix I - Monitoring Well Installation and Water Quality Sampling Logs

Appendix II - Laboratory Test Results with Chain-of-Custody

# APPENDIX I

## Monitoring Well Installation
## &
## Water Quality Sampling Logs

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

# PIEZOMETER WELL INSTALLATION LOG

| | | | |
|---|---|---|---|
| File No.:<br>11-37-4323 | Client: Johnson Engineering, Inc. (JEI) | Project: CITY OF NAPLES FUTURE RECYCLING CENTER, NAPLES, FL | Permit Number:<br>**2011060579** |
| Installed by:<br>CHRIS WOOTEN | | Date finished:<br>14-JUN-2011 | WELL No.: MW-1 |

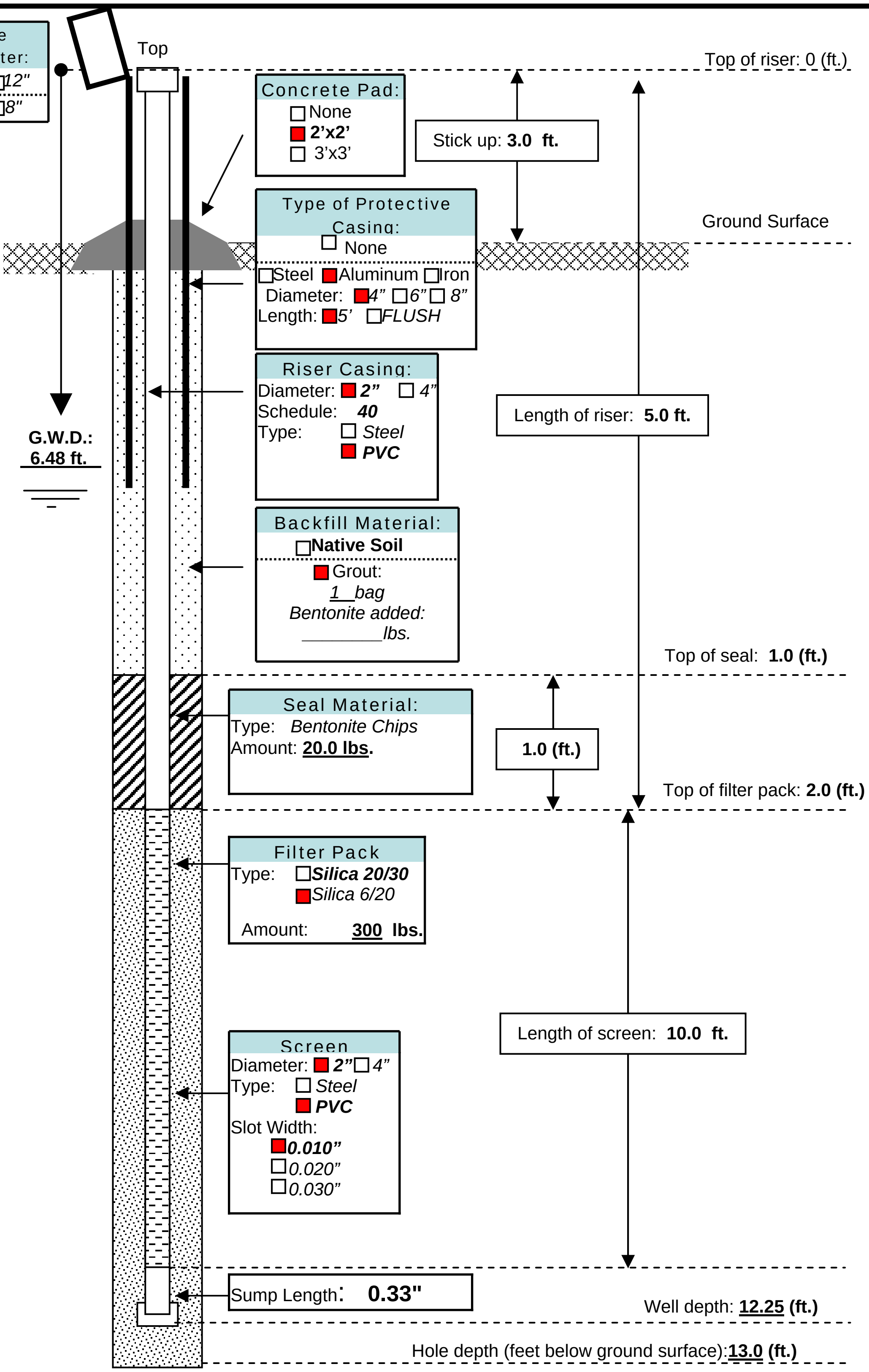
Remarks: Top of well elev. = +7.43' NAVD88

| Drilling Method: | Hole diameter: | |
|---|---|---|
| Hollow Stem Auger: | ☒ 8" | ☐ 12" |
| Rotary Wash w/drill. Fluid: | ☐ 6" | ☐ 8" |

Generalized Soil Profile

0 – 10.0'
Brown fine sand.

--------------
10.0' – 13.0'
Brown silty fine sand with gravel.



Stick up: **3.0 ft.**

Length of riser: **5.0 ft.**

**1.0 (ft.)**

Length of screen: **10.0 ft.**

Concrete Pad:
☐ None
☒ **2'x2'**
☐ 3'x3'

Type of Protective Casing:
☐ None
☐ Steel ☒ Aluminum ☐ Iron
Diameter: ☒ *4"* ☐ *6"* ☐ *8"*
Length: ☒ *5'* ☐ *FLUSH*

Riser Casing:
Diameter: ☒ ***2"*** ☐ *4"*
Schedule: ***40***
Type: ☐ *Steel*
☒ ***PVC***

Backfill Material:
☐ **Native Soil**
☒ Grout:
*1 bag*
*Bentonite added:*
*_________lbs.*

Seal Material:
Type: *Bentonite Chips*
Amount: **20.0 lbs.**

Filter Pack
Type: ☐ ***Silica 20/30***
☒ *Silica 6/20*
Amount: **300 lbs.**

Screen
Diameter: ☒ ***2"*** ☐ *4"*
Type: ☐ *Steel*
☒ ***PVC***
Slot Width:
☒ ***0.010"***
☐ *0.020"*
☐ *0.030"*

Sump Length: **0.33"**

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

# PIEZOMETER WELL INSTALLATION LOG

| | | | |
|---|---|---|---|
| File No.: 11-37-4323 | Client: Johnson Engineering, Inc. (JEI) | Project: CITY OF NAPLES FUTURE RECYCLING CENTER, NAPLES, FL | Permit Number: **2011060579** |
| Installed by: CHRIS WOOTEN | | Date finished: 14-JUN-2011 | WELL No.: MW-2 |

Remarks: Top of well elev. = +5.85' NAVD88

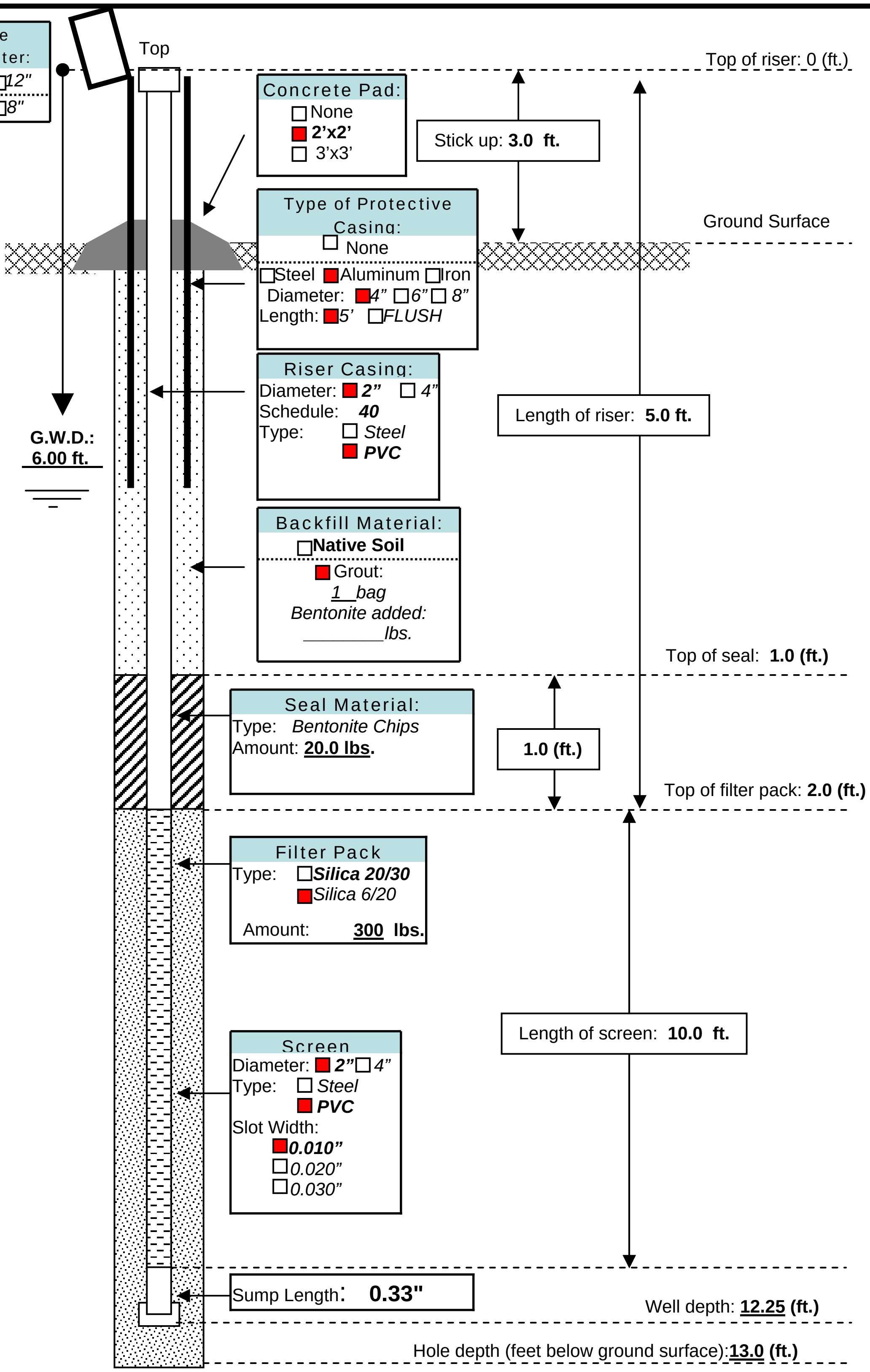
Drilling Method: | Hole diameter:
Hollow Stem Auger: ☒ *8"* ☐ *12"*
Rotary Wash w/drill. Fluid: ☐ *6"* ☐ *8"*

Generalized Soil Profile

0 – 6.0'
Brown fine sand.

---------------
6.0' – 8.5'
Rock

--------------
8.5' – 13.0'
Brown silty fine sand with gravel.



G.W.D.: **6.00 ft.**

Top of riser: 0 (ft.)

Stick up: **3.0 ft.**

Length of riser: **5.0 ft.**

Top of seal: **1.0 (ft.)**

**1.0 (ft.)**

Top of filter pack: **2.0 (ft.)**

Length of screen: **10.0 ft.**

Well depth: **12.25 (ft.)**

Hole depth (feet below ground surface): **13.0 (ft.)**

Concrete Pad:
☐ None
☒ **2'x2'**
☐ 3'x3'

Type of Protective Casing:
☐ None
☐ Steel ☒ Aluminum ☐ Iron
Diameter: ☒ *4"* ☐ *6"* ☐ *8"*
Length: ☒ *5'* ☐ *FLUSH*

Riser Casing:
Diameter: ☒ ***2"*** ☐ *4"*
Schedule: ***40***
Type: ☐ *Steel*
☒ ***PVC***

Backfill Material:
☐ **Native Soil**
☒ Grout:
*1 bag*
*Bentonite added:*
*________lbs.*

Seal Material:
Type: *Bentonite Chips*
Amount: **20.0 lbs.**

Filter Pack
Type: ☐ ***Silica 20/30***
☒ *Silica 6/20*
Amount: **300 lbs.**

Screen
Diameter: ☒ ***2"*** ☐ *4"*
Type: ☐ *Steel*
☒ ***PVC***
Slot Width:
☒ ***0.010"***
☐ *0.020"*
☐ *0.030"*

Sump Length: **0.33"**

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**Geotechnical, Environmental**
**and Materials Consultants**

# PIEZOMETER WELL INSTALLATION LOG

| | | | |
|---|---|---|---|
| File No.: 11-37-4323 | Client: Johnson Engineering, Inc. (JEI) | Project: CITY OF NAPLES FUTURE RECYCLING CENTER, NAPLES, FL | Permit Number: **2011060579** |
| Installed by: CHRIS WOOTEN | | Date finished: 15-JUN-2011 | WELL No.: MW-3 |

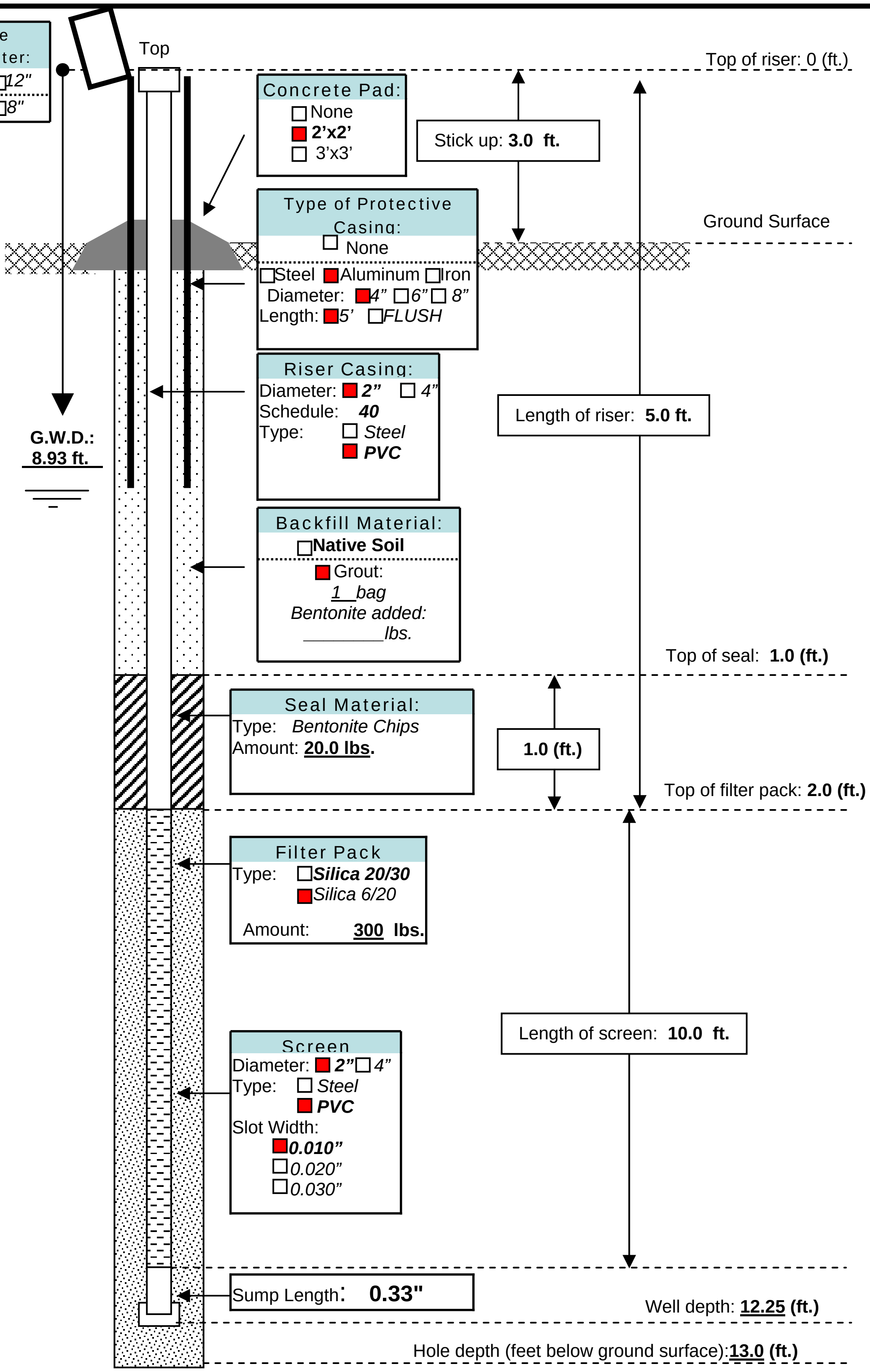
Remarks: Top of well elev. = +9.92' NAVD88

| Drilling Method: | Hole diameter: |
|---|---|
| Hollow Stem Auger: | ☒ *8"* ☐ *12"* |
| Rotary Wash w/drill. Fluid: | ☐ *6"* ☐ *8"* |

**Generalized Soil Profile**

0 – 10.0'
Brown fine sand.

--------------
10.0' – 13.0'
Gray silty fine sand with gravel.



Stick up: **3.0 ft.**

Length of riser: **5.0 ft.**

Length of screen: **10.0 ft.**

**Concrete Pad:**
☐ None
☒ **2'x2'**
☐ 3'x3'

**Type of Protective Casing:**
☐ None
☐ Steel ☒ Aluminum ☐ Iron
Diameter: ☒ *4"* ☐ *6"* ☐ *8"*
Length: ☒ *5'* ☐ *FLUSH*

**Riser Casing:**
Diameter: ☒ ***2"*** ☐ *4"*
Schedule: ***40***
Type: ☐ *Steel* ☒ ***PVC***

**Backfill Material:**
☐ **Native Soil**
☒ Grout:
*1 bag*
*Bentonite added:*
*________lbs.*

**Seal Material:**
Type: *Bentonite Chips*
Amount: **20.0 lbs.**

**Filter Pack**
Type: ☐ ***Silica 20/30*** ☒ *Silica 6/20*
Amount: **300 lbs.**

**Screen**
Diameter: ☒ ***2"*** ☐ *4"*
Type: ☐ *Steel* ☒ ***PVC***
Slot Width:
☒ ***0.010"***
☐ *0.020"*
☐ *0.030"*

Sump Length: **0.33"**

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

# PIEZOMETER WELL INSTALLATION LOG

| | | | |
|---|---|---|---|
| File No.: 11-37-4323 | Client: Johnson Engineering, Inc. (JEI) | Project: CITY OF NAPLES FUTURE RECYCLING CENTER, NAPLES, FL | Permit Number: 2011060579 |
| Installed by: CHRIS WOOTEN | | Date finished: 15-JUN-2011 | WELL No.: MW-4 |

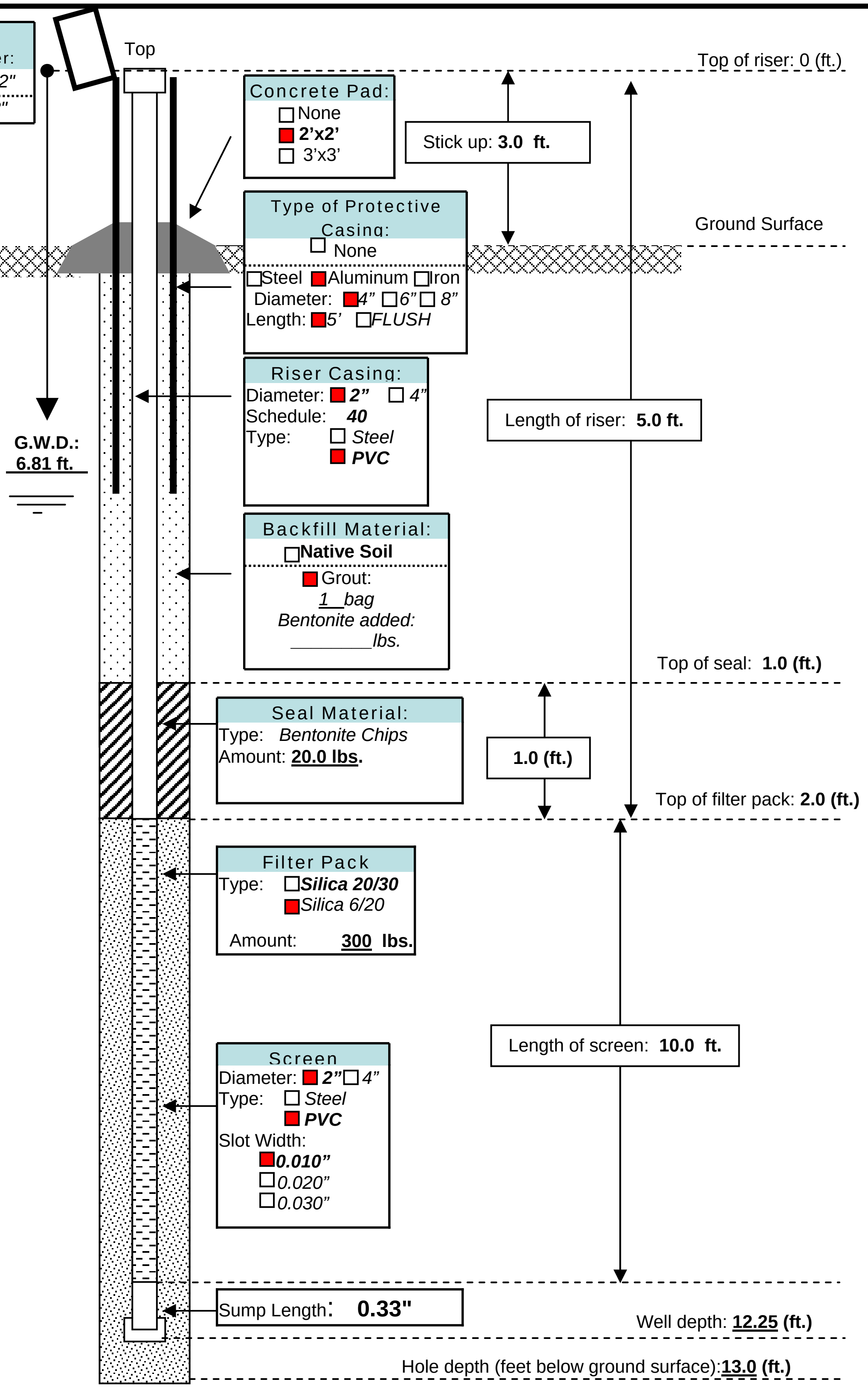
Remarks: Top of well elev. = +6.86' NAVD88

| Drilling Method: | Hole diameter: | |
|---|---|---|
| Hollow Stem Auger: | ☒ 8" | ☐ 12" |
| Rotary Wash w/drill. Fluid: | ☐ 6" | ☐ 8" |

**Generalized Soil Profile**

0 – 9.5'
Brown fine sand.

--------------
9.5' – 13.0'
Tan slightly silty fine sand with gravel.



Top of riser: 0 (ft.)

G.W.D.: 6.81 ft.

**Concrete Pad:**
☐ None
☒ 2'x2'
☐ 3'x3'

Stick up: **3.0 ft.**

**Type of Protective Casing:**
☐ None
☐ Steel ☒ Aluminum ☐ Iron
Diameter: ☒ 4" ☐ 6" ☐ 8"
Length: ☒ 5' ☐ FLUSH

**Riser Casing:**
Diameter: ☒ 2" ☐ 4"
Schedule: 40
Type: ☐ Steel ☒ PVC

Length of riser: **5.0 ft.**

**Backfill Material:**
☐ Native Soil
☒ Grout:
1 bag
Bentonite added: ________lbs.

Top of seal: **1.0 (ft.)**

**Seal Material:**
Type: Bentonite Chips
Amount: **20.0 lbs.**

**1.0 (ft.)**

Top of filter pack: **2.0 (ft.)**

**Filter Pack**
Type: ☐ Silica 20/30
☒ Silica 6/20
Amount: **300 lbs.**

Length of screen: **10.0 ft.**

**Screen**
Diameter: ☒ 2" ☐ 4"
Type: ☐ Steel ☒ PVC
Slot Width:
☒ 0.010"
☐ 0.020"
☐ 0.030"

Sump Length: **0.33"**

Well depth: **12.25 (ft.)**

Hole depth (feet below ground surface): **13.0 (ft.)**

Ardaman & Associates, Inc.

