

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE	PAGE OF PAGES
2. AMENDMENT/MODIFICATION NO. 0003		3. EFFECTIVE DATE 23-Apr-2002	4. REQUISITION/PURCHASE REQ. NO. W32CS5-1120-7457	5. PROJECT NO.(If applicable)
6. ISSUED BY USA ENGINEER DISTRICT, JACKSONVILLE 400 WEST BAY STREET CESAJ-CT (ROOM 867) JACKSONVILLE FL 32202-4412		CODE DACW17	7. ADMINISTERED BY (If other than item 6) CODE	
		<b>See Item 6</b>		
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)			X	9A. AMENDMENT OF SOLICITATION NO. DACW17-01-R-0027
			X	9B. DATED (SEE ITEM 11) 28-Feb-2002
				10A. MOD. OF CONTRACT/ORDER NO.
				10B. DATED (SEE ITEM 13)
CODE	FACILITY CODE			
<b>11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS</b>				
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended.				
Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning <u>2</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.				
12. ACCOUNTING AND APPROPRIATION DATA (If required)				
<b>13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.</b>				
A.THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.				
B.THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).				
C.THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:				
D.OTHER (Specify type of modification and authority)				
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.				
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) DACW17-01-R-0027 - PROFESSIONAL SERVICES FOR OBTAINING AND ANALYZING SEDIMENT SAMPLES, WATER SAMPLES, AND BIOASSAY SAMPLES FOR CIVIL WORKS ACTIVITIES FOR THE JACKSONVILLE DISTRICT.  CLOSING DATE IS NOT EXTENDED. SEE SUMMARY OF CHANGES				
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.				
15A. NAME AND TITLE OF SIGNER (Type or print)			16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA		16C. DATE SIGNED
_____ (Signature of person authorized to sign)		BY _____ (Signature of Contracting Officer)		23-Apr-2002

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

1. THE SCOPE OF WORK IS HEREBY REPLACED IN ITS ENTIRETY WITH THE ATTACHED REVISED SCOPE OF WORK.

THE SPECIFIC AREAS OF THE SCOPE OF WORK AFFECTED BY THE REVISION ARE AS FOLLOWS:

1. TABLE 1 TOTAL SULFIDES D.L. REVISED FROM 1.0 ug/l to 100.0 ug/l.
2. TABLE 3 TOTAL SULFIDES WITH ANALYTICAL METHOD OF EPA 9030, PLUMB 1981 IS ADDED.

SCOPE OF WORK  
PROFESSIONAL SERVICES  
FOR OBTAINING AND ANALYZING SEDIMENT SAMPLES, WATER SAMPLES,  
AND BIOASSAY SAMPLES FOR CIVIL WORKS ACTIVITIES FOR THE  
JACKSONVILLE DISTRICT

1. PURPOSE. The purpose of this contract is to collect and analyze sediment samples, water column samples, ground water samples, and tissue samples, conduct vegetation surveys and air and water quality monitoring programs if required. The analyses will include evaluation of physical, biological and chemical samples. Evaluation of acute biological toxicity by performance of bioassays on elutriate and solid phases of dredged material and chemical analysis on liquid phase of dredged material will also be required.

2. STUDY AREA. The study area consists of Puerto Rico, U.S. Virgin Islands, Georgia south of the St. Mary's River and Florida. A map with specific sampling locations will be provided with each individual task order.

3. TECHNICAL REQUIREMENTS.

a. The Contractor shall collect sediment and water samples and analyze them for some or all of the parameters listed in Table 1. The Contractor shall prepare elutriates from the water and sediment samples and analyze them for some or all of the parameters listed in Table 1. Each task order will specify which parameters are to be analyzed for.

b. Contractor shall collect sediment samples from areas to be dredged for evaluation of acute toxicity. Control sediments will be clean, uncontaminated sediment. Water for all bioassays will be clean, uncontaminated seawater. Alternatively an artificial sea salts mixture may be used provided it meets EPA – quality criteria for marine waters.

c. When collecting water and sediment samples for elutriate or bioassay analyses, in situ hydrographic measurements shall be taken to include water temperature ( $\pm 0.1^{\circ}\text{C}$ ), salinity ( $\pm 0.1$  ppt), dissolved oxygen ( $\pm 0.1$  mg/l), pH ( $\pm 0.1$  pH unit), turbidity ( $\pm 1$  NTU), conductivity ( $\pm 2\%$  of full scale, micro-ohms/cm) and depth ( $\pm 0.1$  m). These measurements will be made at intervals between the surface and the bottom specified by the Contracting Officer. In addition, observations of tidal cycle and height (recorded from local tide tables for that location, date, and time), weather conditions (approximate wind speed and direction), and sea state shall be made and recorded.

d. The Contractor may be required to perform continuous air quality monitoring and/or water column sampling. Air quality monitoring shall be conducted by 2 or 3 man teams fully equipped and trained IAW with applicable OSHA regulations (see attached Air Quality Monitoring Protocol). Air and Water samples shall be taken at intervals and locations specified in the task order. Water samples shall be taken at near surface, mid-depth, and near bottom, unless stated otherwise. When collecting water column samples in situ hydrographic measurements will be taken for the following parameters: water temperature ( $\pm 0.1^{\circ}\text{C}$ ), salinity ( $\pm 0.1$  ppt), dissolved oxygen ( $\pm 0.1$  mg/l), pH ( $\pm 0.1$  pH unit), turbidity ( $\pm 1$  NTU), conductivity ( $\pm 2\%$  of full scale, micro-ohms/cm) and depth ( $\pm 0.1$  m). Tidal cycle and height (recorded from local tide tables for that location, date, and time), weather conditions (approximate wind speed and direction), and sea state shall also be recorded for each 4-hour interval.

The Government may collect samples and send them to the contractor for analysis and report when necessary.

If the contractor is directed by the Contracting Officer or the Contracting Officer's Representative (COR) to eliminate tests, analysis or procedures originally included in a task order, the contractor shall only be paid for those analysis and procedures actually completed.

