Lee County Board Of County Commissioners
Agenda Item Summary **Blue Sheet No. 20021370**

1. REQUESTED MOTION:

ACTION REQUESTED: Approve and execute Agreement No. C-15375, Collection of Surface Water Quality in Lee County, between the South Florida Water Management District and Lee County. The South Florida Water Management District has allocated a not to exceed amount of $6,200.00 for Environmental Lab staff to collect two (2) surface water samples on a monthly basis and ship samples to the Florida Department of Environmental Protection for analysis.

WHY ACTION IS NECESSARY: All agreements and amendments thereto require approval by the Board of County Commissioners.

WHAT ACTION ACCOMPLISHES: Provides mechanism to reimburse Environmental Laboratory for operating expenses incurred in surface water sampling.

2. DEPARTMENTAL CATEGORY: 08 - C8A **COMMISSION DISTRICT #:** CW	**3. MEETING DATE:** 12-10-2002	
4. AGENDA: X CONSENT ___ ADMINISTRATIVE ___ APPEALS ___ PUBLIC ___ WALK ON TIME REQUIRED:	**5. REQUIREMENT/PURPOSE:** *(Specify)* ___ STATUTE ___ ORDINANCE ___ ADMIN. CODE X OTHER Agreement	**6. REQUESTOR OF INFORMATION:** A. COMMISSIONER B. DEPARTMENT Public Works C. DIVISION Natural Resources BY: Roland E. Ottolini, P.E.

7. BACKGROUND:

The South Florida Water Management District and the Lee County Environmental Laboratory have collaborated on the collection of water quality data for the Florida Department of Environmental Protection for the past three years. This agreement involves the collection of surface water samples and field parameters as part of the Ambient Monitoring Program of the Florida Department of Environmental Protection and attendance at meetings and training sessions. The County will collect samples from two (2) designated surface water sites on a monthly basis and ship the samples on the same day to the Florida Department of Environmental Protection's laboratory for analysis.

The South Florida Water Management District agrees to pay the Environmental Laboratory a total not to exceed amount of $6,200.00 as indicated in Exhibit "D" of the agreement. No additional funding is required. Sufficient funds exist within the FY02/03 Environmental Laboratory operating budget.

Attachment: Two (2) Originals, Agreement No. C-15375.

8. MANAGEMENT RECOMMENDATIONS:

9. RECOMMENDED APPROVAL:

A Department Director	B Purchasing or Contracts	C Human Resources	D Other	E County Attorney	F Budget Services 11/26/02				G County Manager
					OA	OM	Risk	GC	
11-25-02		N/A	N/A	11/25/02	11-26-02	11/26/02	11/26/02	11-26-02	11-25-02

10. COMMISSION ACTION:

______ APPROVED
______ DENIED
______ DEFERRED
______ OTHER

Rec. by CoAtty
Date: 11/25/02
Time: 3:28 pm
Forwarded To: Budget 11/26/02 8:50 am

RECEIVED ... PM
11/26/02
8:50 am
11/26 ...

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
3301 Gun Club Road, West Palm Beach, Florida 33406 • (561) 686-8800 • FL WATS 1-800-432-2045 • TDD (561) 697-2574
Mailing Address: P.O. Box 24680, West Palm Beach, FL 33416-4680 • www.sfwmd.gov

ADM 28-06

November 4, 2002

Mr. Keith Kibbey
Lee County
60 Danley Drive #2
Ft. Myers, FL 33907

Subject: **Contract No. C-15375**
Collection of Surface Water Quality in Lee County

Dear Mr. Kibbey:

Enclosed are two (2) copies of the subject contract. Please have them signed by an individual with signature authority on behalf of your organization. **Return both copies to my attention.** Do not date the documents; a fully signed and dated contract will be returned to you upon execution by the District.

Kindly return the executed documents and please include documentation to demonstrate official delegation of signature authority on behalf of your firm up to the contract monetary limits.

Note that this contract is not binding on the parties until it is approved by the appropriate level of authority within the District and executed by both parties.

Your cooperation and timely response will be greatly appreciated. Should there be any questions, please contact me at (561) 682-2720.

Sincerely,

Johanna Labrada
Contract Specialist
Procurement Department

/JL
Enclosure

c: w/ attachment
Carole Maddox, 4654

ORIGINAL

SOUTH FLORIDA WATER MANAGEMENT DISTRICT AGREEMENT

THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT (hereinafter referred to as DISTRICT) HEREBY ENTERS INTO THIS AGREEMENT WITH: **Name:** LEE COUNTY, FLORIDA **Address:** 60 DANLEY DRIVE #2 FT. MYERS, FL 33907 **Project Manager:** Keith Kibbey **Telephone No:** (941) 278-7070 **Fax No:** (941) 939- 4850 **Hereinafter referred to as: COUNTY**	**This number must appear on all Invoices and Correspondence** **C-15375** **MBE PARTICIPATION:** 0%

PROJECT TITLE: COLLECTION OF SURFACE WATER QUALITY IN LEE COUNTY

The following Exhibits are attached hereto and made a part of this AGREEMENT:

Exhibit "A" - Special Provisions	Exhibit "H" - Not Applicable
Exhibit "B" - General Terms and Conditions	Exhibit "I" - Not Applicable
Exhibit "C" - Statement of Work	Exhibit "J" - Not Applicable
Exhibit "D" - Payment and Deliverable Schedule	Exhibit "K" - Not Applicable
Exhibit "E" - Not Applicable	Exhibit "L" - Not Applicable
Exhibit "F" - Not Applicable	Exhibit "M" - FDEP Flowdown Provisions
Exhibit "G" - Not Applicable	

TOTAL AGREEMENT AMOUNT: $6,200.00	**AGREEMENT TYPE: Not-to-Exceed**
Multi-Year Funding (If Applicable)	
Fiscal Year:	**Fiscal Year:**
Fiscal Year:	**Fiscal Year:**
Fiscal Year:	**Fiscal Year:**
***Subject to District Governing Board Annual Budget Approval**	
AGREEMENT TERM: Three (3) Years	**EFFECTIVE DATE:** Last Date of Execution by the Parties
District Project Manager: Carole Maddox **Telephone No:** (561) 681-2500 **Fax No.** (561) 681-6310	**District Contract Administrator:** **Johanna Labrada (561) 682-2720** **Fax No.:** (561) 682-6397 or (561) 681-6275
SUBMIT INVOICES AND NOTICES TO THE DISTRICT AT: South Florida Water Management District 3301 Gun Club Road West Palm Beach, Florida 33406 Attention: Procurement Department	**SUBMIT NOTICES TO THE COUNTY AT:** LEE COUNTY, FLORIDA 60 DANLEY DRIVE #2 FT. MYERS, FL 33907 Attention: Keith Kibbey

IN WITNESS WHEREOF, the authorized representative hereby executes this **AGREEMENT** on this date, and accepts all Terms and Conditions under which it is issued.

LEE COUNTY, FLORIDA	**SOUTH FLORIDA WATER MANAGEMENT DISTRICT**
Accepted By: _____ Signature of Authorized Representative	Accepted By: _____ **Frank Hayden, Procurement Director**
Title: _____	Date: _____
Date: _____	OFFICE OF COUNSEL APPROVED BY: _____ DATE: 11/1/02 **SFWMD** PROCUREMENT APPROVED By: _____ Date: 10/31/02 12/3/02

SOUTH FLORIDA WATER MANAGEMENT DISTRICT AGREEMENT

EXHIBIT "A"
SPECIAL PROVISIONS

The purpose of this Exhibit "A" is to delineate any and all changes, deletions and/or additions to the Exhibit "B" General Terms & Conditions. In the event of any conflict between this Exhibit "A" and any other provision specified in this Agreement, this Exhibit "A" shall take precedence.

1. A new Article 1.4 is hereby added as follows:

"The **COUNTY** agrees to comply with the applicable flowdown provisions for services performed in conjunction with the Exhibit "C" Statement of Work. The flowdown provisions are set forth under Agreement Numbers C-13803 and C-13805 executed between the **DISTRICT** and the Florida Department of Environmental Protection (FDEP), attached hereto as Exhibit "M" and made a part of this **AGREEMENT**. Applicable provisions of this **AGREEMENT** include the following:

From C-13803: (Funding provided through this Agreement to the **COUNTY** includes all travel expenses.)
Section XI - Subcontracting; Section XII - MBE/WBE and Small Business Utilization; Section XIII - Small and Rural Business Utilization; Section XX - Audit: Access to Records; Section XXIII – Debarment and Suspension, and Section XXIV - Lobbying.

From C-13805: (Funding provided through this Agreement to the **COUNTY** includes all sampling activities.)
Section 5B – Fair Share Objectives; Section 5D - Acknowledgement of Federal Government's Participation; Section 9A - Maintenance of Books, Records and Documents; Section 12A - Lobbying Activities; Section 13 - Compliance with Applicable Rules and Regulations; Section 16 - Insurance; Section 24 - Debarment and Suspension; Section 26, Attachment H, - Contract Provisions."

2. Contract Term

This **AGREEMENT** shall be effective on the date of execution by the parties and shall remain in effect for three (3) years subject to satisfactory performance by the **COUNTY,** and the renewal of FDEP Agreements C-13803 and C-13805 on the anniversary of its effective date. Further funding for this **AGREEMENT** shall be in writing through a duly executed amendment and is subject to availability of funds, the renewal of FDEP Agreements C-13803 and C-13805 and Governing Board budgetary appropriations of funding.

SFWMD OFFICE OF COUNSEL APPROVED
By: _____ Date: 11/1/02

SFWMD PROCUREMENT APPROVED
By: _____ Date: 10/31/02

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
EXHIBIT "B"
GENERAL TERMS AND CONDITIONS

ARTICLE 1 - STATEMENT OF WORK

1.1 The **COUNTY** shall, to the satisfaction of the **DISTRICT**, fully and timely perform all work items described in the "Statement of Work," attached hereto as Exhibit "C" and made a part of this **AGREEMENT**.

1.2 As part of the services to be provided by the **COUNTY** under this **AGREEMENT**, the **COUNTY** shall substantiate, in whatever forum reasonably requested by the **DISTRICT,** the methodology, lab analytical examinations, scientific theories, data, reference materials, and research notes. The **COUNTY** shall also be required to substantiate any and all work completed, including but not limited to, work completed by subcontractors, assistants, models, concepts, analytical theories, computer programs and conclusions utilized as the basis for the final work product required by the **AGREEMENT**. This paragraph shall survive the expiration or termination of this **AGREEMENT.**

1.3 The parties agree that time is of the essence in the performance of each and every obligation under this **AGREEMENT**.

ARTICLE 2 - COMPENSATION/ CONSIDERATION

2.1 The total consideration for all work required by the **DISTRICT** pursuant to this **AGREEMENT** shall not exceed the amount as indicated on Page 1 of this **AGREEMENT**. Such amount includes all expenses which the **COUNTY** may incur and therefore no additional consideration shall be authorized.

2.2 Notwithstanding the foregoing, the amount expended under this **AGREEMENT** shall be paid in accordance with, and subject to the multi-year funding allocations for each **DISTRICT** fiscal year indicated on Page 1 of this **AGREEMENT**. Funding for each applicable fiscal year of this **AGREEMENT** is subject to **DISTRICT** Governing Board budgetary appropriation. In the event the **DISTRICT** does not approve funding for any subsequent fiscal year, this **AGREEMENT** shall terminate upon expenditure of the current funding, notwithstanding other provisions in this **AGREEMENT** to the contrary. The **DISTRICT** will notify the **COUNTY** in writing after the adoption of the final **DISTRICT** budget for each subsequent fiscal year if funding is not approved for this **AGREEMENT.**

2.3 The **COUNTY** assumes sole responsibility for all work which is performed pursuant to the Statement of Work, Exhibit "C". By providing funding hereunder, the **DISTRICT** does not make any warranty, guaranty, or any representation whatsoever regarding the correctness, accuracy, or reliability of any of the work performed hereunder.

2.4 The **COUNTY** by executing this **AGREEMENT**, certifies to truth-in-negotiation, specifically, that wage rates and other factual unit costs supporting the consideration are accurate, complete, and current at the time of contracting. The **COUNTY** agrees that the **DISTRICT** may adjust the consideration for this **AGREEMENT** to exclude any significant sums by which the consideration was increased due to inaccurate, incomplete, or non-current wage rates and other factual unit costs. The **DISTRICT** shall make any such adjustment within one (1) year following the expiration or termination of this **AGREEMENT**.

ARTICLE 3 - INVOICING AND PAYMENT

3.1 The **COUNTY's** invoices shall reference the **DISTRICT's** Contract Number and shall be sent to the **DISTRICT's** address specified on Page 1 of this **AGREEMENT**. The **COUNTY** shall not submit invoices to any other address at the **DISTRICT**.

3.2 The **COUNTY** shall submit the invoices on a completion of deliverable basis, pursuant to the schedule outlined in the Payment and Deliverable Schedule, attached hereto as Exhibit "D" and made a part of this **AGREEMENT**. In the event the schedule does not specify payment on a completion of deliverable basis, all invoices shall be substantiated by adequate supporting documentation to justify hours expended and expenses incurred within the not-to-exceed budget, including but not limited to, copies of approved timesheets, payment vouchers, expense reports, receipts and subcontractor invoices.

3.3 The **DISTRICT** shall pay the full amount of the invoice within thirty (30) days following **DISTRICT** acceptance of services and/or deliverable(s) required by this **AGREEMENT**. However, failure by the **COUNTY** to follow the foregoing instructions and submit acceptable services and or deliverables(s) may result in an unavoidable delay of payment by the **DISTRICT**.

3.4 Unless otherwise stated herein, the **DISTRICT** shall not pay for any obligation or expenditure made by the **COUNTY** prior to the commencement date of this **AGREEMENT**.

ARTICLE 4 - PROJECT MANAGEMENT/ NOTICE

4.1 The parties shall direct all technical matters arising in connection with the performance of this **AGREEMENT**, other than invoices and notices, to the attention of the respective Project Managers specified on Page 1 of the **AGREEMENT** for attempted resolution or action. The Project Managers shall be responsible for overall coordination and oversight relating to the performance of this **AGREEMENT**. The **COUNTY** shall direct all administrative matters, including invoices and notices, to the attention of the **DISTRICT's** Contract Administrator specified on Page 1 of the **AGREEMENT**.

All formal notices between the parties under this **AGREEMENT** shall be in writing and shall be deemed received if sent by certified mail, return receipt requested, to the respective addresses specified on Page 1 of the **AGREEMENT**. The **COUNTY** shall also provide a copy of all notices to the **DISTRICT's** Project Manager. All notices required by this **AGREEMENT** shall be considered delivered *upon receipt*. Should either party change its address, written notice of such new address shall promptly be sent to the other party.

All correspondence to the **DISTRICT** under this **AGREEMENT** shall reference the **DISTRICT's** Contract Number specified on Page 1 of the **AGREEMENT**.

ARTICLE 5 - INSURANCE

5.1 The **COUNTY** assumes any and all risks of personal injury, bodily injury and property damage attributable to the negligent acts or omissions of the **COUNTY** and the officers, employees, servants, and agents thereof. The **COUNTY** warrants and represents that it is self-funded for Worker's compensation and liability insurance, covering at a minimum bodily injury, personal injury and property damage with protection being applicable to the **COUNTY's** officers, employees, servants and agents while acting within the scope of their employment during performance under this **AGREEMENT**. The **COUNTY** and the **DISTRICT** further agree that nothing contained herein shall be construed or interpreted as (1) denying to either party any remedy or defense available to such party under the laws of the State of Florida; (2) the consent of the State of Florida or its agents and agencies to be sued; or (3) a waiver of sovereign immunity of the State of Florida beyond the waiver provided in Section 768.28, Florida Statutes.

5.2 In the event the **COUNTY** subcontracts any part or all of the work hereunder to any third party, the **COUNTY** shall require each and every subcontractor to identify the **DISTRICT** as an additional insured on all insurance policies as required by the **COUNTY**. Any contract awarded by the **COUNTY** for work under this **AGREEMENT** shall include a provision whereby the **COUNTY's** subcontractor agrees to defend, indemnify, and pay on behalf, save and hold the **DISTRICT** harmless from all damages arising in connection with the **COUNTY's** subcontract.

ARTICLE 6 - TERMINATION/REMEDIES

6.1 If either party fails to fulfill its obligations under this **AGREEMENT** in a timely and proper manner, the other party shall have the right to terminate this **AGREEMENT** by giving written notice of any deficiency. The party in default shall then have ten (10) calendar days from receipt of notice to correct the deficiency. If the defaulting party fails to correct the deficiency within this time, the non-defaulting party shall have the option to terminate this **AGREEMENT**

at the expiration of the ten (10) day time period. Should the **DISTRICT** elect to terminate for default in accordance with this provision, the **DISTRICT** shall be entitled to recover reprocurement costs, in addition to all other remedies under law and/or equity.

6.2 The **DISTRICT** may terminate this **AGREEMENT** with or without cause at any time for convenience upon thirty (30) calendar days prior written notice to the **COUNTY**. The performance of work under this **AGREEMENT** may be terminated by the **DISTRICT** in accordance with this clause in whole, or from time to time in part, whenever the **DISTRICT** shall determine that such termination is in the best interest of the **DISTRICT**. Any such termination shall be effected by delivery to the **COUNTY** of a Notice of Termination specifying the extent to which performance of work under the **AGREEMENT** is terminated, and the date upon which such termination becomes effective.

In the event of termination for convenience, the **DISTRICT** shall compensate the **COUNTY** for all authorized and accepted deliverables completed through the date of termination in accordance with Exhibit "C", Statement of Work. The **DISTRICT** shall be relieved of any and all future obligations hereunder, including but not limited to lost profits and consequential damages, under this **AGREEMENT**. The **DISTRICT** may withhold all payments to the **COUNTY** for such work until such time as the **DISTRICT** determines the exact amount due to the **COUNTY**.

6.3 If either party initiates legal action, including appeals, to enforce this **AGREEMENT**, the prevailing party shall be entitled to recover a reasonable attorney's fee, based upon the fair market value of the services provided.

6.4 In the event a dispute arises which the project managers cannot resolve between themselves, the parties shall have the option to submit to non-binding mediation. The mediator or mediators shall be impartial, shall be selected by the parties, and the cost of the mediation shall be borne equally by the parties. The mediation process shall be confidential to the extent permitted by law.

