

**ATV Ad Hoc Committee  
Agenda  
December 14, 2017  
6PM  
North Collier Regional Park  
15000 Livingston Road Naples, Florida 34109**

**I. Call to Order**

**II. Approval of Agenda**

**III. New Business**

a) Tickets to Ride

b) Lake Trafford Site

**IV. Committee Comments/Public**

**V. Adjournment**

# **MINUTES OF THE MEETING OF THE PARKS AND RECREATION**

## **ATV Ad Hoc Committee Workshop**

**Naples, Florida, October 12, 2017**

The Collier County Parks and Recreation ATV Ad Hoc Committee, having conducted business herein, met on this date at 6:00 p.m. at North Collier Regional Park, Administrative Building, 15000 Livingston Road, Naples, Florida with the following members present:

### **ATV Ad Hoc Committee Members:**

Mr. Joe Pelletier, Chairman

Mr. Mario Menendez

Mr. Josh Sturgeon

Mr. Greg Westgate

### **Also Present:**

Mr. Barry Williams, Director, Collier County Parks and Recreation

Ms. Jeanine McPherson, Assistant Director, Collier County Parks and Recreation

Mr. Miguel Rojas, Administrative Assistant, Collier County Parks and Recreation

Mr. Shane Johnson, Passarella & Associates, Inc.

## **I. Call to Order**

The October 12, 2017 ATV Ad Hoc Committee meeting was called to order at 6:00 p.m. by Chairman Pelletier.

## **II. Approval of Agenda**

*Mr. Menendez entered a motion to approve the October 12, 2017 meeting agenda as presented. The motion was seconded by Mr. Josh Sturgeon. All were in favor. The motion was carried.*

## **III. Approval of Minutes**

*Mr. Menendez entered a motion to approve the August 2017 meeting minutes as presented. The motion was seconded by Mr. Westgate. All were in favor. The motion was carried.*

## **IV. New Business**

### **A. Report from Passarella & Associates, Inc., regarding PHU mitigation at Immokalee Airport**

Mr. Williams introduced Mr. Shane Johnson, Senior Ecologist of Passarella & Associates, Inc. Mr. Johnson was in attendance at the meeting in order to provide the Ad Hoc committee members an update as to communications had between his firm and Florida Fish & Wildlife representatives with regard to Panther Habitat Units (PHU) mitigation at the Immokalee airport, the proposed site for construction of the ATV Park.

Mr. Johnson provided a brief summary of involvement by Passarella & Associates, Inc., in the ATV project, having been hired by the Parks and Recreation Division to conduct a feasibility analysis of the airport site, with input provided by the U.S. Army Corps of Engineers, as well as the Southwest Florida Water Management District. This analysis included a mitigation cost estimate with regard to Florida panther impact, as well as line item environmental permitting costs. The analysis suggested costs related to Florida panther mitigation were estimated to be in excess of \$3.5M for the entire 400+ acre site. Subsequently, RWA, Inc. was contracted by the Parks and Recreation Division to develop a conceptual site plan for the ATV Park at the Immokalee Airport site. Passarella & Associates, Inc., was engaged by RWA to present the conceptual plan to Florida Fish & Wildlife for review and discussion, in pursuit of a potential reduction of panther mitigation costs. Upon review of the conceptual plan by the Panther Biologists, it was ultimately determined that the proposed site would be 100% impacted, thereby reaffirming panther mitigation costs to be estimated in excess of \$3.5M.

Mr. Johnson suggested a possible reduction in the footprint of the conceptual plan in order to potentially reduce PHU costs, as well as donation of a portion of the park site for conservation.

Mr. Williams reiterated the park was permissible, with a total cost estimate of up to \$6.9M; \$3.6M for possible panther mitigation credits and \$3M-\$3.9M for design and construction. A business plan for the project has been written, which reflects an 82% operating cost recovery. Presently, park impact fee dollars have been allocated to several large ongoing projects and the ATV project would necessitate additional subsidy by the County. Reinstatement of the Tickets to Ride program, whereby interest may be collected from ticket sales to existing parks may be considered. Further, Mr. Williams noted potential funding contribution by the T. Mark Schmidt Off-Highway Vehicle (OHV) Grant Program, although a 25 year lease commitment would be a requirement by the agency for this grant funding.

**Question: Is there another agency or individual to whom this project may be presented to circumvent the high PHU costs?**

**Answer: Florida Fish and Wildlife Conservation Commission is the agency who regulates panther habitat mitigation. The environmental permitting process requires a permit from the U.S. Army Corps of Engineers, who would ultimately request consultation with U.S. Fish & Wildlife for input as to the project location being within a recognized panther zone.**

**Question: Was consideration given by Florida Fish and Wildlife as to a portion of the park site being located in a secondary panther zone; i.e., were PHU costs assessed at 100% for the full site, or at 50% costs for the secondary zone?**

**Answer: PHU costs are calculated by a formulary used by U.S. Florida Fish and Wildlife, which takes into account various factors related to panther habits, both primary and secondary. Mr. Johnson applied a conservative cost of \$1K per unit for the overall project, not adjusted per primary or secondary zones, but clarified that this cost per unit may be negotiated, potentially with a cost ranging between \$700 to \$1K per unit.**

**Question: What are commissioners looking for in a park proposal? What should the proposal contain in order to be of greater marketability to the commissioners?**

**Answer: In Collier County, economic sustainability/cost recovery is of high interest, as well as significant public support.**

**Question: Has the Immokalee Airport completed their master planning process?**

**Answer: Yes; the proposed ATV site was included in that master plan.**

**Question: How was the construction cost estimate for the park determined?**



**Answer: The Bone Valley ATV Park was used as a model for estimating the various aspects of park construction costs.**

**Question: Clarification was requested as to whether or not a lease agreement could be secured with the Immokalee Airport for construction of the proposed ATV Park.**

**Answer: Yes, a lease may be secured, however the area designated as “FAA Aviation use” may still be taken back for airport use as needed.**

**Question: Was the airport required to pay panther mitigation costs for the onsite drag strip at that location?**

**Answer: The airport was originally constructed in 1942, prior to the panther being listed as an endangered species. The conversion of the existing landing strip to a drag strip was therefore grandfathered in.**

**Question: 74 Family Fun Park in Punta Gorda, Florida is now open, although still being developed. Is there any opportunity for a potential partnership between the County and this park?**

**Answer: Mr. Williams stated that post presentation to the BOCC of the current status of the ATV project , a Board recommendation as to the next step for the project would be rendered. If a recommendation is made to seek an alternative site, perhaps a partnership with another park may be considered at that time.**

Mr. Westgate suggested the project move forward with the present findings as a short-term solution, refining and adjusting as necessary to accomodate long-term needs.

Mr. Williams stated a complete presentation of these findings would be presented to the Board of County Commissioners (BOCC) at the October 24, 2017 meeting for further direction.

## **V. Old Business**

### **A. Recommendation to Board**

Mr. Williams requested direction from the Ad Hoc committee with regard to his presentation to be delivered to the BOCC at the October 2017 meeting; specifically:

1. Whether a recommendation should be made to accept the report provided by Passarella and Associates, Inc., with regard to the OHV Park at Immokalee Airport, which includes the summary provided regarding the Florida Fish and Wildlife report, the conceptual site plan, and permitting costs related to design and construction.
2. Consider an alternative site or pursuit of a potential partnership with an existing park.
3. Reinststitute the Tickets to Ride program, utilizing interest earned from the program to assist in funding the ATV project longterm.

4. Continue pursuit of the project or disband the Ad Hoc committee.

**Question: How many times has the ATV project been considered and how far did those attempts get?**

**Answer: This is the third attempt to develop an ATV park and this is the furthest the project has been able to be developed.**

Chairman Pelletier suggested there would be greater participation in the Tickets to Ride program if it were to be revised so as to not require proof of vehicle registration, citing the many recreational vehicle owners who choose to not register their vehicles. Mr. Williams stated that if the recommendation of the Ad Hoc committee was to reinstate Tickets to Ride, the parameters of the program could be revised.

*Mr. Menendez entered a motion to continue the ATV Ad Hoc committee. Mr. Westgate seconded the motion. All were in favor. The motion was carried.*

*Mr. Westgate entered a motion to move forward with the Immokalee Airport location as the proposed site for the ATV Park, inclusive of the findings and recommendations of Passarella and Associates, Inc., and the Florida Fish and Wildlife Conservation Commission. Mr. Sturgeon seconded the motion. All were in favor. The motion was carried.*

*Mr. Westgate entered a motion to reinstitute the Tickets to Ride program, with modifications, yet to be specified. Mr. Menendez seconded the motion. All were in favor. The motion was carried.*

## **VI. Committee Comments/Public Comments**

**Question: Regarding the potential sale of 1000 acres of the HHH Ranch in North Belle Meade in Collier County, environmental impact studies have already been completed. Would this be a viable location for the ATV Park since the panther mitigation has already been done?**

**Answer: The size of the property lends itself to several opportunities, including Conservation Collier projects, however at this time the BOCC recently rejected the offer by the owners of this property to sell to the County.**

**Question: Regarding panther mitigation costs, is the PHU cost higher for the primary panther zone than it is for the secondary panther zone?**

**Answer: The panther habitat analysis produces a number which takes the entire property into consideration. The actual cost is regulated by the conservation bankers who sell the PHUs. The range depends upon marketability and demand.**

A brief conversation was had regarding consideration presently being given by the Parks and Recreation Division to banking its own PHUs on conservation designated properties it owns, to purchase back as need for development projects.