4. SAMPLING METHODOLOGY. Field sampling shall be conducted in accordance with the following methods:

a. Up to three separate sediment core samples or surface grab samples shall be taken at each station using a non-contaminating sediment sampler. The samples shall be placed in appropriate containers and stored following methodologies listed in paragraphs 5.a. or 5.b below.

The contractor shall use a non-contaminating sediment sampler capable of taking surface grab samples. The contractor shall use a corer capable of penetrating sand or finer grained material to at least 20 feet. The COR shall approve all samplers. The station locations, depth of each sample, and type of sampler will be specified with each individual task order.

b. Up to three separate water samples shall be collected at each station using a non-contaminating flow-through pump or discrete sampling device at any depth. The sampling device shall be subject to approval of the COR. The samples shall be placed in appropriate containers and stored following methodologies listed in paragraph 5.a. or 5.b. below. The station locations will be specified with each individual task order.

5. ANALYTICAL METHODOLOGY. Laboratory analyses shall be conducted in accordance with the following:

a. Sediment and Elutriate Analysis.

(1) References

(i) Procedures for Handling and Chemical Analysis of Sediment and Water Samples. USEPA/CE 81-1, May 1981, USAE Waterways Experiment Station, Vicksburg, Mississippi.

(ii) Standard Methods for the Examination of Water and Wastewater. 20<sup>th</sup> Edition, 1996, American Public Health Association (or latest edition).

(iii) Methods for Chemical Analysis of Water and Wastes (EPA 1983, and subsequent updated).

(iv) Test Methods for evaluating Solid Wastes (EPA 1986, and subsequent updates).

(v) Regional Implementation Manual – Requirements and Procedures for Evaluation of Ocean Disposal of Dredged Material in Southeastern Atlantic and Gulf Coastal Waters (EPA Region IV/COE South Atlantic Division 1993, and subsequent updates).

(2) Separate grain size analysis and hydrometer readings shall be performed on each of the sediment samples from each station collected according to paragraph 4.a. above. The following 8

sieve sizes shall be used: No. 4, 10, 20, 40, 60, 100, 200 and 230. Based on hydrometer and sieve analysis, the results shall include percent sand, silt, clay, and particle size distribution curves based on percent weight retained on each mesh sieve. Mean grain size for each sample shall also be reported on the attached form - Gradation Curves.

(3) Handling, preparation, and extraction procedures for specified parameters in bulk sediment samples are referenced in paragraph 5.a. above. Specific methods for settling rates, Atterburg limits and specific gravity are contained in Table 2. All Settling rates shall be reported on forms identical to that contained in the attached form - Suspended Sediment Time Curves. All sediment tests (physical and chemical) shall be performed on each sample from each station.

(4) Handling, preparation, and extraction procedures for specified parameters in site water and elutriate samples are referenced in paragraph 5.a. above. All analyses shall be conducted on each sample from each station. Up to three additional samples of site water from each station designated in task order shall be filtered in the lab and analyzed as a blank for the elutriate.

(5) Elutriates shall be prepared within 7 days of date of sample collection following procedures referenced in paragraph 5.a. above. Up to three separate elutriates shall be prepared for each station.

(6) All sample preparation steps and extractions for trace metals and trace pesticides shall be made in at least a Class 1000 isolated clean room or work station with Class 100 (Teflon coated work benches (Fed. Std. No. L209E, 1992)).

(7) All laboratory analyses shall be completed within 15 days of initial date of sampling.

(8) That portion of the samples remaining after analysis shall be archived until completion of the contract or until applicable recommended holding times expire.

b. Bioassay Analysis.

(1) References

(i) Evaluation of Dredged Material Proposed for Ocean Disposal (Green Book) (EPA/COE 1991, and subsequent updates).

(ii) Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual (EPA/COE 1998). <http://www.epa.gov/OST/itm/index.html>

(iii) Method for Semivolatile Organic Priority Pollutants in Fish (Battelle 1985, Final Report, EPA Contract No. 68-03-1760).

(iv) Regional Implementation Manual – Requirements and Procedures for Evaluation of Ocean Disposal of Dredged Material in Southeastern Atlantic and Gulf Coastal Waters (EPA Region IV/COE South Atlantic Division 1993, and subsequent updates).  
<http://www.epa.gov/OWOW/oceans/framework/index.html>  
<http://www.epa.gov/owow/oceans/gbook/>

(2) The liquid phase laboratory preparation from each dredged material sample shall be chemically analyzed in up to triplicate analysis for the constituents as listed in Table 1. Sample

preservation and subsequent analysis shall use the latest EPA approved procedures. One sample of water used to prepare the liquid phase may be chemically analyzed in triplicate for the constituents specified. Exact methodology is provided in references listed in paragraph 5.a. (1) above.

(3) Each sediment sample, including the control sediments, shall be collected and analyzed in up to triplicate for parameters as listed in Table 1. Grain size analysis shall also be performed. Grain size analysis shall be reported separately. Sample preservation and subsequent analysis shall use latest EPA approved procedures.

(4) Suspended particulate phase animal bioassays shall be conducted on dredged material samples from each station using procedures and species described in references (5.b.(1)(i) or 5.b.(1)(ii) above as appropriate and reference 5.b.(1)(iv). Test species will be specified on the individual task order by the Contracting Officer.

(a) The 100 percent suspended particulate phase may be run first. If mortality of 50% or less occurs by 96 hours, the 50% and 10% dilutions need not be run. If greater than 50% mortality occurs by 96 hours, the test shall be rerun using the full series of dilutions (100%, 50% and 10%).

(b) If the sediment has an odor of hydrogen sulfide, the sediment and water shall be mixed by aeration during preparation of the suspended particulate phase. The aeration shall continue until the odor of hydrogen sulfide is no longer detected by personnel sensitive to that smell.

(5) Solid phase animal bioassays on each dredged material sample shall be conducted using procedures and species described in references 5.5.(1)(I) or 5.b.(1)(ii) above as appropriate and reference 5.b.(1)(iv). Test species will be specified on the individual task order by the Contracting Officer. The reference sediment shall be proven non-polluted sediment of a character normally inhabited by the bioassay organisms selected for testing. The COR shall approve the source of the reference sediment.