6.5 The **DISTRICT** may order that all or part of the work stop if circumstances dictate that this action is in the **DISTRICT's** best interest. Such circumstances may include, but are not limited to, unexpected technical developments, direction given by the **DISTRICT's** Governing Board, a condition of immediate danger to **DISTRICT** employees, or the possibility of damage to equipment or property. This provision shall not shift responsibility for loss or damage, including but not limited to, lost profits or consequential damages sustained as a result of such delay, from the **COUNTY** to the **DISTRICT**. If this provision is invoked, the **DISTRICT** shall notify the **COUNTY** in writing to stop work as of a certain date and specify the reasons for the action, which shall not be arbitrary or capricious. The **COUNTY** shall then be obligated to suspend all work efforts as of the effective date of the notice and until further written direction from the **DISTRICT** is received. Upon resumption of work, if deemed appropriate by the **DISTRICT**, the **DISTRICT** shall initiate an amendment to this **AGREEMENT** to reflect any changes to Exhibit "C", Statement of Work and/or the project schedule.

6.6 The **DISTRICT** anticipates a total project cost as indicated on Page 1, with the balance of matching funds and/or in-kind services to be obtained from the **COUNTY** in the amount as specified on Page 1 of this **AGREEMENT**. In the event such **COUNTY** matching funding and/or in-kind services becomes unavailable, that shall be good and sufficient cause for the **DISTRICT** to terminate the **AGREEMENT** pursuant to Paragraph 6.2 above.

ARTICLE 7 - RECORDS RETENTION/ OWNERSHIP

7.1 The **COUNTY** shall maintain records and the **DISTRICT** shall have inspection and audit rights as follows:

A. Maintenance of Records: The **COUNTY** shall maintain all financial and non-financial records and reports directly or indirectly related to the negotiation or performance of this **AGREEMENT** including supporting documentation for any service rates, expenses, research or reports. Such records shall

be maintained and made available for inspection for a period of five years from completing performance and receiving final payment under this **AGREEMENT**.

B. Examination of Records: The **DISTRICT** or its designated agent shall have the right to examine in accordance with generally accepted governmental ~~auditing standards all records directly or indirectly~~ related to this **AGREEMENT**. Such examination may be made only within five years from the date of final payment under this **AGREEMENT** and upon reasonable notice, time and place.

C. Extended Availability of Records for Legal Disputes: In the event that the **DISTRICT** should become involved in a legal dispute with a third party arising from performance under this **AGREEMENT**, the **COUNTY** shall extend the period of maintenance for all records relating to the **AGREEMENT** until the final disposition of the legal dispute, and all such records shall be made readily available to the **DISTRICT**.

7.2 The **DISTRICT** shall retain exclusive title, copyright and other proprietary rights in all work items, including but not limited to, all documents, technical reports, research notes, scientific data, computer programs, including the source and object code, which are developed, created or otherwise originated hereunder by the **COUNTY**, its subcontractor(s), assign(s), agent(s) and/or successor(s) as required by the Exhibit "C", Statement of Work (the "Work"). In consideration for the **DISTRICT** entering into this **AGREEMENT**, and other good and valuable consideration the sufficiency and receipt in full of which is hereby acknowledged by the **COUNTY**, the **COUNTY** hereby assigns, transfers, sells and otherwise grants to the **DISTRICT** any and all rights it now has or may have in the Work (the "Grant"). This Grant shall be self-operative upon execution by the parties hereto, however the **COUNTY** agrees to execute and deliver to the **DISTRICT** any further assignments or other instruments necessary to evidence the Grant, without the payment of any additional consideration by the **DISTRICT**. The **COUNTY** may not disclose, use, license or sell any work developed, created, or otherwise originated hereunder to any third party whatsoever. This paragraph shall survive the termination or expiration of this **AGREEMENT**.

7.3 The **COUNTY** represents and warrants that proprietary software, if any, to be provided to the **DISTRICT** by the **COUNTY** hereunder, as specifically identified in Exhibit "C", Statement of ~~Work shall have been developed solely by or for the~~ **COUNTY**, or lawfully acquired under license from a third party, including the right to sublicense such software. The **COUNTY** shall include copyright or proprietary legends in the software and on the label of the medium used to transmit the software. The **COUNTY** shall grant to the **DISTRICT** a perpetual, non-transferable, non-exclusive right to use the identified software without an additional fee. The **DISTRICT** acknowledges that title to the software identified in Exhibit "C" shall remain with the Licensor.

7.4 Any equipment purchased by the **COUNTY** with **DISTRICT** funding under this **CONTRACT** shall be returned and title transferred from the **COUNTY** to the **DISTRICT** immediately upon termination or expiration of this **AGREEMENT** upon the written request of the **DISTRICT** not less than thirty (30) days prior to **AGREEMENT** expiration or termination. Equipment is hereby defined as any non-consumable items purchased by the **DISTRICT** with a value equal to or greater than $500.00 and with a normal expected life of one (1) year or more. The **COUNTY** will maintain any such equipment in good working condition while in its possession and will return the equipment to the **DISTRICT** in good condition, less normal wear and tear. The **COUNTY** will use its best efforts to safeguard the equipment throughout the period of performance of this **AGREEMENT**. However the **DISTRICT** will not hold the **COUNTY** liable for loss or damage due to causes beyond the **COUNTY**'s reasonable control. In the event of loss or damage, the **COUNTY** shall notify the **DISTRICT** in writing within five (5) working days of such occurrence.

7.5 The **DISTRICT** has acquired the right to use certain software under license from third parties. For purposes of this **AGREEMENT**, the **DISTRICT** may permit the **COUNTY** access to certain third

party owned software on **DISTRICT** computer systems. The **COUNTY** acknowledges the proprietary nature of such software and agrees not to reproduce, distribute or disclose such software to any third party. Use of or access to such software shall be restricted to designated **DISTRICT** owned systems or equipment. Removal of any copy of licensed software is prohibited.

ARTICLE 8 - STANDARDS OF COMPLIANCE

8.1 The **COUNTY**, its employees, subcontractors or assigns, shall comply with all applicable federal, state, and local laws and regulations relating to the performance of this **AGREEMENT**. The **DISTRICT** undertakes no duty to ensure such compliance, but will attempt to advise the **COUNTY**, upon request, as to any such laws of which it has present knowledge.

8.2 The **COUNTY** hereby assures that no person shall be discriminated against on the grounds of race, color, creed, national origin, handicap, age, or sex, in any activity under this **AGREEMENT**. The **COUNTY** shall take all measures necessary to effectuate these assurances.

8.3 The laws of the State of Florida shall govern all aspects of this **AGREEMENT**. In the event it is necessary for either party to initiate legal action regarding this **AGREEMENT**, venue shall be in the Fifteenth Judicial Circuit for claims under state law and in the Southern District of Florida for any claims which are justiciable in federal court.

8.4 The **COUNTY**, by its execution of this **AGREEMENT**, acknowledges and attests that neither it, nor any of its suppliers, subcontractors, or consultants who shall perform work which is intended to benefit the **DISTRICT** is a convicted vendor or, if the **COUNTY** or any affiliate of the **COUNTY** has been convicted of a public entity crime, a period longer than 36 months has passed since that person was placed on the convicted vendor list. The **COUNTY** further understands and accepts that this **AGREEMENT** shall be either void by the **DISTRICT** or subject to immediate termination by the **DISTRICT**, in the event there is any misrepresentation or lack of compliance with the mandates of Section 287.133, Florida Statutes. The **DISTRICT**, in the event of such termination, shall not incur any liability to the **COUNTY** for any work or materials furnished.

8.5 The **COUNTY** shall be responsible and liable for the payment of all of its FICA/Social Security and other applicable taxes resulting from this **AGREEMENT**.

8.6 The **COUNTY** warrants that it has not employed or retained any person, other than a bona fide employee working solely for the **COUNTY**, to solicit or secure this **AGREEMENT**. Further the **COUNTY** warrants that is has not paid or agreed to pay any person, other than a bona fide employee working solely for the **COUNTY**, any fee, commission, percentage, gift, or other consideration contingent upon or resulting from the awarding or making of this **AGREEMENT**. For breach of this provision, the **DISTRICT** may terminate this **AGREEMENT** without liability and, at its discretion, deduct or otherwise recover the full amount of such fee, commission, percentage, gift, or other consideration.

8.7 The **COUNTY** shall allow public access to all project documents and materials in accordance with the provisions of Chapter 119, Florida Statutes. Should the **COUNTY** assert any exemptions to the requirements of Chapter 119 and related Statutes, the burden of establishing such exemption, by way of injunctive or other relief as provided by law, shall be upon the **COUNTY**.

8.7.1 Pursuant to Sections 119.07(3)(o), and 240.241 Florida Statutes, data processing software obtained by an agency under a license **AGREEMENT** which prohibits its disclosure and which software is a trade secret, as defined in Sections 812.081(c), Florida Statutes is exempt from the disclosure provisions of the Public Records law. However, the parties hereto agree that if a request is made of the **DISTRICT**, pursuant to Chapter 119, Florida Statute, for public disclosure of proprietary property being licensed to the **COUNTY** (Licensee) hereunder, the **DISTRICT** shall advise the **COUNTY** (Licensee) of such request and, as between the **DISTRICT** and the **COUNTY**

(Licensee), it shall be the **COUNTY's** (Licensee's) sole burden and responsibility to immediately seek and obtain such injunctive or other relief from the Courts and to immediately serve notice of the same upon the Licensor to protect the Licensor's claimed exemption under the Statute.

8.8 The **COUNTY** shall make reasonable efforts to obtain any necessary federal, state, local, and other governmental approvals, as well as all necessary private authorizations and permits, prior to the commencement of performance of this **AGREEMENT**. A delay in obtaining permits shall not give rise to a claim by the **COUNTY** for additional compensation. If the **COUNTY** is unable to obtain all necessary permits in a timely manner, either party may elect to terminate this **AGREEMENT**, each party to bear its own costs, notwithstanding other provisions of this **AGREEMENT** to the contrary.

8.9 Pursuant to Section 216.347, F.S., the **COUNTY** is prohibited from the expenditure of any funds under this **AGREEMENT** to lobby the Legislature, the judicial branch, or another state agency.

8.10 The **DISTRICT** is a governmental entity responsible for performing a public service and therefore has a legitimate interest in promoting the goals and objectives of the agency. The work under this **AGREEMENT** involves a project consistent with these goals and objectives. Consequently, the **DISTRICT** is desirous of satisfactorily completing and successfully promoting this project with the cooperation of its **COUNTY**. Therefore, as the **DISTRICT'S COUNTY** for this project, the **COUNTY** assures the **DISTRICT** that the **COUNTY**, its employees, subcontractors and assigns will refrain from acting adverse to the **DISTRICT'S** legitimate interest in promoting the goals and objectives of this project. The **COUNTY** agrees to take all reasonable measures necessary to effectuate these assurances. In the event the **COUNTY** determines it is unable to meet or promote the goals and objectives of the project, it shall have the duty to immediately notify the **DISTRICT**. Upon such notification the **DISTRICT**, in its discretion, may terminate this **AGREEMENT**.

ARTICLE 9 - RELATIONSHIP BETWEEN THE PARTIES

9.1 The **COUNTY** shall be considered an independent contractor and neither party shall be considered an employee or agent of the other party. Nothing in this **AGREEMENT** shall be interpreted to establish any relationship other than that of independent contractor between the parties and their respective employees, agents, subcontractors, or assigns during or after the performance on this **AGREEMENT.** Both parties are free to enter into contracts with other parties for similar services.

9.2 It is the intent and understanding of the Parties that this **AGREEMENT** is solely for the benefit of the **COUNTY** and the **DISTRICT**. No person or entity other than the **COUNTY** or the **DISTRICT** shall have any rights or privileges under this **AGREEMENT** in any capacity whatsoever, either as third-party beneficiary or otherwise.

9.3 The **COUNTY** shall not assign, delegate, or otherwise transfer its rights and obligations as set forth in this **AGREEMENT** without the prior written consent of the **DISTRICT.** Any attempted assignment in violation of this provision shall be void.

9.4 The **COUNTY** shall not pledge the **DISTRICT's** credit or make the **DISTRICT** a guarantor of payment or surety for any **AGREEMENT**, debt, obligation, judgement, lien, or any form of indebtedness.

9.5 The **DISTRICT** assumes no duty with regard to the supervision of the **COUNTY** and the **COUNTY** shall remain solely responsible for compliance with all safety requirements and for the safety of all persons and property at the site of **AGREEMENT** performance.

ARTICLE 10 - MBE PARTICIPATION

10.1 The **COUNTY** hereby acknowledges that no Minority Business Enterprises (MBE) participation goal has been established for this **AGREEMENT**; however, both parties agree to provide the other advance notice of competitive contracts that may result from this **AGREEMENT** along with timelines

for public notice and award of such contracts. In the event subsequent competitive contract awards do result in M/WBE participation, such participation shall be reported to the other party. Both the **COUNTY** and the **DISTRICT** will ensure compliance with the provisions of their respective program, laws, ordinances and policies and will support the other's initiatives to the extent allowed by law.

ARTICLE 11 - YEAR 2000 COMPLIANCE

Article 11 is hereby deleted.

ARTICLE 12 - GENERAL PROVISIONS

12.1 Notwithstanding any provisions of this **AGREEMENT** to the contrary, the parties shall not be held liable for any failure or delay in the performance of this **AGREEMENT** that arises from fires, floods, strikes, embargoes, acts of the public enemy, unusually severe weather, outbreak of war, restraint of Government, riots, civil commotion, force majeure, act of God, or for any other cause of the same character which is unavoidable through the exercise of due care and beyond the control of the parties. Failure to perform shall be excused during the continuance of such circumstances, but this **AGREEMENT** shall otherwise remain in effect. This provision shall not apply if the "Statement of Work" of this **AGREEMENT** specifies that performance by **COUNTY** is specifically required during the occurrence of any of the events herein mentioned.

12.2 In the event any provisions of this **AGREEMENT** shall conflict, or appear to conflict, the **AGREEMENT**, including all exhibits, attachments and all documents specifically incorporated by reference, shall be interpreted as a whole to resolve any inconsistency.

12.3 Failures or waivers to insist on strict performance of any covenant, condition, or provision of this **AGREEMENT** by the parties, their successors and assigns shall not be deemed a waiver of any of its rights or remedies, nor shall it relieve the other party from performing any subsequent obligations strictly in accordance with the terms of this **AGREEMENT**. No waiver shall be effective unless in writing and signed by the party against whom enforcement is sought. Such waiver shall be limited to provisions of this **AGREEMENT** specifically referred to therein and shall not be deemed a waiver of any other provision. No waiver shall constitute a continuing waiver unless the writing states otherwise.

12.4 Should any term or provision of this **AGREEMENT** be held, to any extent, invalid or unenforceable, as against any person, entity or circumstance during the term hereof, by force of any statute, law, or ruling of any forum of competent jurisdiction, such invalidity shall not affect any other term or provision of this **AGREEMENT**, to the extent that the **AGREEMENT** shall remain operable, enforceable and in full force and effect to the extent permitted by law.

12.5 This **AGREEMENT** may be amended only with the written approval of the parties hereto.

12.6 This **AGREEMENT** states the entire understanding and **AGREEMENT** between the parties and supersedes any and all written or oral representations, statements, negotiations, or contracts previously existing between the parties with respect to the subject matter of this **AGREEMENT**. The **COUNTY** recognizes that any representations, statements or negotiations made by **DISTRICT** staff do not suffice to legally bind the **DISTRICT** in a contractual relationship unless they have been reduced to writing and signed by an authorized **DISTRICT** representative. This **AGREEMENT** shall inure to the benefit of and shall be binding upon the parties, their respective assigns, and successors in interest.

ARTICLE 13 – SAFETY REQUIREMENTS

13.1 The **COUNTY** shall require appropriate personal protective equipment in all operations where there is exposure to hazardous conditions.

13.2 The **COUNTY** shall instruct employees required to handle or use toxic materials or other harmful substances regarding their safe handling and use, including instruction on the potential hazards, personal hygiene and required personal protective

measures. A Material Safety Data Sheet (MSDS) shall be provided by the **COUNTY** to the **DISTRICT** on each chemical product used.

13.3 The **COUNTY** shall comply with the standards and regulations set forth by the Occupational Safety and Health Administration (OSHA), the Florida Department of Labor and Employment Security and all other appropriate federal, state, local or **DISTRICT** safety and health standards.

13.4 It is the **COUNTY's** sole duty to provide safe and healthful working conditions to its employees and those of the **DISTRICT** on and about the site of **AGREEMENT** performance.

13.5 The **COUNTY** shall initiate and maintain an accident prevention program which shall include, but shall not be limited to, establishing and supervising programs for the education and training of employees in the recognition, avoidance, and prevention of unsafe conditions and acts.

13.6 The **COUNTY** shall erect and maintain, as required by existing conditions and performance of the **AGREEMENT**, reasonable safeguards for safety and protection, including posting of danger signs and other warnings, against hazards.

13.7 The **COUNTY** shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to:

13.7.1 employees on the work and other persons who may be affected thereby; including pedestrians, visitors, or traveling public;

13.7.2 the work, materials, and equipment to be incorporated therein; whether in storage on or off the site, under care, custody or control of the **COUNTY**, or the **COUNTY's** subcontractors; and

13.7.3 other properties at the site or adjacent thereto; such as trees, shrubs, lawns, walks, utilities, pavement, roadways, structures, building, vehicles, and equipment not designated for removal, relocation or replacement in the course of work.

13.8 The **COUNTY** shall provide first aid services and medical care to its employees.

13.9 The **COUNTY** shall develop and maintain an effective fire protection and prevention procedures and good housekeeping practices on the work site throughout the **AGREEMENT**.

13.10 *Emergencies*: In emergency affecting safety of persons or property on or about the site or as a result of the work; the **COUNTY** shall act, timely and with due diligence, to prevent threatened damage, injury, or loss.

13.11 *Environmental*: When the **COUNTY**, **COUNTY's** subcontractors, or subcontractors, use petroleum products, hazardous chemicals, or any other chemicals used on or about the site, the **COUNTY** shall be responsible for handling these chemical constituents in accordance with federal, state and local regulations during the terms of the **AGREEMENT**. For accidental discharges or releases onto the floor, air, ground, surface waters, ground waters, it shall be the **COUNTY's** sole responsibility to respond immediately to clean the site, at his expense, to the complete satisfaction of federal, state, local regulatory agencies and to the **DISTRICT** requirements.

13.12 The **DISTRICT** may order the **COUNTY** to halt operations under the **AGREEMENT**, at the **COUNTY's** expense, if a condition of immediate danger to the public and/or **DISTRICT** employees, equipment, or property exist. This provision shall not shift the responsibility or risk of loss for injuries or damage sustained from the **COUNTY** to the **DISTRICT**; and the **COUNTY** shall remain solely responsible for compliance with all federal, state and local safety requirements, provisions of this section, and safety of all persons and property on or about the site.

EXHIBIT "C"
STATEMENT OF WORK
COLLECTION OF SURFACE WATER QUALITY SAMPLES

1.0 INTRODUCTION

The South Florida Water Management District (District) and the Lee County Environmental Laboratory (County) have been collaborating on the collection of water quality data for the Florida Department of Environmental Protection (FDEP) for the past three years. This Agreement will involve the collection of surface water samples and field parameters as part of the FDEP Ambient Monitoring Program, as well as attendance at FDEP Ambient Meetings and training sessions. The County will collect samples from two (2) surface water sites that are part of the Surface Water Temporal Variability (SWTV) Network portion of the FDEP Ambient Monitoring Program.