# Water Quality Sampling Log

| | | | |
|---|---|---|---|
| **PROJECT NO.:** 12-37-9323 | **WELL NO.:** 1 | **SAMPLE ID:** MW1 | **DATE:** 6/16/2011 |
| **SITE NAME:** City Naples Aviation Recycle | **SITE LOCATION:** N side Naples Airport | | |

## PURGE DATA

| | | | | |
|---|---|---|---|---|
| **WELL DIAMETER (in):** 2" | **RISER TO GROUND SURFACE (ft):** 3' | **TOTAL WELL DEPTH (ft):** 15.25 | **DEPTH TO WATER (ft):** 6.48 | **WELL CAPACITY (gal/ft):** 20 |

**1 WELL VOLUME (gal) = (TOTAL WELL DEPTH − DEPTH TO WATER) x WELL CAPACITY =**

1 = ( 15.25 − 3.0 ) x 0.16 = ~~1.96~~ BES 1.96

| | | |
|---|---|---|
| **PURGE METHOD:** Peristaltic pump | **PURGING INITIATED AT:** 9:40 | **PURGING ENDED AT:** 10:45 |
| | **PURGE RATE (gpm):** 0.092 | **TOTAL VOLUME PURGED (gal):** 6.0 |

| WELL VOLS. PURGED | CUMUL. VOLUME PURGED (gal) | pH | TEMP. (°C) | COND. (µmhos) | TURBIDITY (N.T.U.) | ODOR | APPEARANCE | DISSOLVED OXYGEN (%) |
|---|---|---|---|---|---|---|---|---|
| – | – | – | – | – | – | None | Clear | – |
| 1 | 2.0 | 7.26 | 28.36 | ~~2827~~ | 6 | ↓ | ↓ | 9.0 |
| 2 | 4.0 | 7.26 | 28.41 | ~~2.840~~ | 5 | ↓ | ↓ | 5.9 |
| 3 | 6.0 | 7.28 | 28.30 | 2825 | 4 | ↓ | ↓ | 4.1 |
| ——— Sample | | | | | | | | |
| | | | | | | | | |
| | | | | #1 Above = | 27.27 = | 2.727 | | |
| | | | | #2 Above = | 27.99 = | 2.799 | | |

## SAMPLING DATA

| | |
|---|---|
| **SAMPLED BY / AFFILIATION** Buffa Kerr/ardaman | **SAMPLER(S) SIGNATURE(S)** Buffa Kerr |
| **SAMPLING METHOD(S):** Peristaltic Pump / reverse syphon vacuum trap | **SAMPLING INITIATED AT:** 10:50 — **SAMPLING ENDED AT:** 11:10 |

**FIELD DECONTAMINATION:** [✓ Y] N — **FIELD-FILTERED:** ~~Y~~ [✓ N] — **DUPLICATE:** Y [✓ N]

**NEW TUBING USED:** [✓ Y] N — **CHEMICAL LAB PERFORMING ANALYSES:** Jupiter

| SAMPLE CONTAINER SPECIFICATIONS | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD |
|---|---|---|---|---|---|---|
| NO. | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOLUME ADDED IN FIELD (ml) | FINAL pH | |
| 1 | HDP | 125ml | HNO3 | 0 lab kit | <2 | RCRA metals |
| 1 | HDP | 250ml | HNO3 | 0 lab kit | <2 | mercury |
| 2 | ~~[illegible]~~CG | 40ml | Ice | 0 | 7.2 | 8260B |
| 1 | AG | 1LTR | Ice | 0 | ↓ | 8270C |
| 1 | ↓ | ↓ | ↓ | ↓ | ↓ | 8081 |
| 1 | ↓ | ↓ | ↓ | ↓ | ↓ | 8141 by 8270 |
| 1 | ↓ | ↓ | ↓ | ↓ | ↓ | 8151 by 8321 |

**REMARKS:** install 6-14-11 develop 6-15-11 Clear calm 80°s F Rain ~ 16hrs ago
inert tubing and water cal for purge & all samples except
8260/70 ~ -1" purge water poured back into well
drawdown < 0.1' to stabilize

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

# Water Quality Sampling Log

PROJECT NO.: 11-32-4323 | WELL NO.: 2 | SAMPLE ID: MW 2 | DATE: 6 16 2011

SITE NAME: City Naples Future Recycle | SITE LOCATION: N Side Naples Airport

## PURGE DATA

WELL DIAMETER (in): 2" | RISER TO GROUND SURFACE (ft): 3.0 | TOTAL WELL DEPTH (ft): 15.25 | DEPTH TO WATER (ft): 6.00 | WELL CAPACITY (gal/ft): 1.6

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =

2 = ( 15.25 - 6.00 ) x 0.16 = 1.48

PURGE METHOD: Peristolic Pump

PURGING INITIATED AT: 11:25 Am | PURGING ENDED AT: 12:25

PURGE RATE (gpm): 0.075 | TOTAL VOLUME PURGED (gal): 4.5

| WELL VOLS. PURGED | CUMUL. VOLUME PURGED (gal) | pH | TEMP. (°C) | COND. (µmhos) | TURBIDITY (N.T.U.) | ODOR | APPEARANCE | DISSOLVED OXYGEN (%) |
|---|---|---|---|---|---|---|---|---|
| — | — | — | — | — | — | None | Clear | — |
| 1 | 1.5 | 6.78 | 27.06 | 1,545 | 3.0 | ↓ | ↓ | 6.1 |
| 2 | 3.0 | 6.83 | 26.80 | 1,510 | 3.0 | ↓ | ↓ | 4.3 |
| 3 | 4.5 | 6.80 | 26.42 | 1,509 | 2.0 | ↓ | ↓ | 4.1 |
| 4 → | Sample | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

## SAMPLING DATA

SAMPLED BY / AFFILIATION: Biffle Davis / Ardaman | SAMPLER(S) SIGNATURE(S): Biffle F D

SAMPLING METHOD(S): Peristolic pump reverse syphon vacuum trap | SAMPLING INITIATED AT: 12:30 | SAMPLING ENDED AT: 12:40

FIELD DECONTAMINATION: [✓ Y] N | FIELD-FILTERED: Y [✓ N] | DUPLICATE: Y [✓ N]

NEW TUBING USED: [✓ Y] N | CHEMICAL LAB PERFORMING ANALYSES: Jupiter

| SAMPLE CONTAINER SPECIFICATIONS | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD |
|---|---|---|---|---|---|---|
| NO. | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOLUME ADDED IN FIELD (ml) | FINAL pH | |
| 1 | HDP | 125 ml | HNO3 | Ø Lab Kit | <2 | RCRA metals |
| 1 | ↓ | 250 ml | ↓ | ↓ | <2 | mercury |
| 2 | CG | 40 ml | Ice | None | 6.8 | 8260 B |
| 1 | AG | 1 LTR | ↓ | ↓ | ↓ | 8270 C |
| 1 | ↓ | ↓ | | | | 8081 |
| 1 | | | | | | 8141 by 8270 |
| 1 | | | | | | 8151 by 8321 |

REMARKS: install develop 6-14-11 6-15-11 Clear w/ few clouds calm 80's rain ≈ 16 hrs earlier insert tubing ≈ mid water col for purge & All tests except 8260/8270 = ≈ ~1"

Purge water poured back into well drawdown >0.1' to stabilize

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

Ardaman & Associates, Inc.

# Water Quality Sampling Log

**PROJECT NO.:** 11-37-4323 **WELL NO.:** 3 **SAMPLE ID:** MW3 **DATE:** 6/16/2011

**SITE NAME:** City Naples Future Recycle **SITE LOCATION:** North side Naples Airport

## PURGE DATA

**WELL DIAMETER (in):** 2

**RISER TO GROUND SURFACE (ft):** 3.0

**TOTAL WELL DEPTH (ft):** 15.25

**DEPTH TO WATER (ft):** 8.93

**WELL CAPACITY (gal/ft):** 1.0

**1 WELL VOLUME (gal) = (TOTAL WELL DEPTH − DEPTH TO WATER) × WELL CAPACITY =**

3 × ( 15.25 − 8.93 ) × 0.16 = 1.0112

**PURGE METHOD:** Peristaltic Pump

**PURGING INITIATED AT:** 1:00 Pm

**PURGING ENDED AT:** 1:30

**PURGE RATE (gpm):** 0.1

**TOTAL VOLUME PURGED (gal):** 3.0

| WELL VOLS. PURGED | CUMUL. VOLUME PURGED (gal) | pH | TEMP. (°C) | COND. (µmhos) | TURBIDITY (N.T.U.) | ODOR | APPEARANCE | DISSOLVED OXYGEN (%) |
|---|---|---|---|---|---|---|---|---|
| — | — | — | — | — | — | None | Clear | — |
| 1 | 1.0 | 7.07 | 28.97 | 0.786 | 29 | ↓ | ↓ | 7.5 |
| 2 | 2.0 | 7.10 | 28.80 | 0.753 | 16 | ↓ | ↓ | 6.4 |
| 3 | 3.0 | 7.12 | 28.38 | 0.736 | 9 | | | 4.9 |
| ~~4~~ | Sample | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

## SAMPLING DATA

**SAMPLED BY / AFFILIATION:** Biffle Davis / Ardaman

**SAMPLER(S) SIGNATURE(S):** Biffle F Davis III

**SAMPLING METHOD(S):** Peristaltic Pump Reverse syphon Vacuum Trap

**SAMPLING INITIATED AT:** 1:35

**SAMPLING ENDED AT:** 1:45

**FIELD DECONTAMINATION:** [✓ Y] N

**FIELD-FILTERED:** Y [✓ N]

**DUPLICATE:** Y [✓ N]

**NEW TUBING USED:** [✓ Y] N

**CHEMICAL LAB PERFORMING ANALYSES:** Jupiter

| SAMPLE CONTAINER SPECIFICATIONS | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD |
|---|---|---|---|---|---|---|
| NO. | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOLUME ADDED IN FIELD (ml) | FINAL pH | |
| 1 | HDP | 125ml | HNO3 Ice | None lab kit | <2 | RCRA metals |
| 1 | ↓ | 250ml | ↓ | ↓ ↓ | <2 | Mercury |
| 2 | CG | 40ml | Ice | None | 7.1 | 8260 B |
| 1 | AG | 1 LTR | | | | 8270 C |
| 1 | | | | | | 8081 |
| 1 | ↓ | ↓ | | | | 8141 by 8270 |
| 1 | | | ↓ | ↓ | ↓ | 8151 by 8321 |

**REMARKS:** well install & Develop 6-15-11 Ptly cloudy lt Breeze to calm 90s F
rain ≈ 16 hrs earlier
inserted tubing ≈ mid water col for purge & all tests except
8260 & 8270 ≈ 1"
Purge water poured back into well drawdown ≈ 0.3' to stabilize

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

# Water Quality Sampling Log

**PROJECT NO.:** 11-37-4323 | **WELL NO.:** 4 | **SAMPLE ID:** MW 4 | **DATE:** 6 16 2011

**SITE NAME:** City Naples Eaton Recycle | **SITE LOCATION:** North Side Naples Airport

## PURGE DATA

**WELL DIAMETER (in):** 2" | **RISER TO GROUND SURFACE (ft):** 3.0 | **TOTAL WELL DEPTH (ft):** 15.25 | **DEPTH TO WATER (ft):** 6.81 | **WELL CAPACITY (gal/ft):** 1.4

**1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =**
4 = ( 15.25 - 6.81 ) x 0.16 = 1.3504

**PURGE METHOD:** Peristaltic Pump | **PURGING INITIATED AT:** 2:00pm | **PURGING ENDED AT:** 3:00pm

**PURGE RATE (gpm):** 0.07 | **TOTAL VOLUME PURGED (gal):** 4.2

| WELL VOLS. PURGED | CUMUL. VOLUME PURGED (gal) | pH | TEMP. (°C) | COND. (µmhos) | TURBIDITY (N.T.U.) | ODOR | APPEARANCE | DISSOLVED OXYGEN (%) |
|---|---|---|---|---|---|---|---|---|
| — | — | — | — | — | — | NONE | LT Brown | — |
| 1 | 1.4 | 7.09 | 28.71 | 0.664 | 18 | ↓ | now ↓ clear | 6.4 |
| 2 | 2.8 | 7.13 | 28.40 | 0.658 | 10 | ↓ | Clear | 4.0 |
| 3 | 4.2 | 7.15 | 28.23 | 0.656 | 6 | ↓ | ↓ | 3.4 |
| ~~4~~ | ~~5.6~~ | ~~Sample~~ | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

## SAMPLING DATA

**SAMPLED BY / AFFILIATION** Biffle Davis / Ardaman | **SAMPLER(S) SIGNATURE(S)** Biffle D III

**SAMPLING METHOD(S):** Peristaltic Pump / Reverse syphon VACUUM TRAP | **SAMPLING INITIATED AT:** 3:20 | **SAMPLING ENDED AT:** 3:30

**FIELD DECONTAMINATION:** [✓ Y] N | **FIELD-FILTERED:** Y [✓ N] | **DUPLICATE:** Y [✓ N]

**NEW TUBING USED:** [✓ Y] N | **CHEMICAL LAB PERFORMING ANALYSES:** Jupiter

| SAMPLE CONTAINER SPECIFICATIONS | | | SAMPLE PRESERVATION | | | INTENDED ANALYSIS AND/OR METHOD |
|---|---|---|---|---|---|---|
| NO. | MATERIAL CODE | VOLUME | PRESERVATIVE USED | TOTAL VOLUME ADDED IN FIELD (ml) | FINAL pH | |
| 1 | HDP | 125ml | HNO3 Ice | none, lab kit | <2 | RCRA metals |
| 1# | ↓ | 250ml | ↓ ↓ | ↓ | <2 | mercury |
| 2 | CG | 40ml | Ice | NONE | 7.15 | 8260 B |
| 1 | AG | 1 LTR | | | | 8270 C |
| 1 | | | | | | 8081 |
| 1 | | | | | | 8141 by 8270 |
| 1 | ↓ | ↓ | ↓ | ↓ | ↓ | 8151 by 8321 |

**REMARKS:** well install & develop 6-15-11 Ptly cloudy Lt Breeze 90's F
RAIN ≈ 18 hrs earlier
inserted tubing ≈ mid water col for purging & tests except
8260 & 8270 = ≈ -1"
Purge water poured back into well

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

# APPENDIX II

## Laboratory Test Results
## with
## Chain-of-Custody

Jupiter
Environmental Laboratories, Inc

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

June 28, 2011

Gary Drew
Ardaman & Associates FM
9970 Bavaria Road
Fort Myers, FL 33913

RE: LOG# 1127493
Project ID: Naples Recycle 11-37-4323
COC# 27493

Dear Gary Drew:

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, June 17, 2011. 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

Ann McKewin for
Kacia Baldwin
V.P. of Operations

Jupiter Environmental Laboratories, Inc.
150 S. Old Dixie Highway
Jupiter, FL 33458
Phone: (561)575-0030
Fax: (561)575-4118

## SAMPLE ANALYTE COUNT

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

| Lab ID | Sample ID | Method | Analytes Reported |
|---|---|---|---|
| 1127493001 | MW 1 | EPA 200.8 (Total) | 7 |
| | | EPA 7470 | 1 |
| | | EPA 8081 (GC) | 24 |
| | | EPA 8260B | 77 |
| | | EPA 8270C | 129 |
| | | EPA 8321 | 11 |
| | | JEL 8270 (GC/MS) | 49 |
| 1127493002 | MW 2 | EPA 200.8 (Total) | 7 |
| | | EPA 7470 | 1 |
| | | EPA 8081 (GC) | 24 |
| | | EPA 8260B | 77 |
| | | EPA 8270C | 129 |
| | | EPA 8321 | 11 |
| | | JEL 8270 (GC/MS) | 49 |
| 1127493003 | MW 3 | EPA 200.8 (Total) | 7 |
| | | EPA 7470 | 1 |
| | | EPA 8081 (GC) | 24 |
| | | EPA 8260B | 77 |
| | | EPA 8270C | 129 |
| | | EPA 8321 | 11 |
| | | JEL 8270 (GC/MS) | 49 |
| 1127493004 | MW 4 | EPA 200.8 (Total) | 7 |
| | | EPA 7470 | 1 |
| | | EPA 8081 (GC) | 24 |
| | | EPA 8260B | 77 |
| | | EPA 8270C | 129 |
| | | EPA 8321 | 11 |
| | | JEL 8270 (GC/MS) | 49 |

## SAMPLE SUMMARY

Workorder: 1127493

Project ID: Naples Recycle 11-37-4323

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| 1127493001 | MW 1 | Aqueous Liquid | 6/16/2011 11:10 | 6/17/2011 10:30 |
| 1127493002 | MW 2 | Aqueous Liquid | 6/16/2011 12:40 | 6/17/2011 10:30 |
| 1127493003 | MW 3 | Aqueous Liquid | 6/16/2011 13:45 | 6/17/2011 10:30 |
| 1127493004 | MW 4 | Aqueous Liquid | 6/16/2011 15:30 | 6/17/2011 10:30 |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

Lab ID: **1127493001**
Sample ID: **MW 1**
Date Received: 6/17/2011 10:30
Date Collected: 6/16/2011 11:10
Matrix: Aqueous Liquid

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analysis Desc: Mercury by EPA 7470 [REF] (W)** | | | | | | **Analytical Method: EPA 7470** | | | | |
| Mercury | U | ug/L | 0.80 | 0.20 | 1 | | | 6/21/2011 17:43 | SL | |
| **Volatiles by GC/MS** | | | | | | | | | | |
| **Analysis Desc: EPA 8260B Full Scan (W)** | | | | | | **Preparation Method: EPA 5030B** | | | | |
| | | | | | | **Analytical Method: EPA 8260B** | | | | |
| 1,1,1,2-Tetrachloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,1,1-Trichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,1,2,2-Tetrachloroethane | U | ug/L | 1.00 | 0.200 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,1,2-Trichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,1-Dichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,1-Dichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,1-Dichloropropene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,2,3-Trichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,2,3-Trichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,2,4-Trichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,2,4-Trimethylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,2-DBCP | U | ug/L | 1.00 | 0.550 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,2-Dibromoethane (EDB) | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,2-Dichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,2-Dichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,2-Dichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,3,5-Trimethylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,3-Dichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,3-Dichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 1,4-Dichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 2,2-Dichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 2-Chloroethyl vinyl ether | U | ug/L | 1.00 | 0.510 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | J3a |
| 2-Chlorotoluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 2-Hexanone | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 4-Chlorotoluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 4-Isopropyltoluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| 4-methyl-2-pentanone | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Acetone | U | ug/L | 2.00 | 0.510 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Acrolein | U | ug/L | 20.0 | 8.70 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Acrylonitrile | U | ug/L | 20.0 | 4.20 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Benzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Bromobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Bromochloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Bromodichloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |

## ANALYTICAL RESULTS

Workorder: 1127493

Project ID: Naples Recycle 11-37-4323

---

Lab ID: **1127493001**

Sample ID: **MW 1**

Date Received: 6/17/2011 10:30

Date Collected: 6/16/2011 11:10

Matrix: Aqueous Liquid

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromoform | U | ug/L | 1.00 | 0.550 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Bromomethane | U | ug/L | 1.00 | 0.660 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Carbon disulfide | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Carbon tetrachloride | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Chlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Chloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Chloroform | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Chloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Dibromochloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Dibromomethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Dichlorodifluoromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| cis-1,3-Dichloropropene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Ethyl methacrylate | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Ethylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Hexachlorobutadiene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Iodomethane | U | ug/L | 1.00 | 0.460 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Isopropylbenzene (Cumene) | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Methyl ethyl ketone (MEK) | U | ug/L | 1.00 | 0.640 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Methylene chloride | U | ug/L | 4.00 | 2.00 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Naphthalene | U | ug/L | 1.00 | 0.520 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Styrene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Tetrachloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Toluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Trichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Trichlorofluoromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Vinyl acetate | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Vinyl chloride | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Xylenes- Total | U | ug/L | 3.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| cis-1,2-Dichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| cis-1,4-Dichloro-2-butene | U | ug/L | 1.00 | 0.440 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| m & p-xylene | U | ug/L | 2.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| n-Butylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| n-propylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| o-Xylene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| sec-Butylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| t-1,4-Dichloro-2-butene | U | ug/L | 1.00 | 0.410 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| tert-Butyl methyl ether (MTBE) | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| tert-Butylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| trans-1,2-Dichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Dibromofluoromethane (S) | 79 | % | 70-130 | | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| trans-1,3-Dichloropropene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |
| Toluene d8 (S) | 93 | % | 70-130 | | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

Lab ID: **1127493001** Date Received: 6/17/2011 10:30 Matrix: Aqueous Liquid
Sample ID: **MW 1** Date Collected: 6/16/2011 11:10

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 4-Bromofluorobenzene (S) | 99 | % | 70-130 | | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:29 | SS | |

**Analysis Desc: EPA 8270C Full List (W)** **Preparation Method: EPA 3510C**

**Analytical Method: EPA 8270C**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Fluorophenol (S) | 20 | % | 20-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Phenol-d5 (S) | 11 | % | 10-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Nitrobenzene-d5 (S) | 54 | % | 30-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2-Fluorobiphenyl (S) | 70 | % | 40-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2,4,6-Tribromophenol (S) | 89 | % | 10-120 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 1,2,4,5-Tetrachlorobenzene | U | ug/L | 5.00 | 0.520 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 1,2,4-Trichlorobenzene | U | ug/L | 5.00 | 0.920 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 1,2-Dichlorobenzene | U | ug/L | 5.00 | 0.650 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 1,3,5-Trinitrobenzene | U | ug/L | 10.0 | 0.460 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 1,3-Dichlorobenzene | U | ug/L | 5.00 | 0.890 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 1,3-Dinitrobenzene | U | ug/L | 10.0 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 1,4-Dichlorobenzene | U | ug/L | 5.00 | 0.950 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 1,4-Naphthoquinone | U | ug/L | 10.0 | 0.690 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| p-Terphenyl-d14 (S) | 82 | % | 30-140 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 1-Methylnaphthalene | U | ug/L | 5.00 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 1-Naphthylamine | U | ug/L | 5.00 | 2.21 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2,3,4,6-Tetrachlorophenol | U | ug/L | 5.00 | 0.470 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2,4,5-Trichlorophenol | U | ug/L | 10.0 | 0.440 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2,4,6-Trichlorophenol | U | ug/L | 5.00 | 0.470 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2,4-Dichlorophenol | U | ug/L | 10.0 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2,4-Dinitrophenol | U | ug/L | 5.00 | 0.790 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2,4-Dinitrotoluene | U | ug/L | 5.00 | 0.610 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2,6-Dichlorophenol | U | ug/L | 10.0 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2,6-Dinitrotoluene | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2-Acetylaminofluorene | U | ug/L | 5.00 | 0.570 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2-Chloronaphthalene | U | ug/L | 5.00 | 0.410 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2-Chlorophenol | U | ug/L | 5.00 | 0.450 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2-Methylnaphthalene | U | ug/L | 5.00 | 0.470 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2-Methylphenol | U | ug/L | 5.00 | 0.360 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2-Naphthylamine | U | ug/L | 5.00 | 1.80 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2-Nitroaniline | U | ug/L | 10.0 | 0.580 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2-Nitrophenol | U | ug/L | 5.00 | 0.590 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 3&4-Methylphenol | U | ug/L | 10.0 | 0.440 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 3,3'-Dichlorobenzidine | U | ug/L | 5.00 | 0.760 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 3,3'-Dimethylbenzidine | U | ug/L | 5.00 | 3.84 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 3-Nitroaniline | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 4,4'-DDD | U | ug/L | 5.00 | 0.830 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 4,4'-DDE | U | ug/L | 10.0 | 0.710 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

| | | | | | |
|---|---|---|---|---|---|
| Lab ID: | **1127493001** | Date Received: | 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: | **MW 1** | Date Collected: | 6/16/2011 11:10 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 4,4'-DDT | U | ug/L | 5.00 | 0.790 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 4,6-Dinitro-2-methylphenol | U | ug/L | 10.0 | 0.640 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 4-Aminobiphenyl | U | ug/L | 5.00 | 1.53 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 4-Chloro-3-methylphenol | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 4-Chloroaniline | U | ug/L | 5.00 | 1.34 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 4-Chlorophenyl phenyl ether | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 4-Nitroquinoline-1-oxide | U | ug/L | 10.0 | 1.81 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 5-Nitro-o-toluidine | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 7,12-Dimethylbenz(a)anthracene | U | ug/L | 5.00 | 1.29 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Acenaphthene | U | ug/L | 5.00 | 0.550 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Acenaphthylene | U | ug/L | 5.00 | 0.460 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Acetophenone | U | ug/L | 5.00 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Aldrin | U | ug/L | 5.00 | 0.550 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| a-BHC | U | ug/L | 5.00 | 0.680 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Aniline | U | ug/L | 5.00 | 1.52 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Anthracene | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Benzidine | U | ug/L | 20.0 | 5.92 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Benzo(a)anthracene | U | ug/L | 5.00 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Benzo(a)pyrene | U | ug/L | 5.00 | 0.610 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Benzo(b)fluoranthene | U | ug/L | 5.00 | 0.690 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Benzo(g,h,i)perylene | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Benzo(k)fluoranthene | U | ug/L | 5.00 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Benzyl alcohol | U | ug/L | 5.00 | 0.310 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| b-BHC | U | ug/L | 5.00 | 0.840 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 4-Bromophenyl phenyl ether | U | ug/L | 5.00 | 0.670 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Butyl benzyl phthalate | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Carbazole | U | ug/L | 5.00 | 0.630 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Chrysene | U | ug/L | 2.00 | 0.500 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| d-BHC | U | ug/L | 5.00 | 0.630 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Di-n-butyl phthalate | U | ug/L | 5.00 | 0.670 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Di-n-octyl phthalate | U | ug/L | 5.00 | 0.500 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Dibenzo(a,h)anthracene | U | ug/L | 5.00 | 0.660 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Dibenzofuran | U | ug/L | 5.00 | 0.570 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Dieldrin | U | ug/L | 5.00 | 0.650 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Diethyl phthalate | U | ug/L | 20.0 | 2.37 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Dimethyl phthalate | U | ug/L | 5.00 | 0.490 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Dimethylaminoazobenzene | U | ug/L | 5.00 | 0.430 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 2,4-Dimethylphenol | U | ug/L | 5.00 | 0.870 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Dinoseb | U | ug/L | 5.00 | 0.280 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Diphenylamine | U | ug/L | 5.00 | 0.520 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Endosulfan I | U | ug/L | 5.00 | 2.06 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Endosulfan II | U | ug/L | 20.0 | 5.40 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