If the test sediment has an odor of hydrogen sulfide, let the sediment settle in tanks and then aerate until there is sufficient oxygen (approximately 4 ppm) at the sediment-water interface being careful not to oxidize the sediment. One hour after the addition of the organisms, the water in each tank shall be analyzed for hydrogen sulfide, ammonia, and dissolved oxygen. This information shall be included in the final report.

(6) Bioaccumulation potential of the solid phase of the dredged materials shall be estimated from tissue analysis of filter and deposit feeders and burrowing benthic organisms surviving the 10 or 28 day exposure to the solid phase. Test procedures shall be in accordance with those of references 5.b.(1)(i) or 5.b.(1)(ii) as appropriate and reference 5.b.(1)(iv). Constituents to be assessed will be specified on the individual task order by the Contracting Officer. Before analysis the organisms shall be thoroughly depurated. The minimum detection limits shall be specified in reference 5.b.(1)(iv) above or as specified by the Contracting Officer in the Task Order.

Prior to exposure to the solid phase of dredged material, the organisms shall be tested for the specified constituents. The level of Hg, Cd, and PCB's and any other constituents the Contracting Officer may specify shall not exceed the required detection limits. This data shall be provided in the report.

(7) If greater than 10 percent of the control dies during any test, that test shall be repeated except that control mortalities of 20 percent are acceptable in Zooplankton and larval bioassays if approved by the COR.

(8) The size of tanks used to perform animal bioassays shall conform to the size recommendations found in reference 5.b. (1)(i).

## 6. QUALITY CONTROL.

a. All laboratories used shall maintain accreditation under the National Environmental Laboratory Accreditation Conference/Program (NELAC/P) or most current accreditation required in the State of Florida. However, laboratories performing total phosphorus analysis for Comprehensive Everglades Restoration Plan (CERP) must be accredited under NELAC/P. Bioassays and tissue analysis however are not included in State approval process. Prior to exercise of an option, the Government will verify NELAC/P or most current accreditation required for the State of Florida.

b. Contractor shall have an established quality control program (QCP) which is based on Environmental Protection Agency's quality control program as outlined in Handbook for Analytical Quality Control in Water and Wastewater Laboratories, USEPA 600/4-79-019, March 1979, EPA Office of Research and Development, Cincinnati, Ohio. The generic Quality Control Plan submitted to the DEP or DHRS and amended for the specific analysis outlined here is acceptable.

c. Upon completion of the analyses, the laboratory shall prepare a quality control report which includes the precision and accuracy of data generated on the analyzed samples.

d. As an absolute minimum, the following quality control measures shall be taken with each group of samples analyzed:

(1) Reagent blanks shall be run.

(2) Duplicate analyses shall be made on 10% of all samples, unless replicates are already required in the task order, and precision data shall be reported in the quality control report. The nature of the duplicates – either field or lab will be stated in the project specific scope of work.

(3) At least one audit or reference sample (EPA, NBS or other EPA acceptable source) shall be run and reported in the quality control report. This audit sample (water or sediment) shall be within the same concentration range as the samples that are being analyzed.

(4) Spiked samples shall be run for all parameters in order to address analytical accuracy. At least 1 in 20 of the samples must be spiked with an appropriate standard in order to address accuracy. The concentration of the spike shall be large enough to increase the analyte's concentration by at least 50%, but not more than 200% above the original sample concentration. If the sample concentration is less than three times that of the analyte detection limit, then a spike of two to three times that detection limit is appropriate.

(5) Printouts from all AA and GC analyses shall be kept on file IAW NELAC Guidelines in the event that any problems with the data arise.

e. A project specific quality control plan (QAPP) shall be submitted to accomplish the work described in the Task order. The QAPP shall include as a minimum:

(1) Listings of all analytical equipment and sampling devices to be used in the study, methods for calibrating in the field and lab, precision and accuracy standards, maintenance schedules, record keeping methods, and personnel responsible.

(2) Field survey procedures, including boat to be used, description of field notes to be taken, and sample collection, processing, and storage techniques. Particular attention should be given to field sampling and handling procedures to avoid contamination of water and sediment samples.

(3) Labeling system to be employed to ensure proper tracking of samples from collection through analysis to listing in final report.

(4) Laboratory analytical techniques and quality control procedures. Personnel responsible for accurately processing samples.

(5) Any specific QA/QC requirements will be detailed in the project scope of work. Additional time will be allowed for these requirements.

f. All Total Phosphorus analysis for CERP projects shall be performed in accordance with the Attached Guidelines for Selection Laboratories for Everglades Phosphorus Measurements Florida Department of Environmental Protection Bureau of Laboratories.

7. REPORT. Prior to sampling and analysis the contractor may be required to produce a site specific quality assurance project plan (QAPP) in accordance with the Florida Department of Environmental Protection Manual for Preparing Quality Assurance Plans, (DER – QA-001/90). In addition, after completion of the sampling and analyses, the Contractor shall prepare a report as set forth below

a. Report shall consist of a discussion of methods used to collect and analyze samples, sampling conditions (date and time of sample collection, tidal stage, weather conditions) and results of analyses. This report shall also contain the quality control report specified in paragraphs 6.c and 6.d. above.

b. Text material shall be typed on good quality 8½ by 11 inch bond paper with a 1½ binding margin on the left side, ½ inch on the right and 1 inch at the top and bottom.

c. Drawings or plates shall be no larger than 20 inches by 11 inches with sufficient margin for binding on the left side and shall include a geographical scale.

d. All Final Reports shall be typed, and one camera ready original plus four copies shall be furnished as specified below. In addition one electronic copy shall be provided in Microsoft Word (most current version) format on a CDROM. One additional electronic copy shall be provided in Adobe Acrobat (most current version) pdf format on a CDROM.

e. Verbal Brief. The Contractor shall prepare a verbal brief in the form of a progress review, to be submitted by phone to the Contracting Officer's Representative (COR) at the Corps of Engineers, Jacksonville District Office, after sampling and prior to completion of laboratory work.

f. Final Report. After completion of the laboratory analyses and data reduction and analysis, the Contractor shall prepare as set forth below, a final report for the project area. The final report and findings shall be objective and fully substantiated by documentation. Where full documentation is

lacking, professional opinion shall be provided and qualified as such. The final report shall include the following as a minimum:

(1) Laboratory data. A scientific report of the laboratory analyses performed shall be furnished together with appropriate figures, tables, and lists of results as specified in reference 5.b.(1) above. Additional data may be requested during review by the Jacksonville District Office, U.S. Army Corps of Engineers.