2.0 OBJECTIVES

The primary objectives of this Agreement are to 1) obtain water quality data that fulfill District agreements with FDEP; 2) partner with a local government to execute a state wide monitoring effort; 3) reduce District monitoring costs; and 4) allow for redirection of staff to legislatively mandated projects.

3.0 SCOPE OF WORK

The County shall obtain field parameters and collect surface water samples on a monthly basis at two (2) SWTV network locations. The County shall follow the methodologies of sampling provided in FDEP's "Status and Temporal Variability Monitoring Networks Sampling Manual" (see Exhibit "M"). The sampling sites are designated as CALOOSRVR (latitude 264325N/longitude 814155W) and FISHCR27 (latitude 265556N/longitude 811854W). The County shall ship the samples to the FDEP Laboratory for analysis on the same day that samples are collected. The County shall submit all the proper paper work to FDEP Laboratory with the samples and fax copies of these forms to the District Project Manager. Lastly, the County shall have at least one representative attend the FDEP Ambient Meetings and training sessions as offered.

4.0 WORK BREAKDOWN

Task 1. FDEP Surface Water Temporal Variability (SWTV) Network Sample Collection

The county shall collect monthly surface water samples from two SWTV sites located within Lee County. Collection bottles will be provided by FDEP. The County shall collect the required samples and ship them on the same day to the FDEP laboratory for analysis. The County shall follow the methods of collection detailed in Attachment A and ensure that all the proper equipment and supplies are used during sample collection. The County shall be knowledgeable of project details prior to sampling. The County shall document relevant field conditions and

readings and submit all the required paper work to FDEP with the sample shipment. The County shall fax a copy of the proper paper work to the District Project Manager on the same day as collection.

Task 2. Attend FDEP Ambient Meetings and Professional Training

Appropriate County staff shall attend the FDEP Ambient Monitoring Program meetings and relevant training session as they are offered. The County shall ensure all technicians working on projects conducted under this agreement receive basic water quality sample collection training from the FDEP or an equivalent vendor approved by the District. The County and District Project Manager will be available to discuss the status of this Agreement as needed.

Task 3. Reporting

The County shall submit four (4) progress reports to the District; one within fifteen (15) days of the end of each quarter. Each progress report shall indicate work completed during the reporting period and any quality assurance issues or problems encountered during the completion of the tasks outlined in this Agreement.

EXHIBIT "D"
PAYMENT AND DELIVERABLE SCHEDULE

The County shall invoice the District on a quarterly basis. Payment of invoices will be contingent upon delivery and acceptance by the District of all deliverables and work products due within the invoiced period.

Task	Deliverable Description	Due Date	Quarterly Payments
Task 1	Collect SWTV field measurements and fax results to Project Manager.	Date of Collection	-0-
	Collect SWTV samples and ship to FDEP with chain of custody.	Date of Collection	-0-
	Collect samples according to the methods given in Exhibit "M".	Date of Collection	-0-
Task 2	Travel to FDEP Ambient Meetings and Training	To Be Determined	$3,000.00 ($750.00 per quarter)
Task 3	Submit Progress Report indicating work performed to District Project Manager	Quarterly	$3,200.00 ($800.00 per quarter)
TOTAL NOT-TO-EXCEED			**$6,200.00**

ORIGINAL

SOUTH FLORIDA WATER MANAGEMENT DISTRICT AGREEMENT

THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT (hereinafter referred to as DISTRICT) HEREBY ENTERS INTO THIS AGREEMENT WITH: **Name:** LEE COUNTY, FLORIDA **Address:** 60 DANLEY DRIVE #2 FT. MYERS, FL 33907 **Project Manager:** Keith Kibbey **Telephone No:** (941) 278-7070 **Fax No:** (941) 939- 4850 **Hereinafter referred to as: COUNTY**	**This number must appear on all Invoices and Correspondence** **C-15375** **MBE PARTICIPATION:** 0%

PROJECT TITLE: COLLECTION OF SURFACE WATER QUALITY IN LEE COUNTY

The following Exhibits are attached hereto and made a part of this AGREEMENT:

Exhibit "A" - Special Provisions	Exhibit "H" - Not Applicable
Exhibit "B" - General Terms and Conditions	Exhibit "I" - Not Applicable
Exhibit "C" - Statement of Work	Exhibit "J" - Not Applicable
Exhibit "D" - Payment and Deliverable Schedule	Exhibit "K" - Not Applicable
Exhibit "E" - Not Applicable	Exhibit "L" - Not Applicable
Exhibit "F" - Not Applicable	Exhibit "M" - FDEP Flowdown Provisions
Exhibit "G" - Not Applicable	

TOTAL AGREEMENT AMOUNT: $6,200.00	**AGREEMENT TYPE: Not-to-Exceed**
Multi-Year Funding (If Applicable)	
Fiscal Year:	**Fiscal Year:**
Fiscal Year:	**Fiscal Year:**
Fiscal Year:	**Fiscal Year:**
***Subject to District Governing Board Annual Budget Approval**	
AGREEMENT TERM: Three (3) Years	**EFFECTIVE DATE:** Last Date of Execution by the Parties
District Project Manager: Carole Maddox **Telephone No:** (561) 681-2500 **Fax No.** (561) 681-6310	**District Contract Administrator:** **Johanna Labrada (561) 682-2720** **Fax No.:** (561) 682-6397 or (561) 681-6275
SUBMIT INVOICES AND NOTICES TO THE DISTRICT AT: South Florida Water Management District 3301 Gun Club Road West Palm Beach, Florida 33406 Attention: Procurement Department	**SUBMIT NOTICES TO THE COUNTY AT:** LEE COUNTY, FLORIDA 60 DANLEY DRIVE #2 FT. MYERS, FL 33907 Attention: Keith Kibbey

IN WITNESS WHEREOF, the authorized representative hereby executes this **AGREEMENT** on this date, and accepts all Terms and Conditions under which it is issued.

LEE COUNTY, FLORIDA	**SOUTH FLORIDA WATER MANAGEMENT DISTRICT**
Accepted By: _____ Signature of Authorized Representative	Accepted By: _____ **Frank Hayden, Procurement Director**
Title: _____	Date: _____
Date: _____	OFFICE OF COUNSEL APPROVED BY: _____ DATE: 12/30/02 **SFWMD** PROCUREMENT APPROVED By: _____ Date: 12/31/02 12/31/02

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
AGREEMENT

EXHIBIT "A"
SPECIAL PROVISIONS

The purpose of this Exhibit "A" is to delineate any and all changes, deletions and/or additions to the Exhibit "B" General Terms & Conditions. In the event of any conflict between this Exhibit "A" and any other provision specified in this Agreement, this Exhibit "A" shall take precedence.

1. A new Article 1.4 is hereby added as follows:

"The **COUNTY** agrees to comply with the applicable flowdown provisions for services performed in conjunction with the Exhibit "C" Statement of Work. The flowdown provisions are set forth under Agreement Numbers C-13803 and C-13805 executed between the **DISTRICT** and the Florida Department of Environmental Protection (FDEP), attached hereto as Exhibit "M" and made a part of this **AGREEMENT**. Applicable provisions of this **AGREEMENT** include the following:

From C-13803: (Funding provided through this Agreement to the **COUNTY** includes all travel expenses.)
Section XI - Subcontracting; Section XII - MBE/WBE and Small Business Utilization; Section XIII - Small and Rural Business Utilization; Section XX - Audit: Access to Records; Section XXIII – Debarment and Suspension, and Section XXIV - Lobbying.

From C-13805: (Funding provided through this Agreement to the **COUNTY** includes all sampling activities.)
Section 5B – Fair Share Objectives; Section 5D - Acknowledgement of Federal Government's Participation; Section 9A - Maintenance of Books, Records and Documents; Section 12A - Lobbying Activities; Section 13 - Compliance with Applicable Rules and Regulations; Section 16 - Insurance; Section 24 - Debarment and Suspension; Section 26, Attachment H, - Contract Provisions."

2. Contract Term

This **AGREEMENT** shall be effective on the date of execution by the parties and shall remain in effect for three (3) years subject to satisfactory performance by the **COUNTY,** and the renewal of FDEP Agreements C-13803 and C-13805 on the anniversary of its effective date. Further funding for this **AGREEMENT** shall be in writing through a duly executed amendment and is subject to availability of funds, the renewal of FDEP Agreements C-13803 and C-13805 and Governing Board budgetary appropriations of funding.

SFWMD OFFICE OF COUNSEL APPROVED
By: _____ Date: 11/1/02

SFWMD PROCUREMENT APPROVED
By: _____ Date: 10/31/02

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
EXHIBIT "B"
GENERAL TERMS AND CONDITIONS

ARTICLE 1 - STATEMENT OF WORK

1.1 The **COUNTY** shall, to the satisfaction of the **DISTRICT**, fully and timely perform all work items described in the "Statement of Work," attached hereto as Exhibit "C" and made a part of this **AGREEMENT**.

1.2 As part of the services to be provided by the **COUNTY** under this **AGREEMENT**, the **COUNTY** shall substantiate, in whatever forum reasonably requested by the **DISTRICT**, the methodology, lab analytical examinations, scientific theories, data, reference materials, and research notes. The **COUNTY** shall also be required to substantiate any and all work completed, including but not limited to, work completed by subcontractors, assistants, models, concepts, analytical theories, computer programs and conclusions utilized as the basis for the final work product required by the **AGREEMENT**. This paragraph shall survive the expiration or termination of this **AGREEMENT.**

1.3 The parties agree that time is of the essence in the performance of each and every obligation under this **AGREEMENT**.

ARTICLE 2 - COMPENSATION/ CONSIDERATION

2.1 The total consideration for all work required by the **DISTRICT** pursuant to this **AGREEMENT** shall not exceed the amount as indicated on Page 1 of this **AGREEMENT**. Such amount includes all expenses which the **COUNTY** may incur and therefore no additional consideration shall be authorized.

2.2 Notwithstanding the foregoing, the amount expended under this **AGREEMENT** shall be paid in accordance with, and subject to the multi-year funding allocations for each **DISTRICT** fiscal year indicated on Page 1 of this **AGREEMENT**. Funding for each applicable fiscal year of this **AGREEMENT** is subject to **DISTRICT** Governing Board budgetary appropriation. In the event the **DISTRICT** does not approve funding for any subsequent fiscal year, this **AGREEMENT** shall terminate upon expenditure of the current funding, notwithstanding other provisions in this **AGREEMENT** to the contrary. The **DISTRICT** will notify the **COUNTY** in writing after the adoption of the final **DISTRICT** budget for each subsequent fiscal year if funding is not approved for this **AGREEMENT.**

2.3 The **COUNTY** assumes sole responsibility for all work which is performed pursuant to the Statement of Work, Exhibit "C". By providing funding hereunder, the **DISTRICT** does not make any warranty, guaranty, or any representation whatsoever regarding the correctness, accuracy, or reliability of any of the work performed hereunder.

2.4 The **COUNTY** by executing this **AGREEMENT**, certifies to truth-in-negotiation, specifically, that wage rates and other factual unit costs supporting the consideration are accurate, complete, and current at the time of contracting. The **COUNTY** agrees that the **DISTRICT** may adjust the consideration for this **AGREEMENT** to exclude any significant sums by which the consideration was increased due to inaccurate, incomplete, or non-current wage rates and other factual unit costs. The **DISTRICT** shall make any such adjustment within one (1) year following the expiration or termination of this **AGREEMENT**.

ARTICLE 3 - INVOICING AND PAYMENT

3.1 The **COUNTY's** invoices shall reference the **DISTRICT's** Contract Number and shall be sent to the **DISTRICT's** address specified on Page 1 of this **AGREEMENT**. The **COUNTY** shall not submit invoices to any other address at the **DISTRICT**.

3.2 The **COUNTY** shall submit the invoices on a completion of deliverable basis, pursuant to the schedule outlined in the Payment and Deliverable Schedule, attached hereto as Exhibit "D" and made a part of this **AGREEMENT**. In the event the schedule does not specify payment on a completion of deliverable basis, all invoices shall be substantiated by adequate supporting documentation to justify hours expended and expenses incurred within the not-to-exceed budget, including but not limited to, copies of approved timesheets, payment vouchers, expense reports, receipts and subcontractor invoices.

3.3 The **DISTRICT** shall pay the full amount of the invoice within thirty (30) days following **DISTRICT** acceptance of services and/or deliverable(s) required by this **AGREEMENT**. However, failure by the **COUNTY** to follow the foregoing instructions and submit acceptable services and or deliverables(s) may result in an unavoidable delay of payment by the **DISTRICT**.

3.4 Unless otherwise stated herein, the **DISTRICT** shall not pay for any obligation or expenditure made by the **COUNTY** prior to the commencement date of this **AGREEMENT**.

ARTICLE 4 - PROJECT MANAGEMENT/ NOTICE

4.1 The parties shall direct all technical matters arising in connection with the performance of this **AGREEMENT**, other than invoices and notices, to the attention of the respective Project Managers specified on Page 1 of the **AGREEMENT** for attempted resolution or action. The Project Managers shall be responsible for overall coordination and oversight relating to the performance of this **AGREEMENT**. The **COUNTY** shall direct all administrative matters, including invoices and notices, to the attention of the **DISTRICT's** Contract Administrator specified on Page 1 of the **AGREEMENT**.

All formal notices between the parties under this **AGREEMENT** shall be in writing and shall be deemed received if sent by certified mail, return receipt requested, to the respective addresses specified on Page 1 of the **AGREEMENT**. The **COUNTY** shall also provide a copy of all notices to the **DISTRICT's** Project Manager. All notices required by this **AGREEMENT** shall be considered delivered *upon receipt*. Should either party change its address, written notice of such new address shall promptly be sent to the other party.

All correspondence to the **DISTRICT** under this **AGREEMENT** shall reference the **DISTRICT's** Contract Number specified on Page 1 of the **AGREEMENT**.

ARTICLE 5 - INSURANCE

5.1 The **COUNTY** assumes any and all risks of personal injury, bodily injury and property damage attributable to the negligent acts or omissions of the **COUNTY** and the officers, employees, servants, and agents thereof. The **COUNTY** warrants and represents that it is self-funded for Worker's compensation and liability insurance, covering at a minimum bodily injury, personal injury and property damage with protection being applicable to the **COUNTY's** officers, employees, servants and agents while acting within the scope of their employment during performance under this **AGREEMENT**. The **COUNTY** and the **DISTRICT** further agree that nothing contained herein shall be construed or interpreted as (1) denying to either party any remedy or defense available to such party under the laws of the State of Florida; (2) the consent of the State of Florida or its agents and agencies to be sued; or (3) a waiver of sovereign immunity of the State of Florida beyond the waiver provided in Section 768.28, Florida Statutes.

5.2 In the event the **COUNTY** subcontracts any part or all of the work hereunder to any third party, the **COUNTY** shall require each and every subcontractor to identify the **DISTRICT** as an additional insured on all insurance policies as required by the **COUNTY**. Any contract awarded by the **COUNTY** for work under this **AGREEMENT** shall include a provision whereby the **COUNTY's** subcontractor agrees to defend, indemnify, and pay on behalf, save and hold the **DISTRICT** harmless from all damages arising in connection with the **COUNTY's** subcontract.

ARTICLE 6 - TERMINATION/REMEDIES

6.1 If either party fails to fulfill its obligations under this **AGREEMENT** in a timely and proper manner, the other party shall have the right to terminate this **AGREEMENT** by giving written notice of any deficiency. The party in default shall then have ten (10) calendar days from receipt of notice to correct the deficiency. If the defaulting party fails to correct the deficiency within this time, the non-defaulting party shall have the option to terminate this **AGREEMENT**

at the expiration of the ten (10) day time period. Should the **DISTRICT** elect to terminate for default in accordance with this provision, the **DISTRICT** shall be entitled to recover reprocurement costs, in addition to all other remedies under law and/or equity.

6.2 The **DISTRICT** may terminate this **AGREEMENT** with or without cause at any time for convenience upon thirty (30) calendar days prior written notice to the **COUNTY**. The performance of work under this **AGREEMENT** may be terminated by the **DISTRICT** in accordance with this clause in whole, or from time to time in part, whenever the **DISTRICT** shall determine that such termination is in the best interest of the **DISTRICT**. Any such termination shall be effected by delivery to the **COUNTY** of a Notice of Termination specifying the extent to which performance of work under the **AGREEMENT** is terminated, and the date upon which such termination becomes effective.

In the event of termination for convenience, the **DISTRICT** shall compensate the **COUNTY** for all authorized and accepted deliverables completed through the date of termination in accordance with Exhibit "C", Statement of Work. The **DISTRICT** shall be relieved of any and all future obligations hereunder, including but not limited to lost profits and consequential damages, under this **AGREEMENT**. The **DISTRICT** may withhold all payments to the **COUNTY** for such work until such time as the **DISTRICT** determines the exact amount due to the **COUNTY**.

6.3 If either party initiates legal action, including appeals, to enforce this **AGREEMENT**, the prevailing party shall be entitled to recover a reasonable attorney's fee, based upon the fair market value of the services provided.

6.4 In the event a dispute arises which the project managers cannot resolve between themselves, the parties shall have the option to submit to non-binding mediation. The mediator or mediators shall be impartial, shall be selected by the parties, and the cost of the mediation shall be borne equally by the parties. The mediation process shall be confidential to the extent permitted by law.

6.5 The **DISTRICT** may order that all or part of the work stop if circumstances dictate that this action is in the **DISTRICT's** best interest. Such circumstances may include, but are not limited to, unexpected technical developments, direction given by the **DISTRICT's** Governing Board, a condition of immediate danger to **DISTRICT** employees, or the possibility of damage to equipment or property. This provision shall not shift responsibility for loss or damage, including but not limited to, lost profits or consequential damages sustained as a result of such delay, from the **COUNTY** to the **DISTRICT**. If this provision is invoked, the **DISTRICT** shall notify the **COUNTY** in writing to stop work as of a certain date and specify the reasons for the action, which shall not be arbitrary or capricious. The **COUNTY** shall then be obligated to suspend all work efforts as of the effective date of the notice and until further written direction from the **DISTRICT** is received. Upon resumption of work, if deemed appropriate by the **DISTRICT**, the **DISTRICT** shall initiate an amendment to this **AGREEMENT** to reflect any changes to Exhibit "C", Statement of Work and/or the project schedule.

6.6 The **DISTRICT** anticipates a total project cost as indicated on Page 1, with the balance of matching funds and/or in-kind services to be obtained from the **COUNTY** in the amount as specified on Page 1 of this **AGREEMENT**. In the event such **COUNTY** matching funding and/or in-kind services becomes unavailable, that shall be good and sufficient cause for the **DISTRICT** to terminate the **AGREEMENT** pursuant to Paragraph 6.2 above.