Lab ID: **1127493001**
Sample ID: **MW 1**
Date Received: 6/17/2011 10:30
Date Collected: 6/16/2011 11:10
Matrix: Aqueous Liquid

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Endosulfan sulfate | U | ug/L | 5.00 | 3.10 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Endrin | U | ug/L | 5.00 | 1.94 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Endrin Aldehyde | U | ug/L | 10.0 | 0.720 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Fluoranthene | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Fluorene | U | ug/L | 5.00 | 0.650 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| g-BHC (Lindane) | U | ug/L | 5.00 | 0.960 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Heptachlor | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Heptachlor epoxide | U | ug/L | 5.00 | 1.11 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Hexachlorobenzene | U | ug/L | 5.00 | 0.590 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Hexachlorobutadiene | U | ug/L | 5.00 | 1.07 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Hexachlorocyclopentadiene | U | ug/L | 10.0 | 0.770 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Hexachloroethane | U | ug/L | 5.00 | 1.00 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Hexachloropropene | U | ug/L | 5.00 | 1.04 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Indeno(1,2,3-cd)pyrene | U | ug/L | 5.00 | 0.730 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Isodrin | U | ug/L | 5.00 | 0.840 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Isophorone | U | ug/L | 5.00 | 0.480 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Isosafrole | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Kepone | U | ug/L | 5.00 | 1.16 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Methapyrilene | U | ug/L | 5.00 | 0.870 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Methoxychlor | U | ug/L | 10.0 | 0.850 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| N-Nitroso-di-n-butylamine | U | ug/L | 5.00 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| N-Nitrosodi-n-propylamine | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| N-Nitrosodimethylamine | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| N-Nitrosodiphenylamine | U | ug/L | 5.00 | 0.440 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| N-Nitrosomorpholine | U | ug/L | 5.00 | 0.390 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| N-Nitrosopiperidine | U | ug/L | 5.00 | 0.500 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| N-Nitrosopyrrolidine | U | ug/L | 5.00 | 0.510 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Naphthalene | U | ug/L | 5.00 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 4-Nitroaniline | U | ug/L | 10.0 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Nitrobenzene | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| 4-Nitrophenol | U | ug/L | 5.00 | 0.320 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Parathion | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Pentachlorobenzene | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Pentachloronitrobenzene | U | ug/L | 5.00 | 1.17 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Pentachlorophenol | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Phenacetin | U | ug/L | 20.0 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Phenanthrene | U | ug/L | 5.00 | 0.550 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Phenol | U | ug/L | 5.00 | 0.170 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | J3 |
| Pronamide | U | ug/L | 5.00 | 0.510 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Pyrene | U | ug/L | 5.00 | 0.630 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Pyridine | U | ug/L | 20.0 | 2.61 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Safrole | U | ug/L | 5.00 | 0.780 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| Thionazin (Zinophos) | U | ug/L | 5.00 | 0.740 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493

Project ID: Naples Recycle 11-37-4323

Lab ID: **1127493001**
Sample ID: **MW 1**
Date Received: 6/17/2011 10:30
Date Collected: 6/16/2011 11:10
Matrix: Aqueous Liquid

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| bis[2-Chloroethoxy]methane | U | ug/L | 5.00 | 0.420 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| bis[2-Chloroethyl]ether | U | ug/L | 5.00 | 0.610 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| bis[2-Chloroisopropyl]ether | U | ug/L | 5.00 | 0.770 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| bis[2-Ethylhexyl]phthalate | U | ug/L | 5.00 | 0.770 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| o,o,o-Triethylphosphorothioate | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |
| o-Toluidine | U | ug/L | 5.00 | 1.43 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 19:29 | SC | |

Analysis Desc: 8141 List by JEL 8270 GCMS (W)

Preparation Method: EPA 3510C

Analytical Method: JEL 8270 (GC/MS)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Tributyl phosphate (S) | 53 | % | 25-110 | | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Triphenyl phosphate (S) | 58 | % | 25-110 | | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |

**Semivolatiles by EPA 8270C**

Analysis Desc: 8141 List by JEL 8270 GCMS (W)

Preparation Method: EPA 3510C

Analytical Method: JEL 8270 (GC/MS)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Aspon | U | ug/L | 2.41 | 0.603 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Atrazine | U | ug/L | 1.90 | 0.474 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Azinphos methyl | U | ug/L | 2.91 | 0.728 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Azinphos-ethyl | U | ug/L | 2.01 | 0.503 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Bolstar (Sulprofos) | U | ug/L | 2.97 | 0.742 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Carbophenothion | U | ug/L | 1.26 | 0.316 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Chlorfenvinphos | U | ug/L | 2.58 | 0.644 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Chlorpyrifos (Dursban) | U | ug/L | 2.34 | 0.584 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Coumaphos | U | ug/L | 4.41 | 1.10 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Crotoxyphos (Ciodrin) | U | ug/L | 2.46 | 0.616 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Demeton S&O | U | ug/L | 0.812 | 0.203 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Diazinon | U | ug/L | 2.36 | 0.591 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Dichlorofenthion | U | ug/L | 2.60 | 0.650 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Dichlorvos (DDVP) | U | ug/L | 2.36 | 0.590 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Dicrotophos | U | ug/L | 1.23 | 0.308 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Dimethoate | U | ug/L | 2.34 | 0.586 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Dioxathion | U | ug/L | 7.86 | 1.96 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Disulfoton | U | ug/L | 2.23 | 0.557 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| EPN | U | ug/L | 2.34 | 0.586 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Ethion | U | ug/L | 2.53 | 0.633 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Ethoprop | U | ug/L | 2.22 | 0.554 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Famphur | U | ug/L | 2.21 | 0.552 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | J3a |
| Fenitrothion | U | ug/L | 1.93 | 0.483 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Fensulfothion | U | ug/L | 2.88 | 0.720 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Fenthion | U | ug/L | 2.52 | 0.629 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Fonophos | U | ug/L | 1.80 | 0.451 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493

Project ID: Naples Recycle 11-37-4323

| | | | | | |
|---|---|---|---|---|---|
| Lab ID: | **1127493001** | Date Received: | 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: | **MW 1** | Date Collected: | 6/16/2011 11:10 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Leptophos | U | ug/L | 1.62 | 0.406 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Malathion | U | ug/L | 2.69 | 0.673 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Merphos | U | ug/L | 2.00 | 0.500 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Methyl chlorpyrifos | U | ug/L | 1.89 | 0.473 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Methyl parathion | U | ug/L | 2.83 | 0.708 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | J3a |
| Mevinphos | U | ug/L | 2.80 | 0.699 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Monocrotophos | U | ug/L | 0.476 | 0.119 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Naled | U | ug/L | 1.44 | 0.361 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Parathion | U | ug/L | 2.35 | 0.588 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | J3a |
| Phorate | U | ug/L | 2.95 | 0.738 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Phosmet (Imidan) | U | ug/L | 2.49 | 0.623 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Phosphamidon | U | ug/L | 1.05 | 0.262 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Ronnel | U | ug/L | 2.87 | 0.718 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Simazine | U | ug/L | 1.66 | 0.415 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Stirophos | U | ug/L | 3.15 | 0.788 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Sulfotep | U | ug/L | 3.05 | 0.762 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| TEPP | U | ug/L | 1.41 | 0.353 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Terbufos | U | ug/L | 2.00 | 0.500 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Thionazin (Zinophos) | U | ug/L | 3.02 | 0.756 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Tokuthion (Protothiofos) | U | ug/L | 2.72 | 0.680 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |
| Trichloronate | U | ug/L | 2.83 | 0.708 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:07 | SC | |

**Semivolatiles by GC**

Analysis Desc: EPA 8081 by GC (W)

Preparation Method: EPA 3510C

Analytical Method: EPA 8081 (GC)

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 4,4'-DDD | U | ug/L | 0.0080 | 0.0016 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| 4,4'-DDE | U | ug/L | 0.0090 | 0.0018 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| 4,4'-DDT | U | ug/L | 0.019 | 0.0038 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| Aldrin | U | ug/L | 0.0026 | 0.0013 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| a-BHC | U | ug/L | 0.0060 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| a-Chlordane | U | ug/L | 0.010 | 0.0020 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| b-BHC | U | ug/L | 0.010 | 0.0020 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| d-BHC | U | ug/L | 0.0075 | 0.0015 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| Dieldrin | U | ug/L | 0.0028 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| Endosulfan I | U | ug/L | 0.0070 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| Endosulfan II | U | ug/L | 0.0080 | 0.0019 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| Endosulfan sulfate | U | ug/L | 0.0075 | 0.0015 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| Endrin | U | ug/L | 0.0095 | 0.0019 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| Endrin Aldehyde | U | ug/L | 0.0080 | 0.0016 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| Endrin Ketone | U | ug/L | 0.0090 | 0.0018 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| g-BHC (Lindane) | U | ug/L | 0.0082 | 0.0016 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| g-Chlordane | U | ug/L | 0.0070 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493

Project ID: Naples Recycle 11-37-4323

| | | | | | |
|---|---|---|---|---|---|
| Lab ID: | **1127493001** | Date Received: | 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: | **MW 1** | Date Collected: | 6/16/2011 11:10 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Heptachlor | U | ug/L | 0.018 | 0.0036 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| Heptachlor epoxide | U | ug/L | 0.0070 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| Methoxychlor | U | ug/L | 0.011 | 0.0022 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| Total Chlordane | U | ug/L | 0.019 | 0.0034 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| Total Toxaphene | U | ug/L | 0.245 | 0.049 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| Tetrachloro-m-xylene (S) | 78 | % | 60-130 | | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |
| Decachlorobiphenyl (S) | 81 | % | 60-130 | | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:02 | SC | |

**Analysis Desc: EPA 200.8 Total RCRA-4 Metals (W)** **Preparation Method: EPA 200.2 mod.**

**Analytical Method: EPA 200.8 (Total)**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 17 | ug/L | 8.0 | 0.27 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Arsenic | 2.9i | ug/L | 8.0 | 0.65 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Cadmium | U | ug/L | 8.0 | 0.28 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Lead | 0.33i | ug/L | 8.0 | 0.12 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Selenium | U | ug/L | 8.0 | 2.1 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Silver | U | ug/L | 8.0 | 0.40 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Barium | 210 | ug/L | 8.0 | 0.30 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |

**Herbicides**

**Analysis Desc: Herbicides by SW-846 8321 [REF] (W)** **Analytical Method: EPA 8321**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dicamba | U | ug/L | 1.4 | 0.35 | 1 | | | 6/22/2011 19:40 | SL | |
| 2,4-D | U | ug/L | 1.3 | 0.31 | 1 | | | 6/22/2011 19:40 | SL | |
| 2,4-DB | U | ug/L | 4.4 | 1.1 | 1 | | | 6/22/2011 19:40 | SL | |
| Dichlorprop | U | ug/L | 1.3 | 0.32 | 1 | | | 6/22/2011 19:40 | SL | |
| Dinoseb | U | ug/L | 0.18 | 0.18 | 1 | | | 6/22/2011 19:40 | SL | |
| MCPA | U | ug/L | 0.84 | 0.21 | 1 | | | 6/22/2011 19:40 | SL | |
| MCPP | U | ug/L | 0.60 | 0.15 | 1 | | | 6/22/2011 19:40 | SL | |
| Picloram | U | ug/L | 1.4 | 0.35 | 1 | | | 6/22/2011 19:40 | SL | |
| 2,4,5-T | U | ug/L | 0.92 | 0.23 | 1 | | | 6/22/2011 19:40 | SL | |
| 2,4,5-TP (Silvex) | U | ug/L | 1.1 | 0.28 | 1 | | | 6/22/2011 19:40 | SL | |
| Surrogate Recovery | 75 | %Rec | | | 1 | | | 6/22/2011 19:40 | SL | |

# ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

| | | | | |
|---|---|---|---|---|
| Lab ID: | **1127493002** | Date Received: 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: | **MW 2** | Date Collected: 6/16/2011 12:40 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analysis Desc: Mercury by EPA 7470 [REF] (W)** | | | | | | **Analytical Method: EPA 7470** | | | | |
| Mercury | U | ug/L | 0.80 | 0.20 | 1 | | | 6/21/2011 17:45 | SL | |
| **Volatiles by GC/MS** | | | | | | | | | | |
| **Analysis Desc: EPA 8260B Full Scan (W)** | | | | | | **Preparation Method: EPA 5030B** | | | | |
| | | | | | | **Analytical Method: EPA 8260B** | | | | |
| 1,1,1,2-Tetrachloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,1,1-Trichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,1,2,2-Tetrachloroethane | U | ug/L | 1.00 | 0.200 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,1,2-Trichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,1-Dichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,1-Dichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,1-Dichloropropene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,2,3-Trichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,2,3-Trichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,2,4-Trichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,2,4-Trimethylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,2-DBCP | U | ug/L | 1.00 | 0.550 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,2-Dibromoethane (EDB) | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,2-Dichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,2-Dichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,2-Dichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,3,5-Trimethylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,3-Dichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,3-Dichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 1,4-Dichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 2,2-Dichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 2-Chloroethyl vinyl ether | U | ug/L | 1.00 | 0.510 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | J3a |
| 2-Chlorotoluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 2-Hexanone | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 4-Chlorotoluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 4-Isopropyltoluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| 4-methyl-2-pentanone | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Acetone | U | ug/L | 2.00 | 0.510 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Acrolein | U | ug/L | 20.0 | 8.70 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Acrylonitrile | U | ug/L | 20.0 | 4.20 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Benzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Bromobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Bromochloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Bromodichloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

| | | | |
|---|---|---|---|
| Lab ID: **1127493002** | Date Received: 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: **MW 2** | Date Collected: 6/16/2011 12:40 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromoform | U | ug/L | 1.00 | 0.550 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Bromomethane | U | ug/L | 1.00 | 0.660 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Carbon disulfide | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Carbon tetrachloride | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Chlorobenzene | 1.82 | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Chloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Chloroform | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Chloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Dibromochloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Dibromomethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Dichlorodifluoromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| cis-1,3-Dichloropropene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Ethyl methacrylate | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Ethylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Hexachlorobutadiene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Iodomethane | U | ug/L | 1.00 | 0.460 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Isopropylbenzene (Cumene) | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Methyl ethyl ketone (MEK) | U | ug/L | 1.00 | 0.640 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Methylene chloride | U | ug/L | 4.00 | 2.00 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Naphthalene | U | ug/L | 1.00 | 0.520 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Styrene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Tetrachloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Toluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Trichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Trichlorofluoromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Vinyl acetate | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Vinyl chloride | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Xylenes- Total | U | ug/L | 3.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| cis-1,2-Dichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| cis-1,4-Dichloro-2-butene | U | ug/L | 1.00 | 0.440 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| m & p-xylene | U | ug/L | 2.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| n-Butylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| n-propylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| o-Xylene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| sec-Butylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| t-1,4-Dichloro-2-butene | U | ug/L | 1.00 | 0.410 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| tert-Butyl methyl ether (MTBE) | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| tert-Butylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| trans-1,2-Dichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Dibromofluoromethane (S) | 80 | % | 70-130 | | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| trans-1,3-Dichloropropene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| Toluene d8 (S) | 93 | % | 70-130 | | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |

## ANALYTICAL RESULTS

Workorder: 1127493

Project ID: Naples Recycle 11-37-4323

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| | | | | | |
|---|---|---|---|---|---|
| Lab ID: | **1127493002** | Date Received: | 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: | **MW 2** | Date Collected: | 6/16/2011 12:40 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 4-Bromofluorobenzene (S) | 100 | % | 70-130 | | 1 | 6/17/2011 11:00 | SS | 6/17/2011 21:50 | SS | |
| **Analysis Desc: EPA 8270C Full List (W)** | | | | | | **Preparation Method: EPA 3510C**<br>**Analytical Method: EPA 8270C** | | | | |
| 2-Fluorophenol (S) | 12 | % | 20-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | J2 |
| Phenol-d5 (S) | 6 | % | 10-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | J2 |
| Nitrobenzene-d5 (S) | 60 | % | 30-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2-Fluorobiphenyl (S) | 81 | % | 40-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2,4,6-Tribromophenol (S) | 95 | % | 10-120 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 1,2,4,5-Tetrachlorobenzene | U | ug/L | 5.00 | 0.520 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 1,2,4-Trichlorobenzene | U | ug/L | 5.00 | 0.920 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 1,2-Dichlorobenzene | U | ug/L | 5.00 | 0.650 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 1,3,5-Trinitrobenzene | U | ug/L | 10.0 | 0.460 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 1,3-Dichlorobenzene | U | ug/L | 5.00 | 0.890 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 1,3-Dinitrobenzene | U | ug/L | 10.0 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 1,4-Dichlorobenzene | U | ug/L | 5.00 | 0.950 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 1,4-Naphthoquinone | U | ug/L | 10.0 | 0.690 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| p-Terphenyl-d14 (S) | 100 | % | 30-140 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 1-Methylnaphthalene | U | ug/L | 5.00 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 1-Naphthylamine | U | ug/L | 5.00 | 2.21 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2,3,4,6-Tetrachlorophenol | U | ug/L | 5.00 | 0.470 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2,4,5-Trichlorophenol | U | ug/L | 10.0 | 0.440 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2,4,6-Trichlorophenol | U | ug/L | 5.00 | 0.470 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2,4-Dichlorophenol | U | ug/L | 10.0 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2,4-Dinitrophenol | U | ug/L | 5.00 | 0.790 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2,4-Dinitrotoluene | U | ug/L | 5.00 | 0.610 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2,6-Dichlorophenol | U | ug/L | 10.0 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2,6-Dinitrotoluene | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2-Acetylaminofluorene | U | ug/L | 5.00 | 0.570 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2-Chloronaphthalene | U | ug/L | 5.00 | 0.410 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2-Chlorophenol | U | ug/L | 5.00 | 0.450 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2-Methylnaphthalene | U | ug/L | 5.00 | 0.470 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2-Methylphenol | U | ug/L | 5.00 | 0.360 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2-Naphthylamine | U | ug/L | 5.00 | 1.80 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2-Nitroaniline | U | ug/L | 10.0 | 0.580 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2-Nitrophenol | U | ug/L | 5.00 | 0.590 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 3&4-Methylphenol | U | ug/L | 10.0 | 0.440 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 3,3'-Dichlorobenzidine | U | ug/L | 5.00 | 0.760 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 3,3'-Dimethylbenzidine | U | ug/L | 5.00 | 3.84 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 3-Nitroaniline | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 4,4'-DDD | U | ug/L | 5.00 | 0.830 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 4,4'-DDE | U | ug/L | 10.0 | 0.710 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493

Project ID: Naples Recycle 11-37-4323

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Lab ID: **1127493002** Date Received: 6/17/2011 10:30 Matrix: Aqueous Liquid

Sample ID: **MW 2** Date Collected: 6/16/2011 12:40

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 4,4'-DDT | U | ug/L | 5.00 | 0.790 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 4,6-Dinitro-2-methylphenol | U | ug/L | 10.0 | 0.640 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 4-Aminobiphenyl | U | ug/L | 5.00 | 1.53 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 4-Chloro-3-methylphenol | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 4-Chloroaniline | U | ug/L | 5.00 | 1.34 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 4-Chlorophenyl phenyl ether | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 4-Nitroquinoline-1-oxide | U | ug/L | 10.0 | 1.81 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 5-Nitro-o-toluidine | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 7,12-Dimethylbenz(a)anthracene | U | ug/L | 5.00 | 1.29 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Acenaphthene | U | ug/L | 5.00 | 0.550 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Acenaphthylene | U | ug/L | 5.00 | 0.460 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Acetophenone | U | ug/L | 5.00 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Aldrin | U | ug/L | 5.00 | 0.550 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| a-BHC | U | ug/L | 5.00 | 0.680 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Aniline | U | ug/L | 5.00 | 1.52 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Anthracene | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Benzidine | U | ug/L | 20.0 | 5.92 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Benzo(a)anthracene | U | ug/L | 5.00 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Benzo(a)pyrene | U | ug/L | 5.00 | 0.610 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Benzo(b)fluoranthene | U | ug/L | 5.00 | 0.690 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Benzo(g,h,i)perylene | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Benzo(k)fluoranthene | U | ug/L | 5.00 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Benzyl alcohol | U | ug/L | 5.00 | 0.310 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| b-BHC | U | ug/L | 5.00 | 0.840 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 4-Bromophenyl phenyl ether | U | ug/L | 5.00 | 0.670 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Butyl benzyl phthalate | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Carbazole | U | ug/L | 5.00 | 0.630 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Chrysene | U | ug/L | 2.00 | 0.500 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| d-BHC | U | ug/L | 5.00 | 0.630 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Di-n-butyl phthalate | U | ug/L | 5.00 | 0.670 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Di-n-octyl phthalate | U | ug/L | 5.00 | 0.500 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Dibenzo(a,h)anthracene | U | ug/L | 5.00 | 0.660 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Dibenzofuran | U | ug/L | 5.00 | 0.570 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Dieldrin | U | ug/L | 5.00 | 0.650 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Diethyl phthalate | U | ug/L | 20.0 | 2.37 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Dimethyl phthalate | U | ug/L | 5.00 | 0.490 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Dimethylaminoazobenzene | U | ug/L | 5.00 | 0.430 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 2,4-Dimethylphenol | U | ug/L | 5.00 | 0.870 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Dinoseb | U | ug/L | 5.00 | 0.280 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Diphenylamine | U | ug/L | 5.00 | 0.520 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Endosulfan I | U | ug/L | 5.00 | 2.06 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Endosulfan II | U | ug/L | 20.0 | 5.40 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493

Project ID: Naples Recycle 11-37-4323

| | | | | | |
|---|---|---|---|---|---|
| Lab ID: | **1127493002** | Date Received: | 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: | **MW 2** | Date Collected: | 6/16/2011 12:40 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Endosulfan sulfate | U | ug/L | 5.00 | 3.10 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Endrin | U | ug/L | 5.00 | 1.94 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Endrin Aldehyde | U | ug/L | 10.0 | 0.720 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Fluoranthene | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Fluorene | U | ug/L | 5.00 | 0.650 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| g-BHC (Lindane) | U | ug/L | 5.00 | 0.960 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Heptachlor | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Heptachlor epoxide | U | ug/L | 5.00 | 1.11 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Hexachlorobenzene | U | ug/L | 5.00 | 0.590 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Hexachlorobutadiene | U | ug/L | 5.00 | 1.07 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Hexachlorocyclopentadiene | U | ug/L | 10.0 | 0.770 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Hexachloroethane | U | ug/L | 5.00 | 1.00 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Hexachloropropene | U | ug/L | 5.00 | 1.04 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Indeno(1,2,3-cd)pyrene | U | ug/L | 5.00 | 0.730 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Isodrin | U | ug/L | 5.00 | 0.840 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Isophorone | U | ug/L | 5.00 | 0.480 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Isosafrole | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Kepone | U | ug/L | 5.00 | 1.16 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Methapyrilene | U | ug/L | 5.00 | 0.870 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Methoxychlor | U | ug/L | 10.0 | 0.850 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| N-Nitroso-di-n-butylamine | U | ug/L | 5.00 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| N-Nitrosodi-n-propylamine | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| N-Nitrosodimethylamine | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| N-Nitrosodiphenylamine | U | ug/L | 5.00 | 0.440 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| N-Nitrosomorpholine | U | ug/L | 5.00 | 0.390 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| N-Nitrosopiperidine | U | ug/L | 5.00 | 0.500 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| N-Nitrosopyrrolidine | U | ug/L | 5.00 | 0.510 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Naphthalene | U | ug/L | 5.00 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 4-Nitroaniline | U | ug/L | 10.0 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Nitrobenzene | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| 4-Nitrophenol | U | ug/L | 5.00 | 0.320 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Parathion | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Pentachlorobenzene | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Pentachloronitrobenzene | U | ug/L | 5.00 | 1.17 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Pentachlorophenol | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Phenacetin | U | ug/L | 20.0 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Phenanthrene | U | ug/L | 5.00 | 0.550 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Phenol | U | ug/L | 5.00 | 0.170 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | J3 |
| Pronamide | U | ug/L | 5.00 | 0.510 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Pyrene | U | ug/L | 5.00 | 0.630 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Pyridine | U | ug/L | 20.0 | 2.61 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Safrole | U | ug/L | 5.00 | 0.780 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| Thionazin (Zinophos) | U | ug/L | 5.00 | 0.740 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493