(2) Data interpretation. Based on the laboratory analyses performed under this contract, the Contractor shall prepare an interpretive report addressing Study Objectives. Report format will follow that required by reputable and scientific periodicals with introduction, methods, results, discussion, and summary sections.

(3) Estimation of initial mixing and toxicity threshold shall be made on dredged material using the method (ADDAMS model) specified in Appendix B of reference 5.b. (1)(i), the Ocean Disposal Manual using results of bioassay acute toxic concentration relationships. Values to be used in calculating initial mixing zone; width and length of disposal vessel (presumed 22 x 91.5 meters), speed of disposal vessel (presumed 2.68 meters per second), and time to dump (300 seconds). Vessel volume presumed to be 1,700 cubic meters. Contractor shall also use specific parameters defined in the most recent specific ODMDS Site Management and Monitoring Plan.

**8. PERFORMANCE OF TASK ORDERS.** The procedure for assignment of work and performance of work under this contract is as follows:

The contractor will be furnished a Scope of Work (SOW) for each task order and requested to submit a price proposal in accordance with the schedule of line items, based upon the requirements of the SOW. In addition to a price proposal, the Contractor shall submit a work plan detailing field effort and the QAPP that will be used in performance of the SOW. The work plan or QAPP must include a brief narrative describing proposed methods to complete each SOW and all personnel assigned to the task shall be identified including the subcontractors.

The Government will review the contractor's proposal to determine if the contractor has a thorough understanding of the work required. Individual components of the plan will be approved or, if necessary negotiated. The unit prices shall be on a firm fixed price basis as shown in the schedule of line items, only the number of work units to be utilized will be negotiable.

Upon completion of negotiations, the task order will be issued. The Contracting Officer shall issue each task order on a NOT-TO-EXCEED or FIRM-FIXED basis. Orders may be issued orally, facsimile, or be electronic commerce. The Government SOW and the individual components of the Contractor's accepted proposal and plan may be included by reference in the task order.

**9. CONTRACTOR OBLIGATIONS FOR PROJECT IMPLEMENTATION.** The Project Manager or personnel other than the field crew may be required to attend meetings or perform other travel necessary to undertake assignments as specified in the Task Order. The contractor may also be required to submit reports and deliverables as specified in each Task Order. During the period of the contract, the Contractor shall maintain the capability to react to work assignments, and shall maintain adequate staff and facilities to conduct multiple task orders simultaneously. The Contractor shall generate and maintain a Management Plan that demonstrates his intentions on how projects will be managed and how he will respond in case of emergency.

9.1 The contractor shall obtain all necessary permits, licenses, and approvals from all local, state, Commonwealth and Federal Authorities. Should it become necessary for the Contractor in the performance of services of a task order to secure the right of ingress and egress to perform any of the work required under this contract on properties not owned or controlled by the Government; the Contractor shall, if practicable, secure the consent of the owner, his representative or agent, prior to effecting entry on such property. In the event all efforts by the Contractor fail to gain permission from the property owner(s) for entry to the property for performing the required work, the Contractor shall contact the Contracting Officer to obtain instructions for further action. In the event the Contracting Officer must take action to obtain right of entry for the Contractor, the Contractor will be entitled to an equitable extension of time for the period required to obtain said right of entry. The Contractor shall assume all responsibility for and take all precautions to prevent damage to private and Government owned property. The Contractor shall be responsible for any claims covering actions not approved by the Contracting Officer.

9.2 During execution of the work, the Project Manager shall provide adequate professional supervision to assure timeliness, accuracy, quality, and completeness. In the event of controversy or court challenge, the Project Manager may be called upon to testify on behalf of the Government in support of the findings at Government expense under a separate contractual instrument.

9.3 The extent of travel (for other than field crew) is unknown at this time and is dependent on the number and nature of the work assignment, or if specifically required by the scope of work. Travel will be negotiated on each task order and shall be reimbursed by the Government. When applicable, detailed travel budgets must be submitted and approved as part of the Contractor's submitted price proposal. The contractor will be reimbursed for travel costs for transportation, lodging, meals, and incidental expenses in accordance with the Government's JTR and as authorized in each task order.

10. LABORATORY INSPECTIONS. Prior to contract award, a representative of the Corps of Engineers may inspect the facilities of potential Contractors. This inspection is to ensure that the commercial laboratory is capable of performing the required tests by the required methods and that adequate internal quality control is being exercised. The results of this inspection may be used to make the final selection of a Contractor. In addition, the laboratory shall be subject to and available for, inspection by the Contracting Officer at all times.

11. SCHEDULE FOR WORK. Under normal circumstances, the Contractor shall follow the schedule below for task order implementation and delivery. Shorter response time may be required under extraordinary circumstances. These situations will be closely coordinated with the Contractor and the Contracting Officer and detailed in the SOW.

<u>ITEM</u>	<u>CONTRACT INITIATION (DAYS) (FOR)</u> <u>EACH INDIVIDUAL TASK ORDER</u>		
	a. Sediment/Water Chemical Analysis	b. Bioassay Evaluation	c. Tissue Chemical Analysis
Task Order Award	0	0	0
Begin field sampling	10	10*	10
Complete field sampling	25	25	25
Sample analysis complete	40	55	70
Prepare and submit report	45	60	75

Final Report submitted 15 days  
after government review complete.

\* If a QAPP is required an additional 10 days will be added.

12. EQUIPMENT. The Contractor shall have access to the necessary equipment to perform the requirements of the SOW and to meet the required delivery schedule.