ARTICLE 7 - RECORDS RETENTION/ OWNERSHIP

7.1 The **COUNTY** shall maintain records and the **DISTRICT** shall have inspection and audit rights as follows:

A. Maintenance of Records: The **COUNTY** shall maintain all financial and non-financial records and reports directly or indirectly related to the negotiation or performance of this **AGREEMENT** including supporting documentation for any service rates, expenses, research or reports. Such records shall

be maintained and made available for inspection for a period of five years from completing performance and receiving final payment under this **AGREEMENT**.

B. Examination of Records: The **DISTRICT** or its designated agent shall have the right to examine in accordance with generally accepted governmental auditing standards all records directly or indirectly related to this **AGREEMENT**. Such examination may be made only within five years from the date of final payment under this **AGREEMENT** and upon reasonable notice, time and place.

C. Extended Availability of Records for Legal Disputes: In the event that the **DISTRICT** should become involved in a legal dispute with a third party arising from performance under this **AGREEMENT**, the **COUNTY** shall extend the period of maintenance for all records relating to the **AGREEMENT** until the final disposition of the legal dispute, and all such records shall be made readily available to the **DISTRICT**.

7.2 The **DISTRICT** shall retain exclusive title, copyright and other proprietary rights in all work items, including but not limited to, all documents, technical reports, research notes, scientific data, computer programs, including the source and object code, which are developed, created or otherwise originated hereunder by the **COUNTY**, its subcontractor(s), assign(s), agent(s) and/or successor(s) as required by the Exhibit "C", Statement of Work (the "Work"). In consideration for the **DISTRICT** entering into this **AGREEMENT**, and other good and valuable consideration the sufficiency and receipt in full of which is hereby acknowledged by the **COUNTY**, the **COUNTY** hereby assigns, transfers, sells and otherwise grants to the **DISTRICT** any and all rights it now has or may have in the Work (the "Grant"). This Grant shall be self-operative upon execution by the parties hereto, however the **COUNTY** agrees to execute and deliver to the **DISTRICT** any further assignments or other instruments necessary to evidence the Grant, without the payment of any additional consideration by the **DISTRICT**. The **COUNTY** may not disclose, use, license or sell any work developed, created, or otherwise originated hereunder to any third party whatsoever. This paragraph shall survive the termination or expiration of this **AGREEMENT**.

7.3 The **COUNTY** represents and warrants that proprietary software, if any, to be provided to the **DISTRICT** by the **COUNTY** hereunder, as specifically identified in Exhibit "C", Statement of Work shall have been developed solely by or for the **COUNTY**, or lawfully acquired under license from a third party, including the right to sublicense such software. The **COUNTY** shall include copyright or proprietary legends in the software and on the label of the medium used to transmit the software. The **COUNTY** shall grant to the **DISTRICT** a perpetual, non-transferable, non-exclusive right to use the identified software without an additional fee. The **DISTRICT** acknowledges that title to the software identified in Exhibit "C" shall remain with the Licensor.

7.4 Any equipment purchased by the **COUNTY** with **DISTRICT** funding under this **CONTRACT** shall be returned and title transferred from the **COUNTY** to the **DISTRICT** immediately upon termination or expiration of this **AGREEMENT** upon the written request of the **DISTRICT** not less than thirty (30) days prior to **AGREEMENT** expiration or termination. Equipment is hereby defined as any non-consumable items purchased by the **DISTRICT** with a value equal to or greater than $500.00 and with a normal expected life of one (1) year or more. The **COUNTY** will maintain any such equipment in good working condition while in its possession and will return the equipment to the **DISTRICT** in good condition, less normal wear and tear. The **COUNTY** will use its best efforts to safeguard the equipment throughout the period of performance of this **AGREEMENT**. However the **DISTRICT** will not hold the **COUNTY** liable for loss or damage due to causes beyond the **COUNTY**'s reasonable control. In the event of loss or damage, the **COUNTY** shall notify the **DISTRICT** in writing within five (5) working days of such occurrence.

7.5 The **DISTRICT** has acquired the right to use certain software under license from third parties. For purposes of this **AGREEMENT**, the **DISTRICT** may permit the **COUNTY** access to certain third

party owned software on **DISTRICT** computer systems. The **COUNTY** acknowledges the proprietary nature of such software and agrees not to reproduce, distribute or disclose such software to any third party. Use of or access to such software shall be restricted to designated **DISTRICT** owned systems or equipment. Removal of any copy of licensed software is prohibited.

ARTICLE 8 - STANDARDS OF COMPLIANCE

8.1 The **COUNTY**, its employees, subcontractors or assigns, shall comply with all applicable federal, state, and local laws and regulations relating to the performance of this **AGREEMENT**. The **DISTRICT** undertakes no duty to ensure such compliance, but will attempt to advise the **COUNTY**, upon request, as to any such laws of which it has present knowledge.

8.2 The **COUNTY** hereby assures that no person shall be discriminated against on the grounds of race, color, creed, national origin, handicap, age, or sex, in any activity under this **AGREEMENT**. The **COUNTY** shall take all measures necessary to effectuate these assurances.

8.3 The laws of the State of Florida shall govern all aspects of this **AGREEMENT**. In the event it is necessary for either party to initiate legal action regarding this **AGREEMENT**, venue shall be in the Fifteenth Judicial Circuit for claims under state law and in the Southern District of Florida for any claims which are justiciable in federal court.

8.4 The **COUNTY**, by its execution of this **AGREEMENT**, acknowledges and attests that neither it, nor any of its suppliers, subcontractors, or consultants who shall perform work which is intended to benefit the **DISTRICT** is a convicted vendor or, if the **COUNTY** or any affiliate of the **COUNTY** has been convicted of a public entity crime, a period longer than 36 months has passed since that person was placed on the convicted vendor list. The **COUNTY** further understands and accepts that this **AGREEMENT** shall be either void by the **DISTRICT** or subject to immediate termination by the **DISTRICT**, in the event there is any misrepresentation or lack of compliance with the mandates of Section 287.133, Florida Statutes. The **DISTRICT**, in the event of such termination, shall not incur any liability to the **COUNTY** for any work or materials furnished.

8.5 The **COUNTY** shall be responsible and liable for the payment of all of its FICA/Social Security and other applicable taxes resulting from this **AGREEMENT**.

8.6 The **COUNTY** warrants that it has not employed or retained any person, other than a bona fide employee working solely for the **COUNTY**, to solicit or secure this **AGREEMENT**. Further the **COUNTY** warrants that is has not paid or agreed to pay any person, other than a bona fide employee working solely for the **COUNTY**, any fee, commission, percentage, gift, or other consideration contingent upon or resulting from the awarding or making of this **AGREEMENT**. For breach of this provision, the **DISTRICT** may terminate this **AGREEMENT** without liability and, at its discretion, deduct or otherwise recover the full amount of such fee, commission, percentage, gift, or other consideration.

8.7 The **COUNTY** shall allow public access to all project documents and materials in accordance with the provisions of Chapter 119, Florida Statutes. Should the **COUNTY** assert any exemptions to the requirements of Chapter 119 and related Statutes, the burden of establishing such exemption, by way of injunctive or other relief as provided by law, shall be upon the **COUNTY**.

8.7.1 Pursuant to Sections 119.07(3)(o), and 240.241 Florida Statutes, data processing software obtained by an agency under a license **AGREEMENT** which prohibits its disclosure and which software is a trade secret, as defined in Sections 812.081(c), Florida Statutes is exempt from the disclosure provisions of the Public Records law. However, the parties hereto agree that if a request is made of the **DISTRICT**, pursuant to Chapter 119, Florida Statute, for public disclosure of proprietary property being licensed to the **COUNTY** (Licensee) hereunder, the **DISTRICT** shall advise the **COUNTY** (Licensee) of such request and, as between the **DISTRICT** and the **COUNTY**

(Licensee), it shall be the **COUNTY's** (Licensee's) sole burden and responsibility to immediately seek and obtain such injunctive or other relief from the Courts and to immediately serve notice of the same upon the Licensor to protect the Licensor's claimed exemption under the Statute.

8.8 The **COUNTY** shall make reasonable efforts to obtain any necessary federal, state, local, and other governmental approvals, as well as all necessary private authorizations and permits, prior to the commencement of performance of this **AGREEMENT**. A delay in obtaining permits shall not give rise to a claim by the **COUNTY** for additional compensation. If the **COUNTY** is unable to obtain all necessary permits in a timely manner, either party may elect to terminate this **AGREEMENT**, each party to bear its own costs, notwithstanding other provisions of this **AGREEMENT** to the contrary.

8.9 Pursuant to Section 216.347, F.S., the **COUNTY** is prohibited from the expenditure of any funds under this **AGREEMENT** to lobby the Legislature, the judicial branch, or another state agency.

8.10 The **DISTRICT** is a governmental entity responsible for performing a public service and therefore has a legitimate interest in promoting the goals and objectives of the agency. The work under this **AGREEMENT** involves a project consistent with these goals and objectives. Consequently, the **DISTRICT** is desirous of satisfactorily completing and successfully promoting this project with the cooperation of its **COUNTY**. Therefore, as the **DISTRICT'S COUNTY** for this project, the **COUNTY** assures the **DISTRICT** that the **COUNTY**, its employees, subcontractors and assigns will refrain from acting adverse to the **DISTRICT'S** legitimate interest in promoting the goals and objectives of this project. The **COUNTY** agrees to take all reasonable measures necessary to effectuate these assurances. In the event the **COUNTY** determines it is unable to meet or promote the goals and objectives of the project, it shall have the duty to immediately notify the **DISTRICT**. Upon such notification the **DISTRICT**, in its discretion, may terminate this **AGREEMENT**.

ARTICLE 9 - RELATIONSHIP BETWEEN THE PARTIES

9.1 The **COUNTY** shall be considered an independent contractor and neither party shall be considered an employee or agent of the other party. Nothing in this **AGREEMENT** shall be interpreted to establish any relationship other than that of independent contractor between the parties and their respective employees, agents, subcontractors, or assigns during or after the performance on this **AGREEMENT.** Both parties are free to enter into contracts with other parties for similar services.

9.2 It is the intent and understanding of the Parties that this **AGREEMENT** is solely for the benefit of the **COUNTY** and the **DISTRICT**. No person or entity other than the **COUNTY** or the **DISTRICT** shall have any rights or privileges under this **AGREEMENT** in any capacity whatsoever, either as third-party beneficiary or otherwise.

9.3 The **COUNTY** shall not assign, delegate, or otherwise transfer its rights and obligations as set forth in this **AGREEMENT** without the prior written consent of the **DISTRICT.** Any attempted assignment in violation of this provision shall be void.

9.4 The **COUNTY** shall not pledge the **DISTRICT's** credit or make the **DISTRICT** a guarantor of payment or surety for any **AGREEMENT**, debt, obligation, judgement, lien, or any form of indebtedness.

9.5 The **DISTRICT** assumes no duty with regard to the supervision of the **COUNTY** and the **COUNTY** shall remain solely responsible for compliance with all safety requirements and for the safety of all persons and property at the site of **AGREEMENT** performance.

ARTICLE 10 - MBE PARTICIPATION

10.1 The **COUNTY** hereby acknowledges that no Minority Business Enterprises (MBE) participation goal has been established for this **AGREEMENT**; however, both parties agree to provide the other advance notice of competitive contracts that may result from this **AGREEMENT** along with timelines

for public notice and award of such contracts. In the event subsequent competitive contract awards do result in M/WBE participation, such participation shall be reported to the other party. Both the **COUNTY** and the **DISTRICT** will ensure compliance with the provisions of their respective program, laws, ordinances and policies and will support the other's initiatives to the extent allowed by law.

ARTICLE 11 - YEAR 2000 COMPLIANCE

Article 11 is hereby deleted.

ARTICLE 12 - GENERAL PROVISIONS

12.1 Notwithstanding any provisions of this **AGREEMENT** to the contrary, the parties shall not be held liable for any failure or delay in the performance of this **AGREEMENT** that arises from fires, floods, strikes, embargoes, acts of the public enemy, unusually severe weather, outbreak of war, restraint of Government, riots, civil commotion, force majeure, act of God, or for any other cause of the same character which is unavoidable through the exercise of due care and beyond the control of the parties. Failure to perform shall be excused during the continuance of such circumstances, but this **AGREEMENT** shall otherwise remain in effect. This provision shall not apply if the "Statement of Work" of this **AGREEMENT** specifies that performance by **COUNTY** is specifically required during the occurrence of any of the events herein mentioned.

12.2 In the event any provisions of this **AGREEMENT** shall conflict, or appear to conflict, the **AGREEMENT**, including all exhibits, attachments and all documents specifically incorporated by reference, shall be interpreted as a whole to resolve any inconsistency.

12.3 Failures or waivers to insist on strict performance of any covenant, condition, or provision of this **AGREEMENT** by the parties, their successors and assigns shall not be deemed a waiver of any of its rights or remedies, nor shall it relieve the other party from performing any subsequent obligations strictly in accordance with the terms of this **AGREEMENT**. No waiver shall be effective unless in writing and signed by the party against whom enforcement is sought. Such waiver shall be limited to provisions of this **AGREEMENT** specifically referred to therein and shall not be deemed a waiver of any other provision. No waiver shall constitute a continuing waiver unless the writing states otherwise.

12.4 Should any term or provision of this **AGREEMENT** be held, to any extent, invalid or unenforceable, as against any person, entity or circumstance during the term hereof, by force of any statute, law, or ruling of any forum of competent jurisdiction, such invalidity shall not affect any other term or provision of this **AGREEMENT**, to the extent that the **AGREEMENT** shall remain operable, enforceable and in full force and effect to the extent permitted by law.

12.5 This **AGREEMENT** may be amended only with the written approval of the parties hereto.

12.6 This **AGREEMENT** states the entire understanding and **AGREEMENT** between the parties and supersedes any and all written or oral representations, statements, negotiations, or contracts previously existing between the parties with respect to the subject matter of this **AGREEMENT**. The **COUNTY** recognizes that any representations, statements or negotiations made by **DISTRICT** staff do not suffice to legally bind the **DISTRICT** in a contractual relationship unless they have been reduced to writing and signed by an authorized **DISTRICT** representative. This **AGREEMENT** shall inure to the benefit of and shall be binding upon the parties, their respective assigns, and successors in interest.

ARTICLE 13 – SAFETY REQUIREMENTS

13.1 The **COUNTY** shall require appropriate personal protective equipment in all operations where there is exposure to hazardous conditions.

13.2 The **COUNTY** shall instruct employees required to handle or use toxic materials or other harmful substances regarding their safe handling and use, including instruction on the potential hazards, personal hygiene and required personal protective

measures. A Material Safety Data Sheet (MSDS) shall be provided by the **COUNTY** to the **DISTRICT** on each chemical product used.

13.3 The **COUNTY** shall comply with the standards and regulations set forth by the Occupational Safety and Health Administration (OSHA), the Florida Department of Labor and Employment Security and all other appropriate federal, state, local or **DISTRICT** safety and health standards.

13.4 It is the **COUNTY's** sole duty to provide safe and healthful working conditions to its employees and those of the **DISTRICT** on and about the site of **AGREEMENT** performance.

13.5 The **COUNTY** shall initiate and maintain an accident prevention program which shall include, but shall not be limited to, establishing and supervising programs for the education and training of employees in the recognition, avoidance, and prevention of unsafe conditions and acts.

13.6 The **COUNTY** shall erect and maintain, as required by existing conditions and performance of the **AGREEMENT**, reasonable safeguards for safety and protection, including posting of danger signs and other warnings, against hazards.

13.7 The **COUNTY** shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to:

13.7.1 employees on the work and other persons who may be affected thereby; including pedestrians, visitors, or traveling public;

13.7.2 the work, materials, and equipment to be incorporated therein; whether in storage on or off the site, under care, custody or control of the **COUNTY**, or the **COUNTY's** subcontractors; and

13.7.3 other properties at the site or adjacent thereto; such as trees, shrubs, lawns, walks, utilities, pavement, roadways, structures, building, vehicles, and equipment not designated for removal, relocation or replacement in the course of work.

13.8 The **COUNTY** shall provide first aid services and medical care to its employees.

13.9 The **COUNTY** shall develop and maintain an effective fire protection and prevention procedures and good housekeeping practices on the work site throughout the **AGREEMENT**.

13.10 *Emergencies*: In emergency affecting safety of persons or property on or about the site or as a result of the work; the **COUNTY** shall act, timely and with due diligence, to prevent threatened damage, injury, or loss.

13.11 *Environmental*: When the **COUNTY**, **COUNTY's** subcontractors, or subcontractors, use petroleum products, hazardous chemicals, or any other chemicals used on or about the site, the **COUNTY** shall be responsible for handling these chemical constituents in accordance with federal, state and local regulations during the terms of the **AGREEMENT**. For accidental discharges or releases onto the floor, air, ground, surface waters, ground waters, it shall be the **COUNTY's** sole responsibility to respond immediately to clean the site, at his expense, to the complete satisfaction of federal, state, local regulatory agencies and to the **DISTRICT** requirements.

13.12 The **DISTRICT** may order the **COUNTY** to halt operations under the **AGREEMENT**, at the **COUNTY's** expense, if a condition of immediate danger to the public and/or **DISTRICT** employees, equipment, or property exist. This provision shall not shift the responsibility or risk of loss for injuries or damage sustained from the **COUNTY** to the **DISTRICT**; and the **COUNTY** shall remain solely responsible for compliance with all federal, state and local safety requirements, provisions of this section, and safety of all persons and property on or about the site.

EXHIBIT "C"
STATEMENT OF WORK
COLLECTION OF SURFACE WATER QUALITY SAMPLES

1.0 INTRODUCTION

The South Florida Water Management District (District) and the Lee County Environmental Laboratory (County) have been collaborating on the collection of water quality data for the Florida Department of Environmental Protection (FDEP) for the past three years. This Agreement will involve the collection of surface water samples and field parameters as part of the FDEP Ambient Monitoring Program, as well as attendance at FDEP Ambient Meetings and training sessions. The County will collect samples from two (2) surface water sites that are part of the Surface Water Temporal Variability (SWTV) Network portion of the FDEP Ambient Monitoring Program.

2.0 OBJECTIVES

The primary objectives of this Agreement are to 1) obtain water quality data that fulfill District agreements with FDEP; 2) partner with a local government to execute a state wide monitoring effort; 3) reduce District monitoring costs; and 4) allow for redirection of staff to legislatively mandated projects.