**Question: What is the location and start time of the October 24, 2017 BOCC meeting?**

**Answer: The meeting will be held at 9:00 a.m. in Building F of the main Government Complex at the juncture of Airport Pulling Road and U.S. 41.**

**Question: Would it be possible to get a 2-hour window of when the ATV Project would be discussed at the BOCC meeting, so that more members of the public would be able to attend?**

**Answer: Mr. Williams stated he would attempt to get this answer.**

**Question: Would the Immokalee Airport be willing to split the cost of panther mitigation in the area identified as property that may potentially be taken back for future aviation use?**

**Answer: Airport representatives have previously stated there would be no cost sharing of panther mitigation fees.**

**Comment: An opinion was shared that ATV participation would be greater if there were places available locally to ride.**

**The next ATV Ad Hoc Committee meeting will be held November 9, 2017 at 6:00 p.m. at North Collier Regional Park.**

Committee members unable to attend should notify Parks Staff by calling 252-4031.

## **VII. Adjournment**

*Mr. Westgate entered a motion to adjourn the meeting. Mr. Menendez seconded the motion. All were in agreement. The meeting was adjourned.*

ATV Ad Hoc Committee

---

Mr. Joe Pelletier, Chairman

These minutes approved by the Board/Committee on \_\_\_\_\_ as presented, or as amended \_\_\_\_\_.

# **MINUTES OF THE MEETING OF THE PARKS AND RECREATION**

## **ATV Ad Hoc Committee Workshop**

**Naples, Florida, November 9, 2017**

The Collier County Parks and Recreation ATV Ad Hoc Committee, having conducted business herein, met on this date at 6:10 p.m. at North Collier Regional Park, Administrative Building, 15000 Livingston Road, Naples, Florida with the following members present:

### **ATV Ad Hoc Committee Members:**

Mr. Joe Pelletier, Chairman

Mr. Mario Menendez

Mr. Josh Sturgeon

Mr. Greg Westgate

### **Also Present:**

Mr. Barry William, Director, Collier County Parks and Recreation

Ms. Jeanine McPherson, Assistant Director, Collier County Parks and Recreation

Ms. Ilonka Washburn, Operations Manager, Collier County Parks and Recreation

Mr. Miguel Rojas, Administrative Assistant, Collier County Parks and Recreation

## **I. Call to Order**

The November 9, 2017 ATV Ad Hoc Committee meeting was called to order at 6:00 p.m. by Chairman Pelletier.

## **II. Approval of Agenda**

*Mr. Menendez entered a motion to approve the November 9, 2017 meeting agenda, as revised. The motion was seconded by Mr. Sturgeon. All were in favor. The motion was carried.*

## **III. Approval of Minutes**

Minutes for the October 12, 2017 meeting were not available and will be voted upon at the next scheduled meeting.

## **IV. New Business**

### **A. Update following presentation to the BOCC/Lake Trafford**

Mr. Williams updated the Ad Hoc Committee with regard to the Parks' Staff decision to not support the recommendation of the Ad Hoc committee to move forward with pursuit of the Immokalee Airport as the site for the proposed ATV Park. The reasons in support of this decision included the aviation versus non-aviation use of the property, as well as the opinion rendered by Florida Fish and Wildlife that the entire secondary panther zone would be impacted by development, which in combination with design and development costs rendered this site cost prohibitive. This Staff recommendation was presented to the Board of County Commissioners (BOCC) at the October 24, 2017 meeting, and was accepted by the Board. It was noted that Commissioner McDaniel recused himself from comment and vote on this agenda item.

The BOCC expressed an interest in exploring other options and a suggestion was made by Commissioner Fiala to contact management at South Florida Water Management in regard to this issue. Mr. Williams has contacted Lisa Koehler of Big Cypress Basin to discuss a possible lease agreement for use of a 640 acre site adjacent to Pepper Ranch, for which a conceptual plan for an ATV Park has previously been designed. A long-term lease agreement at this site raises the opportunity for grant funding, such as a T. Mark Schmidt Off-Highway Vehicle Grant.

A question remains as to the current condition of the property with regard to arsenic previously found on the grounds 11 years ago. The possibility for a Brownfields Grant was discussed, which are grant funds that are given to assess, safely clean up and sustainably reuse distressed properties.

The 640 acre site is described as having 240 acres of wetlands and 400 acres available for potential development. Mr. Williams stated the order of events would first be a discussion with Big Cypress Basin in regard to the level of interest in entering into a lease agreement for the proposed ATV Park, followed by an environmental study to determine the current condition of the land.

Findings of the discussions held with Big Cypress will be reported back to the BOCC at a later date.

## **B. Tickets to Ride Program**

The BOCC expressed an interest in reinitiating the Tickets to Ride program, in which Collier residents were given access to free tickets to ATV parks within a few hours' drive of the county.

The Ad Hoc committee had previously voted to reinstitute the Tickets to Ride program in Collier County, with revisions to the program. Mr. Williams requested feedback from the committee members with regard to program parameters.

+Potential recreational park participants in the Tickets to Ride program were identified to be Florida Tracks and Trails, 74 Family Fun Park, and Lazy Springs Recreation Park, if permissible. It was reported that management at Florida Tracks and Trails, Punta Gorda, Florida has expressed interest in participation in the program, and in bringing more Collier residents to the park. Croom Motorcycle Area in Brooksville, Fl was deemed to be undesirable due to the distance from Collier County.

+ Mr. Pelletier inquired as to whether Lazy Springs Recreation Park may be included in the program, as the park is owned by a sitting BOCC member. **Mr. Williams will seek counsel from the City Attorney in this regard.**

+ Mr. Pelletier stated that tickets to select participating recreational parks should be made available for public purchase at 50% face value; a significant savings to residents, but which would also generate funds to be put back into the program.

+Mr. Pelletier expressed an interest in removing the proof of registration requirement to purchase tickets due to the number of residents who choose not to register their vehicles. A suggestion was made to allow the purchase of 2 tickets with presentation of a Florida driver's license showing proof of county residency.

+Mr. Westgate suggested that an attempt be made to negotiate a reduced cost of the tickets with participating vendors.

Ms. Washburn advised a spending cap of \$14K on ticket purchases, which is the interest amount presently available. \$10K was originally invested in ticket purchases from two parks for the pilot program, with 300+ residents participating at that time. However, funding for the pilot program quickly ran out, with many tickets still unredeemed by residents.

Presently, there are potentially three parks that may participate in the program, closer in proximity to Collier County, making Tickets to Ride more attractive to residents. Current ticket prices at the three parks were discussed. Mr. Williams suggested that the Ad Hoc committee may better determine how much could be invested to restart the program post negotiation of ticket cost with the participating parks.

Mr. Sturgeon inquired as to marketing of the previous Tickets to Ride program. Ms. Washburn pointed out that no marketing had been done, as it was a pilot program to gauge public interest and a limited budget had been made available for implementation of the pilot program. For the present purposes, Ms. Washburn suggested spending interest only funds on marketing the re-initiation of the program.

Mr. Williams noted that the BOCC has requested a revised method for distribution of tickets to residents and the Parks Division is investigating a possible online purchase option. Ms. Washburn explained that an online ticket purchase option would require each of the vendors to utilize a like POS system, making this option less likely. Another option under consideration is to offer tickets for sale at Max Haas Community Park, which has extended hours of operation, including Saturday.

Mr. Sturgeon inquired as to the method of distribution of tickets with the previous pilot program. In the past, residents could obtain a Ticket to Ride from the Collier County Regional Park after showing proof of vehicle registration. One ticket per registration was allowed.

***Mr. Menendez entered a motion that Parks and Recreation Staff move forward with seeking an opinion from the County Attorney with regard to allowable participation of Lazy Springs Recreational Park in the Tickets to Ride program, as well as to initiate discussion with local recreational parks regarding ticket pricing for purchase by the Parks and Recreation Division for use in the Tickets to Ride program. The motion was seconded by Mr. Josh Sturgeon. All were in favor. The motion was carried.***

## **V. Committee Comments/Public**

+Mr. Sturgeon inquired as to whether a representative from South Florida Water Management may attend a future ATV Ad Hoc committee meeting to answer questions with regard to the Lake Trafford site. Mr. Williams stated that he had been in communication with that agency and would initiate conversation with regard to potential use of the Lake Trafford site for the proposed ATV Park; the outcome of those conversations would determine future steps.

+Mr. Don Hatfield cited an interest by the owner of Florida Tracks and Trails to work with Collier County in promotion and use of his park by Collier residents. A brief history was given by Ad Hoc committee members with regard to previous negotiations had in this regard, with the possibility of participation of Florida Tracks and Trails in the Tickets to Ride program now under consideration.