13. EXPLANATION OF LINE ITEMS. Although most line items are self-explanatory the following is provided as clarification of requirements for selected items. This will apply to the base and all option periods.

13.1 2-Man Crew Mob/Demob (FL/GA)(PR/VI) All expenses associated with mobilizing and demobilizing a 2-Man crew in Florida or Georgia with all equipment and instrumentation necessary to collect, store and ship samples including transportation to and from the project site. Equipment necessary includes but is not limited to a vessel or vehicle capable of safely transporting crew and equipment to sampling locations, Hydrolab or similar device, navigation equipment for location of sample stations, grab samplers, core samplers and/or other sampling equipment sufficient to collect the required samples and associated data.

13.2 2-Man Crew, Daily, Weekly and Monthly Rate (FL/GA)(PR/VI). Includes wages, per-diem, equipment and miscellaneous expenses associated with maintaining a 2-Man crew in the field in Florida or Georgia for one, seven or thirty days respectively.

13.3 3-Man Crew, Mob/Demob (FL/GA)(PR/VI). This line item is essentially the same as line item for 2-man with the additional requirement of a third man and the requirement for vibracoring capability.

13.4 3-Man Crew, Daily, Weekly and Monthly Rate (FL/GA)(PR/VI). Includes wages, per-diem, equipment and miscellaneous expenses associated with maintaining a 3-Man crew in the field for one, seven or thirty days respectively.

13.4.1 Off-Shore Vessel Rental (FL/GA). This line item applies to deep water (>500 ft) sampling only. Any depths significantly greater than 700 ft will be negotiated on a case by case basis.

13.4.2 Off-Shore Vessel Rental (PR/VI). This line applies to deep water sampling in depths estimated at 1200 ft. Any depths significantly greater than 1200 ft will be negotiated on a case by case basis.

13.5 Line Items for crews to operate in Puerto Rico and the Virgin Islands are identical with those for Florida/Georgia crews with the exception that vessel/vehicle rental are not included and are separate line items.

13.6 2-Man Air Monitoring Crew Mob/Demob and Daily, Weekly and Monthly Rates(FLA/GA)(PR/VI). Requirements are the same as for sediment sampling crews except for the instrumentation necessary. See attached Air Monitoring Protocol.

13.7 Hand Augured Well (20FT Max). From time to time it is necessary to establish ground water monitoring stations. These stations will consist of a 2-inch PVC screen and casing placed in a hand augured well. These ground monitoring wells will be established in unconsolidated soils and will not exceed 20 feet in depth. Casing will be sealed with sand, bentonite or cement as specified by the CO and

will be provided with a protective casing with lock. This line item includes all labor, equipment and materials costs of a fully developed well complete in all respects.

13.8 Continuous Sampling. The price for this line item shall include all costs necessary to supply the continuous sampling equipment and perform the requirement for continuous sampling. The price for this line item shall not include other necessary costs that are already included in line items for mob/demob and field work.

13.9 Travel Costs. Travel expenses which have been approved as part of the Task Order, shall be reimbursed by the Government. All requests for payment under these line items must be supported by actual receipts as required by the Government's Joint Travel Regulations (JTR). Only the direct costs of these expenses (no fee, profit or administration costs) will be paid on approved travel. Costs incurred for lodging, meals, and incidentals expenses shall be reimbursed only to the extent that they do not exceed the maximum per diem rates in effect at the time of travel as set forth in the Government's JTR. These rates may be viewed at the website: [www.dtic.mil/perdiem/rateinfo.html](http://www.dtic.mil/perdiem/rateinfo.html).

14. PRIVACY. The Government's unlimited rights to include the right to use, duplicate, or disclose technical data, in whole or in part, in any manner and for any purpose whatsoever, and to have or permit others to do so. The Contractor shall obtain concurrence of the Contracting Officer prior of disclosure or dissemination to data developed under this contract/task orders.

TABLE 1

DESIGNATION OF PARAMETERS TO BE ANALYZED AND REQUIRED DETECTION LIMITS (D.L.)

Parameter	Water Column		Sediment		Elutriate <sup>3</sup>	Tissues <sup>3</sup>
	Analyses	D.L. (ug/l) <sup>1</sup>	Analyses	D.L. (mg/kg) <sup>2</sup>		
Aluminum	X	100.0	X	0.1	X	X
Antimony	X	0.1	X	0.5	X	X
Arsenic	X	0.1	X	0.5	X	X
Barium	X	2.0	X	0.1	X	X
Beryllium	X	0.1	X	0.1	X	X
Cadmium	X	0.05	X	0.1	X	X
Chromium	X	0.1	X	0.1	X	X
Copper	X	0.1	X	0.1	X	X
Iron	X	1.0	X	0.1	X	X
Lead	X	0.1	X	0.1	X	X
Manganese	X	1.0	X	1.0	X	X
Mercury	X	0.01	X	0.05	X	X
Nickel	X	0.1	X	0.1	X	X
Selenium	X	0.1	X	0.2	X	X
Silver	X	0.1	X	0.1	X	X
Thallium	X	0.1	X	0.1	X	X
Tin	X	0.1	X	0.1	X	X
Zinc	X	1.0	X	0.01	X	X
Cyanide	X	0.1	X	1.0	X	X
Fluorides	X	100.0	X	1.0	X	X
Nitrate	X	3.0	X		X	-
Nitrate+ Nitrate	X	50.0	X	1.0	X	-
Total and Un-ionized Ammonia	X	10.0	X	0.1	X	-
Total Kjeldahl Nitrogen (TKN)	X	100.0	X	10.0	X	-
Total Organic Carbon (TOC)	X	0.1%	X	0.1%	X	-
Total Phosphorus <sup>4</sup>	X	4.0	X	1.0	X	-
Orthophosphate	X	4.0	-		X	-
Total Sulfides	X	100.00	X	0.2	X	-
Chloride	X	30.0	-		X	
Oil and Grease	X	50.0	X	1.0 (wet wgt.)	X	-
Pesticides	X	0.0001 –0.25	X	0.01 – 0.02	X	X
PHA's	X	0.3	X	0.3		
PCB's <sup>5</sup>						
Phenols	X	1.0 - 5.0	X	0.1 – 1.5	X	X
Phthalates	X	1.0	X	0.1	X	X
Dioxins Screening test	X	1.0 pptr	X	1.0 pptr	X	X
Dioxins Confirmation	X	1.0 pptr	X	1.0 pptr	X	X