3.0 SCOPE OF WORK

The County shall obtain field parameters and collect surface water samples on a monthly basis at two (2) SWTV network locations. The County shall follow the methodologies of sampling provided in FDEP's "Status and Temporal Variability Monitoring Networks Sampling Manual" (see Exhibit "M"). The sampling sites are designated as CALOOSRVR (latitude 264325N/longitude 814155W) and FISHCR27 (latitude 265556N/longitude 811854W). The County shall ship the samples to the FDEP Laboratory for analysis on the same day that samples are collected. The County shall submit all the proper paper work to FDEP Laboratory with the samples and fax copies of these forms to the District Project Manager. Lastly, the County shall have at least one representative attend the FDEP Ambient Meetings and training sessions as offered.

4.0 WORK BREAKDOWN

Task 1. FDEP Surface Water Temporal Variability (SWTV) Network Sample Collection

The county shall collect monthly surface water samples from two SWTV sites located within Lee County. Collection bottles will be provided by FDEP. The County shall collect the required samples and ship them on the same day to the FDEP laboratory for analysis. The County shall follow the methods of collection detailed in Attachment A and ensure that all the proper equipment and supplies are used during sample collection. The County shall be knowledgeable of project details prior to sampling. The County shall document relevant field conditions and

readings and submit all the required paper work to FDEP with the sample shipment. The County shall fax a copy of the proper paper work to the District Project Manager on the same day as collection.

Task 2. Attend FDEP Ambient Meetings and Professional Training

Appropriate County staff shall attend the FDEP Ambient Monitoring Program meetings and relevant training session as they are offered. The County shall ensure all technicians working on projects conducted under this agreement receive basic water quality sample collection training from the FDEP or an equivalent vendor approved by the District. The County and District Project Manager will be available to discuss the status of this Agreement as needed.

Task 3. Reporting

The County shall submit four (4) progress reports to the District; one within fifteen (15) days of the end of each quarter. Each progress report shall indicate work completed during the reporting period and any quality assurance issues or problems encountered during the completion of the tasks outlined in this Agreement.

EXHIBIT "D"
PAYMENT AND DELIVERABLE SCHEDULE

The County shall invoice the District on a quarterly basis. Payment of invoices will be contingent upon delivery and acceptance by the District of all deliverables and work products due within the invoiced period.

Task	Deliverable Description	Due Date	Quarterly Payments
Task 1	Collect SWTV field measurements and fax results to Project Manager.	Date of Collection	-0-
	Collect SWTV samples and ship to FDEP with chain of custody.	Date of Collection	-0-
	Collect samples according to the methods given in Exhibit "M".	Date of Collection	-0-
Task 2	Travel to FDEP Ambient Meetings and Training	To Be Determined	$3,000.00 ($750.00 per quarter)
Task 3	Submit Progress Report indicating work performed to District Project Manager	Quarterly	$3,200.00 ($800.00 per quarter)
TOTAL NOT-TO-EXCEED			**$6,200.00**

DISTRICT CONTRACT NO. C-13803
DEP CONTRACT NO. GW229
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
CONTRACT FOR SURFACE WATER AND GROUND WATER SAMPLING FOR THE STATUS NETWORK AND GROUND WATER TEMPORAL VARIABILITY NETWORK

This Contract is made and entered into between the FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, whose address is 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, hereinafter referred to as the DEP, and the SOUTH FLORIDA WATER MANAGEMENT DISTRICT, whose address is P.O. Box 24680, West Palm Beach, Florida 33416-4680, hereinafter referred to as the CONTRACTOR.

WITNESSETH:

WHEREAS, the DEP has received Section 106 (CFDA 66.419) grant funds from the U.S. Environmental Protection Agency (EPA) for Surface and Groundwater projects; and,

WHEREAS, the DEP wishes to use state funds as match to the Section 106 grant funds for the collection and interpretation of water quality data from confined and unconfined waters; and,

WHEREAS, the DEP has determined that the relationship between the CONTRACTOR and the DEP is that of a vendor; and,

WHEREAS, the CONTRACTOR possesses the skills, knowledge and other resources necessary to perform these services.

NOW, THEREFORE, in consideration of the premises and the mutual covenants herein contained, and for other good and valuable consideration, the DEP agrees to employ the CONTRACTOR and the CONTRACTOR agrees to perform all work described herein, or hereinafter authorized, upon the terms and conditions stated.

SECTION I - SCOPE OF THE PROJECT

A. General Provisions

The CONTRACTOR shall perform the services and specific responsibilities as set forth in Attachment A, entitled "Scope of Services", attached hereto and made a part hereof.

B. General Responsibilities of the CONTRACTOR

1. The CONTRACTOR is responsible for the professional quality, technical accuracy, timely completion and coordination of all designs, drawings, specifications, reports and other services furnished by the CONTRACTOR under this Contract. If the Contract involves environmental measurements or data generation, the CONTRACTOR shall comply with EPA quality assurance requirements in 40 CFR 30.54 or 31.45, as applicable. The CONTRACTOR shall, without additional compensation, correct or revise any errors, omissions or other deficiencies in its designs, drawings, specifications, reports and other services.

2. The CONTRACTOR shall perform the professional services necessary to accomplish the work specified in this Contract in accordance with this Contract and applicable EPA requirements in effect on the date of execution of the assistance Contract for this project.

3. The DEP's or EPA's approval of drawings, designs, specifications, reports and incidental work or materials furnished hereunder shall not in any way relieve the CONTRACTOR of responsibility for the technical adequacy of its work. Neither the DEP's nor EPA's review, approval, acceptance or payment for any of the services shall be construed as a waiver of any rights under this Contract or of any cause for action arising out of the performance of this Contract.

4. The CONTRACTOR shall be, and shall remain, liable in accordance with applicable law for all damages to the DEP or EPA caused by the CONTRACTOR's negligent performance of any of the services furnished under this Contract, except for errors, omissions or other deficiencies to the extent attributable to the DEP, DEP-furnished data or any third party. The CONTRACTOR shall not be responsible for any time delays in the project caused by circumstances beyond the CONTRACTOR's control.

5. The CONTRACTOR's obligations under this clause are in addition to the CONTRACTOR's other express or implied assurances under this Contract or State law and in no way diminish any other rights that the DEP may have against the CONTRACTOR for faulty materials, equipment, or work.

6. When issuing statements, press releases, requests for proposals, bid solicitations, or other documents related to this project, the CONTRACTOR shall clearly state in each document: (1) the percentage of the cost of the project supported by EPA funding, and (2) the dollar amount of the EPA's support of the project.

7. The CONTRACTOR agrees to ensure that all conference, meeting, convention, or training space funded in whole or in part with federal funds complies with The Hotel and Motel Fire Safety Act of 1990.

SECTION II - SCHEDULE OF WORK

This Contract is effective on the date of execution or July 1, 2002, whichever date is later, and shall remain in effect until June 30, 2003, by which date all requirements shall have been completed. This Contract may be renewed for up to two additional one-year periods. Renewal of this Contract shall be in writing and subject to the same terms and conditions of this Contract. All renewals are contingent upon satisfactory performance by the Contractor and the availability of funds.

SECTION III - REPORTS REQUIRED

A. Recycled Paper

Pursuant to EPA Order 1000.25, dated January 24,1990, the CONTRACTOR agrees to use recycled paper for all reports which are prepared as a part of this Contract. This requirement does not apply to reports which are prepared on forms supplied by EPA. This requirement applies even when the cost of recycled paper is higher than that of virgin paper.

B. Reports

The CONTRACTOR shall submit progress reports as required in Attachment A in accordance with the schedule therein. A comprehensive final report shall be submitted no later than the completion date of the Contract.

The CONTRACTOR's final report shall include the following statement (Note: insert actual dollar costs in appropriate blank spaces):

"This project and the preparation of this report (or booklet, pamphlet, etc as appropriate) was funded in part by a Section 106 Water Pollution Control Program grant from the U.S. Environmental Protection Agency (US EPA) through a contract with the Bureau of Watershed Management of the Florida Department of Environmental Protection. The total cost of the project was _____, of which $_____ or __ percent was provided by the US EPA."

The CONTRACTOR agrees to provide a copy of any draft report and/or final report to the DEP before making, or allowing to be made, a press release, publication, or other public announcement of the project's outcome. This shall not be construed to be a limitation upon the operation and applicability of Chapter 119, Florida Statutes.

SECTION IV - COMPENSATION

A. As consideration for the services rendered by the CONTRACTOR under the terms of this Contract, the DEP shall pay the CONTRACTOR on a fixed price basis for the services outlined in Attachment A, Scope of Services. For the initial term of this Contract beginning upon execution or July 1, 2002, whichever is later, and ending June 30, 2003, the CONTRACTOR shall be compensated the fixed price amount of $140,458 for the services described in Attachment A.

B. The State of Florida's performance and obligation to pay under this Contract is contingent upon an annual appropriation by the Legislature and continuation of other funding presently anticipated, without liability for anticipated profits for unfinished work.

SECTION V - PAYMENTS

A. The CONTRACTOR shall invoices every three (3) months as required in Attachment A. Invoices shall be based on a percentage of completion basis, with the exception of Task V, which shall be billed in total under the final invoice for each service period. Each invoice must be submitted in detail sufficient for a proper pre-audit and post-audit thereof. All travel and incidental expenses are included in the fixed price amount of this Contract. The final invoice must be submitted no later than the date specified in Attachment A to assure the availability of funding for final payment.

B. Five copies of each invoice, including appropriate backup documentation, shall be submitted to:

Department of Environmental Protection
Division of Water Resource Management
Bureau of Watershed Management
Attn: Tracy Wade (MS#3525)
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

C. Pursuant to Florida Statutes, the DEP's Contract Manager shall have five (5) working days, unless otherwise specified herein, to inspect and approve the services for payment; the DEP must submit a request for payment to the Florida Department of Banking and Finance within twenty (20) days; and the Department of Banking and Finance is given ten (10) days to issue a warrant. Days are calculated from the latter date the invoice is received or services received, inspected, and approved. Invoice payment requirements do not start until a proper and correct invoice is received. Invoices which have to be returned to a Contractor for correction(s) will result in a delay in the payment. A Vendor Ombudsman has been established within the Department of Banking and Finance who may be contacted if a contractor is experiencing problems in obtaining payment(s) from a State of Florida agency. The Vendor Ombudsman may be contacted at 850/410-9724 or 1-800-848-3792.

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D. In accordance with Section 215.422, Florida Statutes, the DEP shall pay the CONTRACTOR interest at a rate as established by Section 55.03(1), Florida Statutes on the unpaid balance, if a warrant in payment of an invoice is not issued within forty (40) days after receipt of a correct invoice and receipt, inspection, and approval of the goods and services. Interest payments of less than $1 will not be enforced unless a contractor requests payment. The interest rate established pursuant to Section 55.03(1), Florida Statutes, may be obtained by calling the Department of Banking and Finance, Vendor Ombudsman at the telephone number provided above, or the Department's Procurement Section at (850) 922-5942.

E. Upon satisfactory completion of the work performed under this Contract, as a condition before final payment under this Contract or as a termination settlement under this Contract, the CONTRACTOR shall execute and deliver to the DEP, using Attachment B - Release of Claims by Contractor on EPA Subagreement, a release of all claims against the DEP arising under, or by virtue of, this Contract, except claims which are specifically exempted by the CONTRACTOR to be set forth therein. Unless otherwise provided in this Contract by State law or otherwise expressly agreed to by the parties to this Contract, final payment under this Contract or settlement upon termination of this Contract shall not constitute a waiver of the DEP's claims against the CONTRACTOR or the CONTRACTOR's sureties under this Contract or applicable performance and payment bonds. Release of claims in this section shall refer to contract claims.

F. This Contract is subject to availability of funds or continuation of funding anticipated at the time of execution. Should funding be discontinued or reduced, the Contract will be terminated or amended, as appropriate. In this event, the CONTRACTOR shall be compensated for work or services satisfactorily completed.

SECTION VI - MANAGEMENT

The DEP's Contract Manager is Tracy Wade, Telephone Number (850) 414-8550. The CONTRACTOR's Contract Manager is Carole Maddox, Telephone Number (561) 753-2400, ext. 4758. All matters shall be coordinated with or directed to the appropriate Contract Managers for action or disposition.

SECTION VII - TERMINATIONS

A. This Contract may be terminated in whole or in part in writing by either party in the event of substantial failure by the other party to fulfill its obligations under this Contract through no fault of the terminating party, provided that no termination may be effected unless the other party is given: (1) not less than 10 calendar days' written notice (delivered by Certified Mail, return receipt requested) of intent to terminate, and (2) an opportunity for consultation with the terminating party prior to termination.

B. This Contract may be terminated in whole or in part in writing by either party for its convenience, provided that the other party is given: (1) not less than 10 calendar days' written notice (delivered by Certified Mail, return receipt requested) of intent to terminate, and (2) an opportunity for consultation with the terminating party prior to termination.

C. If termination for default is effected by the DEP an equitable adjustment in the price provided for in this Contract shall be made, but (1) no amount shall be allowed for anticipated profit on unperformed services or other work, and (2) any payment due to the CONTRACTOR at the time of the termination may be adjusted to cover any additional costs to the DEP because of the CONTRACTOR's default. If termination for default is effected by the CONTRACTOR, or if termination for convenience is effected by the DEP the equitable adjustment shall include a reasonable profit for services or other work performed. The equitable adjustment for any termination shall provide for payment to the CONTRACTOR for services rendered and expenses

incurred prior to the termination, in addition to termination settlement costs reasonably incurred by the CONTRACTOR relating to commitments which had become firm prior to the termination.

D. Upon receipt of a termination action under paragraphs A or B above, the CONTRACTOR shall: (1) promptly discontinue all affected work (unless the notice directs otherwise), and (2) deliver or otherwise make available to the DEP all data, drawings, specifications, reports, estimates, summaries and such other information and materials as may have been accumulated by the CONTRACTOR in performing this Contract, whether completed or in process.

E. Upon termination under paragraphs A or B above, the DEP may take over the work or may award another party a contract to complete the work.

F. If, after termination for failure of the CONTRACTOR to fulfill contractual obligations, it is determined that the CONTRACTOR had not failed to fulfill contractual obligations, the termination shall be deemed to have been for the convenience of the DEP. In such event, adjustment of the Contract price shall be made as provided in paragraph C of this section.

SECTION VIII - REMEDIES

All services shall be performed by the CONTRACTOR to the satisfaction of the Secretary of the DEP or his designated representative, who shall decide all questions, difficulties, and disputes of whatever nature which may arise under or by reason of the Contract, the prosecution and fulfillment of the services hereunder and the character, quality, amount and value thereof, and the Secretary's decision upon all claims, questions, and disputes shall be final, conclusive and binding upon the parties hereto, to the extent provided by Florida law.

SECTION IX - LIABILITY

Each party hereto agrees that it shall be solely responsible for the negligent or wrongful acts of its employees and agents. However, nothing contained herein shall constitute a waiver by either party of its sovereign immunity or the provisions of Section 768.28, Florida Statutes.

SECTION X - INTEREST OF CONTRACTOR

The CONTRACTOR covenants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this Contract. The CONTRACTOR further covenants that in the performance of this Contract no person having such interest shall be employed.

SECTION XI - SUBCONTRACTING

A. The CONTRACTOR is hereby authorized to subcontract with Collier County, Palm Beach County, Broward County, Polk County, Dade County and Lee County. The CONTRACTOR shall not subcontract, assign, or transfer any other work under this Contract without the prior written consent of the DEP. When applicable, and upon receipt of such consent in writing, the CONTRACTOR shall cause the names of the firms responsible for such portions of the work to appear on such work.

B. The CONTRACTOR agrees to notify the DEP of all subcontracts no less than ten days prior to the effective date of the subcontracts for the purpose of approval by the DEP. The CONTRACTOR agrees to provide the DEP with an executed copy of all subcontracts within ten days after the effective date of the Contract.

C. The CONTRACTOR agrees to be responsible for the fulfillment of all work elements included in the subcontracts and agrees to be responsible for the payment of all monies due under any

subcontract. The CONTRACTOR shall require all subcontractors to hold the DEP and the EPA harmless from any liability or damages arising under or from any subcontract hereinunder, to the extent provided by Florida law.

D. Pursuant to the Lobbying Disclosure Act of 1995, the CONTRACTOR agrees to refrain from entering into any subcontracts under this Contract with any organization described in Section 501(c)(4) of the Internal Revenue Code of 1986, unless such organization warrants that it does not, and will not, engage in lobbying activities prohibited by the Act as a special condition of the subcontract.

SECTION XII - MBE/WBE AND SMALL BUSINESS UTILIZATION

A. The CONTRACTOR agrees to comply with the requirements of EPA's Program for Utilization of Small, Minority and Women's Business Enterprises in procurement under this Contract. The CONTRACTOR shall ensure, to the fullest extent possible, that at least the negotiated fair share percentages of Federal funds for subcontracts for supplies, construction, equipment or services are made available by the CONTRACTOR to organizations owned or controlled by socially and economically disadvantaged individuals, women and historically black colleges and universities.

B. The CONTRACTOR agrees to include in their bid documents, and require all of its subcontractors to include in their bid documents, the fair share percentages set forth below. The negotiated fair share commitments for the State of Florida are as follows:

State Revolving Fund Construction:	11% MBE and 3% WBE (both SRF)
Architectural & Engineering Services:	10% MBE and 15% WBE
Commodities:	7% MBE and 17% WBE
Contractual:	14% MBE and 36% WBE
Construction:	10% MBE and 11% WBE (non SRF)

C. To evaluate compliance with the "Fair Share" policy, the CONTRACTOR also agrees to comply with the six affirmative steps or positive efforts stated in 40 CFR 30.44(b), 40 CFR 31.36(e), or 40 CFR 35.6580, as appropriate, and must retain all records documenting the CONTRACTOR's and all its subcontractor's good faith efforts.

D. In the event that the CONTRACTOR does not want to rely on the applicable State's MBE/WBE goals, the CONTRACTOR agrees to submit proposed MBE/WBE goals based on availability of qualified minority and women-owned businesses to do work in the relevant market for construction, services, supplies and equipment. "Fair share" objectives must be submitted to the MBE/WBE Coordinator, Grants Management Office within thirty (30) days of Contract execution. It is expected that EPA approval/disapproval of the CONTRACTOR's MBE/WBE objectives will be provided within thirty (30) days of submission to the EPA Grants Management Office.

SECTION XIII - SMALL AND RURAL BUSINESS UTILIZATION

In accordance with Section 129 of Public Law 100-590, the Small Business Administration Reauthorization and Amendment Act of 1988, the CONTRACTOR agrees to utilize, and to encourage its subcontractors under this Contract to utilize, small businesses located in rural areas to the maximum extent possible. The CONTRACTOR agrees to follow the six affirmative steps stated in 40 CFR 30.44(b), 31.36 or 35.6580, as appropriate, in the award of any subcontracts under this Contract. It is understood and agreed that compliance with this requirement will be monitored during management review conducted by the EPA.

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SECTION XIV - NOTICE

Any notice or other written communication between the parties shall be considered delivered when posted by certified mail or delivered in person to the Contract Manager.