Project ID: Naples Recycle 11-37-4323

| | | | | | |
|---|---|---|---|---|---|
| Lab ID: | **1127493002** | Date Received: | 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: | **MW 2** | Date Collected: | 6/16/2011 12:40 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| bis[2-Chloroethoxy]methane | U | ug/L | 5.00 | 0.420 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| bis[2-Chloroethyl]ether | U | ug/L | 5.00 | 0.610 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| bis[2-Chloroisopropyl]ether | U | ug/L | 5.00 | 0.770 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| bis[2-Ethylhexyl]phthalate | U | ug/L | 5.00 | 0.770 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| o,o,o-Triethylphosphorothioate | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |
| o-Toluidine | U | ug/L | 5.00 | 1.43 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:03 | SC | |

**Analysis Desc: 8141 List by JEL 8270 GCMS (W)** **Preparation Method: EPA 3510C**

**Analytical Method: JEL 8270 (GC/MS)**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Tributyl phosphate (S) | 32 | % | 25-110 | | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Triphenyl phosphate (S) | 32 | % | 25-110 | | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |

**Semivolatiles by EPA 8270C**

**Analysis Desc: 8141 List by JEL 8270 GCMS (W)** **Preparation Method: EPA 3510C**

**Analytical Method: JEL 8270 (GC/MS)**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Aspon | U | ug/L | 2.41 | 0.603 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Atrazine | U | ug/L | 1.90 | 0.474 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Azinphos methyl | U | ug/L | 2.91 | 0.728 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Azinphos-ethyl | U | ug/L | 2.01 | 0.503 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Bolstar (Sulprofos) | U | ug/L | 2.97 | 0.742 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Carbophenothion | U | ug/L | 1.26 | 0.316 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Chlorfenvinphos | U | ug/L | 2.58 | 0.644 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Chlorpyrifos (Dursban) | U | ug/L | 2.34 | 0.584 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Coumaphos | U | ug/L | 4.41 | 1.10 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Crotoxyphos (Ciodrin) | U | ug/L | 2.46 | 0.616 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Demeton S&O | U | ug/L | 0.812 | 0.203 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Diazinon | U | ug/L | 2.36 | 0.591 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Dichlorofenthion | U | ug/L | 2.60 | 0.650 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Dichlorvos (DDVP) | U | ug/L | 2.36 | 0.590 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Dicrotophos | U | ug/L | 1.23 | 0.308 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Dimethoate | U | ug/L | 2.34 | 0.586 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Dioxathion | U | ug/L | 7.86 | 1.96 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Disulfoton | U | ug/L | 2.23 | 0.557 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| EPN | U | ug/L | 2.34 | 0.586 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Ethion | U | ug/L | 2.53 | 0.633 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Ethoprop | U | ug/L | 2.22 | 0.554 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Famphur | U | ug/L | 2.21 | 0.552 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | J3a |
| Fenitrothion | U | ug/L | 1.93 | 0.483 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Fensulfothion | U | ug/L | 2.88 | 0.720 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Fenthion | U | ug/L | 2.52 | 0.629 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Fonophos | U | ug/L | 1.80 | 0.451 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

| | | | | | |
|---|---|---|---|---|---|
| Lab ID: | **1127493002** | Date Received: | 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: | **MW 2** | Date Collected: | 6/16/2011 12:40 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Leptophos | U | ug/L | 1.62 | 0.406 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Malathion | U | ug/L | 2.69 | 0.673 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Merphos | U | ug/L | 2.00 | 0.500 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Methyl chlorpyrifos | U | ug/L | 1.89 | 0.473 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Methyl parathion | U | ug/L | 2.83 | 0.708 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | J3a |
| Mevinphos | U | ug/L | 2.80 | 0.699 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Monocrotophos | U | ug/L | 0.476 | 0.119 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Naled | U | ug/L | 1.44 | 0.361 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Parathion | U | ug/L | 2.35 | 0.588 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | J3a |
| Phorate | U | ug/L | 2.95 | 0.738 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Phosmet (Imidan) | U | ug/L | 2.49 | 0.623 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Phosphamidon | U | ug/L | 1.05 | 0.262 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Ronnel | U | ug/L | 2.87 | 0.718 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Simazine | U | ug/L | 1.66 | 0.415 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Stirophos | U | ug/L | 3.15 | 0.788 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Sulfotep | U | ug/L | 3.05 | 0.762 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| TEPP | U | ug/L | 1.41 | 0.353 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Terbufos | U | ug/L | 2.00 | 0.500 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Thionazin (Zinophos) | U | ug/L | 3.02 | 0.756 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Tokuthion (Protothiofos) | U | ug/L | 2.72 | 0.680 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |
| Trichloronate | U | ug/L | 2.83 | 0.708 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:33 | SC | |

**Semivolatiles by GC**

Analysis Desc: EPA 8081 by GC (W)

Preparation Method: EPA 3510C

Analytical Method: EPA 8081 (GC)

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 4,4'-DDD | U | ug/L | 0.0080 | 0.0016 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| 4,4'-DDE | U | ug/L | 0.0090 | 0.0018 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| 4,4'-DDT | U | ug/L | 0.019 | 0.0038 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| Aldrin | U | ug/L | 0.0026 | 0.0013 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| a-BHC | U | ug/L | 0.0060 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| a-Chlordane | U | ug/L | 0.010 | 0.0020 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| b-BHC | U | ug/L | 0.010 | 0.0020 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| d-BHC | U | ug/L | 0.0075 | 0.0015 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| Dieldrin | U | ug/L | 0.0028 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| Endosulfan I | U | ug/L | 0.0070 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| Endosulfan II | U | ug/L | 0.0080 | 0.0019 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| Endosulfan sulfate | U | ug/L | 0.0075 | 0.0015 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| Endrin | U | ug/L | 0.0095 | 0.0019 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| Endrin Aldehyde | U | ug/L | 0.0080 | 0.0016 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| Endrin Ketone | U | ug/L | 0.0090 | 0.0018 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| g-BHC (Lindane) | U | ug/L | 0.0082 | 0.0016 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| g-Chlordane | U | ug/L | 0.0070 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

| | | | | | |
|---|---|---|---|---|---|
| Lab ID: | **1127493002** | Date Received: | 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: | **MW 2** | Date Collected: | 6/16/2011 12:40 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Heptachlor | U | ug/L | 0.018 | 0.0036 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| Heptachlor epoxide | U | ug/L | 0.0070 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| Methoxychlor | U | ug/L | 0.011 | 0.0022 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| Total Chlordane | U | ug/L | 0.019 | 0.0034 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| Total Toxaphene | U | ug/L | 0.245 | 0.049 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| Tetrachloro-m-xylene (S) | 82 | % | 60-130 | | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |
| Decachlorobiphenyl (S) | 79 | % | 60-130 | | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:16 | SC | |

**Analysis Desc: EPA 200.8 Metals (W)** **Preparation Method: EPA 200.2 mod.**

**Analytical Method: EPA 200.8 (Total)**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Selenium | U | ug/L | 8.0 | 2.1 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Silver | U | ug/L | 8.0 | 0.40 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Barium | 100 | ug/L | 8.0 | 0.30 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Chromium | 61 | ug/L | 8.0 | 0.27 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Arsenic | 1.4i | ug/L | 8.0 | 0.65 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Cadmium | 2.8i | ug/L | 8.0 | 0.28 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Lead | 0.14i | ug/L | 8.0 | 0.12 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |

**Herbicides**

**Analysis Desc: Herbicides by SW-846 8321 [REF] (W)** **Analytical Method: EPA 8321**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dicamba | U | ug/L | 1.4 | 0.35 | 1 | | | 6/22/2011 20:11 | SL | |
| 2,4-D | U | ug/L | 1.3 | 0.31 | 1 | | | 6/22/2011 20:11 | SL | |
| 2,4-DB | U | ug/L | 4.4 | 1.1 | 1 | | | 6/22/2011 20:11 | SL | |
| Dichlorprop | U | ug/L | 1.3 | 0.32 | 1 | | | 6/22/2011 20:11 | SL | |
| Dinoseb | U | ug/L | 0.72 | 0.18 | 1 | | | 6/22/2011 20:11 | SL | |
| MCPA | U | ug/L | 0.84 | 0.21 | 1 | | | 6/22/2011 20:11 | SL | |
| MCPP | U | ug/L | 0.60 | 0.15 | 1 | | | 6/22/2011 20:11 | SL | |
| Picloram | U | ug/L | 1.4 | 0.35 | 1 | | | 6/22/2011 20:11 | SL | |
| 2,4,5-T | U | ug/L | 0.92 | 0.23 | 1 | | | 6/22/2011 20:11 | SL | |
| 2,4,5-TP (Silvex) | U | ug/L | 1.1 | 0.28 | 1 | | | 6/22/2011 20:11 | SL | |
| Surrogate Recovery | 83 | %Rec | | | 1 | | | 6/22/2011 20:11 | SL | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

Lab ID: **1127493003** Date Received: 6/17/2011 10:30 Matrix: Aqueous Liquid
Sample ID: **MW 3** Date Collected: 6/16/2011 13:45

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analysis Desc: Mercury by EPA 7470 [REF] (W)** | | | | | **Analytical Method: EPA 7470** | | | | | |
| Mercury | U | ug/L | 0.80 | 0.20 | 1 | | | 6/21/2011 17:46 | SL | |
| **Volatiles by GC/MS** | | | | | | | | | | |
| **Analysis Desc: EPA 8260B Full Scan (W)** | | | | | **Preparation Method: EPA 5030B** | | | | | |
| | | | | | **Analytical Method: EPA 8260B** | | | | | |
| 1,1,1,2-Tetrachloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,1,1-Trichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,1,2,2-Tetrachloroethane | U | ug/L | 1.00 | 0.200 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,1,2-Trichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,1-Dichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,1-Dichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,1-Dichloropropene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,2,3-Trichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,2,3-Trichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,2,4-Trichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,2,4-Trimethylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,2-DBCP | U | ug/L | 1.00 | 0.550 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,2-Dibromoethane (EDB) | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,2-Dichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,2-Dichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,2-Dichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,3,5-Trimethylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,3-Dichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,3-Dichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 1,4-Dichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 2,2-Dichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 2-Chloroethyl vinyl ether | U | ug/L | 1.00 | 0.510 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | J3a |
| 2-Chlorotoluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 2-Hexanone | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 4-Chlorotoluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 4-Isopropyltoluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| 4-methyl-2-pentanone | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Acetone | U | ug/L | 2.00 | 0.510 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Acrolein | U | ug/L | 20.0 | 8.70 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Acrylonitrile | U | ug/L | 20.0 | 4.20 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Benzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Bromobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Bromochloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Bromodichloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

Lab ID: **1127493003**
Sample ID: **MW 3**
Date Received: 6/17/2011 10:30
Date Collected: 6/16/2011 13:45
Matrix: Aqueous Liquid

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromoform | U | ug/L | 1.00 | 0.550 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Bromomethane | U | ug/L | 1.00 | 0.660 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Carbon disulfide | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Carbon tetrachloride | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Chlorobenzene | 0.470i | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Chloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Chloroform | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Chloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Dibromochloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Dibromomethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Dichlorodifluoromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| cis-1,3-Dichloropropene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Ethyl methacrylate | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Ethylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Hexachlorobutadiene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Iodomethane | U | ug/L | 1.00 | 0.460 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Isopropylbenzene (Cumene) | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Methyl ethyl ketone (MEK) | U | ug/L | 1.00 | 0.640 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Methylene chloride | U | ug/L | 4.00 | 2.00 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Naphthalene | U | ug/L | 1.00 | 0.520 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Styrene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Tetrachloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Toluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Trichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Trichlorofluoromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Vinyl acetate | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Vinyl chloride | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Xylenes- Total | U | ug/L | 3.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| cis-1,2-Dichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| cis-1,4-Dichloro-2-butene | U | ug/L | 1.00 | 0.440 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| m & p-xylene | U | ug/L | 2.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| n-Butylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| n-propylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| o-Xylene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| sec-Butylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| t-1,4-Dichloro-2-butene | U | ug/L | 1.00 | 0.410 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| tert-Butyl methyl ether (MTBE) | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| tert-Butylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| trans-1,2-Dichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Dibromofluoromethane (S) | 80 | % | 70-130 | | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| trans-1,3-Dichloropropene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |
| Toluene d8 (S) | 93 | % | 70-130 | | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |

## ANALYTICAL RESULTS

Workorder: 1127493

Project ID: Naples Recycle 11-37-4323

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Lab ID: **1127493003** Date Received: 6/17/2011 10:30 Matrix: Aqueous Liquid

Sample ID: **MW 3** Date Collected: 6/16/2011 13:45

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 4-Bromofluorobenzene (S) | 98 | % | 70-130 | | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:11 | SS | |

**Analysis Desc: EPA 8270C Full List (W)** **Preparation Method: EPA 3510C**

**Analytical Method: EPA 8270C**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Fluorophenol (S) | 21 | % | 20-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Phenol-d5 (S) | 12 | % | 10-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Nitrobenzene-d5 (S) | 60 | % | 30-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2-Fluorobiphenyl (S) | 72 | % | 40-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2,4,6-Tribromophenol (S) | 93 | % | 10-120 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 1,2,4,5-Tetrachlorobenzene | U | ug/L | 5.00 | 0.520 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 1,2,4-Trichlorobenzene | U | ug/L | 5.00 | 0.920 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 1,2-Dichlorobenzene | U | ug/L | 5.00 | 0.650 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 1,3,5-Trinitrobenzene | U | ug/L | 10.0 | 0.460 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 1,3-Dichlorobenzene | U | ug/L | 5.00 | 0.890 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 1,3-Dinitrobenzene | U | ug/L | 10.0 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 1,4-Dichlorobenzene | U | ug/L | 5.00 | 0.950 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 1,4-Naphthoquinone | U | ug/L | 10.0 | 0.690 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| p-Terphenyl-d14 (S) | 120 | % | 30-140 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 1-Methylnaphthalene | U | ug/L | 5.00 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 1-Naphthylamine | U | ug/L | 5.00 | 2.21 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2,3,4,6-Tetrachlorophenol | U | ug/L | 5.00 | 0.470 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2,4,5-Trichlorophenol | U | ug/L | 10.0 | 0.440 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2,4,6-Trichlorophenol | U | ug/L | 5.00 | 0.470 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2,4-Dichlorophenol | U | ug/L | 10.0 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2,4-Dinitrophenol | U | ug/L | 5.00 | 0.790 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2,4-Dinitrotoluene | U | ug/L | 5.00 | 0.610 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2,6-Dichlorophenol | U | ug/L | 10.0 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2,6-Dinitrotoluene | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2-Acetylaminofluorene | U | ug/L | 5.00 | 0.570 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2-Chloronaphthalene | U | ug/L | 5.00 | 0.410 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2-Chlorophenol | U | ug/L | 5.00 | 0.450 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2-Methylnaphthalene | U | ug/L | 5.00 | 0.470 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2-Methylphenol | U | ug/L | 5.00 | 0.360 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2-Naphthylamine | U | ug/L | 5.00 | 1.80 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2-Nitroaniline | U | ug/L | 10.0 | 0.580 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2-Nitrophenol | U | ug/L | 5.00 | 0.590 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 3&4-Methylphenol | U | ug/L | 10.0 | 0.440 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 3,3'-Dichlorobenzidine | U | ug/L | 5.00 | 0.760 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 3,3'-Dimethylbenzidine | U | ug/L | 5.00 | 3.84 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 3-Nitroaniline | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 4,4'-DDD | U | ug/L | 5.00 | 0.830 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 4,4'-DDE | U | ug/L | 10.0 | 0.710 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |

# ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

| | | | | | |
|---|---|---|---|---|---|
| Lab ID: | **1127493003** | Date Received: | 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: | **MW 3** | Date Collected: | 6/16/2011 13:45 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 4,4'-DDT | U | ug/L | 5.00 | 0.790 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 4,6-Dinitro-2-methylphenol | U | ug/L | 10.0 | 0.640 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 4-Aminobiphenyl | U | ug/L | 5.00 | 1.53 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 4-Chloro-3-methylphenol | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 4-Chloroaniline | U | ug/L | 5.00 | 1.34 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 4-Chlorophenyl phenyl ether | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 4-Nitroquinoline-1-oxide | U | ug/L | 10.0 | 1.81 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 5-Nitro-o-toluidine | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 7,12-Dimethylbenz(a)anthracene | U | ug/L | 5.00 | 1.29 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Acenaphthene | U | ug/L | 5.00 | 0.550 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Acenaphthylene | U | ug/L | 5.00 | 0.460 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Acetophenone | U | ug/L | 5.00 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Aldrin | U | ug/L | 5.00 | 0.550 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| a-BHC | U | ug/L | 5.00 | 0.680 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Aniline | U | ug/L | 5.00 | 1.52 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Anthracene | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Benzidine | U | ug/L | 20.0 | 5.92 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Benzo(a)anthracene | U | ug/L | 5.00 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Benzo(a)pyrene | U | ug/L | 5.00 | 0.610 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Benzo(b)fluoranthene | U | ug/L | 5.00 | 0.690 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Benzo(g,h,i)perylene | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Benzo(k)fluoranthene | U | ug/L | 5.00 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Benzyl alcohol | U | ug/L | 5.00 | 0.310 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| b-BHC | U | ug/L | 5.00 | 0.840 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 4-Bromophenyl phenyl ether | U | ug/L | 5.00 | 0.670 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Butyl benzyl phthalate | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Carbazole | U | ug/L | 5.00 | 0.630 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Chrysene | U | ug/L | 2.00 | 0.500 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| d-BHC | U | ug/L | 5.00 | 0.630 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Di-n-butyl phthalate | U | ug/L | 5.00 | 0.670 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Di-n-octyl phthalate | U | ug/L | 5.00 | 0.500 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Dibenzo(a,h)anthracene | U | ug/L | 5.00 | 0.660 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Dibenzofuran | U | ug/L | 5.00 | 0.570 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Dieldrin | U | ug/L | 5.00 | 0.650 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Diethyl phthalate | U | ug/L | 20.0 | 2.37 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Dimethyl phthalate | U | ug/L | 5.00 | 0.490 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Dimethylaminoazobenzene | U | ug/L | 5.00 | 0.430 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 2,4-Dimethylphenol | U | ug/L | 5.00 | 0.870 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Dinoseb | U | ug/L | 5.00 | 0.280 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Diphenylamine | U | ug/L | 5.00 | 0.520 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Endosulfan I | U | ug/L | 5.00 | 2.06 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Endosulfan II | U | ug/L | 20.0 | 5.40 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

| | | | |
|---|---|---|---|
| Lab ID: | **1127493003** | Date Received: 6/17/2011 10:30 | Matrix: Aqueous Liquid |
| Sample ID: | **MW 3** | Date Collected: 6/16/2011 13:45 | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Endosulfan sulfate | U | ug/L | 5.00 | 3.10 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Endrin | U | ug/L | 5.00 | 1.94 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Endrin Aldehyde | U | ug/L | 10.0 | 0.720 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Fluoranthene | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Fluorene | U | ug/L | 5.00 | 0.650 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| g-BHC (Lindane) | U | ug/L | 5.00 | 0.960 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Heptachlor | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Heptachlor epoxide | U | ug/L | 5.00 | 1.11 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Hexachlorobenzene | U | ug/L | 5.00 | 0.590 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Hexachlorobutadiene | U | ug/L | 5.00 | 1.07 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Hexachlorocyclopentadiene | U | ug/L | 10.0 | 0.770 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Hexachloroethane | U | ug/L | 5.00 | 1.00 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Hexachloropropene | U | ug/L | 5.00 | 1.04 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Indeno(1,2,3-cd)pyrene | U | ug/L | 5.00 | 0.730 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Isodrin | U | ug/L | 5.00 | 0.840 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Isophorone | U | ug/L | 5.00 | 0.480 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Isosafrole | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Kepone | U | ug/L | 5.00 | 1.16 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Methapyrilene | U | ug/L | 5.00 | 0.870 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Methoxychlor | U | ug/L | 10.0 | 0.850 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| N-Nitroso-di-n-butylamine | U | ug/L | 5.00 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| N-Nitrosodi-n-propylamine | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| N-Nitrosodimethylamine | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| N-Nitrosodiphenylamine | U | ug/L | 5.00 | 0.440 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| N-Nitrosomorpholine | U | ug/L | 5.00 | 0.390 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| N-Nitrosopiperidine | U | ug/L | 5.00 | 0.500 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| N-Nitrosopyrrolidine | U | ug/L | 5.00 | 0.510 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Naphthalene | U | ug/L | 5.00 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 4-Nitroaniline | U | ug/L | 10.0 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Nitrobenzene | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| 4-Nitrophenol | U | ug/L | 5.00 | 0.320 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Parathion | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Pentachlorobenzene | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Pentachloronitrobenzene | U | ug/L | 5.00 | 1.17 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Pentachlorophenol | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Phenacetin | U | ug/L | 20.0 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Phenanthrene | U | ug/L | 5.00 | 0.550 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Phenol | U | ug/L | 5.00 | 0.170 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | J3 |
| Pronamide | U | ug/L | 5.00 | 0.510 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Pyrene | U | ug/L | 5.00 | 0.630 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Pyridine | U | ug/L | 20.0 | 2.61 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Safrole | U | ug/L | 5.00 | 0.780 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| Thionazin (Zinophos) | U | ug/L | 5.00 | 0.740 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493

Project ID: Naples Recycle 11-37-4323

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| | | | |
|---|---|---|---|
| Lab ID: **1127493003** | Date Received: 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: **MW 3** | Date Collected: 6/16/2011 13:45 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| bis[2-Chloroethoxy]methane | U | ug/L | 5.00 | 0.420 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| bis[2-Chloroethyl]ether | U | ug/L | 5.00 | 0.610 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| bis[2-Chloroisopropyl]ether | U | ug/L | 5.00 | 0.770 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| bis[2-Ethylhexyl]phthalate | U | ug/L | 5.00 | 0.770 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| o,o,o-Triethylphosphorothioate | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |
| o-Toluidine | U | ug/L | 5.00 | 1.43 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 20:38 | SC | |

**Analysis Desc: 8141 List by JEL 8270 GCMS (W)**

**Preparation Method: EPA 3510C**

**Analytical Method: JEL 8270 (GC/MS)**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Tributyl phosphate (S) | 44 | % | 25-110 | | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Triphenyl phosphate (S) | 45 | % | 25-110 | | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |

**Semivolatiles by EPA 8270C**

**Analysis Desc: 8141 List by JEL 8270 GCMS (W)**

**Preparation Method: EPA 3510C**

**Analytical Method: JEL 8270 (GC/MS)**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Aspon | U | ug/L | 2.41 | 0.603 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Atrazine | U | ug/L | 1.90 | 0.474 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Azinphos methyl | U | ug/L | 2.91 | 0.728 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Azinphos-ethyl | U | ug/L | 2.01 | 0.503 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Bolstar (Sulprofos) | U | ug/L | 2.97 | 0.742 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Carbophenothion | U | ug/L | 1.26 | 0.316 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Chlorfenvinphos | U | ug/L | 2.58 | 0.644 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Chlorpyrifos (Dursban) | U | ug/L | 2.34 | 0.584 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Coumaphos | U | ug/L | 4.41 | 1.10 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Crotoxyphos (Ciodrin) | U | ug/L | 2.46 | 0.616 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Demeton S&O | U | ug/L | 0.812 | 0.203 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Diazinon | U | ug/L | 2.36 | 0.591 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Dichlorofenthion | U | ug/L | 2.60 | 0.650 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Dichlorvos (DDVP) | U | ug/L | 2.36 | 0.590 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Dicrotophos | U | ug/L | 1.23 | 0.308 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Dimethoate | U | ug/L | 2.34 | 0.586 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Dioxathion | U | ug/L | 7.86 | 1.96 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Disulfoton | U | ug/L | 2.23 | 0.557 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| EPN | U | ug/L | 2.34 | 0.586 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Ethion | U | ug/L | 2.53 | 0.633 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Ethoprop | U | ug/L | 2.22 | 0.554 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Famphur | U | ug/L | 2.21 | 0.552 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | J3a |
| Fenitrothion | U | ug/L | 1.93 | 0.483 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Fensulfothion | U | ug/L | 2.88 | 0.720 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Fenthion | U | ug/L | 2.52 | 0.629 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Fonophos | U | ug/L | 1.80 | 0.451 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

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Lab ID: **1127493003**
Sample ID: **MW 3**

Date Received: 6/17/2011 10:30
Date Collected: 6/16/2011 13:45

Matrix: Aqueous Liquid

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Leptophos | U | ug/L | 1.62 | 0.406 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Malathion | U | ug/L | 2.69 | 0.673 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Merphos | U | ug/L | 2.00 | 0.500 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Methyl chlorpyrifos | U | ug/L | 1.89 | 0.473 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Methyl parathion | U | ug/L | 2.83 | 0.708 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | J3a |
| Mevinphos | U | ug/L | 2.80 | 0.699 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Monocrotophos | U | ug/L | 0.476 | 0.119 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Naled | U | ug/L | 1.44 | 0.361 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Parathion | U | ug/L | 2.35 | 0.588 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | J3a |
| Phorate | U | ug/L | 2.95 | 0.738 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Phosmet (Imidan) | U | ug/L | 2.49 | 0.623 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Phosphamidon | U | ug/L | 1.05 | 0.262 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Ronnel | U | ug/L | 2.87 | 0.718 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Simazine | U | ug/L | 1.66 | 0.415 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Stirophos | U | ug/L | 3.15 | 0.788 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Sulfotep | U | ug/L | 3.05 | 0.762 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| TEPP | U | ug/L | 1.41 | 0.353 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Terbufos | U | ug/L | 2.00 | 0.500 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Thionazin (Zinophos) | U | ug/L | 3.02 | 0.756 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Tokuthion (Protothiofos) | U | ug/L | 2.72 | 0.680 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |
| Trichloronate | U | ug/L | 2.83 | 0.708 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 17:59 | SC | |

**Semivolatiles by GC**

**Analysis Desc: EPA 8081 by GC (W)**

**Preparation Method: EPA 3510C**

**Analytical Method: EPA 8081 (GC)**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 4,4'-DDD | U | ug/L | 0.0080 | 0.0016 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| 4,4'-DDE | U | ug/L | 0.0090 | 0.0018 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| 4,4'-DDT | U | ug/L | 0.019 | 0.0038 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| Aldrin | U | ug/L | 0.0026 | 0.0013 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| a-BHC | U | ug/L | 0.0060 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| a-Chlordane | U | ug/L | 0.010 | 0.0020 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| b-BHC | U | ug/L | 0.010 | 0.0020 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| d-BHC | U | ug/L | 0.0075 | 0.0015 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| Dieldrin | U | ug/L | 0.0028 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| Endosulfan I | U | ug/L | 0.0070 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| Endosulfan II | U | ug/L | 0.0080 | 0.0019 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| Endosulfan sulfate | U | ug/L | 0.0075 | 0.0015 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| Endrin | U | ug/L | 0.0095 | 0.0019 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| Endrin Aldehyde | U | ug/L | 0.0080 | 0.0016 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| Endrin Ketone | U | ug/L | 0.0090 | 0.0018 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| g-BHC (Lindane) | U | ug/L | 0.0082 | 0.0016 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| g-Chlordane | U | ug/L | 0.0070 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493

Project ID: Naples Recycle 11-37-4323

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Lab ID: **1127493003** Date Received: 6/17/2011 10:30 Matrix: Aqueous Liquid

Sample ID: **MW 3** Date Collected: 6/16/2011 13:45

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Heptachlor | U | ug/L | 0.018 | 0.0036 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| Heptachlor epoxide | U | ug/L | 0.0070 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| Methoxychlor | U | ug/L | 0.011 | 0.0022 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| Total Chlordane | U | ug/L | 0.019 | 0.0034 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| Total Toxaphene | U | ug/L | 0.245 | 0.049 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| Tetrachloro-m-xylene (S) | 73 | % | 60-130 | | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |
| Decachlorobiphenyl (S) | 74 | % | 60-130 | | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:31 | SC | |

**Analysis Desc: EPA 200.8 Total RCRA-4 Metals (W)** **Preparation Method: EPA 200.2 mod.**

**Analytical Method: EPA 200.8 (Total)**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 26 | ug/L | 8.0 | 0.27 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Arsenic | 2.4i | ug/L | 8.0 | 0.65 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Cadmium | U | ug/L | 8.0 | 0.28 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Lead | U | ug/L | 8.0 | 0.12 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Selenium | U | ug/L | 8.0 | 2.1 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Silver | U | ug/L | 8.0 | 0.40 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Barium | 32 | ug/L | 8.0 | 0.30 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |

**Herbicides**

**Analysis Desc: Herbicides by SW-846 8321 [REF] (W)** **Analytical Method: EPA 8321**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dicamba | U | ug/L | 1.4 | 0.35 | 1 | | | 6/22/2011 20:43 | SL | |
| 2,4-D | U | ug/L | 1.3 | 0.31 | 1 | | | 6/22/2011 20:43 | SL | |
| 2,4-DB | U | ug/L | 4.4 | 1.1 | 1 | | | 6/22/2011 20:43 | SL | |
| Dichlorprop | U | ug/L | 1.3 | 0.32 | 1 | | | 6/22/2011 20:43 | SL | |
| Dinoseb | U | ug/L | 0.72 | 0.18 | 1 | | | 6/22/2011 20:43 | SL | |
| MCPA | U | ug/L | 0.84 | 0.21 | 1 | | | 6/22/2011 20:43 | SL | |
| MCPP | U | ug/L | 0.60 | 0.15 | 1 | | | 6/22/2011 20:43 | SL | |
| Picloram | U | ug/L | 1.4 | 0.35 | 1 | | | 6/22/2011 20:43 | SL | |
| 2,4,5-T | U | ug/L | 0.92 | 0.23 | 1 | | | 6/22/2011 20:43 | SL | |
| 2,4,5-TP (Silvex) | U | ug/L | 1.1 | 0.28 | 1 | | | 6/22/2011 20:43 | SL | |
| Surrogate Recovery | 95 | %Rec | | | 1 | | | 6/22/2011 20:43 | SL | |

## ANALYTICAL RESULTS

Workorder: 1127493

Project ID: Naples Recycle 11-37-4323

| | | | | | |
|---|---|---|---|---|---|
| Lab ID: | **1127493004** | Date Received: | 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: | **MW 4** | Date Collected: | 6/16/2011 15:30 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analysis Desc: Mercury by EPA 7470 [REF] (W)** | | | | | **Analytical Method: EPA 7470** | | | | | |
| Mercury | U | ug/L | 0.80 | 0.20 | 1 | | | 6/21/2011 17:48 | SL | |
| **Volatiles by GC/MS** | | | | | | | | | | |
| **Analysis Desc: EPA 8260B Full Scan (W)** | | | | | **Preparation Method: EPA 5030B** | | | | | |
| | | | | | **Analytical Method: EPA 8260B** | | | | | |
| 1,1,1,2-Tetrachloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,1,1-Trichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,1,2,2-Tetrachloroethane | U | ug/L | 1.00 | 0.200 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,1,2-Trichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,1-Dichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,1-Dichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,1-Dichloropropene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,2,3-Trichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,2,3-Trichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,2,4-Trichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,2,4-Trimethylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,2-DBCP | U | ug/L | 1.00 | 0.550 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,2-Dibromoethane (EDB) | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,2-Dichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,2-Dichloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,2-Dichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,3,5-Trimethylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,3-Dichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,3-Dichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 1,4-Dichlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 2,2-Dichloropropane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 2-Chloroethyl vinyl ether | U | ug/L | 1.00 | 0.510 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | J3a |
| 2-Chlorotoluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 2-Hexanone | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 4-Chlorotoluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 4-Isopropyltoluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| 4-methyl-2-pentanone | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Acetone | U | ug/L | 2.00 | 0.510 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Acrolein | U | ug/L | 20.0 | 8.70 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Acrylonitrile | U | ug/L | 20.0 | 4.20 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Benzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Bromobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Bromochloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Bromodichloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |

# ANALYTICAL RESULTS

Workorder: 1127493

Project ID: Naples Recycle 11-37-4323

Lab ID: **1127493004**    Date Received: 6/17/2011 10:30    Matrix: Aqueous Liquid

Sample ID: **MW 4**    Date Collected: 6/16/2011 15:30

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromoform | U | ug/L | 1.00 | 0.550 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Bromomethane | U | ug/L | 1.00 | 0.660 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Carbon disulfide | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Carbon tetrachloride | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Chlorobenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Chloroethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Chloroform | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Chloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Dibromochloromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Dibromomethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Dichlorodifluoromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| cis-1,3-Dichloropropene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Ethyl methacrylate | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Ethylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Hexachlorobutadiene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Iodomethane | U | ug/L | 1.00 | 0.460 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Isopropylbenzene (Cumene) | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Methyl ethyl ketone (MEK) | U | ug/L | 1.00 | 0.640 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Methylene chloride | U | ug/L | 4.00 | 2.00 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Naphthalene | U | ug/L | 1.00 | 0.520 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Styrene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Tetrachloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Toluene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Trichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Trichlorofluoromethane | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Vinyl acetate | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Vinyl chloride | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Xylenes- Total | U | ug/L | 3.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| cis-1,2-Dichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| cis-1,4-Dichloro-2-butene | U | ug/L | 1.00 | 0.440 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| m & p-xylene | U | ug/L | 2.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| n-Butylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| n-propylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| o-Xylene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| sec-Butylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| t-1,4-Dichloro-2-butene | U | ug/L | 1.00 | 0.410 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| tert-Butyl methyl ether (MTBE) | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| tert-Butylbenzene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| trans-1,2-Dichloroethene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Dibromofluoromethane (S) | 79 | % | 70-130 | | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| trans-1,3-Dichloropropene | U | ug/L | 1.00 | 0.400 | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |
| Toluene d8 (S) | 91 | % | 70-130 | | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

Lab ID: **1127493004** Date Received: 6/17/2011 10:30 Matrix: Aqueous Liquid
Sample ID: **MW 4** Date Collected: 6/16/2011 15:30

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 4-Bromofluorobenzene (S) | 99 | % | 70-130 | | 1 | 6/17/2011 11:00 | SS | 6/17/2011 22:32 | SS | |

**Analysis Desc: EPA 8270C Full List (W)** **Preparation Method: EPA 3510C**

**Analytical Method: EPA 8270C**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Fluorophenol (S) | 23 | % | 20-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Phenol-d5 (S) | 15 | % | 10-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Nitrobenzene-d5 (S) | 54 | % | 30-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2-Fluorobiphenyl (S) | 70 | % | 40-110 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2,4,6-Tribromophenol (S) | 94 | % | 10-120 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |

**Semivolatiles by EPA 8270C**

**Analysis Desc: EPA 8270C Full List (W)** **Preparation Method: EPA 3510C**

**Analytical Method: EPA 8270C**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,2,4,5-Tetrachlorobenzene | U | ug/L | 5.00 | 0.520 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 1,2,4-Trichlorobenzene | U | ug/L | 5.00 | 0.920 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 1,2-Dichlorobenzene | U | ug/L | 5.00 | 0.650 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 1,3,5-Trinitrobenzene | U | ug/L | 10.0 | 0.460 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 1,3-Dichlorobenzene | U | ug/L | 5.00 | 0.890 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 1,3-Dinitrobenzene | U | ug/L | 10.0 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 1,4-Dichlorobenzene | U | ug/L | 5.00 | 0.950 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 1,4-Naphthoquinone | U | ug/L | 10.0 | 0.690 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| p-Terphenyl-d14 (S) | 109 | % | 30-140 | | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 1-Methylnaphthalene | U | ug/L | 5.00 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 1-Naphthylamine | U | ug/L | 5.00 | 2.21 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2,3,4,6-Tetrachlorophenol | U | ug/L | 5.00 | 0.470 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2,4,5-Trichlorophenol | U | ug/L | 10.0 | 0.440 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2,4,6-Trichlorophenol | U | ug/L | 5.00 | 0.470 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2,4-Dichlorophenol | U | ug/L | 10.0 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2,4-Dinitrophenol | U | ug/L | 5.00 | 0.790 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2,4-Dinitrotoluene | U | ug/L | 5.00 | 0.610 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2,6-Dichlorophenol | U | ug/L | 10.0 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2,6-Dinitrotoluene | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2-Acetylaminofluorene | U | ug/L | 5.00 | 0.570 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2-Chloronaphthalene | U | ug/L | 5.00 | 0.410 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2-Chlorophenol | U | ug/L | 5.00 | 0.450 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2-Methylnaphthalene | U | ug/L | 5.00 | 0.470 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2-Methylphenol | U | ug/L | 5.00 | 0.360 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2-Naphthylamine | U | ug/L | 5.00 | 1.80 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2-Nitroaniline | U | ug/L | 10.0 | 0.580 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2-Nitrophenol | U | ug/L | 5.00 | 0.590 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 3&4-Methylphenol | U | ug/L | 10.0 | 0.440 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 3,3'-Dichlorobenzidine | U | ug/L | 5.00 | 0.760 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

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| | | | | | |
|---|---|---|---|---|---|
| Lab ID: | **1127493004** | Date Received: | 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: | **MW 4** | Date Collected: | 6/16/2011 15:30 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 3,3'-Dimethylbenzidine | U | ug/L | 5.00 | 3.84 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 3-Nitroaniline | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 4,4'-DDD | U | ug/L | 5.00 | 0.830 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 4,4'-DDE | U | ug/L | 10.0 | 0.710 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 4,4'-DDT | U | ug/L | 5.00 | 0.790 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 4,6-Dinitro-2-methylphenol | U | ug/L | 10.0 | 0.640 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 4-Aminobiphenyl | U | ug/L | 5.00 | 1.53 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 4-Chloro-3-methylphenol | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 4-Chloroaniline | U | ug/L | 5.00 | 1.34 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 4-Chlorophenyl phenyl ether | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 4-Nitroquinoline-1-oxide | U | ug/L | 10.0 | 1.81 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 5-Nitro-o-toluidine | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 7,12-Dimethylbenz(a)anthracene | U | ug/L | 5.00 | 1.29 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Acenaphthene | U | ug/L | 5.00 | 0.550 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Acenaphthylene | U | ug/L | 5.00 | 0.460 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Acetophenone | U | ug/L | 5.00 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Aldrin | U | ug/L | 5.00 | 0.550 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| a-BHC | U | ug/L | 5.00 | 0.680 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Aniline | U | ug/L | 5.00 | 1.52 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Anthracene | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Benzidine | U | ug/L | 20.0 | 5.92 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Benzo(a)anthracene | U | ug/L | 5.00 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Benzo(a)pyrene | U | ug/L | 5.00 | 0.610 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Benzo(b)fluoranthene | U | ug/L | 5.00 | 0.690 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Benzo(g,h,i)perylene | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Benzo(k)fluoranthene | U | ug/L | 5.00 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Benzyl alcohol | U | ug/L | 5.00 | 0.310 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| b-BHC | U | ug/L | 5.00 | 0.840 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 4-Bromophenyl phenyl ether | U | ug/L | 5.00 | 0.670 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Butyl benzyl phthalate | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Carbazole | U | ug/L | 5.00 | 0.630 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Chrysene | U | ug/L | 2.00 | 0.500 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| d-BHC | U | ug/L | 5.00 | 0.630 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Di-n-butyl phthalate | U | ug/L | 5.00 | 0.670 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Di-n-octyl phthalate | U | ug/L | 5.00 | 0.500 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Dibenzo(a,h)anthracene | U | ug/L | 5.00 | 0.660 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Dibenzofuran | U | ug/L | 5.00 | 0.570 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Dieldrin | U | ug/L | 5.00 | 0.650 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Diethyl phthalate | U | ug/L | 20.0 | 2.37 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Dimethyl phthalate | U | ug/L | 5.00 | 0.490 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Dimethylaminoazobenzene | U | ug/L | 5.00 | 0.430 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 2,4-Dimethylphenol | U | ug/L | 5.00 | 0.870 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

Lab ID: **1127493004** Date Received: 6/17/2011 10:30 Matrix: Aqueous Liquid
Sample ID: **MW 4** Date Collected: 6/16/2011 15:30

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dinoseb | U | ug/L | 5.00 | 0.280 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Diphenylamine | U | ug/L | 5.00 | 0.520 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Endosulfan I | U | ug/L | 5.00 | 2.06 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Endosulfan II | U | ug/L | 20.0 | 5.40 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Endosulfan sulfate | U | ug/L | 5.00 | 3.10 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Endrin | U | ug/L | 5.00 | 1.94 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Endrin Aldehyde | U | ug/L | 10.0 | 0.720 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Fluoranthene | U | ug/L | 5.00 | 0.600 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Fluorene | U | ug/L | 5.00 | 0.650 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| g-BHC (Lindane) | U | ug/L | 5.00 | 0.960 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Heptachlor | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Heptachlor epoxide | U | ug/L | 5.00 | 1.11 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Hexachlorobenzene | U | ug/L | 5.00 | 0.590 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Hexachlorobutadiene | U | ug/L | 5.00 | 1.07 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Hexachlorocyclopentadiene | U | ug/L | 10.0 | 0.770 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Hexachloroethane | U | ug/L | 5.00 | 1.00 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Hexachloropropene | U | ug/L | 5.00 | 1.04 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Indeno(1,2,3-cd)pyrene | U | ug/L | 5.00 | 0.730 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Isodrin | U | ug/L | 5.00 | 0.840 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Isophorone | U | ug/L | 5.00 | 0.480 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Isosafrole | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Kepone | U | ug/L | 5.00 | 1.16 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Methapyrilene | U | ug/L | 5.00 | 0.870 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Methoxychlor | U | ug/L | 10.0 | 0.850 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| N-Nitroso-di-n-butylamine | U | ug/L | 5.00 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| N-Nitrosodi-n-propylamine | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| N-Nitrosodimethylamine | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| N-Nitrosodiphenylamine | U | ug/L | 5.00 | 0.440 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| N-Nitrosomorpholine | U | ug/L | 5.00 | 0.390 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| N-Nitrosopiperidine | U | ug/L | 5.00 | 0.500 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| N-Nitrosopyrrolidine | U | ug/L | 5.00 | 0.510 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Naphthalene | U | ug/L | 5.00 | 0.800 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 4-Nitroaniline | U | ug/L | 10.0 | 0.540 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Nitrobenzene | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| 4-Nitrophenol | U | ug/L | 5.00 | 0.320 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Parathion | U | ug/L | 5.00 | 0.560 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Pentachlorobenzene | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Pentachloronitrobenzene | U | ug/L | 5.00 | 1.17 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Pentachlorophenol | U | ug/L | 5.00 | 0.750 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Phenacetin | U | ug/L | 20.0 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Phenanthrene | U | ug/L | 5.00 | 0.550 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Phenol | U | ug/L | 5.00 | 0.170 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | J3 |
| Pronamide | U | ug/L | 5.00 | 0.510 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

Lab ID: **1127493004** Date Received: 6/17/2011 10:30 Matrix: Aqueous Liquid
Sample ID: **MW 4** Date Collected: 6/16/2011 15:30

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Pyrene | U | ug/L | 5.00 | 0.630 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Pyridine | U | ug/L | 20.0 | 2.61 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Safrole | U | ug/L | 5.00 | 0.780 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| Thionazin (Zinophos) | U | ug/L | 5.00 | 0.740 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| bis[2-Chloroethoxy]methane | U | ug/L | 5.00 | 0.420 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| bis[2-Chloroethyl]ether | U | ug/L | 5.00 | 0.610 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| bis[2-Chloroisopropyl]ether | U | ug/L | 5.00 | 0.770 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| bis[2-Ethylhexyl]phthalate | U | ug/L | 5.00 | 0.770 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| o,o,o-Triethylphosphorothioate | U | ug/L | 5.00 | 0.620 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |
| o-Toluidine | U | ug/L | 5.00 | 1.43 | 1 | 6/20/2011 14:40 | AMM | 6/21/2011 21:13 | SC | |

**Analysis Desc: 8141 List by JEL 8270 GCMS (W)** **Preparation Method: EPA 3510C**

**Analytical Method: JEL 8270 (GC/MS)**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Tributyl phosphate (S) | 38 | % | 25-110 | | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Triphenyl phosphate (S) | 42 | % | 25-110 | | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Aspon | U | ug/L | 2.41 | 0.603 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Atrazine | U | ug/L | 1.90 | 0.474 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Azinphos methyl | U | ug/L | 2.91 | 0.728 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Azinphos-ethyl | U | ug/L | 2.01 | 0.503 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Bolstar (Sulprofos) | U | ug/L | 2.97 | 0.742 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Carbophenothion | U | ug/L | 1.26 | 0.316 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Chlorfenvinphos | U | ug/L | 2.58 | 0.644 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Chlorpyrifos (Dursban) | U | ug/L | 2.34 | 0.584 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Coumaphos | U | ug/L | 4.41 | 1.10 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Crotoxyphos (Ciodrin) | U | ug/L | 2.46 | 0.616 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Demeton S&O | U | ug/L | 0.812 | 0.203 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Diazinon | U | ug/L | 2.36 | 0.591 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Dichlorofenthion | U | ug/L | 2.60 | 0.650 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Dichlorvos (DDVP) | U | ug/L | 2.36 | 0.590 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Dicrotophos | U | ug/L | 1.23 | 0.308 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Dimethoate | U | ug/L | 2.34 | 0.586 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Dioxathion | U | ug/L | 7.86 | 1.96 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Disulfoton | U | ug/L | 2.23 | 0.557 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| EPN | U | ug/L | 2.34 | 0.586 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Ethion | U | ug/L | 2.53 | 0.633 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Ethoprop | U | ug/L | 2.22 | 0.554 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Famphur | U | ug/L | 2.21 | 0.552 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | J3a |
| Fenitrothion | U | ug/L | 1.93 | 0.483 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Fensulfothion | U | ug/L | 2.88 | 0.720 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Fenthion | U | ug/L | 2.52 | 0.629 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Fonophos | U | ug/L | 1.80 | 0.451 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Leptophos | U | ug/L | 1.62 | 0.406 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

| | | | | | |
|---|---|---|---|---|---|
| Lab ID: | **1127493004** | Date Received: | 6/17/2011 10:30 | Matrix: | Aqueous Liquid |
| Sample ID: | **MW 4** | Date Collected: | 6/16/2011 15:30 | | |

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Malathion | U | ug/L | 2.69 | 0.673 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Merphos | U | ug/L | 2.00 | 0.500 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Methyl chlorpyrifos | U | ug/L | 1.89 | 0.473 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Methyl parathion | U | ug/L | 2.83 | 0.708 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | J3a |
| Mevinphos | U | ug/L | 2.80 | 0.699 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Monocrotophos | U | ug/L | 0.476 | 0.119 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Naled | U | ug/L | 1.44 | 0.361 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Parathion | U | ug/L | 2.35 | 0.588 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | J3a |
| Phorate | U | ug/L | 2.95 | 0.738 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Phosmet (Imidan) | U | ug/L | 2.49 | 0.623 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Phosphamidon | U | ug/L | 1.05 | 0.262 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Ronnel | U | ug/L | 2.87 | 0.718 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Simazine | U | ug/L | 1.66 | 0.415 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Stirophos | U | ug/L | 3.15 | 0.788 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Sulfotep | U | ug/L | 3.05 | 0.762 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| TEPP | U | ug/L | 1.41 | 0.353 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Terbufos | U | ug/L | 2.00 | 0.500 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Thionazin (Zinophos) | U | ug/L | 3.02 | 0.756 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Tokuthion (Protothiofos) | U | ug/L | 2.72 | 0.680 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |
| Trichloronate | U | ug/L | 2.83 | 0.708 | 1 | 6/20/2011 13:13 | AMM | 6/21/2011 18:25 | SC | |