Monobutyltin	X	0.1	X	0.01	X	X
Dibutyltin	X	0.1	X	0.01	X	X
Tributyltin	X	0.1	X	0.01	X	X
Biological Oxygen Demand	X	1000.0	-		X	-
Total Coliform	X	1 colony/100 ml	X	1 colony/100 ml	X	-
Fecal Coliform	X	1 colony/100 ml	X	1 colony/100 ml	X	-
Lipids	-		-		-	X
Color	X	10 PCU	-		X	-
Total Suspended Solids	X	1000.0	-		-	-
Total Dissolved Solids	X	1000.0	-		X	-
% Solids	-		X	1.0 %	-	-
Grain Size Distribution	-		X	1.0 %	-	-
Hydrometer Grain Size Testing	-		X	1.0 %	-	-
Specific Gravity	-		X	-	-	-
Atterburg Limits	-		X	-	-	-
Settling Rates	-		X	-	-	-
Gross Alpha and Beta emissions	X	-	X	-	X	X
Mass Spectroscopy for unknowns	X	-	X	-	X	X

## NOTES:

(-) Not Applicable

(1) Parts per Billion (ppb) unless otherwise noted

(2) Dry Basis, Parts per Million (ppm) unless otherwise noted

(3) Elutriate detection limits are identical to water column D. L. and Tissue detection limits are identical to sediment column D.L. unless otherwise noted; tissues reported as wet and dry weight in terms of mass.

(4) From time to time the contractor may be asked to perform total phosphorus analysis in compliance with the Florida Department of Environmental Protection Guidelines for Selecting Laboratories for Everglades Phosphorus Measurements

(see attached guidelines). A separate line item has been included for these samples.

(5) PCB Congener analysis IAW the RIM ref. 5 a.(1)(v) and 5 b.(1)(i).

TABLE 2

## LABORATORY PROCEDURES FOR SEDIMENT SAMPLES

Para Parameter	Analytical Method	Special Procedures	
Aluminum	EPA 6010, 7020		
Antimony	EPA 7041		
Arsenic	EPA 7060		
Barium	EPA 6010, 7080		
Beryllium	EPA 6010, 7080		
Cadmium	EPA 6010, 7131		
Chromium	EPA 6010, 7191		
Copper	EPA 6010, 7091		
Iron	EPA 6010, 7380		
Lead	EPA 6010, 7421		
Manganese	EPA 6010, 7460		
Mercury	EPA 7471		
Nickel	EPA 6010, 7520		
Selenium	EPA 7740		
Silver	EPA 6010, 7761		
Thallium	EPA 7840, 7841		
Tin	EPA 6010, 7870		
Zinc	EPA 6010, 7950		
Cyanide	EPA 9010, 9012		
Fluorides	EPA 340.2	Water Extraction	
Nitrate + Nitrite	Sediment Method P. 3-183	Note 1	
Total Ammonia	Sediment Method 3, P. 7-157	Note 1, 5	
Total Kjeldahl Nitrogen	Sediment Method 2, P. 3-202	Note 1, 2	
Total Organic Carbon (TOC)	Sediment Method 1, P. 3-73	Note 1	
Total Phosphorus	Sediment Method, P.3-227	Note 1	
Orthophosphate	EPA 365.2		
Total Sulfides	EPA 9030, Plumb 1981		
Chloride	EPA 325.2		
Oil and Grease	EPA 9071	Note 3	
Pesticides	EPA 8080		
PAH's	EPA 8100		
PCB's	EPA 8080		
Phenols	EPA 8040		
Phthalates	EPA 8270		
Dioxins Screening Test	EPA 8290 (TCDD only)		
Dioxins Confirmation	EPA 8290		
Monobutyltin	Stephensen & Smith 1988 or Uhler & Durrel 1989		
Dibutyltin	Stephensen & Smith 1988 or Uhler & Darrel 1989		
Tributyltin	Stephensen & Smith 1988 or Uhler & Durrel 1989		
Biological Oxygen	EPA 405.1		

Demand			
Total Coliform	S. M.		
Fecal Coliform	S. M.		
Strep Coliform	S. M.		
Lipids	EPA OB10/90	In tissues, Note 4	
% Solids	Plumb 1981		
Grain Size Distribution	Plumb 1981		
Hydrometer Grain Size Testing	ASTM D422		
Specific Gravity	ASTM D854		
Atterburg Limits	ASTM D4318		
Settling Rates	Corps SAD Lab Method		

## NOTES:

- (1) Environmental Protection Agency/Corps of Engineers, Technical Committee on Criteria for Dredged and Fill Material, Technical Report EPA/CE-81-1, May 1981.
- (2) Wet samples are digested in a Kjeldahl flask, distilled, and ammonia is then determined by potentiometric method.
- (3) Gravimetric – extraction with Fluorocarbon – 113.
- (4) USEPA Environmental Services Division Region IV, Analytical Support Branch, Athens, Georgia, Method OB10/90, “Extraction and Analysis of Organics in Biological Tissue”, Sec. 7.5, Determination of % Lipids.
- (5) Ammonia shall be reported as both total ammonia and un-ionized NH