+A suggestion was made that public comment be allowed prior to Ad Hoc committee vote on an action item in order to potentially introduce ideas or concepts which may not have previously been considered by committee members. Public comment does not require a response from committee members, however allows the public opinion to be formally recognized. Mr. Williams stated this was allowable within the parameters of Robert's Rules of Order. The Ad Hoc committee was in agreement with this request and will allow public comment prior to committee vote, with a 3 minute time limit allowable per public speaker.

+A suggestion was made to have an expiration date on tickets purchased for the Tickets to Ride program for data tracking purposes.

+ A suggestion was made to identify how frequently a resident may purchase tickets for the revised Tickets to Ride program, i.e., once weekly, once monthly, etc.

+ A suggestion was made that residents be allowed to purchase a ticket to their choice of park, as opposed to receiving the allowable number of tickets to only a single park location.

+Support was expressed for opening the Tickets to Ride participation to all Collier residents by proof of residency via a valid drivers license and not having to present vehicle registration, as not all participants are riders.

+A question was asked as to whether an environmental study done at the Lake Trafford site would include the current status of any residual arsenic levels at that location. Mr. Williams indicated that if the site were available for development for the proposed ATV Park, the environmental study would include an analysis of soil quality and safety.

+A request was made to obtain all meeting minutes since the initiation of the Ad Hoc committee. Mr. Williams noted a public record request could be completed and the information would be made available.

**The next ATV Ad Hoc Committee meeting will be held December 14, 2017 at 6:00 p.m. at North Collier Regional Park.**

Committee members unable to attend should notify Parks Staff by calling 252-4031.



**VI. Adjournment**

*Mr. Menendez entered a motion to adjourn. Mr. Westgate seconded the motion. All were in agreement. The meeting was adjourned.*

**ATV Ad Hoc Committee**

---

**Mr. Joe Pelletier, Chairman**

**These minutes approved by the Board/Committee on \_\_\_\_\_ as presented, or as amended \_\_\_\_\_.**

June 5, 2008

South Florida Water Management District  
Environmental Engineering Unit  
Land Management and Operations Support  
3301 Gun Club Road  
West Palm Beach, Florida 33406

Attn: Mr. Robert Kukleski

Re: Dredge Spoil Material Evaluation  
Proposed Lake Trafford OHV Park  
Imokalee, Lee County, Florida  
PSI Project No.: 552-8G038


Dear Mr. Kukleski:

In accordance with our agreement, Professional Service Industries, Inc. (PSI) has performed an evaluation of the dredge spoil materials for the above referenced project

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.**

  
Stephen P. Long, P.E. P.G.  
Chief Engineer

Enclosures

C:\Documents and Settings\steve.long\My Documents\SFWMD\Lake Trafford\Lake Trafford Sampling Report.doc

**DREDGE SPOIL MATERIAL  
EVALUATION**

For the

**PROPOSED OHV PARK  
LAKE TRAFFORD  
IMOKALEE, LEE COUNTY, FLORIDA**

Prepared for

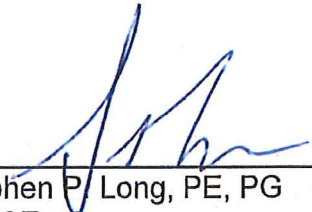
**SOUTH FLORIDA  
WATER MANAGEMENT DISTRICT  
ENVIRONMENTAL ENGINEERING UNIT  
LAND MANAGEMENT AND OPERATIONS  
SUPPORT**

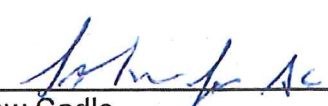
Prepared by

**Professional Service Industries, Inc.  
5801 Benjamin Center Drive  
Tampa, FL 33634  
Telephone (813) 886-1075**

**PSI PROJECT NO. 552-8G038**

**June 5, 2008**

  
\_\_\_\_\_  
Stephen P. Long, PE, PG  
Chief Engineer

  
\_\_\_\_\_  
Andrew Cadle  
Project Scientist

## TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION.....</b>	<b>1</b>
1.1	Property/Project Description.....	1
1.2	Previous Environmental Reports.....	1
1.3	Authorization.....	2
1.4	Purpose And Scope.....	2
<b>2</b>	<b>PROPERTY DESCRIPTION AND PHYSICAL SETTING .....</b>	<b>5</b>
2.1	Physical Setting.....	5
2.1.1	Topographic Map Review.....	5
2.1.2	Geology and Hydrogeology.....	5
<b>3</b>	<b>SAMPLE COLLECTION METHODOLOGY .....</b>	<b>6</b>
<b>4</b>	<b>SAMPLE RESULTS .....</b>	<b>7</b>
4.1	Regulatory Guidance Concentrations.....	7
4.2	Sampling Results.....	7
4.3	Qualifications.....	8
<b>5</b>	<b>Human Health Risk Assessment.....</b>	<b>9</b>
<b>6</b>	<b>CONCLUSIONS.....</b>	<b>12</b>
6.1	Conclusions.....	12
6.2	Development Alternatives.....	13
<b>7</b>	<b>WARRANTY .....</b>	<b>15</b>

### TABLES

Table 1 – Summary of Soil Analytical Results

### FIGURES

Figure 1 – Site Vicinity Map

Figure 2 – Soil Sampling Locations

### APPENDICES

Appendix A – Boring Logs

Appendix B – Analytical Laboratory Report

Appendix C – Grain Size Analysis Laboratory Reports

Appendix D – Human Health Risk Assessment

Appendix E - Rough Order of Magnitude Cost Estimates





# 1 INTRODUCTION

## 1.1 PROPERTY/PROJECT DESCRIPTION

PSI understands that South Florida Water Management District (SFWMD or the District) is considering the development of a public access area for riding of off-highway vehicles (OHVs) (aka/all-terrain vehicles or ATVs) on an existing dredge spoil impoundment, located adjacent to Lake Trafford in Imokalee, Florida.

The existing dredge spoil impoundment and proposed OHV park is located on Tract EK100-001, which is northeast of Lake Trafford near Pepper Drive. A site vicinity map is provided as **Figure 1**. The site currently consists of an unlined surface impoundment with earthen berms and a gravel access road on top of the berms. Dredge spoils from the dredging of Lake Trafford in 2006 were pumped as a slurry into the surface impoundment. The impoundment consists of three cells that encompass a total of about 480 acres. It appears that the dredge slurry was pumped into Cell 1, which is located on the north side of the property, and subsequently flowed into Cells 2 and 3. Based on our site reconnaissance, it appears that the majority of the sand-sized particles settled in Cell 1, while progressively finer materials settled in Cells 2 and 3. Approximately 12-15 feet of dredge spoil material was placed in the impoundment. The materials have consolidated to a degree since their deposition, but the materials are still highly unconsolidated and potentially unstable. PSI understands that the District is considering the use of Cell #1 only for the OHV park. Cells #2 and #3 may be used in the future for further dredge spoil storage and were not evaluated.

The District requested that PSI evaluate the presence of chemical constituents in the dredge spoil materials within Cell #1 and to provide an opinion as to the potential suitability of these materials for the proposed use of the site as an OHV park. In order to provide the District with this opinion, PSI collected and analyzed samples of the material and conducted a human health risk assessment.

## 1.2 PREVIOUS ENVIRONMENTAL REPORTS

A Phase II ESA was conducted in 1999 by ECT on Tract EK100-001 prior to the District's acquisition of the property. The Phase II ESA was conducted prior to the construction of the impoundment and placement of the dredge spoils on the property. The property was previously operated as a citrus grove. ECT sampled native soils and groundwater and did not identify any pre-existing contaminants in the soil or groundwater.

In August 2000, PPB Environmental Laboratories conducted a study of the Lake Trafford sediments prior to the dredging of these materials. The study was conducted by PPB on behalf of the United States Army Corps of Engineers. PPB collected twenty sediment samples from the lake sediments and analyzed the samples for RCRA metals, organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs), and polynuclear aromatic hydrocarbons (PAHs). No OCPs, PCBs, or PAHs were detected at



concentrations of concern. However, arsenic was detected in the majority of the samples at concentrations that exceed the Chapter 62-777, FAC Soil Cleanup Target Level for Residential Direct Exposure (SCTL-RDE). Arsenic concentrations as high as 10.7 mg/kg were detected. No other metals were detected at concentrations of concern.

### 1.3 AUTHORIZATION

This dredge spoil material evaluation was performed in substantive compliance with Work Order #54 under SFWMD Contract No. C-OTO-60916.

### 1.4 PURPOSE AND SCOPE

The purpose of the consulting services outlined below is to:

- 1) Determine the chemical and physical properties of the dredge spoils within impoundment Cell 1 and whether the chemical and physical properties differ between by depth.
- 2) Perform a human health risk assessment to evaluate potential exposure to chemical impacts in the dredge spoils in an OHV use setting. Recommend limitations on use, as required, based on the nature and concentrations of any identified contaminants and the physical properties of the dredge spoils.

The scope of work for this project was divided into two tasks, as follows:

- |        |                               |
|--------|-------------------------------|
| Task 1 | Field Investigation           |
| Task 2 | Risk Assessment and Reporting |

The scope of work for each of these tasks is described, below.