**Semivolatiles by GC**

Analysis Desc: EPA 8081 by GC (W)

Preparation Method: EPA 3510C

Analytical Method: EPA 8081 (GC)

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 4,4'-DDD | U | ug/L | 0.0080 | 0.0016 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| 4,4'-DDE | U | ug/L | 0.0090 | 0.0018 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| 4,4'-DDT | U | ug/L | 0.019 | 0.0038 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| Aldrin | U | ug/L | 0.0026 | 0.0013 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| a-BHC | U | ug/L | 0.0060 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| a-Chlordane | U | ug/L | 0.010 | 0.0020 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| b-BHC | U | ug/L | 0.010 | 0.0020 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| d-BHC | U | ug/L | 0.0075 | 0.0015 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| Dieldrin | U | ug/L | 0.0028 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| Endosulfan I | U | ug/L | 0.0070 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| Endosulfan II | U | ug/L | 0.0080 | 0.0019 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| Endosulfan sulfate | U | ug/L | 0.0075 | 0.0015 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| Endrin | U | ug/L | 0.0095 | 0.0019 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| Endrin Aldehyde | U | ug/L | 0.0080 | 0.0016 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| Endrin Ketone | U | ug/L | 0.0090 | 0.0018 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| g-BHC (Lindane) | U | ug/L | 0.0082 | 0.0016 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| g-Chlordane | U | ug/L | 0.0070 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| Heptachlor | U | ug/L | 0.018 | 0.0036 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |

## ANALYTICAL RESULTS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

Lab ID: **1127493004** Date Received: 6/17/2011 10:30 Matrix: Aqueous Liquid
Sample ID: **MW 4** Date Collected: 6/16/2011 15:30

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Heptachlor epoxide | U | ug/L | 0.0070 | 0.0014 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| Methoxychlor | U | ug/L | 0.011 | 0.0022 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| Total Chlordane | U | ug/L | 0.019 | 0.0034 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| Total Toxaphene | U | ug/L | 0.245 | 0.049 | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| Tetrachloro-m-xylene (S) | 66 | % | 60-130 | | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |
| Decachlorobiphenyl (S) | 62 | % | 60-130 | | 1 | 6/20/2011 13:11 | AMM | 6/21/2011 10:45 | SC | |

**Analysis Desc: EPA 200.8 Metals (W)** **Preparation Method: EPA 200.2 mod.**

**Analytical Method: EPA 200.8 (Total)**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Selenium | U | ug/L | 8.0 | 2.1 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Silver | U | ug/L | 8.0 | 0.40 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Barium | 130 | ug/L | 8.0 | 0.30 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Chromium | 28 | ug/L | 8.0 | 0.27 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Arsenic | 0.91i | ug/L | 8.0 | 0.65 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Cadmium | U | ug/L | 8.0 | 0.28 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |
| Lead | 0.22i | ug/L | 8.0 | 0.12 | 4 | 6/22/2011 10:13 | ZS | 6/22/2011 16:31 | ZS | |

### Herbicides

**Analysis Desc: Herbicides by SW-846 8321 [REF] (W)** **Analytical Method: EPA 8321**

| Parameters | Results | Units | PQL | MDL | DF | Prepared | By | Analyzed | By | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dicamba | U | ug/L | 1.4 | 0.35 | 1 | | | 6/22/2011 21:14 | SL | |
| 2,4-D | U | ug/L | 1.3 | 0.31 | 1 | | | 6/22/2011 21:14 | SL | |
| 2,4-DB | U | ug/L | 4.4 | 1.1 | 1 | | | 6/22/2011 21:14 | SL | |
| Dichlorprop | U | ug/L | 1.3 | 0.32 | 1 | | | 6/22/2011 21:14 | SL | |
| Dinoseb | U | ug/L | 0.72 | 0.18 | 1 | | | 6/22/2011 21:14 | SL | |
| MCPA | U | ug/L | 0.84 | 0.21 | 1 | | | 6/22/2011 21:14 | SL | |
| MCPP | U | ug/L | 0.60 | 0.15 | 1 | | | 6/22/2011 21:14 | SL | |
| Picloram | U | ug/L | 1.4 | 0.35 | 1 | | | 6/22/2011 21:14 | SL | |
| 2,4,5-T | U | ug/L | 0.92 | 0.23 | 1 | | | 6/22/2011 21:14 | SL | |
| 2,4,5-TP (Silvex) | U | ug/L | 1.1 | 0.28 | 1 | | | 6/22/2011 21:14 | SL | |
| Surrogate Recovery | 95 | %Rec | | | 1 | | | 6/22/2011 21:14 | SL | |

## ANALYTICAL RESULTS QUALIFIERS

Workorder: 1127493
Project ID: Naples Recycle 11-37-4323

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### PARAMETER QUALIFIERS

| | |
|---|---|
| J2 | Surrogate recovery was outside defined limits due to matrix interference. |
| J3 | The reported value failed to meet the established quality control for either precision or accuracy. |
| J3a | The reported value failed to meet the established quality control criteria. LCS value skewed high. Target analyte was not detected in associated samples. |

### PROJECT COMMENTS

| | |
|---|---|
| 1127493 | 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. |

### SUBCONTRACTOR NELAC CERTIFICATION

| | |
|---|---|
| 1127493 | SL = E84809 |

Jupiter

www.jupiterlabs.com
150 S. Old Dixie Highway, Jupiter, FL 33458
(561) 575-0030 • FAX (561) 575-4118 • clientservices@jupiterlabs.com

J.E.L. Log # 1127493
P.O. # 
Quote #

Company Name Aroorman & Associates Inc
Address 9970 Bavaria Rd
City Ft Myers State FL Zip 33913
Sampling Site Address Naples Airport Former Dump
ttn Greg Drew P.E. Email gdrew@ardaman.c
Project Name Naples Paddle Project # 11-37-4323
Sampler Name/Signature Biffle R Davis / Biffle R Da

Requested Turnaround Time
Note: Rush requests subject to acceptance by the laboratory
☒ Standard
___ Expedited
Due __/__/__

## LAB ANALYSIS

| | Sample Label (Client ID) | Collected Date | Collected Time | Matrix Code* | # of Cont | RCRA metals | Mercury | 8260 B | 8270 C | 8081 | 8141 by 8270 | 8151 by 8321 | | | | | | Field Filtered (Y/N) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pres Codes | | | | | | B/I | B/I | I | I | I | I | I | | | | | | | |
| 1 | MW 1 | 6-16-11 | 11:10am | GW | 8 | X | X | X | X | X | X | X | | | | | | | |
| 2 | MW 2 | 6-16-11 | 12:40pm | GW | 8 | X | X | X | X | X | X | X | | | | | | | |
| 3 | MW 3 | 6-16-11 | 1:45pm | GW | 8 | X | X | X | X | X | X | X | | | | | | | |
| 4 | MW 4 | 6-16-11 | 3:30pm | GW | 8 | X | X | X | X | X | X | X | | | | | | | |
| 5 | Trip/Temp Blank | 6-6-11 | | | | | | | | | | | | | | | | | Jupiter lab Blank |
| 6 | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | | | | | | | | |

**Matrix Codes***
Soil/Solid Sediment SW Surface Water
W Ground Water SL Sludge
W Waste Water O Other (Please Specify)
V Drinking Water

**Pres Codes**
A- none I- Ice
B- $HNO_3$ O- Other
C- $H_2SO_4$ M- MeOH
D- NaOH N- $Na_2S_2O_3$
E- HCl Z- ZnAc

| Relinquished by | Date | Time | Received by | Date | Time |
|---|---|---|---|---|---|
| Biffle Da | 6-16-11 | 5:30pm | FedEx | | |
| FedEx | 6/17/11 | 10:30 | Kevin B | 6/17/11 | 10:30 |
| | | | | | |
| | | | | | |
| | | | | | |

A/QC level with report
one ___ 1 ___ 2 ___ 3 ___ See price guide for applicable fees

EP Dry Cleaning ☐ FDEP UST Pre-Approval ☐
SFWMD ☐ ADaPT ☐ DOT ☐

Temp Control
6.0 °C

Page 1 of 1

27493

# Login Checklist

Cooler Unpacked/Checked by: KB Date: 6/7/11

Project ID: 1127493

## Cooler Check

| Cooler ID | Cooler Temp (C) | # of Samples in Cooler | *Tracking # | Evidence Tape | | | |
|---|---|---|---|---|---|---|---|
| | | | | Present? | | Intact? | |
| | | | | Yes | No | Yes | No |
| | 6.0 | 4 | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Note: if the temperature of a cooler is above 6C or an evidence seal is damaged then identify the bottles in the affected cooler(s) on the sample discrepancy form.
*Write tracking number only if waybill copy cannot be placed in the folder

## Condition of Containers:

**Loose Caps**: Yes______ No ✓
If yes, fill out sample discrepancy form.

**Broken Containers**: Yes______ No ✓
If yes, fill out sample discrepancy form.

**Acid Preserved Samples**: Are their pHs </=2 ?Yes ✓ No______ N/A______
If no, fill out sample discrepancy form and check unpreserved containers with same Field ID.

**Base Preserved Samples**: Are their pHs >/=12 or 9 ?Yes______ No______ N/A ✓
(Cyanide >/= 12; Sulfide >/=9)
If no, fill out sample discrepancy form and check unpreserved containers with same Field ID.

**Are all samples in cooler on COC?**: Yes ✓ No______
If no, fill out sample discrepancy form.

**Are all samples on COC in cooler?**: Yes ✓ No______
If no, fill out sample discrepancy form.

N/A = not Applicable

FedEx
TRK# 8729 1976 5504
[0215]

FRP – 17 JUN A2
PRIORITY OVERNIGHT

**3E PBIA**

33458
FL – US PBI

#66372 06/16 50FG1/0CB0/F5F4

ALIGN OPEN END OF FEDEX AIRBILL POUCH HERE

---

FedEx Express **US Airbill**

FedEx Tracking Number 8729 1976 5504

RECIPIENT: PEEL HERE

**1 From** This portion can be removed for Recipient's records.

Date 6/16/11 FedEx Tracking Number 872919765504

Sender's Name [illegible] Phone 239 768-6600

Company ARDAMAN & ASSOCIATES INC

Address 9970 BAVARIA RD

Dept/Floor/Suite/Room

City FORT MYERS State FL ZIP 33913-8506

**2 Your Internal Billing Reference** 11-37-4323

**3 To**

Recipient's Name Lab Phone 561 575-2036

Company [illegible]

Address Package Lab
We cannot deliver to P.O. boxes or P.O. ZIP codes.

☐ HOLD Weekday
FedEx location address REQUIRED. NOT available for FedEx First Overnight.

Address 150 S. [illegible]
Use this line for the HOLD location address or for continuation of your shipping address.

☐ HOLD Saturday
FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

City [illegible] State FL ZIP 33458

8729 1976 5504

fedex.com 1.800.GoFedEx 1.800.463.3339

Form ID No. 0215 Recipient's Copy

**4a Express Package Service** * To most locations. Packages up to 150 lbs.

☒ FedEx Priority Overnight
Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx Standard Overnight
Next business afternoon.* Saturday Delivery NOT available.

☐ FedEx First Overnight
Earliest next business morning delivery to select locations.*

☐ FedEx 2Day
Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx Express Saver
Third business day.* Saturday Delivery NOT available.

**4b Express Freight Service** ** To most locations. Packages over 150 lbs.

☐ FedEx 1Day Freight*
Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

FedEx 1Day Freight Booking No.

☐ FedEx 2Day Freight
Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx 3Day Freight
Third business day.** Saturday Delivery NOT available.

**5 Packaging** * Declared value limit $500.

☐ FedEx Envelope*
☐ FedEx Pak* Includes FedEx Small Pak and FedEx Large Pak
☐ FedEx Box
☐ FedEx Tube
☒ Other

**6 Special Handling and Delivery Signature Options**

☐ SATURDAY Delivery
NOT available for FedEx Standard Overnight, FedEx Express Saver, or FedEx 3Day Freight.

☐ No Signature Required
Package may be left without obtaining a signature for delivery.

☐ Direct Signature
Someone at recipient's address may sign for delivery. Fee applies.

☐ Indirect Signature
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.

**Does this shipment contain dangerous goods?**

☒ No
☐ Yes As per attached Shipper's Declaration
☐ Yes Shipper's Declaration not required
☐ Dry Ice Dry Ice, 9, UN 1845 ___ x ___ kg
☐ Cargo Aircraft Only

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

**7 Payment** *Bill to:*

Enter FedEx Acct. No. or Credit Card No. below.

☒ Sender Acct. No. in Section 1 will be billed.
☐ Recipient
☐ Third Party
☐ Credit Card
☐ Cash/Check

[redacted]

[redacted]

Total Packages 1
Total Weight [illegible] lbs.
Credit Card Auth.

605

fedex.com 1.800.GoFedEx 1.800.463.3339

FEDEX
TRK# 8729 1976 5515
0215

PRIORITY OVERNIGHT

**3E PBIA**

33458
FL-US PBI

#66372 06/16 50FG1/0C90/F5F4

RT 232 1 B
B02 5515
FZ 06.17

61
00

**FedEx Express US Airbill**

FedEx Tracking Number 8729 1976 5515

Form ID No. 0215

**1 From** This portion can be removed for Recipient's records.

Date 6-14-11

FedEx Tracking Number 872919765515

Sender's Name B.C. [illegible] Phone 239 [illegible]

Company [illegible]

Address [illegible] Dept./Floor/Suite/Room

City [illegible] State ZIP [illegible]

**2 Your Internal Billing Reference** 11-37-4323

**3 To**

Recipient's Name L.B Phone 561 [illegible]

Company Jupiter Environmental Labs Inc

Address Package 2 of 2
We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address [illegible] Old Dixie Highway
Use this line for the HOLD location address or for continuation of your shipping address.

City Jupiter State FL ZIP 33458

☐ HOLD Weekday FedEx location address REQUIRED. NOT available for FedEx First Overnight.

☐ HOLD Saturday FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

8729 1976 5515

**4a Express Package Service** * To most locations. *Packages up to 150 lbs.*

☒ FedEx Priority Overnight Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx Standard Overnight Next business afternoon.* Saturday Delivery NOT available.

☐ FedEx First Overnight Earliest next business morning delivery to select locations.*

☐ FedEx 2Day Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx Express Saver Third business day.* Saturday Delivery NOT available.

**4b Express Freight Service** ** To most locations. *Packages over 150 lbs.*

☐ FedEx 1Day Freight Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected. FedEx 1Day Freight Booking No.

☐ FedEx 2Day Freight Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx 3Day Freight Third business day.** Saturday Delivery NOT available.

**5 Packaging** * Declared value limit $500.

☐ FedEx Envelope*
☐ FedEx Pak* Includes FedEx Small Pak and FedEx Large Pak.
☐ FedEx Box
☐ FedEx Tube
☒ Other

**6 Special Handling and Delivery Signature Options**

☐ SATURDAY Delivery NOT available for FedEx Standard Overnight, FedEx Express Saver, or FedEx 3Day Freight.

☐ No Signature Required Package may be left without obtaining a signature for delivery.

☐ Direct Signature Someone at recipient's address may sign for delivery. *Fee applies.*

☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. *Fee applies.*

**Does this shipment contain dangerous goods?**

☒ No
☐ Yes As per attached Shipper's Declaration.
☐ Yes Shipper's Declaration not required.
☐ Dry Ice Dry Ice, 9, UN 1845 ___ x ___ kg
☐ Cargo Aircraft Only

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

**7 Payment** *Bill to:*

Enter FedEx Acct. No. or Credit Card No. below.

☐ Sender Acct. No. in Section 1 will be billed.
☐ Recipient
☐ Third Party
☐ Credit Card
☐ Cash/Check

[redacted]

[redacted]

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# GUIDANCE FOR DISTURBANCE AND USE OF OLD CLOSED LANDFILLS OR WASTE DISPOSAL AREAS IN FLORIDA

**Version 2.1**
**FINAL**

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# DISCLAIMER

The information contained in this document is intended for guidance only. It is not a rule and does not create any standards or criteria which must be followed by the regulated community. Furthermore, compliance with this document does not relieve the owner or operator from the responsibility for complying with the Department's rules nor from any liability for environmental damages caused by the disturbance of or activities near old landfills or waste disposal areas.

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# LIST OF ACRONYMS

| | |
|---|---|
| EDP | Excavation and Disposal Plan |
| EPA | U. S. Environmental Protection Agency |
| F.A.C. | Florida Administrative Code |
| F.S. | Florida Statutes |
| GWMP | Ground Water Monitoring Plan |
| HRA | Health Risk Assessment |
| MOP | Monitoring Only Plan |
| NELAP | National Environmental Laboratory Accreditation Program |
| PCAP | Preliminary Contamination Assessment Plan |
| PCAR | Preliminary Contamination Assessment Report |
| QA/QC | Quality Assurance/Quality Control |
| RCRA | Resource Conservation and Recovery Act |
| RSM | Recovered Screened Material |
| RTL | Reuse Target Level |
| SPLP | Synthetic Precipitation Leaching Procedure |
| SSW | Screened Solid Waste |
| WPF | Waste Processing Facility |
| WTE | Waste-to-Energy |

## 1.0 BACKGROUND AND PURPOSE

In the past, the Florida Department of Environmental Protection (Department) has received notifications that old landfills or old disposal areas were unexpectedly discovered during various construction projects. The Department has also been contacted by property owners who were seeking to develop property which was known to contain areas where waste had been disposed. As such, the Department was asked to provide guidance regarding proper management of waste for similar situations. Questions are typically raised about the relocation of wastes, where they can be properly disposed, permitting requirements, back-filling of excavated areas, use of screened material from the waste and ground water monitoring requirements.

There have also been situations where development projects, such as residential housing units, schools, recreational areas or retail businesses, have been constructed on top of or adjacent to old disposal areas. Some of these projects have resulted in considerable health and safety concerns for individuals living or working near these disposal areas and for the integrity of the environmental protection measures that may be in place at the disposal sites.

The potential risks from old disposal sites may vary considerably and are usually not well understood. This can be due to a variety of factors such as a lack of records on the types of waste disposed at a site or a lack of data on the generation and fate of gases and leachate from these wastes. For example, some wastes contain more biodegradable material than others and as a result may generate more methane gas under anaerobic conditions causing odors and green house gases. Or, due to the age of the wastes, they may have stabilized to the point that gas generation is no longer of concern. If gases are still being generated, they may or may not be migrating off-site depending on the specific geological and physical features of the site. Also, since these old disposal sites were unlined, impact to ground water from leachate generation may be a problem, but this can not be determined without a ground water investigation.

Due to the difficulties encountered in dealing with these old sites, the Department has been asked to develop recommendations for managing the problems arising from construction near or over them. Consequently, this document is intended to provide guidance to the regulated community on the Department’s requirements and recommendations for disturbing or using old, closed landfills or disposal areas. While owners of these old sites are encouraged to use this guidance, this document is not a rule and does not create any standards or criteria which must be followed by the regulated community.

The original document for this guidance was issued on May 3, 2001. Since that time, changes have occurred which require the Department to update this document. For example, on April 17, 2005, Chapter 62-780, Florida Administrative Code (F.A.C.) became effective. This new chapter establishes the procedures for the assessment and cleanup of contaminated sites when it has been established that a person is legally responsible for conducting site rehabilitation or when a person voluntarily rehabilitates a contaminated site. As a result, the previous process used by the Department, (i.e., the process known as Corrective Actions for Contaminated Site Cases) is an obsolete tool and individuals choosing to conduct contamination assessment and possibly cleanup are now encouraged to use the process identified in Chapter 62-780, F.A.C. In addition, concentrations for some of the Reuse Target Levels (RTLs) listed in the original document have been changed. Consequently, this guidance document needed to be revised to implement these updates. This revision was completed on June 3, 2009 in version 2.0. The basic processes contemplated in the original document remained the same. This version of the document dated February 3, 2011, version 2.1, merely updated some statute and rule references that had changed since version 2.0 was issued.

## 2.0 APPLICABILITY

In general, this document only applies to old disposal sites that are inactive, i.e. no longer receiving wastes, and can normally be placed into one of three categories:

(1) old permitted landfills that had a final cover[1] installed before July 1, 1985 without a closure permit;
(2) old disposal sites, such as dumps, open dumps and promiscuous dumps, that were operated and closed without permits and which may have had few or no records available of their operations; and
(3) construction and demolition (C&D) debris disposal areas which were operated and closed prior to August 2, 1989.

The application of this document to any other sites will be determined on a case-by-case basis by the Department.

For the purposes of this document, a "landfill" means a Class I, II or III landfill as it is currently defined in the Department's Solid Waste Management Facilities rule, Chapter 62-701, F.A.C. Also, C&D debris[2] in this document means the same as it is currently defined in Section 403.703(6), Florida Statutes (F.S.) which reads:

> (6) "Construction and demolition debris" means discarded materials generally considered to be not water-soluble and nonhazardous in nature, including, but not limited to, steel, glass, brick, concrete, asphalt roofing material, pipe, gypsum wallboard, and lumber, from the construction or destruction of a structure as part of a construction or demolition project or from the renovation of a structure, and includes rocks, soils, tree remains, trees, and other vegetative matter that normally results from land clearing or land development operations for a construction project, including such debris from construction of structures at a site remote from the construction or demolition project site. Mixing of construction and demolition debris with other types of

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[1] In July 1, 1985, final cover was generally defined as a 24-inch thick soil layer placed over the wastes in the landfill.

[2] An additional explanation of how C&D debris wastes are defined is contained in Section 4.3.2 of this document.

solid waste will cause the resulting mixture to be classified as other than construction and demolition debris. The term also includes:
(a) Clean cardboard, paper, plastic, wood, and metal scraps from a construction project;
(b) Yard trash and unpainted, nontreated wood scraps and wood pallets from sources other than construction or demolition projects;
(c) Scrap from manufacturing facilities which is the type of material generally used in construction projects and which would meet the definition of construction and demolition debris if it were generated as part of a construction or demolition project. This includes debris from the construction of manufactured homes and scrap shingles, wallboard, siding concrete, and similar materials from industrial or commercial facilities; and
(d) De minimis amounts of other nonhazardous wastes that are generated at construction or destruction projects, provided such amounts are consistent with best management practices of the industry.

Dumps, open dumps, and promiscuous dumps were defined in earlier rules by the Department. In 1974, dumps were defined in Rule 17-7.02(7), F.A.C. as:

> "Dump" is a land disposal site at which solid waste is disposed of in a manner which does not protect the environment and is exposed to the elements, vectors and scavengers.

In 1979, open dumps and promiscuous dumps were defined in Rules 17-7.02(33) and (36), F.A.C., respectively, as:

> "Open Dump" means a site for the disposal of solid waste which does not comply with the criteria of Chapter 17-7, F.A.C.; and
>
> "Promiscuous Dump" means an unauthorized site where indiscriminate deposits of solid waste are made.

## 3.0 GOAL

If plans are made to disturb an old landfill, the owner is required to notify the Department before beginning this activity. The basic regulatory requirements for the old, closed landfills are contained in Rule 62-701.610(1), F.A.C. and read as follows:

> Use of closed landfill areas. Closed landfill areas, if disturbed, are a potential hazard to public health, ground water and the environment. The Department retains regulatory control over any activities which may affect the integrity of the environmental protection measures such as the landfill cover, drainage, liners, monitoring system, or leachate and stormwater controls.

> Consultation with the Department is required prior to conducting activities at the closed landfill areas.

The goal of this document is not to impose new regulatory burdens on owners of old landfills or disposal sites but to clarify what the Department's expectations are if an old site is disturbed or used. The owners of these sites are strongly encouraged to consult with the Department prior to disturbing any of these areas or conducting any construction near or over them and to develop a plan of action that achieves the goals of the owner but is also protective of human health and the environment. To facilitate communication with the Department in these matters, a list of contacts and addresses for the Tallahassee and District offices is provided in APPENDIX A.

The remaining portions of this document describe the activities that should be conducted or considered when attempting development near or over these old sites. The Department encourages the owners of these sites to follow these recommendations.

## 4.0 WASTE DISTURBANCE

### 4.1 Waste Relocation On-site

There have been occasions when construction projects have included the on-site relocation of existing wastes (i.e., within the footprint of the original landfill disposal area) which were either known to exist at the site before construction or discovered during construction. The owner may also desire to sort uncontaminated concrete from the waste before reburial[3].