TABLE 3

## LABORATORY PROCEDURES FOR WATER SAMPLES

Parameter	Analytical Method	Special Procedures
Aluminum	EPA 202.2, 200.7	
Antimony	EPA 204.2	
Arsenic	EPA 206.2	
Barium	EPA 208.2, 200.7	
Beryllium	EPA 210.2, 200.7	
Cadmium	EPA 213.2, 200.7	Note 1
Chromium	EPA 218.2, 200.7	Note 2
Copper	EPA 220.2, 200.7	Note 1
Iron	EPA 236.2, 200.7	Note 1
Lead	EPA 239.2, 200.7	Note 1
Manganese	EPA 243.2, 200.7	
Mercury	EPA 245.2	Note 3
Nickel	EPA 249.2, 200.7	Note 1
Selenium	EPA 270.2	
Silver	EPA 272.2, 200.7	Note 1
Thallium	EPA 279.2	
Tin	EPA 282.2, 200.7	
Zinc	EPA 289.1, 200.7	Note 1
Cyanide	EPA 335.3	
Fluorides	EPA 340.2	
Nitrite	EPA 353.3	
Nitrate+Nitrite	EPA 353.2	10 cm Light path
Total Ammonia	EPA 350.1	Note 5
Total Kjeldahl Nitrogen (TKN)	EPA 351.2	
Total Organic Carbon (TOC)	EPA 415.1	Note 5
Total Phosphorus	EPA 365.2	10 cm Light path
Orthophosphate	EPA 376.2	
Total Sulfides	EPA 9030, Plumb 1981	
Chloride		
Oil and Grease	EPA 413.1	
Pesticides	EPA 8080	
PAH's	EPA 8100	
PCB's	EPA 8080	
Phenols	EPA 8040	
Phthalates	EPA 8270	
Dioxins Screening Test	EPA 8290 (TCDD only)	
Dioxins Confirmation	EPA 8290	
Monobutyltin	Stephensen & Smith 1988 or Uhler & Durrel 1989	
Dibutyltin	Stephensen & Smith 1988 or Uhler & Durrel 1989	
Tributyltin	Stephensen & Smith 1988 or Uhler & Durrel 1989	
Biological Oxygen Demand	EPA 405.1	
Total Coliform	S. M.	

Fecal Coliform		S. M.		
Strept Coliform		S. M.		
Color		EPA 110.2		
Total Suspended Solids		EPA 160.2		Before filtration
Total Dissolved Solids		EPA 160.1		Before filtration

## NOTES:

- (1) APDC-DDCC chelation (pH 5.0) – MIBK extraction method is utilized on 200ml sample. (Kinrade and Van Loon (1974), Analytical Chemistry 46 (No. 13): 18-94.
- (2) Sample (100ml) is oxidized by EPA 219-3 method, followed by APDC-DDDC chelation (pH 2.4) and MIBK extraction.
- (3) Samples are placed in bulb stoppered silica flasks, 1 percent  $K_2Cr_2O_7$ . Solution added 1ml/100g) and set aside for 24 hours. Samples are then u. v. irradiated for 4 hours under 1 W Honvia Lamp. Mercury determination is cold vapor AA after  $SnCl_2$  reduction and preconcentration by amalgamation on gold (in-Friedman, P and –Schmidt, 1982, “Determination of Mercury in Seawater by Cold Vapor Atomic Absorption Spectrophotometry”. Frenedius Z. Anal. Chem. 313:200-212, of in Olafsson, J., 1982. “An inter-calibration for Mercury in Seawater”. Marine Chemistry 11:129-142). A procedural blank should be subtracted.
- (4) Samples (5ml) are analyzed by ampoule technique or by another comparable instrument. Organic Carbon is oxidized to  $CO_2$  by persulfate, and  $CO_2$  is then measured by IR.
- (5) Ammonia shall be reported as both total ammonia and un-ionized  $NH^3$ .

## AIR QUALITY MONITORING

From time to time it is necessary to burn debris from hurricanes or other natural disasters. Open burning at landfills or other areas or the use of an air curtain reduction pit are means for reducing the volume of debris. Air monitoring programs shall be continuous operations executed by 2 or 3 man teams, 24 hours a day for the duration of the project. An air monitoring program must meet the following objectives:

1. Monitor air quality to evaluate worker exposure to pollutants
2. Monitoring ambient air samples to document pollutant-specific, defensible air quality conditions during operations.
3. Provide quality assurance of the site management, air monitoring, and sampling program in accordance with applicable EPA and/or NIOSH methods and standards.

### **Worker Exposure Monitoring**

This includes personal air monitoring (for particulate and organic vapor); colorimetric tube sampling to determine ambient concentrations of sulfur dioxide, nitrogen dioxide, phosgene, mercury vapor, chlorine, and hydrogen sulfide; and real-time air monitoring of total hydrocarbon compounds (THC), mercury vapor, phosgene, hydrogen sulfide, and particulates.

### **Ambient Air Monitoring**

Ambient monitoring is conducted at locations within and outside the debris reduction site to assess air quality impacts resulting from site operations. Pollutants monitored include volatile organic compounds and respirable particulates.

### **Sampling and Analytical Procedures: EPA Method TO-14 for Volatile Organic Compounds**

This method involves drawing ambient air into a pre-evacuated, 6-liter SUMMA® canister. Samples are fractionated using a vacuum pump, a mass flow controller, and a cryogenic trap. Analysis is performed using a GC/MS/DS interfaced to an automatic desorber.

### **NIOSH Method 0600 for Total Particulate and PM-10**

This method uses tare weighed filter cassettes and a calibrated sample pump for collecting an integrated sample over a designated time period. A similar technique is used to measure respirable particulate (less than 10 microns-PM<sub>10</sub>).

**Guidelines for Selecting Laboratories for Everglades Phosphorus Measurements**  
*Florida Department of Environmental Protection*  
*Bureau of Laboratories*

## **Background**

Phosphorus has been identified in the Everglades Forever Act as the chemical agent responsible for undesirable ecological changes in the Everglades. Studies focused on establishing and quantifying ecological impacts due to phosphorus inputs have revealed the importance of accurately detecting and measuring phosphorus at very low concentrations. Typically, decisions for Everglades ecological preservation and restoration projects require that detection limits for total phosphorus be established at levels near or below marsh background concentrations.

Some of the historical Everglades data sets have been found to be inadequate for quantifying ecological change, primarily because the phosphorus measurements generated for those studies lacked sufficient sensitivity, accuracy and/or precision. The intent of this paper is to establish guidelines for procuring laboratory services with reasonable assurance that all phosphorus data generated will meet or exceed data quality objectives for Everglades restoration projects.