SECTION XV - PERSONNEL

A. To the extent required by law, the CONTRACTOR will be self-insured against, or will secure and maintain during the life of this Contract, Workers' Compensation Insurance for all of his employees connected with the work of this project and, in case any work is subcontracted, the CONTRACTOR shall require the subcontractor similarly to provide Workers' Compensation Insurance for all of the latter's employees unless such employees are covered by the protection afforded by the CONTRACTOR. Such self-insurance program or insurance coverage shall comply fully with the Florida Workers' Compensation law. In case any class of employees engaged in work under this Contract is not protected under Workers' Compensation statutes, the CONTRACTOR shall provide, and cause each subcontractor to provide, adequate insurance satisfactory to the DEP, for the protection of his employees not otherwise protected.

B. The CONTRACTOR warrants and represents that it is self-funded for liability insurance, appropriate and allowable under Florida law, and that such self-insurance offers protection applicable to the CONTRACTOR's officers, employees, servants and agents while acting within the scope of their employment with the CONTRACTOR.

C. No person, on the grounds of race, creed, color, national origin, age, sex, or disability, shall be excluded from participation in; be denied the proceeds or benefits of; or otherwise be subjected to discrimination in performance of this Contract.

D. An entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid on a contract to provide goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not award or perform work as a contractor, supplier, subcontractor or consultant under contract with any public entity, and may not transact business with any public entity. The Florida Department of Management Services is responsible for maintaining the discriminatory vendor list and intends to post the list on its website. Questions regarding the discriminatory vendor list may be directed to the Florida Department of Management Services, Office of Supplier Diversity at 850/487-0915.

SECTION XVI - DOCUMENTS AND NON-EXPENDABLE EQUIPMENT

A. Ownership of Documents

All reports produced and other data gathered by the CONTRACTOR for the purpose of this Contract shall become the joint property of the DEP and the CONTRACTOR without restrictions or limitations upon their use and shall be made available by the CONTRACTOR at any time upon request of the DEP.

B. Non-Expendable Equipment and Personal Property

For the first year of services, the purchase of non-expendable equipment costing $1,000 or more is not authorized. However, the DEP reserves the right to authorize the purchase of equipment for future periods of services. Upon satisfactory completion of this Contract, the CONTRACTOR may retain ownership of the authorized non-expendable personal property or equipment purchased under this Contract. However, the CONTRACTOR shall complete and sign a Property Reporting

Form, provided as Attachment C and forward it along with the appropriate invoice to the DEP's Contract Manager. The following terms shall apply:

A. The CONTRACTOR shall have use of the non-expendable personal property or equipment for the authorized purposes of the contractual arrangement as long as the required work is being performed.

B. The CONTRACTOR is responsible for the implementation of adequate maintenance procedures to keep the non-expendable personal property or equipment in good operating condition.

C. The CONTRACTOR is responsible for any loss, damage, or theft of, and any loss, damage or injury caused by the use of, non-expendable personal property or equipment purchased with state funds and held in his possession for use in a contractual arrangement with the DEP.

SECTION XVII - SUPERSESSION

The DEP and the CONTRACTOR agree that this and other appropriate clauses in 40 CFR 31.36 apply to that work eligible for EPA assistance to be performed under this Contract and that these clauses supersede any conflicting provisions of this Contract.

SECTION XVIII - PRIVITY OF CONTRACT

This Contract is expected to be funded in part with funds from the U.S. Environmental Protection Agency. Neither the United States nor any of its departments, agencies or employees is, or will be, a party to this Contract or any lower tier subcontract. This Contract is subject to regulations contained in 40 CFR, Part 31.36, in effect on the date of the assistance award for this project.

SECTION XIX - CHANGES IN SERVICE REQUIREMENTS

A. The DEP may at any time, by written order designated to be a change order, make any change in the work within the general scope of the Contract (e.g., specifications, time, method or manner of performance, requirements, additional laboratory analyses, etc.). All change orders are subject to the mutual Contract of both parties as evidenced in writing. Any change order which causes an increase or decrease in the CONTRACTOR's cost or time shall require an appropriate adjustment and modification (amendment) to this Contract.

B. No services for which the CONTRACTOR will charge an additional compensation shall be furnished without the written authorization of the DEP.

SECTION XX - AUDIT: ACCESS TO RECORDS

A. The CONTRACTOR shall maintain books, records, documents and other evidence directly pertinent to performance on EPA funded work under this Contract in accordance with generally accepted accounting principles and practices consistently applied, and 40 CFR, Part 30 or 31, as applicable, in effect on the date of execution of this Contract. The CONTRACTOR shall also maintain the financial information and data used in the preparation or support of the cost submission required under 40 CFR 31.36, as applicable, for any negotiated contract or change order and a copy of the cost summary submitted to the DEP. The United States Environmental Protection Agency, the Comptroller General of the United States, the United States Department of Labor, the DEP and the State or any of their authorized representatives shall have access to all such books, records, documents and other evidence for the purpose of inspection, audit and copying during normal business hours. The CONTRACTOR will provide facilities for such access and inspection.

B. If this is a formally advertised, competitively awarded, fixed price contract, the CONTRACTOR agrees to make paragraphs A through G of this clause applicable to all negotiated change orders and contract amendments affecting the contract price. In the case of all other types of prime contracts, the CONTRACTOR agrees to include paragraphs A through G of this clause applicable to all contracts awarded in excess of $10,000 at any tier, and to make paragraphs A through G of this clause applicable to all change orders directly related to project performance.

C. Audits conducted under this provision shall be in accordance with generally accepted auditing standards and with established procedures and guidelines of the reviewing or audit agency(ies).

D. The CONTRACTOR agrees to disclose all information and reports resulting from access to records under paragraphs A and B of this provision and to any of the agencies referred to in paragraph A.

E. Records under paragraphs A and B above shall be maintained by the CONTRACTOR during performance on EPA assisted work under this Contract for the time periods specified in 40 CFR, Part 30 or 31, as applicable. In addition, those records which relate to any controversy arising under an EPA assistance Contract, litigation, the settlement of claims arising out of such performance or to costs or items to which an audit exception has been taken shall be maintained by the CONTRACTOR for the time periods specified in 40 CFR, Part 30 or 31, as applicable.

F. Access to records is not limited to the required retention periods. The authorized representatives designated in paragraph A of this clause shall have access to records at any reasonable time for as long as the records are maintained.

G. This right of access clause applies to financial records pertaining to all contracts (except formally advertised, competitively awarded, fixed price contracts) and all contract change orders regardless of the type of Contract. In addition this right of access applies to all records pertaining to all contracts, contract change orders and contract amendments: a) to the extent the records pertain directly to contract performance; b) if there is any indication that fraud, gross abuse or corrupt practices may be involved; or c) if the contract is terminated for default or for convenience.

SECTION XXI - COVENANT AGAINST CONTINGENT FEES

The CONTRACTOR assures that no person or selling agency has been employed or retained to solicit or secure this Contract upon an Contract or understanding for a commission, percentage, brokerage or contingent fee excepting bona fide employees or bona fide established commercial or selling agencies maintained by the CONTRACTOR for the purpose of securing business. For breach or violation of this assurance, the DEP shall have the right to annul this Contract without liability or, at its discretion, to deduct from the Contract price or consideration, or otherwise recover the full amount of such commission, percentage, brokerage or contingent fee.

SECTION XXII - GRATUITIES

A. If the DEP finds, after a notice and hearing, that the CONTRACTOR or any of the CONTRACTOR's agents or representatives offered or gave gratuities (in the form of entertainment, gifts or otherwise) to any official, employee or agent of the DEP, the State or EPA in an attempt to secure a contract or favorable treatment in awarding, amending or making any determinations related to the performance of this Contract, the DEP may, by written notice to the CONTRACTOR, terminate this Contract. The DEP may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which the DEP bases such findings shall be in issue and may be reviewed in proceedings under Section VIII (REMEDIES) of this Contract.

B. In the event this Contract is terminated as provided in paragraph A, the DEP may pursue the same remedies against the CONTRACTOR as it could pursue in the event of a breach of the Contract by

the CONTRACTOR, and as a penalty, in addition to any other damages to which it may be entitled by law, be entitled to exemplary damages in an amount (as determined by the DEP) which shall be not less than three nor more than ten times the costs the CONTRACTOR incurs in providing any such gratuities to any such officer or employee.

SECTION XXIII - DEBARMENT AND SUSPENSION

A. In accordance with Executive Order 12549, Debarment and Suspension (40 CFR 32), the CONTRACTOR certifies that neither it, nor its principals, is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency; and, that the CONTRACTOR shall not knowingly enter into any lower tier contract, or other covered transaction, with a person who is similarly debarred or suspended from participating in this covered transaction, unless authorized in writing by the EPA to the DEP.

B. Upon execution of this Contract by the CONTRACTOR, the CONTRACTOR shall complete, sign and return a copy of the form entitled "Certification Regarding Debarments, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Federally Funded Transactions", attached hereto and made a part hereof as Attachment D.

C. As required by paragraphs A and B above, the CONTRACTOR shall include the language of this section, and Attachment D in all subcontracts or lower tier Contracts executed to support the CONTRACTOR's work under this Contract.

SECTION XXIV – LOBBYING

The CONTRACTOR certifies that no Federal appropriated funds have been paid or will be paid, on or after December 22, 1989, by or on behalf of the CONTRACTOR, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress, in connection with the awarding, renewal, amending or modifying of any Federal contract, grant, or cooperative agreement. If any non-Federal funds are used for lobbying activities as described above, the CONTRACTOR shall submit Attachment E, Standard Form-LLL, "Disclosure Form to Report Lobbying" (attached hereto and made a part hereof), and shall file quarterly updates of any material changes. The CONTRACTOR shall require the language of this certification to be included in all subcontracts, and all subcontractors shall certify and disclose accordingly.

SECTION XXV - PUBLIC ENTITY CRIMES

A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, F.S., for Category Two, for a period of 36 months from the date of being placed on the convicted vendor list.

SECTION XXVI - UNILATERAL CANCELLATION

This Contract may be unilaterally canceled by the DEP for refusal by the CONTRACTOR to allow public access to all documents, papers, letters, or other material made or received by the CONTRACTOR in conjunction with this Contract, unless the records are exempt from Section 24(a) of Article I of the State Constitution and Section 119.07(1), Florida Statutes.

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SECTION XXVII - COMPLIANCE WITH HEALTH AND SAFETY REGULATIONS

The CONTRACTOR shall comply with all applicable federal, state and local rules and regulations in providing services to the DEP under this Contract. The CONTRACTOR acknowledges that this requirement includes compliance with all federal, state and local health and safety rules and regulations.

SECTION XXVIII - CHOICE OF LAW/FORUM

The parties hereby agree that any and all actions or disputes arising out of this Contract shall be governed by the Laws of the State of Florida. Any action hereon or in connection herewith brought by the DEP shall be brought in Palm Beach County, Florida. Any action hereon or in connection herewith brought by the CONTRACTOR shall be brought in Leon County, Florida.

SECTION XXIX - SEVERABILITY

In the event one or more provisions of this Contract are declared invalid, the balance of this Contract shall remain in full force and effect.

SECTION XXX - ENTIRE CONTRACT

It is expressly understood and agreed that this Contract states the entire Contract and that the parties are not bound by any stipulations, representations, Contracts, or promises, oral or otherwise, not printed or inserted in this Contract. The CONTRACTOR agrees that no representations have been made by the DEP in order to induce the CONTRACTOR to enter into this Contract other than as expressly stated in this Contract. This Contract cannot be changed orally, nor by any means other than by written amendments expressly referencing this Contract and signed by all parties hereto, unless otherwise provided herein.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

By: _____

Title: Procurement Director

Date: 7/18/02

P.O. BOX 24680
~~8894 Belvedere Road~~ 33416-4680
West Palm Beach, Florida ~~33411~~

FEID No.: 59-6015290

Approved as to form and legality:

SFWMD PROCUREMENT APPROVED 7/3/02 DATE

7/03/02

SFWMD Attorney

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

By: _____

Director, Division of Water Resource Management or designee

Date: 6/26/02

DEP Contracts Administrator

Approved as to form and legality:

DEP Attorney

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List of Attachments/Exhibits included as part of this Contract:

Specify Type	Letter/ Number	Description (including number of pages)
Attachment	A	Scope of Services (8 pages)
Attachment	B	EPA Release of Claims Form (1 page)
Attachment	C	Property Reporting Form (1 page)
Attachment	D	Certification Regarding Debarment/Suspension (2 pages)
Attachment	E	Disclosure of Lobbying Activities (2 pages)
Attachment	F	Status and Temporal Variability Monitoring Networks Sampling Manual (91 pages)
Attachment	G	Instructions for Sample Shipment (1 page)
Attachment	H	Required Electronic Format (3 pages)
Attachment	I	Microlanduse Form (1 page)
Attachment	J	GPS Standards (5 pages)
Exhibit	1	Status Network Sampling Index Periods (1 page)
Exhibit	2	Status Network Reporting Units (1 page)
Exhibit	3	Watershed Monitoring Basins (1 page)
Exhibit	4	Large Rivers and Canals (1 page)

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ATTACHMENT A

Scope of Services

(Service Period: July 1, 2002 or Contract Execution, whichever date is later, through June 30, 2003)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

The Department of Environmental Protection (DEP) has requested the assistance of the South Florida Water Management District in collecting and interpreting water quality data from confined and unconfined aquifers, rivers, streams and lakes within the boundaries of the Water Management District (WMD), as part of the statewide Integrated Water Resources Monitoring (IWRM) Network. A description of the work to be performed is outlined below:

QUALITY ASSURANCE

The Contractor and approved subcontracting agencies and entities who will be conducting water quality sampling under this Contract shall follow procedures and methods specified in the DEP "*Status and Temporal Variability Monitoring Networks Sampling Manual*" (**ATTACHMENT F**). This replaces the DEP *Comprehensive Quality Assurance Project Plan* document and supplements. Requests for variance to the procedures outlined In **ATTACHMENT F** may be submitted to the DEP Watershed Monitoring and Data Management Section QA Office in writing. Variances will be scrutinized on a case-by-case basis.

For purposes of this Contract, all sample analysis will be performed by the DEP Central Laboratory under separate agreement with the DEP's Watershed Monitoring and Data Management Section.

All samples shall be shipped in accordance with **ATTACHMENT G**, *Instructions for Sample Shipment*.

STORET

All water quality data collected under this Contract shall be submitted to the DEP in an approved standardized electronic format. An example of the approved format is included as **ATTACHMENT H**. This format will assist the DEP in the preparation of data, collected under this Contract, for entry into STORET using a computer conversion program. The DEP will be responsible for assuring that data collected under this Contract is entered into the STORET system, and for verification of the data before final storage. In addition to the above, a printed copy of the project field data, along with supporting Quality Assurance data, shall be kept and maintained by the Contractor for the duration of this Contract, and provided to DEP upon request. This includes results from any blanks, duplicates, spikes, blind samples and standards.

QUALIFIED SAMPLER

The Contractor shall ensure that at least one (two if possible) *qualified sampler* is present during all sample collection. For the purposes of this Contract, a *qualified sampler* shall be one who has

taken the USGS sampling course or the DEP Sampling Techniques Workshop within the past five (5) years.

CONTRACT TASKS

The Contractor shall collect surface and ground water quality samples for the Watershed Monitoring Program within the boundaries of the South Florida Water Management District. Each activity to be performed has been identified and described as a separate task:

TASK I - SAMPLE COLLECTION
Fixed Price Task Cost: $55,666

Collect an estimated 144 surface water and 109 ground water quality samples from the STATUS Network and Ground Water Temporal Variability (GWTV) Network, and forward to DEP designated lab(s) for analysis. This estimate includes:

- Approximately 30 STATUS Network samples from low order streams in the Everglades-West Coast (SF-C) Integrated Water Resource Monitoring (IWRM) Reporting Unit within the established Index Period (August 1 – October 31, 2002);

- Approximately 30 STATUS Network samples from large rivers in the Southeast Florida (SF-B) Integrated Water Resource Monitoring (IWRM) Reporting Unit within the established Index Period (May 1 – June 30, 2003);

- Approximately 30 STATUS Network samples from small lakes in the Everglades-West Coast (SF-C) Integrated Water Resource Monitoring (IWRM) Reporting Unit within the established Index Period (Effective Date of the Contract – September 30, 2002);

- Approximately 30 STATUS Network samples from large lakes in the Everglades-West Coast (SF-C) Integrated Water Resource Monitoring (IWRM) Reporting Unit within the established Index Period (October 1- December 31, 2002);

- Approximately 30 unconfined aquifer STATUS Network samples from wells and springs in the Southeast Florida (SF-B) Integrated Water Resource Monitoring (IWRM) Reporting Unit within the established Index Period (April 1 – June 30, 2003);

- Approximately 30 confined aquifer STATUS Network samples from wells in the Southeast Florida (SF-B) Integrated Water Resource Monitoring (IWRM) Reporting Unit within the established Index Period (January 1 –March 31, 2003);

- Approximately 3 monthly unconfined aquifer GWTV samples from wells in the Everglades-West Coast (SF-C) IWRM Reporting Unit (collected at 25-35 day intervals) from the Effective Date of the Contract – September 30, 2002);

- Approximately 27 monthly unconfined aquifer GWTV samples from wells in the Southeast Florida (SF-B) IWRM Reporting Unit (collected at 25-35 day intervals) from October 1, 2002 – June 30, 2003);

- Approximately 1 quarterly confined aquifer GWTV samples from wells in the Everglades-West Coast (SF-C) IWRM Reporting Unit from the Effective Date of the Contract – September 30, 2002;

- Approximately 6 newly-installed monitor wells;

- Approximately 41 QA samples (20% of total samples).

In addition to the above (which requires collection and shipment of water samples to the DEP Laboratory):

- Measure field analytes only at approximately 3 *monthly* unconfined aquifer GWTV sites, and at approximately 3 *quarterly* confined aquifer GWTV sites (approximately 6 total sites, estimated 54 total site visits). These are the GWTV sites not being sampled during the below-specified time periods for laboratory analytes for the STATUS network:

    1) Kissimmee-Okeechobee (SF-A) IWRM Reporting Unit: 1 monthly unconfined aquifer GWTV sites, and 1 confined aquifer GWTV site; from the Effective Date of the Contract – June 30, 2003;
    2) Southeast Florida (SF-B) IWRM Reporting Unit: 3 monthly unconfined aquifer GWTV sites, from the Effective Date of the Contract – September 30, 2002;
    3) Everglades – West coast (SF-C) IWRM Reporting Unit: 1 monthly unconfined aquifer GWTV site, and 1 quarterly confined aquifer GWTV site, from October 1, 2002 – June 30, 2003;
    4) Caloosahatchee – West coast (SF-D) IWRM Reporting Unit: 1 monthly unconfined aquifer GWTV site, and 1 quarterly confined aquifer GWTV site, from the Effective Date of the Contract – June 30, 2003.