In 2001, the Department revised its solid waste rule to address the relocation of these on-site wastes at closed landfills. Specifically, Rule 62-701.610(2), F.A.C., reads:

> Relocation of waste. The owner of a closed landfill may request permission from the Department to move waste from one point to another within the footprint of the same solid waste disposal unit. If the landfill has a valid closure permit, the permittee shall seek a modification to reflect the relocation of waste. The Department shall approve such a request upon a demonstration that:
> (a) The activity will not cause or contribute to any leachate leakage from the landfill, and will not adversely affect the closure design of the landfill;
> (b) Any leachate, stormwater runoff, or gas which is generated by the activity is controlled on site;
> (c) Any hazardous waste which is generated by the activity will be managed in accordance with Chapter 62-730, F.A.C.;

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[3] Sorting materials other than uncontaminated concrete will require written approval by the Department before the sorting begins in accordance with the requirements of Section 4.4 of this document.

> (d) Immediately after the activity is completed, the landfill will be covered, vegetated, and graded so as to comply with the closure requirements that apply to that landfill, which shall include a final cover of at least two feet of soil; and
>
> (e) The appropriate District Office of the Department is notified at least seven days before the activity takes place in order to have the opportunity to inspect the site.

If the landfill has a valid closure permit, then a modification of that closure permit will be required to relocate on-site wastes. The owner of the landfill will have to demonstrate that the requirements of Rule 62-701.610(2), F.A.C. will be satisfied during the relocation activities. Uncontaminated concrete which is excavated from the disposal site and removed from the wastes may be used as a raw material or as fill material without a permit[4], i.e. used as clean debris. But it must meet the definition of clean debris contained in Rule 62-701.200(15), F.A.C. before it can be used as fill or raw material.

If the landfill was closed before closure permits were required, then waste relocation activities may still be allowed and the Department will not require a closure permit or long-term care requirements provided the following occur.

(a) A Relocation Plan must be submitted for review and approval to the Department's District office in the District where the disposal site is located (see contacts and addresses in APPENDIX A). At a minimum, it should include the following:

- a site map showing which waste will be removed and where it will be reburied;
- an estimate of the total volume of wastes to be relocated and the time needed to complete the project;
- a description of how the wastes will be excavated and relocated; and
- a description of how odors will be minimized and how surface water and leachate resulting from the relocation activities will be controlled.

(b) The waste must only be relocated within the original landfill or disposal site footprint[5], and must be covered with two feet of soil, compacted and revegetated.

(c) No off-site waste can be transported to the site and disposed of in the relocation areas.

(d) Should any hazardous wastes be encountered, they will be managed as a hazardous waste according to Chapter 62-730, F.A.C.

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[4] For the Department's requirements on this use, see Rules 62-701.220(2)(f) and 62-701.730(15), F.A.C.

[5] Relocation of wastes outside the original footprint is considered new disposal and may require a permit.

(e) The only wastes to be relocated are those which are necessary to implement the construction project.

(f) If sorting of uncontaminated concrete from the waste is planned, a description of how the sorting will be accomplished shall be provided. Uncontaminated concrete may be used as a raw material or as fill without a permit provided it meets the requirements stated above for facilities having valid closure permits.

(g) If it is determined that the waste at the site is causing ground water contamination, then some water quality monitoring, and possibly corrective actions, will be required as described in Section 4.6.

### 4.2 Waste Left In-place

Waste left in-place and not disturbed, is generally subject only to the closure requirements that applied at the time the site was operated. If there are questions about these requirements, the summaries in APPENDICES B and C may provide some guidance.

Normally, no further action is required by the Department in the areas containing undisturbed waste. However, if the waste is not stabilized[6] and the final cover is inadequate, the Department may require the soil cover be repaired (for example, at least two feet of soil cover and no areas of ponding). Also, if it is determined that the waste is causing ground water contamination, then some water quality monitoring, and possibly corrective action, will be required according to Section 4.6.

### 4.3 Waste Removal and Off-site Disposal

Removing the waste may be the best option to achieve unrestricted use of former disposal areas. This option may not be practical if a large area of land was used for disposal or if much of the waste was disposed of in the ground water and cannot be easily removed. In those cases, a partial removal may be appropriate. The Department must be notified prior to beginning these activities. However, a permit will not generally be required for these activities provided the work is conducted under a Department approved Excavation and Disposal Plan (see Section 4.3.1).

Uncontaminated concrete which is excavated from the disposal site and removed from the wastes may be used as a raw material or as fill material without a permit[7], i.e. used as clean debris. But it must meet the definition of clean debris contained in Rule 62-701.200(15), F.A.C. before it can be used as fill or raw material.

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[6] Rule 62-701.200(120), F.A.C. defines stabilized to mean the "biological and chemical decomposition of the wastes has ceased or diminished to a level so that such decomposition no longer poses a pollution, health, or safety hazard."

[7] For the Department's requirements on this use, see Rules 62-701.220(2)(f) and 62-701.730(15), F.A.C.

### 4.3.1 Excavation and Disposal Plan

Before beginning waste removal, an Excavation and Disposal Plan (EDP) must be submitted for review and approval to the Department's District office in the District where the disposal site is located. An EDP should include at least the following items.

(a) Extent of Waste - The extent of the disposal area where the waste will be removed must be fully delineated as follows:

- The extent of the in-place waste disposal area must be fully delineated in both the vertical and horizontal directions. Normally this delineation can be conducted using soil borings or test pits. Other geophysical methods may also be used.
- A site plan showing the location of the disposal area and locations of the test pits or soil borings must be provided.
- A description of the materials found in the test pits or borings and the depths where these materials were encountered must also be provided.
- If ground water was encountered in the pits or borings, the depth to water should be described.

(b) Gas Concerns - To ensure there are no potential adverse effects from waste gas, a combustible gas[8] survey of ambient air conditions must be conducted at the site before the wastes are removed and again within ninety days after removal. Combustible gases in confined spaces must not exceed twenty-five percent of the lower explosive limit of methane. Ambient air monitoring must also be conducted periodically during excavation to ensure conditions for combustible gases are not being created. In addition, before wastes are removed, soil monitoring probes must be installed where the wastes are located and sampled for combustible gases. Sampling must be conducted in the headspace of the monitoring probe without purging the gas before collecting the sample.

(c) Waste Removal – The EDP should describe the waste removal activities planned including a description of:

- the procedures for staging wastes prior to removal and an estimate of the length of time wastes will be staged;
- an estimate of the total volume of wastes to be removed and the time needed to complete the project;
- the methods(s) that will be used to characterize the various types of waste encountered according to the recommendations of Section 4.3.2;
- the procedures for handling any hazardous waste or hazardous materials should they be encountered;
- the procedures for handling any land clearing debris should it be generated and designated for off-site disposal or recycling;

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[8] Combustible gas meters shall be calibrated to methane.

- the intended permitted disposal facility(s) for wastes removed;
- how odors and dust will be minimized and the procedures for controlling leachate from disturbed or staged waste areas prior to removal of the wastes from the site;
- if sorting of uncontaminated concrete from the waste is planned, a description of how the sorting will be accomplished shall be provided; and
- the procedures that will be used to ensure the water quality monitoring, and possibly corrective action, requirements of Section 4.6 will be followed.

### 4.3.2 Waste Characterizations

Before excavated waste can be disposed of off-site, it will need to be characterized to determine which method of disposal is appropriate. The waste can usually be placed into one of four categories:

(1) a hazardous waste;
(2) a waste suitable for disposal in a permitted Class I landfill;
(3) a waste suitable for disposal in a permitted Class III landfill; and
(4) C&D debris waste (if it meets the definition of C&D debris waste as described below).

In addition, some sites may involve a significant amount of land clearing operations prior to excavation of the waste. The vegetative waste generated from these land clearing operations may be suitable for disposal in a permitted Class III landfill, C&D debris facility, or a land clearing debris disposal facility.

If the excavated waste is a hazardous waste, it will need to be managed in accordance with the requirements of Chapter 62-730, F.A.C. The generator is responsible for determining if the excavated material is a hazardous waste. The Department's Hazardous Waste Regulation Section can be contacted if there are any questions about the hazardous waste determination for this material at 850/245-8790.

If the excavated material is not a hazardous waste and if it is not considered a liquid waste according to Rule 62-701.200(65), F.A.C., then it may be disposed of in a permitted Class I landfill[9]. The landfill owner/operator, however, is not required to accept this material for disposal. The generator of the waste should contact the landfill owner/operator before transporting the material to ensure it can be received at the landfill for disposal.

Some wastes may qualify for disposal in a permitted Class III landfill, provided they are not putrescible household wastes or other Class I wastes, and meet the definition of Rule 62-701.200(14), F.A.C. which reads as follows:

> "Class III waste" means yard trash, construction and demolition debris, processed tires, asbestos, carpet, cardboard, paper, glass,

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[9] While not typically expected to be an option, the wastes could also be disposed of at a Waste-to-Energy (WTE) facility if the WTE facility is authorized by its permit to process it and the material is not a hazardous waste.

> plastic, furniture other than appliances, or other materials approved by the Department that are not expected to produce leachate which poses a threat to public health or the environment.

Some of the wastes removed from old disposal sites may meet the definitions of the specific items listed in the rule and may be suitable for disposal in a Class III landfill if they are not contaminated with other wastes. However, the definition of Class III wastes also allows the Department to approve "other materials" for disposal in Class III landfills if the wastes are "not expected to produce leachate which poses a threat to public health or the environment." Many of the wastes from these old disposal sites may qualify for this "other materials" category at a Class III landfill[10]. But the burden will be on the generator to show entitlement to this determination by the Department. These determinations will be made on a case-by-case basis.

Some waste may be considered C&D debris and qualify for disposal in a C&D debris disposal facility or a Class III landfill, however, this determination may be difficult. There are essentially three tests that must be satisfied. The first two deal with the definition of C&D debris contained in Section 403.703(6), F.S., and the third deals with the problem of mixing. First, the material must be "not water-soluble and nonhazardous in nature" including a list of included materials[11]. In other words, it must be of a certain "type." Second, the material must be "from the construction or destruction of a structure as part of a construction or demolition project," meaning that it must also be from a certain "source." Third, the law says that mixing of C&D debris with other types of waste will cause it to be classified as other than C&D debris.

Thus, for wastes from an old disposal site to be classified as C&D debris, the generator will have the burden to demonstrate that the waste met the "type" and "source" requirements and also show that it had never been mixed with other types of solid waste. If these three criteria cannot be satisfied, then the waste may not be disposed of at a C&D debris facility. However, it may still be allowed for disposal at a Class III landfill if the Department approves it as an "other material" according to Rule 62-701.200(14), F.A.C. Otherwise, it will have to be disposed of at a Class I landfill.

Vegetative waste that meets the definition of "yard trash" contained in Rule 62-701.200(135), F.A.C., may not be disposed of in a Class I landfill (see Section 403.708(12)(c), F.S.). However, it may be disposed of in a permitted Class III landfill. Yard trash may also be disposed of in a permitted C&D debris disposal facility, while land clearing debris may be disposed of in a permitted land clearing debris disposal facility. The definition of yard trash reads as follows:

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[10] More information can be found in policy memorandum SWM-04.39 which is available at the following web site address:
http://www.dep.state.fl.us/waste/quick_topics/publications/shw/solid_waste/policymemos/SWM-04-39.pdf

[11] These included materials are generally items such as: (1) steel, glass, brick, concrete, asphalt material, pipe, gypsum wallboard and lumber; (2) rocks, soils, tree remains, trees, and other vegetative matter which normally results from land clearing or land development operations for a construction project; and (3) clean cardboard, paper, plastic, wood, and metal scraps from a construction project.

> "Yard trash" means vegetative matter resulting from landscaping maintenance or land clearing operations and includes materials such as tree and shrub trimmings, grass clippings, palm fronds, trees and tree stumps.

The definition of land clearing debris reads as follows:

> "Land clearing debris" means rocks, soils, tree remains, trees, and other vegetative matter which normally results from land clearing or land development operations for a construction project. Land clearing debris does not include vegetative matter from lawn maintenance, commercial or residential landscape maintenance, right-of-way or easement maintenance, farming operations, nursery operations, or any other sources not related directly to a construction project.

### 4.4 Recycling Wastes or Vegetative Matter

In some cases, the owner of a site may wish to recycle some of the excavated waste or the vegetative matter generated during land clearing operations. This recycling might be on-site or the wastes may be sorted from non-recyclable wastes and transported off-site for recycling. If the only waste to be sorted and recycled is uncontaminated concrete, then, as stated earlier, this waste may be used as a raw material or as fill material without a permit[12], i.e. used as clean debris. But it must meet the definition of clean debris contained in Rule 62-701.200(15), F.A.C. before it can be used as fill or raw material. If other wastes are planned for sorting or recycling, then the requirements become more complicated.

If the waste is excavated and transported off-site for recycling, then it may be suitable for processing at a Waste Processing Facility[13] (WPF). Likewise, the vegetative materials generated during the operation and transported off-site may be suitable for recycling at a yard trash processing facility.

If the excavated wastes are sorted on-site for the purpose of recycling them either on-site or at a permitted or registered facility located off-site, then the owner of the landfill will be required to obtain written approval by the Department before beginning the sorting operations. The owner must contact the Department's District office in which the landfill is located to determine the exact requirements.

A WPF that recycles the waste must have a solid waste permit to operate according to the requirements of Rule 62-701.710, F.A.C. No excavated waste should be transported to a WPF unless the facility is authorized by permit to receive this

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[12] For the Department's requirements on this use, see Rules 62-701.220(2)(f) and 62-701.730(15), F.A.C.

[13] The requirements for Waste Processing Facilities are contained in Rule 62-701.710, F.A.C.

material and the owner or operator of the WPF is willing to process it. The characterization of the waste in Section 4.3.2 of this document should help clarify if the waste can be processed by the WPF.

Yard trash[14] from the site may be recycled at yard trash processing facilities. These facilities will not normally need a solid waste permit provided they meet the criteria for a yard trash processing facility in Rule 62-709.330, F.A.C. and register with the Department in accordance with Rule 62-709.320(3), F.A.C.

The excavation, on-site sorting or recycling, transportation and off-site recycling of wastes or vegetative materials may be allowed, with prior written approval by the Department, provided the following occur.

(a) A Recycling Plan must be submitted for review and approval to the Department's District office in the District where the disposal site is located. It should include the following:

- a site map showing where the waste staging, sorting and screening areas will be located and which areas of the disposal site will be excavated;
- an estimate of the total volume of wastes to be sorted or recycled and the time needed to complete the project;
- a description of how the excavation will occur;
- a description of how the recyclable wastes will be sorted from the excavated wastes including operation of the staging areas;
- a description of how the screened waste will be managed in accordance with the recommendations of Section 4.5;
- a description of how odors will be minimized and how surface water and leachate resulting from the excavation, staging, sorting and screening activities will be controlled;
- a description of how dust from the recycling operation will be controlled[15];
- a description of the permitted facilities where the recyclable wastes shall be transported to and processed; and
- a description of how the excavated areas will be back-filled, covered, compacted and revegetated.

(b) Should any hazardous wastes be encountered, they must be managed as a hazardous waste according to Chapter 62-730, F.A.C.

(c) If it is determined that the waste at the site is causing ground water contamination, then some water quality monitoring, and possibly corrective actions, will be required according to Section 4.6.

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[14] Yard trash is defined in Section 4.3.2 of this document.

[15] The owner should also be aware that the Department may regulate this dust as a fugitive particulate emission. The Department's Air Section, in the District where the landfill is located, can be contacted for further details.

## 4.5 Use of Screened Solid Waste

Screened solid waste (SSW) refers to the fines fraction of material that is produced by screening excavated wastes. This would normally occur during the on-site recycling operations. If the wastes that are screened meet the criteria for being C&D debris wastes in Section 4.3.2, then the fines fraction generated by this screening shall be considered Recovered Screen Material (RSM) and should be managed in accordance with the Department's RSM guidance[16] dated September 28, 1998 (DEP, 1998). Screened material from any other wastes shall be designated as SSW rather than RSM. For the purposes of this document, most of the screened material from recycling wastes at old disposal sites will be treated as SSW rather than RSM[17].

In order to use any SSW, the owner will have to provide reasonable assurances to the Department that the proposed use is protective of human health and that applicable Department standards and criteria will not be violated. The main goals that must be accomplished for owners to use the SSW are summarized as follows:

(a) The SSW must be managed and used so that it will not cause violations of applicable Department air, ground water, or surface water standards or criteria.

(b) The use of the SSW must not pose a significant threat to human health, which, for the purposes of this document, means an incremental risk of no greater than $1x10^{-6}$ for carcinogens and a health hazard index (hazard quotient) of no greater than one (1.0) for non-carcinogens[18].

(c) The use of the SSW must not create a public nuisance.

In some cases, it will be easy to provide a satisfactory demonstration that the proposed use of the SSW will be safe. In other cases, chemical testing may be required and evaluations of the proposed uses may be more difficult. The following discussion attempts to clarify some of these issues for use in back-filling excavated areas and in off-site applications.

### 4.5.1 Back-filling Excavated Areas

Back-filling on-site excavated areas can be placed into two categories. The first, and easiest to address, occurs when the SSW is placed in the excavated areas of the original waste disposal footprint (above the water table), compacted, covered with two

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[16] This guidance can be found at the following web site address: http://www.dep.state.fl.us/waste/quick_topics/publications/shw/solid_waste/RSMFINALTotal.pdf. In addition, memorandum SWM-21.38 has some information on arsenic sampling. It is found at: http://www.dep.state.fl.us/waste/quick_topics/publications/shw/solid_waste/policymemos/SWM-21-38.pdf.

[17] The Department assumes that it will be difficult to classify old waste as C&D debris according to the three tests in Section 4.3.2. Therefore, the screened material from these wastes should be treated as SSW rather than RSM.

[18] For additional information, see Chapter 62-777, F.A.C.

feet of clean fill[19] and re-vegetated. In this case, the Department considers the likelihood of direct human exposure with the SSW to be negligible. Also, since the SSW is placed within the boundaries of the original waste disposal footprint, the leachability concerns are probably similar to the waste before it was disturbed. Therefore, no further action will be required if this method of backfilling is used unless it is determined that the residual waste at the site is causing ground water contamination. Then some water quality monitoring, and possibly corrective actions, will be required according to Section 4.6.

The second category of backfilling occurs when SSW is placed on the ground surface or mixed within the top 24 inches of soil at the site (above the water table). In these cases, the owner needs to ensure that all the goals of Section 4.5 are achieved. When showing the risks from these uses will not exceed the human health risk goals of Section 4.5, Item (b), the owner may choose to conduct a separate human health risk assessment (HRA) to determine the potential risks from the proposed uses of SSW. The owner may also elect to use the Department's soil cleanup target levels (SCTLs) contained in Table II of Chapter 62-777, F.A.C. as a guide for evaluating the potential risks. To use the Department's SCTLs, the following testing will be required.

(a) Representative discrete and composite samples shall be collected of the SSW as it will be used at the minimum frequency indicated in TABLE 1. Sampling and analysis must meet the requirements of Chapter 62-160, F.A.C. and the Department’s Standard Operating Procedures.

(b) Total analysis shall be conducted on the composite samples for the eight Resource Conservation and Recovery Act (RCRA) metals[20] using the approved EPA Methods and for semi-volatile organic compounds using EPA Method 8270C, and pesticides using EPA Method 8081A.

(c) Total analysis shall be conducted on the discrete samples for volatile organic compounds using EPA Method 8260B.

(d) The leaching potential for detected parameters in the total analyses of the samples can be estimated by comparing the total concentrations of those parameters to the Department's corresponding SCTL leachability values. To further evaluate leaching potential, the samples can also be prepared using the Synthetic Precipitation Leaching Procedure (SPLP), EPA Method 1312. The extracts prepared from this procedure can then be analyzed[21], using the approved EPA methods with the results compared to the Department's ground water standards and criteria.

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[19] For the purposes of this document, "clean fill" means soil which has not become contaminated by human activity or soil which meets the "cleaned soil" criteria of Chapter 62-713, F.A.C. Soil may include other similar materials if approved by the Department.

[20] These metals are: arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver.

[21] When analyzing for parameters such as sulfates and TDS, it is likely that de-ionized water will need to be used as the extraction fluid in the SPLP test rather than the extraction fluid specified in the method itself.

(e) Laboratories conducting the analyses must be certified by an accrediting authority recognized by the National Environmental Laboratory Accreditation Program (NELAP) and must submit their results in an acceptable electronic format. Analysis of the SPLP extracts must be conducted using detection limits at or below the Department's ground water standards and criteria.

Based on the results of the above testing, possible uses for SSW can then be considered. SSW may be used as backfill on-site above the water table without further restrictions provided: (1) the total concentrations of detected chemicals are below the Department's corresponding residential direct exposure SCTLs; and (2) the detected chemicals are not expected to be a leaching concern. However, filling jurisdictional surface waters or wetlands is not allowed unless a permit specifically authorizing this use of the SSW is issued by the Department. If these conditions cannot be met, then the Department should be contacted about appropriate uses for the SSW.

### 4.5.2 Off-site Uses

SSW must not be used as fill material in jurisdictional surface waters or wetland unless a permit specifically authorizing this use has been issued by the Department. SSW may be suitable for use as initial and intermediate cover at permitted Class I, II or III landfills provided it meets the criteria of Rules 62-701.200(59) and (61), F.A.C. These uses of SSW may require approval by the Department's District office in the District where the disposal site is located as part of its landfill permit.

Other potential uses of SSW will depend on the chemical nature of the material. Testing similar to that contained in Section 4.5.1, Items (a) through (e) must be conducted to evaluate total and leachable concentrations of chemicals in the SSW. The Department must be consulted before using any SSW off-site from the disposal area.

## 4.6 Water Quality Evaluations

When wastes are removed or left in-place, water quality monitoring will generally be needed to ensure there are no adverse affects to ground water from the wastes. The actual requirements for water quality evaluations will vary depending upon the site-specific circumstances.

### 4.6.1 Wastes Removed

If all the wastes are removed from the site, then limited water quality sampling (usually one to three sampling events) will usually be required in the area where the wastes were previously disposed to determine if there are any violations of the Department's water quality standards or criteria. The Department recommends preparing a Preliminary Contamination Assessment Plan (PCAP) and getting it approved by the Department. After conducting the activities in the PCAP, then a Preliminary Contamination Assessment Report (PCAR) must be prepared for review by the Department. If the PCAR demonstrates that no water quality violations are occurring, then no further testing will be required. A description of the tasks required for developing PCAPs and PCARs is included in APPENDIX D.

If the PCAR demonstrates that water quality violations are occurring at the site, then further work will be required. Depending on the level of the contamination and the nature of the site, the Department may allow the owner to initiate a Monitoring Only Plan (MOP) and simply monitor the level of ground water contamination. As an alternative, the Department may require the owner to conduct additional assessment to evaluate the extent of the contamination and based on the results of that additional assessment then implement some form of remedial action. The remedial action may be simply to continue monitoring the site for some period of time, or it may require some ground water control and treatment. The actual requirements are determined on a case-by-case basis. When it is determined that additional assessment is needed, the process described in Chapter 62-780, F.A.C. should be followed.

### 4.6.2 Wastes Left In-place

If the wastes are left in place or only partially removed, then monitoring of the water quality at the site for some period of time will be required. The Department may allow monitoring wells to be installed according to the PCAP and PCAR requirements described in Section 4.6.1 and then require these wells be sampled for a period of time. As an alternative, the Department may require a Ground Water Monitoring Plan (GWMP) according to the requirements of Rule 62-520.600, F.A.C. and have the wells installed under this plan monitored for a period of time. In either case, the owner must contact the Department to determine which approach will be required. The duration of the monitoring will depend on the site-specific conditions and the results of the water quality testing. If it is determined by the Department that water quality violations are not occurring at the site, then no further water quality evaluations will be required.

If sampling results from the PCAP or the GWMP show there are violations of the Department's water quality standards or criteria, then further work will be required. The owner must follow the additional assessment procedures described in Section 4.6.1 to evaluate the extent of the contamination. Based on the results of the additional assessment, the owner will then be required to implement some form of remedial action. This may be simply to continue monitoring the site for some period of time, or it may require some ground water control and treatment. The actual requirements are determined on a case-by-case basis.

## 5.0 CONSTRUCTION NEAR WASTE-FILLED AREAS

There have been occasions where construction projects were conducted near old disposal sites without actually disturbing the wastes. The Department encourages caution be used when planning and implementing these projects since their proximity to old disposal areas may result in unacceptable risks to human health and the environment. At a minimum, the Department encourages implementation of the following recommendations:

(a) a combustible gas[22] survey of ambient air conditions should be conducted periodically at the project site to ensure combustible gases from the disposal area are not exceeding twenty-five percent of their lower explosive limit in structures;

(b) soil monitoring probes should be installed between the proposed construction and the waste-filled areas to ensure combustible gases exceeding their lower explosive limit are not moving from the disposal area;

(c) any structures located near the disposal areas which could be impacted by combustible gas should be designed with good ventilation and with explosion proof electrical wiring;

(d) access to the disposal site should be restricted; and

(e) shallow potable water wells and irrigation wells should not be installed within 500 feet of the waste-filled areas unless it is confirmed there are no adverse affects to ground water from the wastes in the disposal area.