#### Task 1 Field Investigation

- PSI divided Cell 1 into 16 cells of about 10 acres each. A soil boring was installed in the approximate center of each cell. The soil borings were advanced using a direct-push drilling system (i.e., Geoprobe) mounted on a Marsh Master tracked vehicle.
- At each location, PSI drilled to a maximum depth of up to 20 feet, or until the native soils below the impoundment were encountered, whichever was less. Soil samples were collected at three foot intervals using a Geoprobe Macrocore sampler.
- PSI collected 3 samples of the dredge spoil at each boring location for laboratory analysis. The samples were collected from depths of 0-2 feet bls, 6-8 feet bls, and 12-14 feet bls for laboratory analysis by EPA method 6020 for arsenic and copper.





- One sample each from 50% of the soil borings was selected at random depths for additional chemical analysis (8 total). Additional analyses included OCPs by EPA Method 8081, total petroleum hydrocarbons (TPH) by the FL-PRO method, PAHs by EPA Method 8270, RCRA metals by EPA method 6020/7471 and total organic carbon (TOC) by EPA method 9060.
- Additionally, five soil samples were collected from the surface (0-2 feet) for grain size testing. The samples were analyzed for particle sizing (sieve analysis) by ASTM D-422. The grain size results were utilized to evaluate the potential for dust generation and airborne suspension of particles.

#### Quality Assurance/Quality Control

- PSI utilized the FDEP Standard Operating Procedures for Field Activities (DEP-SOP/001-01).
- Quality assurance samples, including field duplicates, equipment blanks, and one trip blank were collected and analyzed by the primary laboratory. The duplicates and equipment blanks were analyzed for the same constituents as the field samples.
- PSI prepared a project-specific ADAPT library which outlines laboratory QC and method detection limit requirements. Laboratory reports were prepared in a format acceptable for incorporation into ADAPT and all data were validated using the ADAPT program.

#### Equipment Decontamination

Sampling equipment was decontaminated, as appropriate, to minimize potential cross-contamination of samples. Decontamination was conducted in accordance with the methods described in the FDEP SOP.

#### Investigative-Derived Waste

Investigative derived waste (IDW) from the site was returned to the area of the original sampling.

### Task 2 Risk Assessment and Reporting

PSI subcontracted the preparation of a human health risk assessment (HHRA) to Newfields, LLC. The NewFields HHRA included the following tasks.

- Newfields prepared a HHRA database, that included location (x,y) information, chemical data and physical data for each sampling location.
- Constituents of Potential Concern (COPCs) within the present Cell 1 sediments were selected for further evaluation. Maximum concentrations of constituent results in the HHRA database were compared to the Chapter 62-777, Florida Administrative Code (FAC) Soil Cleanup Target Levels for Residential Direct Exposure (SCTL-RDE). Any constituent exceeding the SCTL-RDE was selected as a COPC.



- A conceptual site model (CSM) was developed for proposed end uses. The CSM consists of a detailed exposure pathway diagram to support the selection of the relevant exposure pathways and to illustrate why other pathways are not likely to be complete for each scenario.
- Exposure parameters were developed for both identified receptors of concern – OHV rider and offsite residential receptor. Off-site residential receptors are being considered due to the potential for dust generation at the park.
- Risk characterization. Forward calculation of risk was conducted for each receptor of concern. The risk characterization included toxicity characterization of each COPC, exposure assessment, and an uncertainty analysis. The forward calculation resulted in the development of a baseline risk at the site for the proposed use and potential receptors.
- Risk based concentrations (RBC) for each COPC were developed for use in risk management. The RBCs were developed using backwards analyses of the identified exposures. The RBCs were utilized to determine areas with higher contaminant concentrations that could be removed or capped to decrease risks to an acceptable level.



## 2 PROPERTY DESCRIPTION AND PHYSICAL SETTING

### 2.1 PHYSICAL SETTING

#### 2.1.1 TOPOGRAPHIC MAP REVIEW

According to the 1958 (photo revised 1973) United States Geological Survey (USGS) 7.5 minute, "Immokalee, FLA" quadrangle topographic map, surface elevations average approximately 25 feet National Geodetic Vertical Datum (NGVD).

#### 2.1.2 GEOLOGY AND HYDROGEOLOGY

Based on the review of the "Soil Survey of Collier County, Florida" publication developed by the U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS), in cooperation with the University of Florida, issued January 1990, the soils beneath the subject property have been classified as Immokalee fine sand and Myakka fine sand.

Immokalee fine sand is a nearly level, poorly drained soil. Typically, the surface layer is black fine sand about 6 inches thick. The subsurface layer is light gray fine sand to a depth of about 35 inches. This soil has moderate permeability. The seasonal high water table under natural conditions is at a depth of 6 to 18 inches for 1 to 6 months during most years. The water table is below a depth of 18 inches during the other months.

Myakka fine sand is a nearly level, poorly drained soil. Typically, the surface layer is dark gray fine sand about 7 inches thick. The subsurface layer is fine sand to a depth of about 27 inches. The substratum is light gray on the upper part and the lower part is light brownish gray. The permeability is moderate. The seasonal high water table under natural conditions is at a depth of 6 to 18 inches for 1 to 6 months during most years. The water table is below a depth of 18 inches during the other months.

### 3 SAMPLE COLLECTION METHODOLOGY

Field investigation and sampling activities were directed by Mr. Michael Wise of PSI on March 20, 21 and 24 through 27, 2008. The assessment was performed in general accordance with the authorized scope of work. All field sampling activities were performed in accordance with the FDEP Standard Operating Procedures for Field Investigation Activities (DEP-SOP 001/01).

The ground surface within the impoundment is extremely unstable, so PSI utilized a direct push drilling rig (Geoprobe) mounted on a track-mounted, low ground pressure access vehicle (Marsh Master) to collect samples of the dredge material. Cell #1 of the dredge spoil impoundment was divided into 16 approximately equal-sized grids, of about 11.75 acres each. A soil boring was located in the approximate center of each grid cell using a GPS receiver. The grid cells and soil boring locations are shown on **Figure 2**.

PSI installed sixteen soil borings using the Geoprobe. Soil samples were collected at 3 foot intervals using a 3-foot long, Geoprobe soil sample barrel. The soil borings were advanced to a depth of 20 feet or until native materials were encountered, whichever was less. The base of the impoundment was typically identified during drilling by the presence of significantly denser sands with reduced penetration rates for the sample barrel. Three-foot long soil cores were collected in polyacetate sleeves within the soil sample barrel. Once retrieved, the core sleeves were split open to allow examination of the soil core and collection of soil samples. Lithologic logging was performed on each soil core and the resulting boring logs are presented in **Appendix A**.

Soil samples were collected for laboratory analysis from three intervals in each boring; the surface interval (0-2 feet bls), intermediate (generally 6-8 feet bls), and the base of the impoundment (ranging from 10-14 feet bls).

All of the soil samples were analyzed for arsenic and copper by EPA method 6020. Additional analyses were performed on 50% of the soil borings. One sample was selected from every other boring at random depths for additional chemical analysis (8 total). Additional analyses included OCPs by EPA Method 8081, TPH by the FL-PRO method, PAHs by EPA Method 8270, RCRA metals by EPA method 6020/7471 and TOC by EPA method 9060. Samples were collected into laboratory supplied containers and placed on ice for delivery to the laboratory.



## 4 SAMPLE RESULTS

### 4.1 REGULATORY GUIDANCE CONCENTRATIONS

Analyte concentrations in the dredge spoil samples were compared to the FDEP Soil Cleanup Target Levels (SCTLs), which are published in Chapter 62-777, FAC. FDEP has established separate SCTLs for direct exposure (i.e., ingestion, inhalation, and dermal contact) and for leaching to groundwater. Both of these SCTLs are described below:

- **Residential** – The Soil Cleanup Target Level for direct exposure in a residential setting (SCTL-RDE) is the default standard for site screening purposes in Florida, and assumes potential contact with soils on a regular basis by adults and children.
- **Leaching to Groundwater** – The Soil Cleanup Target Level for leaching to groundwater (SCTL-LGW) also represents a default standard for site screening purposes in Florida, and is based on soil concentrations which are considered likely to result in an exceedance of the groundwater quality standard for a particular chemical.

For screening purposes, analyte concentrations were compared to both the SCTL-RDE and SCTL-LGW criteria. Analytes that were present at concentrations exceeding either criteria were considered as Constituents of Potential Concern (COPCs) and were further evaluated as part of the human health risk assessment.

### 4.2 SAMPLING RESULTS

Laboratory analytical results for the soil samples analyzed for only arsenic and copper are summarized on **Table 1**. Laboratory analytical results for the soil samples analyzed for OCPs, PAHs, RCRA metals, and TPH are summarized on **Table 2**. These results have been evaluated by comparison with the appropriate human-health based SCTLs established in Chapter 62-777, FAC.