Ground water sample collection includes:

- Completion of electronic microlanduse forms (see **ATTACHMENT I**);

- Attachment of well identification tags as needed.

All water sample collection includes:

- On-site analysis for field analytes and field reference samples (see **ATTACHMENT H**);

- Measurement of sample location using differentially-correcting Global Positioning System (DGPS) technology. DGPS units will be provided by DEP if necessary. All DGPS data must meet or exceed DEP protocols for accuracy (**ATTACHMENT J**), and be provided in DEP-specified electronic format (see **ATTACHMENT H**);

- Physical site data, in electronic format using DEP-specified software. This includes land ownership, depiction of actual sample location relative to GPS measurement point (if offset required), digital photographs, and any additional pertinent information which may potentially affect water quality. Provide sketch maps depicting site location and directions (sketch maps can be submitted on paper or scanned electronically in JPEG format).

Samples shall be collected for all analytes identified in **ATTACHMENT F**. Samples should be collected during the appropriate Index Period as depicted in **EXHIBIT 1.** Reporting Units are shown in **EXHIBIT 2**. All samples shall be shipped in accordance with **ATTACHMENT G**, *Instructions for Sample Shipment.*

Field audits shall be performed in accordance with **ATTACHMEMT F.**

TASK II – STATUS NETWORK SITE CHARACTERIZATION
Fixed Price Per Task Cost: $39,142

Reconnoiter proposed IWRM STATUS Network surface and ground water sampling sites in the Lake Okeechobee and Everglades – West coast Group 1 Basin (**EXHIBIT 3**) to determine suitability and access. DEP will provide the preliminary site selection lists to the Contractor by August 15, 2002. Lakes and large rivers with boat access, as well as spring and well sites with assured access need not be field reconnoitered prior to sampling. Other potential sites can be reconnoitered prior to or at the time of sampling, as long as sampling occurs within the prescribed Index Period (**EXHIBIT 1**).

"Office" reconnaissance should be performed prior to actual field reconnaissance or sampling, and should be employed to eliminate from sampling consideration sites which are determined to be not sampleable. A list of remaining potentially sampleable proposed sites must be submitted to DEP at least thirty (30) days prior to the beginning of the appropriate Index Period, so that sample container tags can be generated and delivered to the Contractor in a timely manner.

RESOURCE TYPES TO BE MONITORED:

1) Small streams and canals;
2) Large rivers and canals (designated in **EXHIBIT 4**);
3) Lakes;
4) Confined aquifer wells;
5) Unconfined aquifer wells and springs.

NUMBER OF SITES:

Approximately 30 sites per resource type will be sampled within each selected reporting unit.

The list frame for ground water sites includes:

1) DEP Ambient Monitoring Background Network wells;
2) DEP Ambient Monitoring VISA Network wells;
3) Springs;
4) Department of Health (former HRS) Private Well Survey wells;
5) Upgradient "background" wells at DEP permitted facilities;
6) Water Management District Salt Water Intrusion Networks.

DEP will supply a list of candidate wells and springs in order of increasing distance from randomly-generated locations within the IWRM Reporting Unit. Only wells within the existing DEP list frame

may be considered as candidate monitoring sites. DEP staff will initiate contact with DEP District staff to obtain permitted facility information.

In order to better characterize confined and unconfined ground water resources, DEP requests the assistance of the Contractor in adding any additional wells from existing water management district or other available databases into STATUS Network list frame. Candidate wells should meet the following minimum requirements:

1) Well accessible for sampling;
2) Well location known;
3) Casing material and casing depth known;
4) Total depth known;
5) Screened or open-holed interval known;
6) Well taps only one aquifer.

The list frames for surface water sites comes from different sources. The "*Gazetteer of Florida Lakes*" can be used to determine whether a site is a lake or a stream. Candidate rivers and canals are selected from defined linear features existing in the USEPA's flow-validated National Hydrographic Dataset (NHD). A large river and canal subset is composed of NHD segments corresponding with Florida's 50 major rivers as identified in the December 1989 *Florida River Assessment* by the Florida Resources and Environmental Analysis Center, located at Florida State University. In addition, staff at various water management districts have identified additional waterbodies to add to the list of large rivers (**EXHIBIT 4**). The small stream subset is the balance of remaining NHD segments minus coastal segments and those existing "seaward" of a "head of salt" line defined by DEP GIS staff.

Regardless of resource, any proposed site rejected during reconnaissance must be documented, and reasons for rejection stated in writing. Rejection of a site shall reference one of the exclusionary criteria listed below, or be mutually agreed to by the Contractor and DEP Contract Manager. Site rejection documentation should be submitted to DEP prior to submittal of field data for the project.

SURFACE WATER SELECTION CRITERIA (SITE INCLUSION/EXCLUSION):

Inclusion

1) Site accessible either by foot / boat / vehicle;
2) Water present within the water body at the targeted sampling location (or for streams, within 50 meters above or below targeted sampling point);
3) Site is either a small stream, a large river or canal (**EXHIBIT 4**), or a lake.

Exclusion

1) Incorrect resource type (i.e, lake is not referenced in "*Florida Lakes Gazetteer*");
2) Changing resource type (i.e., resource type will definitely change prior to scheduled sampling. Example: impoundment of a former river to form a lake);
3) Site falls outside reporting unit;
4) Site located seaward of "head of tide" delineation adopted by DEP and Florida Marine Research Institute (FMRI). Estuaries and tidal portion of rivers will be sampled by FMRI;

5) Access denied by land owner; or access cannot be gained after three attempts;
6) Sampler cannot get necessary equipment to sampling site;
7) Sampling location cannot be reached within three hours from closest point of access;
8) Lake is dry, or does not meet EMAP lake definition[2] within 50 meters of the random latitude/longitude coordinates;
9) Stream is dry for 50 meters above and below the one meter stream segment closest to the provided list frame latitude/longitude coordinates;
10) Unsafe conditions. If Contractor deems conditions to be unsafe, then he/she shall document the reasons in writing.

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[2] EMAP Lake Definition: *a standing body of water greater than 1 hectare (about 2.5 acres) that has at least 1000 m² (about 0.25 acre) of open water and is at least 1 m deep at it's deepest point.* "Open Water" *is defined as water free of emergent vegetation rooted on the bottom of the lake.*

GROUND WATER SELECTION CRITERIA (SITE INCLUSION/EXCLUSION):

Inclusion

1) Site accessible either by foot / boat / vehicle;
2) Well construction information known: *total depth, casing depth, casing material, well owner, screen/open hole interval, (optional) existing recent water quality data*;
3) Well completed into proper ground water resource type (confined/unconfined);
4) Well present in current list frame.

Exclusion

1) Well no longer functions as aquifer sampling device (i.e., destroyed);
2) Well casing damaged or excessively corroded, or if well water quality indicates that well is corroding at depth;
3) Well consistently dry, purges dry or does not recover within 6 hours;
4) Access denied by well owner, or access cannot be gained after three attempts;
5) Access difficult: well cannot be reached within 3 hours from closest point of access;
6) Unsafe conditions. If Contractor deems conditions to be unsafe, then he/she shall document the reasons in writing;
7) Well intercepts the known zone of discharge at a DEP permitted facility.

NOTE: Additional exclusionary criteria may be proposed, and will be adopted if mutually agreed to by the Contractor and the DEP Ambient Monitoring staff.

RECONNAISSANCE PROCEDURES:

1) Visit sites supplied by DEP and apply appropriate inclusion/exclusion criteria;
2) Obtain landowner permission to reconnoiter and sample site (if necessary);
3) Produce sketch map of site;
4) Take digital photographs of site (recommend 5 photos: north/south/east/west from at or near sampling point, and a photo of the sampling point);

5) Provide written description of site, and whether site is suitable for sampling (see inclusion/exclusion criteria above);
6) Provide items 3) – 5) to DEP Contract Manager in appropriate electronic format (paper sketch map or scanned JPEG-format file OK) for all visited sites, along with owner information (name, address, phone number);
7) GPS site *only if necessary for relocation during subsequent sampling*. Actual official location should be GPS'ed at the time of sampling. Suggest using flagged tape or other non-destructive marker where appropriate to identify recon sites for subsequent sampling;
8) Lakes: Recon 30 acceptable primary and 5 acceptable alternate sites – locate accessible boat ramp(s). Lake sites known to be both accessible and sampleable need not be physically visited during recon;
9) Small streams and large rivers: Recon 30 acceptable primary and 5 acceptable alternate sites per resource. Large river sites known to be both accessible and sampleable need not be physically visited during recon;
10) Unconfined/Confined wells: Recon 30 acceptable primary and 5 acceptable alternate sites per resource;
11) DEP will provide up to 100 potential sites for reconnaissance, per resource type. Sites MUST BE RECONNOITERED IN THE ORDER PROVIDED, until 35 (30 primary, 5 alternate) sampleable sites are documented. Should fewer than 35 sampleable sites be located within the 100 potential sites provided, then no further reconnaissance will be required, and as many suitable sites as possible (up to 30) will subsequently be sampled.

TASK III - NETWORK REFINEMENT
Fixed Price Task Cost: $2,000

Contractor staff will assist DEP in refinement and design of surface and ground water sampling networks. Contractor staff will acquire sampling easements as needed. DEP will procure additional gaging stations as needed. Changes to the network shall be mutually agreed upon in writing prior to implementation.

Contractor staff will provide updates to well/station information to DEP quarterly as necessary, and will assist DEP staff in detecting and correcting errors or omissions in the well/station databases.

TASK IV - DATA MANAGEMENT AND DATA INTERPRETATION
Fixed Price Task Cost: $6,000

Contractor staff will edit data supplied to the Contractor and approve distribution to the public via GWIS (Generalized Water Information System) updates. Data review will follow written standard operating procedures and timetables. Field data will be submitted to DEP in approved electronic format (**ATTACHMENT H**) within 15 days of the end of the sampling event. A sampling project within the STATUS Network is defined as the complete sampling of a resource within one reporting unit. GWTV field data should be submitted with quarterly progress reports. DEP reserves the right to require the use of DEP-supplied field data entry software if data is not submitted in DEP-approved format. Contractor staff will also review and edit data interpretations regarding Watershed Monitoring Program data. All applicable data will be computerized in DEP-approved format (see **ATTACHMENT H**).

TASK V - ATTEND PROGRAM MEETINGS AND TRAINING
Fixed Price Task Cost: $26,650

One or more Contractor staff will attend three triennial Watershed Monitoring Program meetings. Each of these meetings will last approximately three days. Appropriate Contractor staff will attend up to three other meetings scheduled by DEP such as sampling courses, training workshops, or other meetings as required.

TASK VI – ADDITIONAL RESOURCES
Total Task Cost: $0.00

DEP will hire and fund two (2) OPS Technicians. One at $30,340.00/year and the other at $27,000.00/year to assist the Contractor in performing Contract tasks. The DEP will pay the DEP OPS employees' travel expenses (approximately $6,500.00/year).

TASK VII - REPORTS
Fixed Price Task Cost: $11,000

Progress Reports and invoices are to be submitted every three months by Contractor to DEP. Quarterly Quality Assurance Reports, field data and other appropriate documentation should be attached to the Quarterly Progress Reports. A Final Comprehensive Report that summarizes all tasks associated with this Contract, including sampling site updates shall be submitted by the end of the Contract period.

REPORTING REQUIREMENTS

Each progress report shall indicate work performed during the reporting period, percentage of project completed, work scheduled for the next reporting period, and include quarterly quality assurance reports, problems encountered and planned solutions.

PAYMENTS

The Contractor shall submit invoices every three (3) months, based on the percentage of overall project completion, in conjunction with progress reports as required herein. A final invoice must be submitted no later than July 17, 2003, to assure the availability of funding for final payment.

The Department shall have fourteen (14) calendar days from receipt of a deliverable to determine satisfactory performance. If said deliverable is acceptable to the Department, the invoice shall be processed for payment with the invoice processing time beginning on the date the Department approved the work product submitted by the Contractor.

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT B

RELEASE OF CLAIMS BY CONTRACTOR ON EPA SUBAGREEMENT

IN ACCORDANCE with the final payment provisions of **DEP Contract No. GW229**, the CONTRACTOR hereby releases the DEP and the EPA from any and all claims that may arise under, or by virtue of, the contract, except those claims which may be specifically exempted and set forth herein.

Specific Exemptions: (attach additional sheet(s) if necessary)
_____
_____
_____

DEP CONTRACT NO.: **GW229**

CONTRACTOR: **SOUTH FLORIDA WATER MANAGEMENT DISTRICT**
8894 BELVEDERE ROAD
WEST PALM BEACH, FLORIDA 33411

SIGNATURE OF AUTHORIZED INDIVIDUAL DATE

_____ _____

TITLE: _____

NOTARY:

STATE OF _____

COUNTY OF _____

Sworn to and subscribed before me this

_____day of _____, 20_____

_____
Signature of Notary Public

_____
Print, Type or Stamp Commissioned Name of Notary Public

Personally Known *or* Produced Identification

Type of Identification Produced _____

ATTACHMENT C

PROPERTY REPORTING FORM FOR DEP CONTRACT NO. GW229
(For Property With Contractor Assigned Property Control Numbers)

CONTRACTOR: List non-expendable equipment/personal property* costing $1,000 or more purchased under the above Contract. Also list all upgrades* under this contract, costing $1,000 or more, of property previously purchased under a DEP contract (identify the property upgraded and the applicable DEP contract on a separate sheet). Complete the serial no./cost, location/address and property control number columns of this form. The Contractor shall establish a unique identifier for tracking all personal property purchased under this Contract and shall report the inventory of said property, on an annual basis, to the Department's Project Manager, by DEP Contract number, no later than January 31st for each year this Contract is in effect.

DESCRIPTION	SERIAL NO./COST**	LOCATION/ADDRESS	CONTRACTOR ASSIGNED PROPERTY CONTROL NUMBER

*Not including software. **Attach copy of invoice, bill of sale, or other documentation to support purchase.

CONTRACTOR:	Contractor's Project Manager:	Date:

BELOW FOR DEP USE ONLY

DEP CONTRACT MANAGER: **Maintain this document with a copy of the invoices supporting the cost of each item identified above in your Contract file. If the Contract is a cost reimbursement Contract, make sure to send invoices supporting the cost of the items to Finance and Accounting for the processing of the Contractor's invoice for payment.**

DEP Contract Manager Signature: _____ Date: _____

DEP FINANCE AND ACCOUNTING: No processing required by Finance & Accounting as the Contractor is responsible for retaining ownership of the equipment/property upon satisfactory completion of the Contract.

DEP PROPERTY MANAGEMENT: No processing required by the Property Management section as the Contractor will retain ownership of the equipment/property upon satisfactory completion of the Contract.

ATTACHMENT D

CERTIFICATION REGARDING DEBARMENTS, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION-LOWER TIER FEDERALLY FUNDED TRANSACTIONS

DEP CONTRACT NO: GW229

1. The undersigned hereby certifies that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. The undersigned also certifies that it and its principals:

   (a) Have not within a three-year period preceding this certification been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State anti-trust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

   (b) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 2.(a) of this Certification; and

   (c) Have not within a three-year period preceding this certification had one or more public transactions (Federal, State or local) terminated for cause or default.

3. Where the undersigned is unable to certify to any of the statements in this certification, an explanation shall be attached to this certification.

Dated this _____ day of _____, 20_____.

By_____
Authorized Signature/Contractor

_____
Typed Name/Title

_____
Contractor's Firm Name

_____
Street Address

_____
Building, Suite Number

_____
City/State/Zip Code

_____
Area Code/Telephone Number

Form DEP 55-220 (01/01)

INSTRUCTIONS FOR CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION- LOWER TIER FEDERALLY FUNDED TRANSACTIONS

1. By signing and submitting this form, the certifying party is providing the certification set out below.

2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the certifying party knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the Department of Environmental Protection (DEP) or agencies with which this transaction originated may pursue available remedies, including suspension and/or debarment.

3. The certifying party shall provide immediate written notice to the person to which this contract is submitted if at any time the certifying party learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

4. The terms covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal, and voluntarily excluded, as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this contract is submitted for assistance in obtaining a copy of those regulations.

5. The certifying party agrees by submitting this contract that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier contract, or other covered transaction with a person who is proposed for debarment under 48 CFR 9, subpart 9.4, debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the DEP or agency with which this transaction originated.

6. The certifying party further agrees by executing this contract that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all contracts or lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not is proposed for debarment under 48 CFR 9, subpart 9.4, debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List (Telephone No. (202) 501-4740 or (202) 501-4873.)

8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is proposed for debarment under 48 CFR 9, subpart 9.4, suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the DEP or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

ATTACHMENT E

Approved by OMB
0348-0046

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

1. Type of Federal Action:	2. Status of Federal Action:	3. Report Type:
☐ a. contract b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	☐ a. bid/offer/application b. initial award c. post-award	☐ a. initial filing b. material change **For Material Change Only:** year_____ quarter_____ date of last report_____

4. Name and Address of Reporting Entity:	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:
☐ Prime ☐ Subawardee Tier _____, *if known:* **Congressional District,** *if known:*	**Congressional District,** *if known:*
6. Federal Department/Agency:	**7. Federal Program Name/Description:** CFDA Number, *if applicable:* _____
8. Federal Action Number, *if known:*	**9. Award Amount,** *if known:* $
10. a. Name and Address of Lobbying Entity *(if individual, last name, first name, MI):*	**b. Individuals Performing Services** *(including address if different from No. 10a)* *(last name, first name, MI):*
(attach Continuation Sheet(s) SF-LLL-A, if necessary)	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.	**Signature:** _____ **Print Name:** _____ **Title:** _____ **Telephone No.:** _____ **Date:** _____
Federal Use Only:	Authorized for Local Reproduction Standard Form – LLL (Rev 7 97)

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.

2. Identify the status of the covered Federal action.

3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by the reporting entity for this covered Federal action.

4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.

5. If the organization filing the report in item 4 checks "Subawardee", then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.

6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.

7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.

8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."

9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

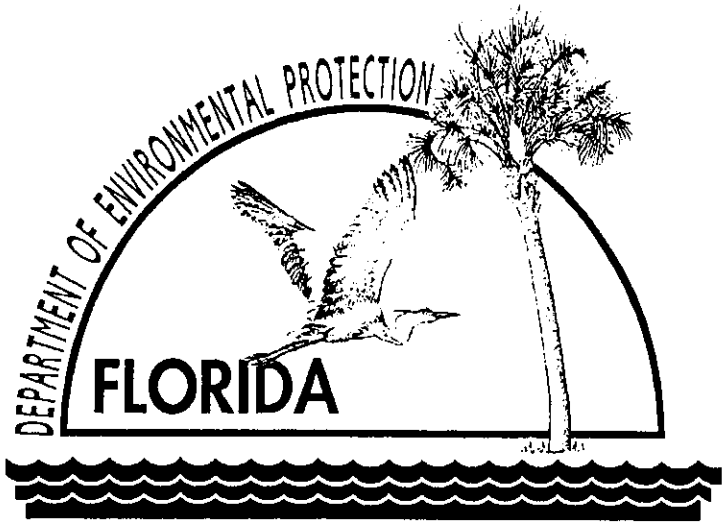
10. (a) Enter the full name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.