## 6.0 CONSTRUCTION OVER WASTE-FILLED AREAS

The appropriate District office must be consulted before any construction activity is conducted over an old disposal site. The goals of this consultation are to ensure that the integrity of the environmental protection measures of the disposal area is not adversely impacted and to protect the health and safety of individuals who may be using the disposal area.

### 6.1 Cautions For Construction

When considering construction projects over old disposal sites, the Department recommends the following guidelines be used.

(a) The Department strongly discourages the construction of residential structures over old waste-filled areas. Instances of landfill gas seeping into the structures and structural settlement problems are well documented difficulties with this use of old disposal sites.

(b) Any construction projects should consider potential impacts from combustible gas. Inside structures, combustible gases must not exceed twenty-five percent of the lower explosive limit for methane. Any structures located on disposal areas must be designed with good ventilation and with explosion proof electrical wiring. Enclosed ground level and underground structures should be avoided

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[22] Combustible gas meters shall be calibrated to methane.

unless designed with adequate protection against landfill gas intrusion and accumulation.

(c) If the construction project may cause combustible gas to migrate off-site, then gas monitoring on a quarterly basis will be required in soil monitoring probes according to Rule 62-701.530(2), F.A.C., i.e., along the property boundary.

(d) If any waste is disturbed because of the construction project, then the guidelines in Section 4.0 should be followed, as appropriate.

(e) When planning the construction, concentrated weight loading should be avoided, if possible, to prevent uneven settlement of the underlying wastes. Also, disturbance of the landfill cover or barriers should be minimized or avoided when structures are built, particularly if pilings are used. Any disturbance of the cover or barrier must be repaired.

(f) Irrigation systems, if installed, must be designed to minimize disturbance to the underlying waste-filled areas and must not withdraw water from areas where ground water may be contaminated.

(g) Surface water management systems must not be located over contaminated areas or over waste-filled areas unless they are lined. Also, an Environmental Resource Permit from the Department will be required prior to constructing a surface water system.

(h) The disposal site must be maintained. For example, areas that have settled must be filled with clean fill to minimize leachate generation due to rainfall and irrigation and to protect individuals who may walk or play on the site.

(i) The landfill cover must be maintained to prevent human contact with the underlying waste materials.

(j) Care must be taken during any waste relocation, construction or recreational activities to prevent damage to ground water monitoring and gas monitoring systems.

(k) Underground utilities and similar installations that are placed within 200 feet of, or across, any side of the filled areas should be avoided. If they cannot be avoided and if combustible gases are being generated, then a properly located gas barrier or ventilation system must be placed at each waste boundary which is crossed by the utility line to prevent the landfill gas from migrating along the utility line to off-site structures.

## 6.2 Alternate Uses of Disposal Areas

Some creative alternate uses of closed landfills and old disposal areas have been implemented in recent years. One very successful use is the creation of recreational facilities. Facilities such as ball parks, soccer fields, hiking trails, golf courses and golf driving ranges appear to be acceptable and successful land uses for these old sites. The Department prefers these types of uses be selected for an old site rather than the construction of structures such as residential housing or educational facilities.

Before beginning one of these projects, the owner must develop construction plans and a detailed description of the project and present these for review to the Department's District office where the project is located. A list of contacts and addresses for these offices in provided in
APPENDIX A.

In most cases, a permit will not be required, except for an Environmental Resource Permit addressing the surface water control system. The construction plans must show the major features of the project including locations of: waste disposal areas, on-site structures, the surface water management system, irrigation systems and planned utility lines. The description of the project must include how the recommendations for waste disturbance in Section 4.0 will be addressed. It must also address the recommendations of Sections 5.0 and 6.1.

## REFERENCES

DEP (Florida Department of Environmental Protection), 1998, Guidelines For The Management Of Recovered Screen Material From C&D Debris Recycling Facilities in Florida, Department of Environmental Protection, Solid Waste Section, Tallahassee, Florida, September 28.

### Table 1. Minimum Number of Soil Samples Required

| Amount of Soil by Volume, $yd^3$ | Amount of Soil by Weight, tons | Number of Discrete Samples Required for Volatile Organics | Number of Composite Samples Required for non-Volatile Organics |
|---|---|---|---|
| <100 | <140 | 1 | 1 |
| 100 to <500 | 140 to <700 | 3 | 3 |
| 500 to <1000 | 700 to <1400 | 5 | 5 |
| For each additional 500 $yd^3$ | For each additional 700 tons | 1 | 1 |

# APPENDIX A

## Department Solid Waste Contacts and Addresses

# DEPARTMENT OF ENVIRONMENTAL PROTECTION
# SOLID WASTE CONTACTS

(updated February 3, 2011)

| | |
|---|---|
| Northwest District: | Dawn Templin, P.E.<br>Department of Environmental Protection<br>160 Governmental Center, Suite 308<br>Pensacola, Florida 32502-5794<br>850/595-0644<br>Dawn.Templin@dep.state.fl.us |
| Northeast District: | Emerson Raulerson, P.E.<br>Department of Environmental Protection<br>7825 Baymeadows Way, Suite B200<br>Jacksonville, Florida 32256-7590<br>904/256-1581<br>Emerson.Raulerson@dep.state.fl.us |
| Central District: | Tom Lubozynski, P.E.<br>Department of Environmental Protection<br>3319 Maguire Boulevard, Suite 323<br>Orlando, Florida 32803-3767<br>407/894-7555<br>Tom.Lubozynski@dep.state.fl.us |
| Southwest District: | Susan Pelz, P.E.<br>Department of Environmental Protection<br>13051 N. Telecom Parkway<br>Temple Terrace, Florida 33637-0926<br>813/632-7600 ext. 386<br>Susan.Pelz@dep.state.fl.us |
| Southeast District: | Joe Lurix<br>Department of Environmental Protection<br>400 North Congress Avenue, Suite 200<br>West Palm Beach, Florida 33401<br>561/681-6672<br>Joe.Lurix@dep.state.fl.us |
| South District: | Al McLaurin, P.E.<br>Department of Environmental Protection<br>2295 Victoria Avenue, Suite 364<br>Fort Myers, Florida 33901-3881<br>863-314-5975<br>Albert.McLaurin@dep.state.fl.us |
| Tallahassee: | Richard Tedder, P.E.<br>Department of Environmental Protection<br>2600 Blair Stone Road, MS# 4565<br>Tallahassee, Florida 32399-2400<br>850/245-8735<br>Richard.Tedder@dep.state.fl.us |

# APPENDIX B

## Partial Summary of Landfill Permit, Closure and Long-term Care Requirements

# PARTIAL SUMMARY OF LANDFILL PERMIT, CLOSURE AND LONG-TERM CARE REQUIREMENTS

(June 30, 2000)

| AGENCY "CHAPTER TITLE" | GENERAL DESCRIPTION OF REQUIREMENTS |
|---|---|
| Dept. of Health and Rehabilitative Services<br>Chapter 10D-12, "Garbage and Rubbish"<br>October 20, 1964 | Permit:<br>• None, but an operational work plan approval by the Division of Health was required before receiving waste.<br>Ground Water Monitoring:<br>• None.<br>Closure Design:<br>• Final cover depth of 24 inches of compacted earth.<br>• 2:1 slopes were allowed.<br>Long-term Care:<br>• Maintenance program required to assure prompt repair of cracks, depressions and erosion of the surface and side slopes until the site stabilized. |
| Dept. of Pollution Control<br>Chapter 17-7, "Resource Recovery and Management Part I: Solid Waste Facilities"<br>October 1, 1974 | Landfill Permit:<br>• Permit required after January 1, 1975 to operate, maintain, construct, expand or modify a landfill.<br>• No permits required for closure.<br>• Normal farming operations and persons who dispose of solid waste resulting from their own activities on their own property are specifically exempted from permitting provided no public nuisance or conditions adversely affecting public health is caused and provided the activity does not violate other rules, laws or ordinances.<br>Ground Water Monitoring:<br>• Not required, but the Department had the option to require it at the time of design approval or if ground water contamination was suspected.<br>Landfill Closure Design:<br>• Two feet of earth compacted in 6 inch layers with the top 6 inch layer loosely compacted to promote plant growth.<br>• Side slopes for landfills $\geq$ five feet above grade to be covered with 3.5 feet of compacted earth cover.<br>• Slopes no greater than 3:1 required (2:1 slopes no longer allowed).<br>Dump Closure:<br>• Dumps required to be eliminated or converted to "sanitary landfills" by July 1, 1977.<br>• Dumps were closed by controlling access, taking steps to divert surface water around the site, removing wastes from the water table, and seeding or planting grass to minimize erosion.<br>• No final cover requirement mentioned.<br>Long-term Care:<br>• None. |

# PARTIAL SUMMARY OF LANDFILL PERMIT, CLOSURE AND LONG-TERM CARE REQUIREMENTS

(June 30, 2000)

| AGENCY "CHAPTER TITLE" | GENERAL DESCRIPTION OF REQUIREMENTS |
|---|---|
| Dept. of Environmental Regulation<br>Chapter 17-7, ", "Resource Recovery and Management Part I: Solid Waste Facilities"<br>May 25, 1979 | <u>Permit:</u><br>• No landfill to be operated, maintained, constructed, expanded, or modified without a valid Department permit.<br>• No permits required for closure.<br><u>Ground Water Monitoring (by 9 months from eff. date, ~ 2/25/80):</u><br>• Class I landfills required to have a minimum of three monitoring wells. Class II landfills are required to have at least one.<br>• Wells required to be sampled at least every six months for various indicator parameters.<br><u>Closure Design (for sanitary landfills and open dumps):</u><br>• Two feet of earth compacted in 6 inch layers with the top 6 inch layer loosely compacted to promote plant growth, slopes no greater than 3 to 1.<br>• Site access controlled.<br>• Site seeded or planted with grass or suitable vegetation.<br><u>Long-term Care:</u><br>• Site to be maintained until stabilized by controlling erosion, maintaining grass cover, prevention of ponding, and prevention of deposited wastes from becoming a hazard or nuisance.<br>• Landfill to be monitored, including collection and treatment of leachates, until the site is stabilized. |
| Dept. of Environmental Regulation<br>Chapter 17-4<br>January 1, 1983<br>(aka: Ground Water Rule) | <u>Ground Water Monitoring:</u><br>• Landfills (domestic or industrial) which are "existing installations" required to submit a ground water monitoring plan by May 1983.<br>• New landfills required to submit a ground water monitoring plan in conjunction with their permit applications. |
| Dept. of Environmental Regulation<br>Chapter 17-7, ", "Resource Recovery and Management Part I: Solid Waste Facilities"<br>July 1, 1985 | <u>Permit:</u><br>• No landfill to be operated, maintained, constructed, expanded, modified or closed without a valid Department permit.<br>• For the first time, permits were required for closure of Class I, II or III landfills and applied to all landfills receiving waste, portions of landfills not having final cover and all future landfills requiring solid waste permits (but see exceptions in next bullet).<br>• Closure permit requirements did not apply to: (1) a person disposing of their own waste on their own property; (2) any disposal of C&D debris; and (3) a Class I, II or III landfill which had a modification of an operation permit to close or a closure plan approved by the Department by July 1, 1985.<br><u>Ground Water Monitoring:</u><br>• Monitoring to be in accordance with Rules 17-3.401, 17-4.245 and 17-4.246.<br><u>Closure Design:</u><br>• Barrier layer must be a geomembrane, soils or chemically/physically amended soils. Minimum final cover thickness must be two feet of soils or one foot of soils plus a geomembrane or soil admixture.<br><u>Long-term Care:</u><br>• 20 year long-term care period.<br>• Landfill to be monitored and maintained after closure in accordance with approved closure plan.<br>• Language on "use of closed landfill areas" added to rule. Consultation with the Department required before conducting activities at a closed landfill.<br>• Language providing guidance for "construction on closed landfill" areas added to rule. |

# PARTIAL SUMMARY OF LANDFILL PERMIT, CLOSURE AND LONG-TERM CARE REQUIREMENTS

(June 30, 2000)

| AGENCY<br>"CHAPTER TITLE" | GENERAL DESCRIPTION OF REQUIREMENTS |
|---|---|
| Dept. of Environmental Regulation<br>Chapter 17-701, "Solid Waste Management Facilities"<br>July 19, 1990 | Permit:<br>• The on-site exemption from permitting by persons disposing of their own waste on their own property is modified. It applies only if: (1) the waste is from their residential property; or (2) is rocks, soils trees, tree remains and other vegetative matter which normally results from land clearing operations; or (3) the environmental effects of the disposal on ground water and surface water are addressed in a permit, site certification or ground water monitoring plan approved by the Department. |
| Dept. of Environmental Regulation<br>Chapter 17-701, "Solid Waste Management Facilities"<br>January 6, 1993 | Ground Water Monitoring:<br>• Downgradient well spacing no greater than 500 feet. Upgradient well spacing no greater than 1500 feet.<br>• Specific leachate and surface water sampling added.<br>• Monitoring parameters detailed including addition of EPA Method 601/602 parameters.<br>• Added language for consistency with Federal Subtitle D requirements including detection wells and assessment monitoring with corrective action.<br>Closure Design:<br>• If a soil barrier layer is used, it must be 18 inches thick and covered by another 18 inches of soil. The soil barrier layer must have a minimum hydraulic conductivity of $1x10^{-5}$ cm/sec for Class III landfills or $1x10^{-7}$ cm/sec for Class I landfills. If a geomembrane is used, it must be covered by a 24-inch thick soil layer.<br>Long-term Care:<br>• 30 year long-term care period, per Subtitle D requirements.<br>• Landfill to be monitored and maintained after closure in accordance with approved closure plan.<br>• Language providing guidance for "construction on closed landfill" areas removed from the rule. Language on "use of closed landfill areas" remained in the rule. |
| Dept. of Environmental Regulation<br>Chapter 17-701, "Solid Waste Management Facilities"<br>January 2, 1994 | Ground Water Monitoring:<br>• Added requirements for APPENDIX I and II analyses in accordance with Subtitle D requirements.<br>Closure Design:<br>• Added language for consistency with Federal Subtitle D requirements. This included requiring a geomembrane in the cap if it was also used in the bottom liner system (bathtub effect), and allowed for alternate closure designs if the applicant could show a substantially equivalent rate of storm water infiltration with the alternate design. |
| Dept. of Environmental Protection<br>Chapter 62-701, "Solid Waste Management Facilities"<br>May 27, 2001 | Current rule. No additional changes to closure requirements. Earlier, the chapter title was changed because of the DER/DNR merger to form DEP. The current rule also included the "rule reduction" exercise. |

# APPENDIX C

## Partial Summary of Construction and Demolition (C&D) Debris Permit, Closure and Long-term Care Requirements

# PARTIAL SUMMARY OF CONSTRUCTION AND DEMOLITION (C&D) DEBRIS FACILITY PERMIT, CLOSURE AND LONG-TERM CARE REQUIREMENTS

(June 30, 2000)

| **AGENCY<br>"CHAPTER TITLE"** | **GENERAL DESCRIPTION OF REQUIREMENTS** |
|---|---|
| Dept. of Environmental Regulation Chapter 17-7, ", "Resource Recovery and Management Part I: Solid Waste Facilities"<br>May 25, 1979 | Permit:<br>• First time the definition of C&D Debris appears in the rule.<br>• All C&D disposal sites are specifically exempted from permitting provided no public nuisance or conditions adversely affecting public health is caused and provided the activity does not violate other rules, laws or ordinances.<br>Ground Water Monitoring:<br>• None.<br>Closure Design:<br>• None.<br>Long-term Care:<br>• None. |
| Dept. of Environmental Regulation Chapter 17-701, "Solid Waste Management Facilities"<br>August 2, 1989 | Permit:<br>• General permits now required for off-site disposal of C&D debris, but on-site disposal is still exempt from permitting.<br>• New C&D facilities have to comply by the effective date of rule.<br>• Existing C&D facilities have to comply within 90 days of the effective date or ~November 2, 1989.<br>Ground Water Monitoring:<br>• None.<br>Closure Design (both on-site and off-site disposal areas):<br>• Final cover with a 24-inch thick soil layer required with upper six inches capable of supporting vegetation and graded to eliminate ponding, promote drainage and minimize erosion.<br>Long-term Care:<br>• None. |
| Dept. of Environmental Protection Chapter 62-701, "Solid Waste Management Facilities"<br>April 23, 1997 | Permit:<br>• Regular permits now required for construction or operation (but not for closure) of an off-site C&D disposal facility.<br>• General permits still allowed for off-site disposal of land clearing debris.<br>• On-site disposal is still exempt from permitting provided the site is properly closed.<br>Ground Water Monitoring:<br>• Limited ground water monitoring required for off-site C&D disposal facilities but not for land clearing debris sites.<br>• C&D disposal facilities required to have ground water monitoring plans in place by July 1, 1998.<br>Long-term Care:<br>• C&D disposal facilities to be maintained and monitored (ground water) for five years from the date of closing. |

# APPENDIX D

## Preliminary Contamination Assessment Actions

# PRELIMINARY CONTAMINATION ASSESSMENT ACTIONS

1. The owner of the disposal facility, hereinafter referred to as the "Respondent", shall submit to the Department as part of any assessment report documents certification that the organization(s) and laboratory(s) performing the sampling and analysis have used procedures approved by the Department. All field sampling activities and field measurements shall follow the applicable procedures and requirements described in the most current version of DEP-SOP-001/01, per Rule 62-160.210, Florida Administrative Code (F.A.C.). Laboratories conducting analysis must be NELAP certified.

2. Within sixty (60) days of written authorization from the Department, Respondent shall submit a Preliminary Contamination Assessment Plan ("PCAP") to the Department. Applicable portions of the PCAP shall be signed and sealed by an appropriate professional. The PCAP shall describe the tasks that Respondent proposes to perform in order to determine whether the soil, sediment, surface water or ground water are contaminated at Respondent's facility; and, if so, whether such contamination has resulted in a violation of the water quality standards and minimum criteria established in Chapters 62-520 and 62-302, F.A.C. or constitutes a risk to the public health, the environment, or the public welfare. The PCAP shall include a time schedule for each task so that all tasks can be completed and a Preliminary Contamination Assessment Report ("PCAR") can be submitted to the Department within ninety (90) days of approval of the PCAP by the Department.

3. The PCAP shall include provisions for the installation and sampling of, in most cases, a minimum of four (4) monitor wells to determine the groundwater quality and flow direction at the site. Proposal of fewer wells or an alternate well configuration is subject to Department approval. Provision to sample surface waters, sediments and soils shall be included as necessary.

A. One of the wells shall be located in the area suspected of greatest contamination and two wells shall be located downgradient of the area suspected of highest contamination.

B. One of the wells shall be an unaffected background well.

C. The wells, surface waters, sediments and soils, as applicable, shall be sampled and analyzed for the following parameters with the listed method:

(1) priority pollutant metals using Department approved Methods;

(2) priority pollutant organic chemicals using EPA methods 624/8240 and 625/8250 or 8270;

(3) all non-priority pollutant organic chemicals with peaks greater than 10 micrograms per liter (ug/l) using EPA methods 624/8240 and 625/8250 or 8270;

(4) pesticides and herbicides using EPA methods 8080, 8140, 8150 or 625/8250 or 8270, if applicable, or other Department approved methods for pesticides and herbicides for which the listed methods are not applicable; and,

(5) others, as applicable.

The proposal of any alternate analytical methods is subject to approval by the Department. The number of contaminants to be analyzed may be reduced if Respondent can demonstrate to the Department's satisfaction that the contaminants proposed to be deleted from the list cannot be attributed to any activities that have taken place at Respondent's facility. The Department shall submit written notification to the Respondent if the number can be reduced.

4. The PCAP shall include provisions for investigation of the following conditions, as applicable, at the disposal site and the surrounding area:

A. the presence and thickness of any free product at the site;

B. the presence of soil contamination at the site;

C. the aquifers present beneath the site and their Chapter 62-502, F.A.C, groundwater classification;

D. the number and locations of all public and private potable supply wells within a 1/2 mile radius of the site;

E. the presence of surface waters of the State within a 1/2 mile radius of the site and, if applicable, their Rule 62-302, F.A.C., classification; and,

F. the geology and hydrogeology of the site focusing on aquifers and confining units which are present, the potential for movement of contaminants both horizontally and vertically, zones that are likely to be affected, and actual and potential uses of the groundwater as a resource.

5. The PCAP shall contain the following site specific information:

A. proposed well construction details including methods and materials, well installation depths and screened intervals and well development procedures;

B. a description of methods and equipment to be used to quantify soil and sediment contamination;

C. a description of water sampling methods;

D. name of laboratory to be used for analytical work;

E. the parameters to be analyzed for, the analytical methods to be used and the detection limits of these analytical methods;

F. site map depicting monitoring well locations and other proposed sampling sites and justification for their selection; and,

G. a detailed site history including: a description of past and present property and/or facility owners; a description of past and present operations; a summary of current and past environmental permits; and a summary of known spills or releases of materials which may be potential pollution sources.

6. The Department shall review the PCAP and provide Respondent with a written response to the proposal. In the event that additional information is necessary for the Department to evaluate the PCAP, the Department shall make a written request to Respondent for the information and Respondent shall provide the requested information within sixty (60) days from receipt of said request. The PCAP shall incorporate all required modifications to the PCAP identified by the Department. Any action taken by Respondent with regard to the implementation of the PCAP prior to the Respondent

receiving written notification from the Department that the PCAP has been approved shall be at Respondent's risk.

7. Within (90) days of the Department's approval of the PCAP (unless a written time extension is granted by the Department), Respondent shall submit a written Preliminary Contamination Assessment Report ("PCAR") to the Department. Applicable portions of the PCAR shall be signed and sealed by an appropriate professional. The PCAR shall:

A. summarize and analyze all "PCAP" tasks;

B. include, but not be limited to, the following tables and figures:

(1) a table with well construction details, top of casing elevation, depth to water measurements, and water elevations;

(2) a site map showing water elevations, water table contours and the groundwater flow direction for each aquifer monitored for each sampling period;

(3) a table with water quality information for all monitor wells;

(4) site maps showing contaminant concentrations and contours of the contaminants; and,

(5) cross sections depicting the geology of the site at least to the top of the confining unit. In general there should be at least one north to south cross section and one east to west cross section.

C. include copies of field notes pertaining to field procedures, particularly of data collection procedures;

D. specify results and conclusions regarding the objectives of the Preliminary Contamination Assessment;

E. identify, to the extent possible, the source(s), extent, and concentrations of contaminants, and the existence of any imminent hazards; and,

F. provide the following quality assurance data along with the analytical data from all media:

(1) dates of sample collection, sample preparation including extraction and sample analysis;

(2) the detection limits for these analyses;

(3) the results from the analyses of field quality control samples; including field equipments, trip blanks and duplicates;

(4) the results from reagent water blanks run on that day (5 percent of samples run, minimum);

(5) the spike and surrogate percent recoveries for the data set;

(6) the actual chromatograms, if requested by the Department;

(7) any other QA/QC information Department deems necessary to evaluate validity of the submitted data; and,

(8) a water quality data Electronic Data Deliverable (EDD) of the results in an electronic format consistent with requirements for running the data through Florida DEP Automated Data Processing Tool (ADaPT) and importing the data into the Department's databases.

8. The Department shall review the PCAR and determine whether it is adequate to meet the objectives of the PCAP. In the event that additional information is necessary

to evaluate the PCAR, the Department shall make a written request and Respondent shall provide all requested information within sixty (60) days of receipt of said request.

9. Respondent shall provide notification to the Department at least twenty (20) days prior to the installation or sampling of any monitoring wells, and shall allow Department personnel the opportunity to observe installation and sampling and to take split samples. All necessary approvals must be obtained from the appropriate Water Management District before any wells are installed. Raw data shall be exchanged between Respondent and the Department as soon as the data is available.

10. The Respondent is required to comply with all local, state and federal regulations and to obtain any necessary approvals from local, state and federal authorities in carrying out these assessment actions.

11. If the Department's review of the PCAR indicates that the site is not contaminated and does not constitute a risk to the public health or the environment the Department will so notify the Respondent in writing.

12. If the Department's review of the PCAR indicates that the soil, sediments, surface water or ground water is contaminated, or constitutes a risk to the public health, the environment, or the public welfare, the Respondent will be required to initiate risk based corrective actions as required by Chapter 62-780, F.A.C.