- Arsenic, chromium, and total petroleum hydrocarbons (TPH) were the only target analytes that were detected in any of the collected dredge spoil samples at concentrations exceeding the regulatory criteria. The detections of each of these analytes are further described in the following bullets.
- Arsenic concentrations in the surface interval (0-2 feet bls) ranged from below the laboratory method detection limit (LMDL) of 0.21 milligrams per kilogram (mg/kg) to 9.0 mg/kg. The median arsenic concentration in the surface interval was 3.78 mg/kg and the 95 % upper confidence limit (UCL) estimate of the mean was 7.43 mg/kg.
- Arsenic concentrations in the intermediate depth interval (4-8 feet bls) ranged from below the LMDL to 6.0 mg/kg. The median arsenic concentration in the intermediate interval was 0.67 mg/kg and the 95% UCL was 2.23 mg/kg.

- Arsenic concentrations in the deep interval ranged from below the LMDL to 0.68 mg/kg. The median arsenic concentration in the deeper interval was 0.29 mg/kg and the 95% UCL was 0.44 mg/kg. Note that these samples were collected from the dredge spoil material in the interval just above the base of the impoundment. As such, the depth of these samples varied from 9-15 feet, depending on the thickness of spoils at each location.
- Chromium was detected at a concentration exceeding the SCTL-LGW of 38 mg/kg in a single sample. Chromium was detected at 57 mg/kg in SB-6;9-12 feet bls.
- TPH was detected at a concentration exceeding the SCTL-RDE criterion of 460 mg/kg and the SCTL-LGW criterion of 340 mg/kg in a single sample. TPH was detected at a concentration of 520 mg/kg in SB-2;0-3 feet bls. No PAHs were detected in this sample.

A copy of chain-of-custody documentation and laboratory analytical reports is provided in **Appendix B**.

PSI also conducted grain size distribution testing on five surficial soil samples. The grain size distributions generally classified the surficial soil as fine-grained clayey sand. Shell and organics were noted in several of the samples. The clay content of the soils ranged from 4.3% to 13.5% by weight. The grain size distribution reports are included in **Appendix C**.

### **4.3 QUALIFICATIONS**

Validation of the laboratory data was performed using the FDEP ADAPT program to ensure that all required quality control targets were met. The data generally met the quality control requirements for both field and laboratory activities. Some of the data were qualified as noted in the laboratory report and in the summary tables, but none of the data were rejected due to quality control concerns. An outlier report is included with the laboratory data in Appendix B.



## 5 Human Health Risk Assessment

A human health risk assessment (HHRA) was performed in order to evaluate potential health risks associated with exposure to the dredge spoils at the site to future potential users of the OHV park and nearby residents. The HHRA was performed by Newfields, LLC under direction from PSI and is included in Appendix D. Arsenic and TPH were the only COPCs that were detected at concentrations exceeding the SCTL-RDE criteria. However, TPH was identified at only one location at a concentration that only slightly exceeded the SCTL-RDE criteria. Therefore, the HHRA focused solely upon arsenic.

The HHRA considered risks to three potential receptor groups, OHV riders, children/adolescents who might accompany parents to the park or ride, and nearby residents. Risks to nearby residents would be primarily associated with ingestion or inhalation of wind-borne dust generated by the riders. While the nearest residence is currently greater than 2,000 feet from the property boundary, the HHRA assumed that the nearest potential residence would be located immediately beyond the boundary.

While contaminant concentrations were initially compared to the SCTL-RDE criteria for screening purposes, it is acknowledged that the residential exposure scenario is not appropriate for the proposed use of the site as an OHV park. Certain exposure parameters that were assumed in the calculation of the SCTL-RDE criteria by FDEP (e.g., daily exposure to soils for 25 years) are considered overly conservative, while other default parameters (e.g., dust generation) would likely underestimate site conditions associated with the use as an OHV park. Therefore, exposure parameters that are specific to the proposed use were developed as part of the HHRA.

The calculated 95% UCL estimate of the mean concentration for arsenic in the surface interval (0-2 feet bls) was utilized in the risk calculations. The use of 95% UCL estimates rather than maximum detected concentrations is deemed appropriate because users would tend to spend equal amounts of time across the entire area, rather than remaining in one location. Therefore, users would be expected to be exposed to the average concentration across the site. The 95% UCL is a conservative statistical estimation of the mean concentration, which is affected by the number of samples collected and the standard deviation of the data set.

Arsenic was the sole COPC that was evaluated in the risk assessment. Arsenic is a known carcinogen, but can also produce non-cancerous health effects at higher concentrations. Health risks were evaluated both for carcinogenic and non-carcinogenic health effects.

Newfields calculated baseline health risks for all three receptor groups using conservative exposure assumptions. Such assumptions are typically labeled as "reasonable maximum exposure" (RME) assumptions. RME exposure assessments generally include very conservative exposure assumptions that are representative of the

upper bound (i.e., worst case) estimates of exposure. Therefore, the risk assessment is expected to be conservative.

Newfields evaluated both cancer and non-cancer risks for all three potential receptor groups. Cancer risks are generally presented as unitless probabilities (e.g. one in one million or  $1 \times 10^{-6}$ ). The term "incremental" signifies that this risk is in excess of the baseline cancer risks for the general population. Non-cancer risks are evaluated using a hazard index (HI), which is the ratio of the chemical dose received by the exposure population divided by the reference dose (i.e., the maximum allowable dose that would not produce health effects). An HI below one is considered acceptable for non-cancer risks. It should be noted that Florida Statutes require the use of a  $1 \times 10^{-6}$  ILCR threshold for carcinogenic chemicals and a hazard index of 1 for non-carcinogenic chemicals in all risk assessments.

Newfields calculated the following ILCR and HI for the three potential receptors using RME exposure assumptions. The results of the risk assessment are shown in the following table.

**Human Health Risk Comparison based on Receptor Population**

Arsenic Exposure EPC =7.4 mg/kg		Ingestion	Inhalation of Particulates	Total
<i>Carcinogenic</i>				
Recreational ORV Rider	RME	<b>2.0 E-06</b>	1.3E-09	<b>2.0 E-06</b>
	Childhood	<b>1.3 E-06</b>	8.3E-10	<b>1.3 E-06</b>
Nearby Resident		NA	2.3 E-09	2.3 E-09
<i>NonCarcinogenic</i>				
Recreational ORV Rider	RME	3.1 E-02	7.3 E-07	3.1 E-02
	Childhood	4.5 E-02	9.7 E-07	4.5 E-02
Nearby Resident		NA	1.3 E-06	1.3 E-06

**Notes:**

Exposure point concentration (EPC) concentration for arsenic is 7.4 mg/kg

ORV Rider inhalation rate was selected to model the conservative aggregate residential daily inhalation rate rather than the inhalation rate derived from hourly activity inhalation rates.

Bolded and highlighted "risk" numbers are greater than  $10^{-6}$  for carcinogenic effects and greater than 1 for non-carcinogenic effects

As shown in the table above, the calculated ILCR for nearby residents using the RME exposure assumptions is below the FDEP allowable risk threshold of  $1 \times 10^{-6}$  and the calculated HI for this group is below one. Therefore, the risk to this receptor group associated with exposure to the dredge spoil soils in an OHV park setting is within an allowable range.



However, the calculated ILCR for both adult OHV riders and children that may attend the park with parents or ride in the park exceeds the  $1 \times 10^{-6}$  allowable risk threshold. The calculated level of risk is not allowable under Florida Statutes. A sensitivity analysis indicates that the adult exposure risk would be below the allowable risk threshold if the exposure duration were shortened to 15 years rather than the assumed 30 years, the risk would be acceptable. However, children are typically more sensitive to chemical exposures than adults due to their low body weight and the fact that children tend to ingest more soil than adults.

It should be noted that the University of Florida Center for Environment and Human Toxicology (UF) developed recommended soil cleanup target levels for arsenic in an OHV setting in January 2007. UF prepared a brief risk evaluation on behalf of FDEP, which recommended a SCTL of 5.5 mg/kg for arsenic using very similar exposure assumptions to those utilized by Newfields for this site. The 95% UCL arsenic concentration of 7.4 mg/kg, also exceeds the SCTL recommended by UF for this type of setting. UF also concluded that the most sensitive receptor group would be children/adolescents between the ages of 3 and 17. The SCTL recommended by UF was based on this most sensitive receptor group.