## **Laboratory Accreditation**

All analytical work for Everglades restoration projects must be performed by a laboratory that maintains accreditation under the National Environmental Laboratory Accreditation Program (NELAP). NELAP provides for a minimum set of standards to ensure a) that a documentation history of all essential data elements necessary to reconstruct reported results is maintained, b) that analyst training and demonstration of proficiency has been performed and documented, and c) that satisfactory analytical performance has been achieved on proficiency testing samples. NELAP accreditation must be obtained for all test methods that support Everglades restorations projects and must be maintained for the duration of the project.

## **Methodology**

All methodology utilized must be accredited under NELAP for the duration of the project and must comply with FAC 62-160. Methods must be based on EPA or AWWA Standard Methods or validation data for performance based measurement systems (PBMS) must have been submitted to the Florida Dept. of Environmental Protection (FDEP) and approved. All method validation exercises must be performed using field matrix samples from the area of study and equivalency must be demonstrated vis-à-vis standardized EPA or AWWA methodologies (see 'New and Alternative Analytical Methods, DEP-QA-001/01). All preservation techniques and holding times must comply with guidelines published in 40 CFR Part 136 Table 2.

## **Method Detection Limits**

Laboratories participating in Everglades restoration projects must maintain, and have documented, routinely achievable detection limits for total phosphorus of less than 5 ug/L. All detection limits must be calculated on an on-going basis using data collected from each analytical run. All detection limits studies must have been conducted in accordance with FAC 62-160. Validation data for initial detection limit studies must have been submitted to the FDEP and approved.

### **Practical Quantitation Limits**

Practical quantitation limits (PQLs) are defined in FAC 62-4 as the lowest measured value that can be quantified within specified limits of accuracy and precision. At values above the detection limit, the relative precision of a series of measurements (the measurement precision divided by the measured mean value) increases greatly as the detection limit is approached. For Everglades restoration projects, accuracy within 70% - 130% and long term precision of less than 15% relative standard deviation (RSD) must be documented and maintained for total phosphorus concentrations of 10 ug/L or less in laboratory check standards. The accuracy at 10 ug/L must be evaluated at least once during each analytical run. Any data reported below the laboratory's practical quantitation limit must be qualified as specified in FAC 62-160.

### **Quality Control Requirements**

All quality control requirements specified in NELAP Chapter 5 must be documented and maintained. For total phosphorus, a minimum of 5 calibration standards (excluding any calibration blank) must be included in analytical calibration curves. For background marsh samples, it is highly recommended that the upper calibration range not exceed 200 ug/L. Analytical sensitivity must be evaluated using a check standard prepared at the practical quantitation limit for each analytical run as described above. Analytical sensitivity evaluations must pass the criterion for accuracy specified for PQLs (70% - 130% recovery). Sample matrix spikes, using actual Everglades samples, must be evaluated with each analytical batch. Spike fortification should target a final concentration of 2-5 times the amount of phosphorus expected in the samples. Control limits for sample matrix spikes must not exceed 85% - 115% accuracy. If control limits for any measurements specified in NELAP Chapter 5 are exceeded (including control limits for sample matrix spikes), either the analysis must be repeated or all data reported for the associated analytical or preparation batch must be appropriately qualified as specified in F.A.C. 62-160. Data deemed to be inappropriate for project data quality objectives are subject to rejection by project managers.

### **Performance Demonstrations**

Prior to performing any analytical work on Everglades restoration projects, laboratories must have demonstrated acceptable performance for total phosphorus measurements. Acceptable performance for initial consideration is either a) adequate performance (an overall rating of 3 or better) in at least one recent exercises of the Everglades Phosphorus Round Robin program or b) an average score of 2.0 or greater for total phosphorus on two or more consecutive, recent proficiency evaluation studies sponsored by the U.S. Geological Survey, Branch of Quality Systems (Standard Reference Sample Project, Nutrient Series), with no individual score for any total phosphorus measurement to be less than 1.0 .

In addition to the initial demonstration of performance, laboratories must agree to continue to participate and achieve acceptable performance (as described above) in the ongoing Everglades Phosphorus Round Robin program and in the USGS Standard Reference Sample Project. In the event that laboratory performance is unacceptable in a proficiency study (as described above), the project manager must be notified and the laboratory must take appropriate corrective action. Laboratories must agree to work with other participating laboratories to solve performance problems in a reasonable period of time. The laboratory and the project manager will undertake remedial action with regard to data reported during a period of poor performance.

### **Data Usability**

It is incumbent upon laboratories to understand programmatic data quality objectives. Laboratories must perform an ongoing review of all aspects of data generation to ensure data are of sufficient quality to meet or exceed program objectives. Data review must include, at a minimum, an assessment of 1) the calibration curve, 2) the results for all quality control samples specified in this document, 3) analytical detection limits and blank sample results, 4) potential analytical interferences, 5) field quality control sample results (blanks, duplicates, filtered and unfiltered sample results, etc.), 6) holding time requirements, and 7) a comparison of reported analytical results versus historical values for the area under study (when available). Laboratories must take appropriate corrective action and notify their project manager whenever any aspect of the analysis fails to conform to requirements specified in the analytical method, this document or in NELAP Chapter 5.

### **Audits**

Prior to beginning any analytical work for Everglades restoration projects, laboratories must be audited by the FDEP (or by a delegated representative from a contracting agency) for the purpose of determining their suitability to perform the analytical work. The FDEP audit will consist of a data validation audit and/or on-site performance audit. Electronic data must be available to FDEP from participating laboratories. Any critical deficiencies noted in audits must be corrected prior to performing analytical work on an Everglades restoration project.

### **Everglades Round Robin Program**

FDEP will conduct an Everglades Round Robin program twice annually. The program will consist of samples collected at Everglades marsh and canal sites as well as independent reference standards. The samples will be sent to participating laboratories for total phosphorus analysis and the results will be evaluated by FDEP using statistical methods recommended by the Florida State University Statistics Department for this exercise.