## 6 CONCLUSIONS

### 6.1 CONCLUSIONS

Based on the results of the sampling and risk assessment described herein, PSI offers the following conclusions:

- Arsenic, chromium, and TPH were the only analytes detected in the dredge spoil materials at concentrations exceeding the regulatory criteria.
- The detection of chromium at a concentration slightly exceeding the SCTL-LGW criterion was limited to a single location and is not considered to be significant.
- The detection of TPH at a concentration slightly exceeding the SCTL-RDE and SCTL-LGW criteria was limited to a single location and is not considered to be significant. However, it should be noted that the detection of TPH in soil at a concentration exceeding the SCTL criteria may trigger a requirement to report the results to FDEP under Chapter 62-770, FAC.
- Arsenic was consistently detected at concentrations exceeding the SCTL-RDE criterion in the surface interval soils. From a risk assessment perspective this interval is most significant, as receptors would be most likely to be exposed to these soils.
- Arsenic concentrations detected in the intermediate and deep intervals were significantly lower than the surface soils. The lower concentrations at depth are likely explained by the presence of a higher content of fine material in the surface interval. Arsenic tends to bind preferentially to finer grained materials and organics in the soil matrix. When dredge spoils are pumped into an impoundment as a slurry, the coarser grained materials tend to settle out of suspension first. This is evidenced by a higher percentage content of fine materials in Cells #2 and #3, when compared to Cell #1.
- The HHRA indicates an ILCR for potential OHV riders and children/adolescents using the park that exceeds the FDEP maximum allowable risk threshold, when worst-case exposure assumptions (i.e., RME) are assumed.
- The soils within Cell #1 are highly unconsolidated and may not be geotechnically suitable for use as an OHV park in their current condition, regardless of chemical impacts. The soil profile generally consists of a dry crust underlain by very wet and highly unconsolidated soils. Although OHVs typically exert relatively low ground pressure, the ground surface is highly unstable. It is not possible to walk across much of the impoundment without sinking. Additionally, ground vibration caused by OHVs may further liquefy the soils.
- Based on the elevated cancer risk associated with exposure to the arsenic in the site soils and the geotechnical instability of the ground surface, it does not appear that the proposed dredge spoil impoundment Cell #1 would be acceptable for use as an OHV park without significant modifications. Although



PSI did not perform an evaluation of Cells 2 and 3, it appears likely that conditions would be even less favorable in those cells due to the presence of a significantly higher fraction of fine-grained soils in those cells.

## 6.2 DEVELOPMENT ALTERNATIVES

While the current chemical impacts and ground conditions within Cell #1 do not appear favorable for development of an OHV park, the District has requested that PSI evaluate potential alternatives to address both the health risk and geotechnical concerns. PSI considered several alternatives which are outlined below:

- Alternative #1: Partial Removal of Dredge Spoils (2 feet)
- Alternative #2: Capping
- Alternative #3: Ground Improvement
- Alternative #4 Complete Removal of Dredge Spoils

PSI also calculated rough order of magnitude (ROM) costs for each of these alternatives for comparison purposes. The ROM cost estimation spreadsheets are included in **Appendix E**. These ROM cost estimates are subject to a degree of uncertainty and should not be considered as bids to perform the work.

**Alternative 1** would involve the removal of the upper 2 feet of arsenic impacted soils. While it would not be necessary to replace these soils from an environmental risk perspective, it would likely be necessary to replace the soils with imported and compacted fill in order to render the surface sufficiently stable for sustained OHV traffic. A geo-grid geotextile would also likely be required beneath the new fill to improve ground stability. The impacted material could be placed within Cells 2 or 3 where riding will not occur. The volume of impacted material is estimated to be on the order of 607,000 cubic yards, assuming a 2 foot depth of cut across the 188 acre cell. The costs for Alternative 1 are expected to be in the range of \$12-\$14 million. This cost includes relocation of arsenic impacted soils to the adjacent cells, placement of a geo-grid geotextile, and costs for import and compaction of a two-foot soil cover.

**Alternative 2** would allow the arsenic impacted soils to remain in place. A geo-grid geotextile would be placed over the existing grade and 2-3 feet of imported and compacted fill would be placed over the entire cell as a cap. The cap would be considered as an engineering control preventing exposure to the underlying impacted soils. FDEP would normally require a deed restriction and an engineering control maintenance plan in order to accept this alternative. The costs for this alternative are likely to be in the range of \$10-\$12 million. This cost includes placement of a geo-grid geotextile, and costs for import and compaction of a two-foot soil cover.

**Alternative 3** would utilize mixing of the upper three feet of the soil column using a large plough pulled behind a low ground pressure tracked vehicle. Thorough mixing of the upper 3 feet of the soil column may reduce the surficial arsenic concentrations to a sufficient degree to reduce human health risks associated with exposure to arsenic in the soils below the allowable threshold. Lime would be added to the soil during mixing

to dry out the soil and improve stability. The soils would then be compacted using a vibratory roller. It would also be necessary to construct a series of ditches throughout the impoundment to facilitate drainage of the soils. The high moisture content of the dredge spoils within the impoundment is the primary reason for the instability. Dredge spoils typically take years to drain and consolidate, but it would be possible to accelerate the drainage by digging a series of trenches through the spoil and draining the excess water from the impoundment. The estimated cost for this alternative would be on the order of \$4-\$6 million. These costs assume the addition of lime at a rate of 2-3% by weight. It should be noted that the costs and the feasibility associated with this alternative are subject to a degree of uncertainty. It may not be possible to mix the soils to the required degree using the light, low-ground pressure equipment that would be required for this application. Prior to selecting this alternative, we would recommend that the District conduct a pilot scale effort on 10 acres +/- to establish equipment requirements and optimal lime addition rates.

**Alternative 4** would involve transferring all of the dredge spoils in Cell 1 into Cells 2 and 3, followed by destruction of the earthen berms. This alternative would solve both the environmental risk and ground stability problems, but the cost may be excessive. PSI estimates the costs of this alternative at \$18-\$20 million. PSI is also not certain that the existing capacity within Cells 2 and 3 is sufficient to accommodate all of the spoils from Cell 1. If this alternative is considered, we would recommend that the District survey all three cells to evaluate capacity.





## 7 WARRANTY

PSI warrants that the findings and conclusions reported herein were conducted in general accordance with good commercial and customary practice for conducting soil sampling and human health risk assessments. However, the findings and conclusions contain all of the limitations inherent in these methodologies.

This report has been developed to provide the client with information regarding apparent indications of chemical impacts to the subject property and potential human health risks associated with those impacts. The assessment and conclusions presented herein were based upon the subjective evaluation of limited data. They may not represent all conditions at the subject site as they reflect the information gathered from specific locations. PSI warrants that the findings and conclusions contained herein have been prepared with generally accepted environmental investigation methodology and only for the site described in this report. However, no other warranties are implied or expressed.

Due to the limited nature of the work, there is a possibility that there may exist conditions which could not be identified within the scope of the assessment or which were not apparent at the time of report preparation. It is also possible that the testing methods employed at the time of the report may later be superseded by other methods. The description, type, and composition of what are commonly referred to as "hazardous materials or conditions" can also change over time. PSI does not accept responsibility for changes in the state of the art, nor for changes in the scope of various lists of hazardous materials or conditions.



## TABLES

TABLE 1-b: COPPER AND ARSENIC IN SOIL ANALYTICAL RESULTS

PROJECT: Lake Trafford

PSI PROJECT NO: 552-8G038

Sample ID	Sample Interval (ft bls)	Date Collected	Arsenic (mg/kg)	Copper (mg/kg)
SB-1	0-2'	3/27/2008	8.8	12
SB-1	6-8'	3/27/2008	<0.23	0.36 l
Dup 1	6-8'	3/27/2008	<0.22	<0.22
SB-1	12-14'	3/27/2008	<0.23	0.29 l
SB-2	0-2'	3/26/2008	9.0	13
Dup 2	0-2'	3/26/2008	8.9	11
SB-2	6-8'	3/26/2008	<0.22	<0.22
SB-2	12-15'	3/26/2008	0.33 l	0.36 l
SB-3	0-2'	3/26/2008	8.0	9.3
SB-3	6-8'	3/26/2008	<0.23	<0.23
SB-3	12-14'	3/26/2008	<0.23	<0.23
SB-4	0-2'	3/26/2008	5.0	11
SB-4	4-6'	3/26/2008	<0.24	0.42 l
SB-4	9-11'	3/26/2008	<0.23	<0.23
SB-5	0-2'	3/25/2008	0.34 l	0.84 l
SB-5	6-8'	3/25/2008	<0.24	<0.24
SB-5	12-14'	3/25/2008	0.28 l	1.2
SB-6	0-2'	3/25/2008	<0.23	<0.23
SB-6	6-8'	3/25/2008	<0.23	1.2
Dup 3	6-8'	3/25/2008	<0.23	0.51 l
SB-6	10-12'	3/25/2008	0.24 l	3.9
SB-7	0-2'	3/25/2008	<0.23	<0.23
SB-7	4-6'	3/25/2008	<0.22	0.40 l
SB-7	7-9'	3/25/2008	0.49 l	3
SB-8	0-2'	3/25/2008	<0.23	0.71 l
SB-8	4-6'	3/25/2008	0.54 l	0.99 l
SB-8	7-9'	3/25/2008	<0.24	0.30 l
SB-9	0-2'	3/20/2008	<0.24	<0.24
Dup 4	0-2'	3/20/2008	<0.21	<0.21
SB-9	6-8'	3/20/2008	<0.23	<0.23
SB-9	12-15'	3/20/2008	0.32 l	0.40 l
SB-10	0-2'	3/21/2008	1.9	1.6
SB-10	6-8'	3/21/2008	0.87	1.2 l
SB-10	12-14'	3/21/2008	0.68	0.92 l
SB-11	0-2'	3/21/2008	5.8	7.7
SB-11	6-8'	3/21/2008	6.0	9.5
SB-11	12-14'	3/21/2008	<0.24	<0.24
SB-12	0-2'	3/24/2008	5.3	21
SB-12	4-6'	3/24/2008	<0.23	<0.23
SB-12	10-12'	3/24/2008	<0.24	<0.24
Dup 6	10-12'	3/24/2008	<0.23	0.25 l

**TABLE 1-b: COPPER AND ARSENIC IN SOIL ANALYTICAL RESULTS**

**PROJECT: Lake Trafford**

**PSI PROJECT NO: 552-8G038**

Sample ID	Sample Interval (ft bls)	Date Collected	Arsenic (mg/kg)	Copper (mg/kg)
SB-13	0-2'	3/24/2008	5.2	15
SB-13	6-8'	3/24/2008	<0.23	1.9
SB-13	12-14'	3/24/2008	<0.24	2.5
SB-14	0-2'	3/24/2008	4.9	15
SB-14	6-8'	3/24/2008	0.52 I	0.54 I
SB-14	10-12'	3/24/2008	<0.24	<0.24
SB-15	0-2'	3/25/2008	<0.23	<0.23
SB-15	6-8'	3/25/2008	<0.23	0.46 I
SB-15	10-12'	3/25/2008	<0.24	2.3
SB-16	0-2'	3/25/2008	5.7	18
SB-16	4-6'	3/25/2008	<0.25	<0.25
SB-16	7-9'	3/25/2008	<0.24	1.2 I
<b>SCTL-RDE</b>			<b>2.1</b>	<b>150</b>
<b>SCTL-LGW</b>			<b>SPLP</b>	<b>SPLP</b>

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



TABLE 1-5: SOIL ANALYTICAL DATA SUMMARY (detected constituents only)  
 PROJECT NAME: Lake Trafford  
 PSI PROJECT NO.: 542-0030

Sample Info		Polynuclear Aromatic Hydrocarbons (PAHs)										METALS						TPH
Sample ID	Sample Interval (ft. bls)	Fluoranthene (ug/kg)	Pyrene (ug/kg)	Chrysene (ug/kg)	Benzo[a]anthracene (ug/kg)	Benzo[b]fluoranthene (ug/kg)	Dibenz[a,h]anthracene (ug/kg)	Benzo[g,h,i]perylene (ug/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Total Petroleum Hydrocarbons (mg/kg)		
SB-2	0-3'	3/26/08	8.9	7.3	7.0	7.6	7.7	8.8	8.3	3.4	3.8	2.2	1.3	0.041	2.41	32.0		
SB-4	3-6'	3/26/08	0.89	1.31	0.741	0.58	0.80	0.76	3.4	3.4	0.08	5.6	2.8	0.039	0.46	41		
SB-6	6-12'	3/25/08	1.21	0.861	0.60	0.62	0.63	0.81	4.1	4.1	1.3	9.7	9.8	0.043	1.3	48.0		
SB-8	6-9'	3/25/08	3.41	2.01	0.911	0.71	0.991	1.01	0.261	7.9	0.08	6.1	4.4	0.010	0.49	41		
SB-10	6-12'	3/21/08	1.51	1.11	0.68	0.71	0.73	0.92	1.11	3.4	0.08	6.6	4.1	0.021	0.021	43		
Dup 5	6-12'	3/21/08	4.01	2.81	1.71	2.21	0.72	1.01	1.3	3.7	0.10	7.5	4.7	0.021	0.021	43		
SB-12	6-9'	3/24/08	1.41	1.21	0.57	0.58	0.80	0.76	0.23	7.2	0.08	4.7	1.2	0.002	0.45	47.5		
SB-14	0-3'	3/24/08	0.841	0.73	0.68	0.71	0.72	0.92	0.27	3	0.08	2.2	1.9	0.039	0.54	48.0		
SB-16	3-6'	3/25/08	0.70	0.62	0.57	0.60	0.61	0.77	0.22	5.6	0.08	10	5.5	0.039	0.45	47.6		
SCTL-3026		1,200,000	2,400,000	77,000	890	24,000	700	4,800,000	1.1	130	32	219	400	3	140	480		
SCTL-LOW		1,200,000	2,400,000	77,000	890	24,000	700	4,800,000	SPUD	1000	7.5	38	380.0	2.1	52	300		

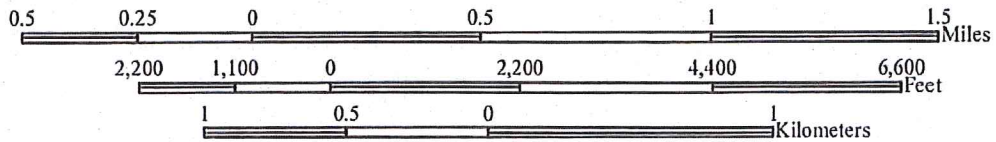
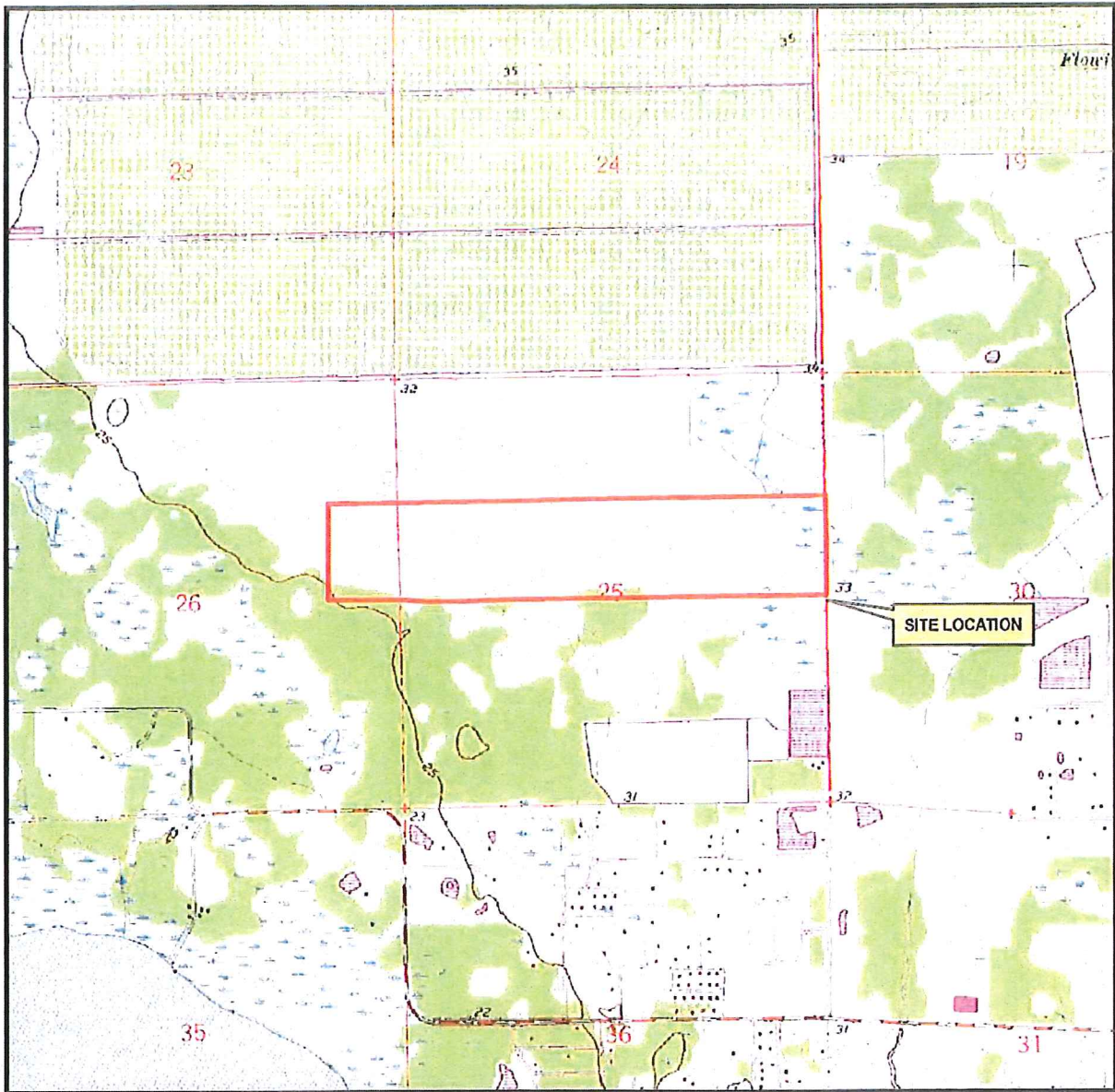
1 = The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

N/A = Not Applicable

NA = Not Analyzed

## FIGURES





SOURCE: USGS QUADRANGLE IMMOKALEE, FLA  
 NATIONAL GEODETIC VERTICAL DATUM 1929  
 DATE: 1958 PHOTO REVISED 1987



SECTIONS 25 & 26 TOWNSHIP 46 SOUTH, RANGE 28 EAST

PROJECT NO.  
**552-8G038**  
 DRAWN BY  
**PV/SL**  
 DATE CREATED  
**06-05-2008**  
 REFERENCE  
 SCALE 1:24,000

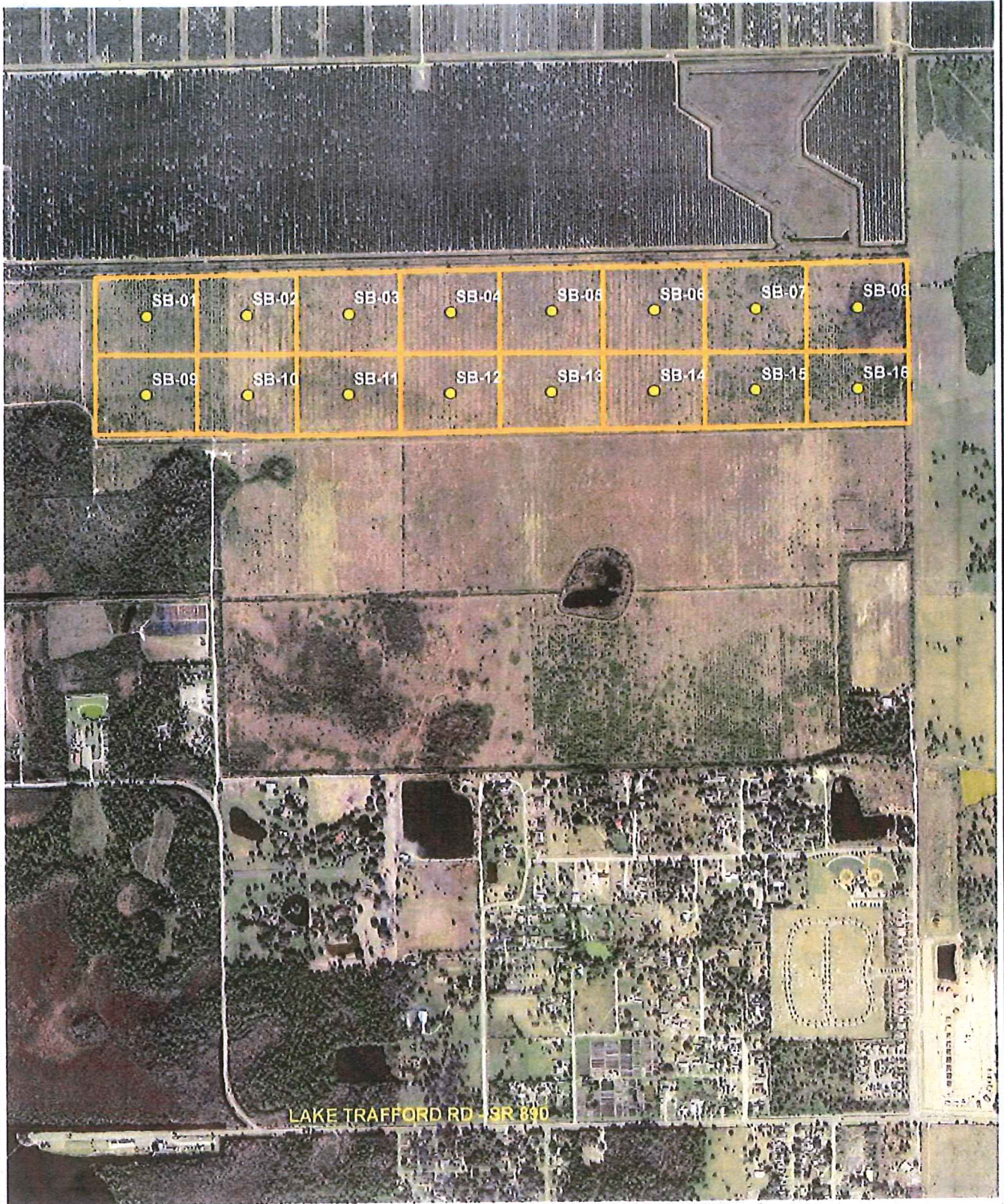
**psi** Information  
 To Build On  
 Engineering • Consulting • Testing  
 5501 Benjamin Center Drive  
 Suite 112  
 Tampa, Florida 33634  
 (813) 558-1075  
 (813) 249-0301 fax



**FIGURE 1 - USGS SITE VICINITY MAP**  
**LAKE TRAFFORD DREDGE SPOIL IMPOUNDMENT**  
 IMMOKALEE, COLLIER COUNTY, FLORIDA

P:\522-ENV\0608\06-REPORTS\552-8G038\LAKE TRAFFORD\06-05-2008\F1-142502.TIF





REFERENCE: THE 2004 AERIAL PHOTOGRAPH WAS OBTAINED FROM LABINS



P:\2008\05\06\060506\LAKE TRAFFORD\060506-060506-FIG-2-DTC.MXD

<b>552-8G038</b>	
DRAWN BY <b>PV/SL</b>	
DATE CREATED <b>06-05-2008</b>	
REFERENCE SCALE 1" = 12,000'	
 <b>Information To Build On</b> Engineering • Consulting • Testing 5501 Benjamin Center Drive Suite 112 Tampa, Florida 33634 (813) 588-1075 (813) 249-0301 fax	

**FIGURE 2 - SOIL SAMPLING LOCATION MAP**  
**LAKE TRAFFORD DREDGE SPOIL IMPOUNDMENT**  
 IMMOKALEE, COLLIER COUNTY, FLORIDA



**APPENDIX A**  
**SOIL BORING LOGS**

**APPENDIX B**  
**ANALYTICAL LABORATORY REPORT**

**APPENDIX C**

**GRAIN SIZE TESTING LABORATORY REPORTS**

**APPENDIX D**  
**HUMAN HEALTH RISK ASSESSMENT**

**APPENDIX E**  
**ROUGH ORDER OF MAGNITUDE COST ESTIMATES**

**Rough Order of Magnitude Estimated Costs  
Remediation/Ground Improvement  
Lake Trafford OHV Park**

<b>Alternative #1</b>		<b>Partial Removal of Dredge Spoils (2 feet)</b>	
<i>Task 1 - removal of upper two feet of soil</i>			
Impoundment Size	180 acres		
Impoundment Size	7,840,800 square feet		
2 feet soil removal	15,681,600 cubic feet		
2 feet soil removal	580,800 cubic yards		
soil removal unit cost	\$ 5.00	\$/cubic yard-excavate and relocate to Cells #2 and #3	
Soil Removal Cost	\$ 2,904,000	Total soil removal cost	
<i>Task 2 - placement of geotextile grid</i>			
Impoundment Size	7,840,800 square feet		
Impoundment Size	871,200 square yards		
Geotextile grid unit cost	\$ 4.25	\$/square yard Tensar BX 1200 -includes placement	
Geotextile placement cost	\$ 3,702,600		
<i>Task 3 - import and compaction of replacement soil</i>			
Required Volume	580,800 cubic yards		
Required Volume	784,080 tons		
Import soil unit cost	\$12.00	\$/ton (including import soil and compaction)	
Soil Replacement Cost	\$6,969,600	Total soil replacement cost	
<b>Alternative 1 Total Cost:</b>	<b>\$ 13,576,200</b>		

<b>Alternative #2</b>		<b>Capping</b>	
<i>Task 1 - placement of geotextile grid</i>			
Impoundment Size	7,840,800 square feet		
Impoundment Size	871,200 square yards		
Geotextile grid unit cost	\$ 4.25	\$/square yard Tensar BX 1200 -includes placement	
Geotextile placement cost	\$ 3,702,600		
<i>Task 2 - import and compaction of replacement soil</i>			
Required Volume	580,800 cubic yards		
Import soil unit cost	\$12.00	\$/cubic yard	
Soil Replacement Cost	\$6,969,600	Total soil replacement cost	
<b>Alternative #2 Total Cost:</b>	<b>\$ 10,672,200</b>		



**Rough Order of Magnitude Estimated Costs  
Remediation/Ground Improvement  
Lake Trafford OHV Park**

<b>Alternative #3</b>	
<b>Ground Improvement</b>	
<i>Task 1 - soil mixing/tilling</i>	
Impoundment Size	180 acres
Soil mixing unit cost	\$ 5,000 \$\$/acre
Soil mixing cost	\$ 950,000 labor and materials for ploughing (includes \$50,000 mobilization charge)
Volume of soil mixed	1,176,120 tons-assuming 3 foot zone of mixing
Lime requirement	35,283.60 tons (assume 3% by weight)
Lime requirement	\$ 100.00 \$\$/ton
Lime cost	\$ 3,528,360
Total cost of task 1	\$ 4,478,360
<i>Task 2 - drainage improvements</i>	
Length of 15 ft deep trench	12000
Trenching unit cost	\$ 15 \$\$/linear foot
Trenching cost	\$ 180,000 includes labor and equipment
<b>Alternative #3 Total Cost:</b>	<b>\$ 4,658,360</b>

<b>Alternative #4</b>	
<b>Complete Removal of Soils</b>	
<i>Task 1 - soil mixing/tilling</i>	
Impoundment Size	180 acres
Impoundment Size	7,840,800 square feet
13 feet soil removal	101,930,400 cubic feet
13 feet soil removal	3,775,200 cubic yards
Soil removal unit cost	\$ 5.00 \$\$/cubic yard-excavate and relocate to Cells #2 and #3
Soil Removal Cost	\$ 18,876,000 Total soil removal cost
<b>Alternative #4 Total Cost:</b>	<b>\$ 18,876,000</b>