    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).

11. The certifying official shall sign and date the form, print his/her name, title and telephone number.

ATTACHMENT F

Status and Temporal Variability Monitoring Networks



Sampling Manual

Florida Department of Environmental Protection
2600 Blair Stone Road, Tallahassee, Florida 32399-2400
September 2001

Status and Temporal Variability Monitoring Networks

Sampling Manual

Prepared by:

Laura Morse
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James Silvanima
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Watershed Monitoring and Data Management Section
Florida Department of Environmental Protection

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Section I. Introduction

The Watershed Monitoring and Data Management Section (WM&DMS) of the Florida Department of Environmental Protection (FDEP) will annually host a water sampling workshop for the Florida Status and Temporal Variability (TV) Monitoring Networks. The purpose of the workshop is to provide a consistent state-wide approach to water sampling conducted for the two networks. The need for a single sampling protocol is especially important, since many agencies participate in the sampling effort. Furthermore, the long-term nature of the program requires that variations in sampling procedures over time be minimized and that deliberate changes to these procedures occur in a controlled fashion. The procedures recommended within are approved procedures; however, many are specific to the two networks and may not be directly applicable to other programs.

The Status and Temporal Variability Monitoring Networks are a multi-agency cooperative effort. Participants include state, local, and federal agencies, as well as privately owned companies. Naturally, with this number of groups involved in sampling and analysis, coordination and communication are essential. If at any time questions arise regarding the two networks, don't hesitate to contact the FDEP WM&DMS at (850) 921-9422.

Section II. Description of Networks

The Ambient Monitoring Network consists of two projects. The Status Network is a probability-based network designed to randomly sample Florida's water quality resources, for the purpose of making statistical inferences about water quality status. The Temporal Variability Network is a fixed-station-monitoring network designed to detect both short-term variability and long-term trends.

Status Network

The purpose of the Status Network is to characterize the environmental conditions of Florida's water resources and to determine if those conditions are changing over time. To accomplish this, the state has been divided into 20 geographic reporting units, all of which will be sampled over a 5-year period. During any given year, sampling will be conducted in 5 reporting units, one from each water management district. [Under this strategy, 5 reporting units will be sampled twice during the 5-year cycle, the other 15 reporting units will be sampled once only.] The water resources to be characterized include confined aquifers, unconfined aquifers, high-order streams (Horton order greater than 4), low-order streams (Horton order 4 or less), small lakes (1-10 hectares), and large lakes (over 10 hectares). Each year, and for each active reporting unit, 30 sampling stations from each of the six water resources will be selected at random (900 stations per year). Samples will be collected from these stations during resource-specific index periods and analyzed for the constituents listed in Table II-1. The analytical methods for each constituent are listed in Table II-2. The Watershed Monitoring and Data Management Section, the five water management districts, and selected county environmental protection agencies will collect samples. The FDEP Central Chemistry and Biology Laboratories in Tallahassee, Florida, will analyze all samples. For further information on the design of the Status Network, refer to Overview of the Florida Department of Environmental Protection's Integrated Water Resource Monitoring Efforts and the Design Plan of the Status Network written by WM&DMS staff.

Temporal Variability Network

The purpose of the Temporal Variability (TV) Network is to characterize site-specific water quality variability at selected sampling sites. There are 79 surface water TV stations located on Florida lakes and streams. The surface water TV stations are monitored monthly for the constituents listed in Table II-3. Table II-2 lists the methods that will be used for the analysis of each constituent.

There are 47 ground water TV stations tapping confined or unconfined aquifers. Unconfined wells will be sampled monthly, and confined wells will be sampled quarterly. The analytes to be measured will depend on whether or not the well is in an actively monitored reporting unit (see above for description of reporting unit). Wells located in actively monitored reporting units will be analyzed for the analytes shown in Table II-3. Wells not located in actively monitored reporting units will be analyzed for field measurements only (pH, specific conductance, temperature, dissolved oxygen, and water level). For further information regarding the Temporal Variability Network, refer to the Watershed Monitoring and Data Management Section's Overview of the Florida Department of Environmental Protection's Integrated Water Resource Monitoring Efforts and the Design Plan of the Status Network.

Table II-1. Status Monitoring Indicator List

INDICATOR	LAKES (lg)	LAKES (sm)	STREAMS (ho)	STREAMS (lo)	AQUIFERS
Calcium	T	T	T	T	D
Magnesium	T	T	T	T	D
Sodium	T	T	T	T	D
Potassium	T	T	T	T	D
Chloride	T	T	T	T	D
Sulfate	T	T	T	T	D
Fluoride	T	T	T	T	D
Alkalinity	T	T	T	T	D
Nitrate + Nitrite	T	T	T	T	D
Ammonia	T	T	T	T	D
Kjeldahl Nitrogen	T	T	T	T	D
Phosphorous	T	T	T	T	D
Specific Conductance	D	D	D	D	D
Orthophosphate	D	D	D	D	D
Organic Carbon	T	T	T	T	T
Dissolved Solids	T	T	T	T	T
Suspended Solids	T	T	T	T	T
Turbidity	T	T	T	T	T
Color	T	T	T	T	T
Fecal Coliform	T	T	T	T	T
Enterococci	T	T	T	T	T
Chlorophyll-A	T	T	T	T	
Algal Growth Potential	T	T			
Phytoplankton	T	T			
Water Temperature	X	X	X	X	X
pH	X	X	X	X	X
Specific Conductance/Salinity	X	X	X	X	X
Dissolved Oxygen	X	X	X	X	X
Secchi Depth	X	X	X	X	
Total Depth	X	X	X	X	
Sample Depth	X	X	X	X	
Depth to Water (from LSE)					X
Land Surface Elevation (LSE)					X
Microlanduse					X

T total sample/ D filtered sample/ X other sample or measurement

Table II-2. Analytical Methods for Status and Temporal Variability Networks

ANALYTE[1]	ANALYSIS METHOD[2,3]
Field Measurements	
pH	EPA 600/4-79-020, Method 150.1
Temperature	EPA 600/4-79-020, Method 170.1
Specific Conductance	EPA 600/4-79-020, Method 120.1
Dissolved Oxygen	EPA 600/4-79-020, Method 360.1
Depth to Water	Steel tape and chalk/electronic indicator[4]
Total Water Depth	Steel tape/electronic measuring device[4]
Secchi Depth[5]	Welch (1948); EPA 620/R-97/001
Biology	
Chlorophyll-A[5]	SM 10200 H (modified)
Phytoplankton Taxonomy[6]	SM 10200 F.1; 10200 F.2
Algal Growth Potential[6]	EPA 600/9-78-018 (modified)
Microbiology	
Total Coliform	EPA 600/8-78-017, p. 109; SM 9222 B
Fecal Coliform	EPA 600/8-78-017, p. 125; SM 9222 D
Enterococci	SM 9230 C
Escherichia coli	SM 9213 D
Organics	
Total Organic Carbon	EPA 600/4-79-020, Method 415.1
Nutrients[7]	
Nitrate-Nitrite	EPA 600/4-79-020, Method 353.2
Ammonia	EPA 600/4-79-020, Method 350.1
Total Kjeldahl Nitrogen	EPA 600/4-79-020, Method 351.2
Total Phosphorus	EPA 600/4-79-020, Method 365.1
Orthophosphate	EPA 600/4-79-020, Method 365.1
Inorganic Anions[8]	
Chloride	EPA 600/4-79-020, Method 300.0
Sulfate	EPA 600/4-79-020, Method 300.0
Fluoride	EPA 600/4-79-020, Method 340.2

Table II-2. Continued

ANALYTE[1]	ANALYSIS METHOD[2,3]
Metals[8]	
Calcium	EPA 600/4-79-020, Method 200.7
Magnesium	EPA 600/4-79-020, Method 200.7
Sodium	EPA 600/4-79-020, Method 200.7
Potassium	EPA 600/4-79-020, Method 200.7
Physical Properties	
Alkalinity[8]	EPA 600/4-79-020, Method 310.1
Turbidity	EPA 600/4-79-020, Method 180.1
Specific Conductance (Lab)	EPA 600/4-79-020, Method 120.1
Color	EPA 600/4-79-020, Method 110.2
Total Suspended Solids	EPA 600/4-79-020, Method 160.1
Total Dissolved Solids	EPA 600/4-79-020, Method 160.2

[1]Analyte measured in unfiltered samples for ground water and surface water matrices unless otherwise noted

[2]Field analytes measured by sampling agency; Biology and Microbiology analytes measured by DEP Biology Laboratory; all other analytes measured by DEP Central Chemistry Lab

[3]Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020, revised March 1983; Welch, P.S., 1948, Limnological Methods, Blakiston Co., Philadelphia; Environmental Monitoring and Assessment Program Surface Waters: Field Operations Manual for Lakes, EPA 620/R-97/001, 1997; Selenastrum capricornutum printz Algal Assay Bottle Test: Experimental Design, Application, and Data Interpretation Protocol, EPA 600/9-78-018, 1978; Microbiological Methods for Monitoring the Environment- Water and Wastes, EPA 600/8-78-017, 1978; Standard Methods for the Examination of Water and Wastewater (designated SM), 19th Ed., American Public Health Association, Washington, DC, 1995

[4]Measurements using an electronic indicator or measuring device shall follow manufacturer's instructions

[5]Measured only in unfiltered surface water

[6]Measured only in water samples from lakes for the Status Network

[7]Measured in filtered ground water samples and unfiltered surface water samples, except ortho-phosphate which is measured in both filtered ground water and surface water samples

[8]Measured in filtered ground water samples and unfiltered surface water samples

Table II-3. Temporal Variability Monitoring Indicator List

INDICATOR	SURFACE WATER	GROUND WATER[1]
Calcium	T	D
Magnesium	T	D
Sodium	T	D
Potassium	T	D
Chloride	T	D
Sulfate	T	D
Fluoride	T	D
Alkalinity	T	D
Nitrate + Nitrite	T	D
Ammonia	T	D
Kjeldahl Nitrogen	T	D
Phosphorous	T	D
Specific Conductance	D	D
Orthophosphate	D	D
Organic Carbon	T	T
Dissolved Solids	T	T
Suspended Solids	T	T
Turbidity	T	T
Color	T	T
Fecal Coliform	T	T
Enterococci	T	T
Chlorophyll-A	T	
Water Temperature	X	X
pH	X	X
Specific Conductance/Salinity	X	X
Dissolved Oxygen	X	X
Secchi Depth	X	
Total Depth	X	
Sample Depth	X	
Depth to Water (from LSE)		X
Land Surface Elevation (LSE)		X
T total sample/ D filtered sample/ X other sample or measurement		
[1]Active Reporting Unit only. Inactive Reporting Units monitored for field measurements only.		

Section III. Project Preparation

Sampling Schedule

Sample schedules will be provided to the sampling agencies. They will list the types of projects for which each agency is scheduled for, and the numbers of samples, equipment blanks, and duplicates to be collected for each project. If sampling cannot be done according to this schedule, your Project Manager must notify FDEP WM&DMS staff as soon as possible so that others involved in the project (e.g. laboratories, etc.) can be notified of the change.

Sampling Kit Shipments

The FDEP Central Laboratory has been instructed to ship all containers for a project no later than two weeks prior to the beginning of the project. The containers will be shipped in coolers addressed to the Project Manager. Pre-printed Federal Express airbills for return shipment will also be shipped inside the coolers. If the container shipment is not received at the sampling agency 7 days prior to the first day of sampling, please notify WM&DMS staff.

Project Paperwork

The FDEP WM&DMS staff will ship the paperwork needed for a sampling project to each sampling agency. This package will be mailed no later than two weeks prior to the beginning of a project. Check the package to make sure it contains all of the following items:

<u>For Ground Water (GWTV) and Surface Water (SWTV) Temporal Variability Monitoring:</u>

- Custody sheets
- Station identification (bar-coded) container labels
- RQ (Requisition) labels
- Field sheets
- Micro land use forms (once annually for GW only)

<u>For Status Monitoring</u>

- Custody sheets
- Station identification (bar-coded) container labels
- RQ (Requisition) labels
- Field log sheets

- Micro land use forms (GW only)

Preservatives

FDEP WM&DMS staff will supply preservatives for both Status and TV samples. These preservatives are contained in vials, each of which has enough pre-measured preservative to adequately preserve one sample container. It is the responsibility of the sampling agency to keep an inventory of preservatives. To order more preservatives, please notify the WM&DMS Quality Assurance Officer at (850) 922-5820, *two months in advance* of completely exhausting supplies.

Filters

FDEP WM&DMS staff will supply filter devices for filtering of surface and ground water samples. For surface water samples, orthophosphate ($o\text{-}PO_4$) is filtered using a disposable syringe and a filter disk. For ground water samples, a disposable in-line filter capsule is used to filter anions, nutrients, and metals. Inventories should be periodically checked to ensure enough supplies are available. Requests for additional filters should be made well in advance of sampling by calling (850) 922-5820.

Field Reference Samples

The U.S. Geological Survey Water Resources Division Laboratory (USGS WRD) in Ocala supplies field reference samples to sampling agencies. Shipments to the sampling agencies are generally made once or twice a year, so plenty of samples should be on hand. These samples should be analyzed at a rate of 1 per 5-10 actual samples, for both pH and specific conductance. Inventories should be periodically checked and requests for additional field reference samples should be made well in advance of sampling. Requests should be made either by calling the WM&DMS QA Officer at (850) 922-5820 or contacting the USGS by electronic mail at ocalaman@usgs.gov. Faxes can also be sent to the USGS at (352) 237-7081. When requesting supplies from the USGS; specify name and sampling agency, provide a description and quantity of items needed, mention how fast the supplies are needed, and list current mailing address.

Container Inventory

Soon after receiving the containers, they should be inventoried. Check the FDEP lab shipment to ensure that all necessary containers and preservatives have arrived, using the inventory list on the

back of the custody sheet. Remember that it is the sampling agency's responsibility to ensure that enough supplies are available. Do not forget to include Quality Control (QC) samples. Container inventories are shown in Sections V and VII. If there are any questions, call either the FDEP lab or WM&DMS staff.

Supplies and Equipment Inventory

Prior to beginning a project, conduct an inventory of all sampling supplies and equipment needed. A checklist can be helpful in ensuring that the proper supplies and equipment are available. A checklist can also be helpful when checking cleanliness and working order of sampling equipment. Checklists will vary for different agencies. Examples of checklists are shown in Sections V and VII.

Historical Data

Prior to visiting a sample site, it is imperative that documentation from previous visits be reviewed, if available. Important information can be obtained from the documentation including average purging time, calibration ranges, and expected field measurements. If possible, take a printed copy of the field notes to the site so they can be compared with the current observations. If discrepancies are found, be sure to note them in the field logbook. Finally, check to see that the information in the station file is complete. Often relevant information is missing. If so, try to obtain that information in the field.

Section IV. Instrument Calibration Procedures

Introduction

The following are the minimum calibration requirements needed to ensure that an instrument is capable of producing acceptable data.

General Calibration Considerations

Field equipment shall be fully calibrated daily for pH, specific conductance, and dissolved oxygen (DO). Refer to equipment manufacturer's recommendations for calibration procedures.

Once the meter has been calibrated, pH, conductivity, and DO checks shall take place at the end of the sampling day. The pH meter will be checked against the pH 7 buffer, the specific conductance meter against a single standard, and DO will be checked with water saturated air. If a field meter fails a calibration check, then a complete calibration must be performed prior to collecting further data.

The minimum frequency of the pH and conductivity checks are contingent upon field reference sample results. At least 95% of the results must be satisfactory or marginal. If this is not met, then the minimum frequency for the checks will be every 4 hours, and at the end of the sampling day, until satisfactory performance can be assured.

Records of each system calibration and calibration check must be maintained in a calibration log. The method used to calibrate, time and date of calibration, standard(s) used, resulting meter response, actions taken, and the results of the calibration should be listed. Optionally, the meter name, model number, and identification number (if applicable) may be entered.

Documentation on calibration standards (e.g., buffers, KCl, and other reagents) must be maintained.

- At a minimum, the date of receipt, expiration dates (noted on the bottle label), and date of first use shall be noted on the standard container.
- Expiration dates must be followed.
- If reagents or standards are prepared from stock chemicals, they must be analytical reagent grade or better. NOTE: Potassium chloride standards must be of primary standard grade.

Calibration of Specific Meters

Multiprobe Meters

Calibration should be performed according to manufacturer's specific instructions on a daily basis. Checks should be conducted as listed in the following for the individual meters.

---

pH Meters

- The pH meter is calibrated on a daily basis according to manufacturer's instructions. Use buffer solutions (pH of 4, 7, 10) purchased from commercial vendors for calibration. Do not reuse buffers. Each meter/electrode system must be calibrated at a minimum of two points, at least three pH units apart, bracketing the expected sample pH. Check historical data for expected pH or use pH paper on an aliquot to estimate. Values must be within 0.1 standard units of the actual buffer values, or the meter must be recalibrated.
- A calibration check must be made at the end of the sampling day.
- If less than 95% of the pH field reference sample values are not satisfactory or marginal, the minimum frequency for checks will be every 4 hours as well as at the end of the sampling day. The pH meter is checked against the pH = 7 buffer. The value must be within 0.1 standard units of the actual buffer value, or the meter must be recalibrated.
- There are several interferences to keep in mind with pH measurement:
  - Sodium interferences that occur at pH > or = 10 can be reduced or eliminated by using a low sodium error electrode;
  - Coatings of oils, greases, and particulates may impair the electrode's response. The electrode bulb should be patted dry with lint-free paper or cloth and rinsed with deionized water. If not, acetone may be used to clean very hard to remove films, but must be used sparingly so the electrode surface is not damaged.
  - Temperature effects on the electometric measurement of pH and conductivity are controlled by using instruments having automatic temperature compensation (ATC) or by calibrating the meter at the temperature of the samples.
  - Poorly buffered solutions with low specific conductance (<200 µS/cm) may cause fluctuations in the pH readings. Equilibrate the electrode by immersing it in an aliquot of sample for several minutes before taking pH readings.
- Under normal conditions a pH measurement should be accurate to +/- 0.1 pH units.

Thermometers/Thermistors

- Temperature determinations can be made with any field-grade mercury-filled, alcohol-filled, or dial-type Celsius thermometer as well as an electronic thermistor.
- All field thermometric devices shall be checked annually in the laboratory against a National Institute of Standards and Technology (NIST) precision thermometer.

- The annual check should consist of the following:
  - Temperatures should agree within +/- 0.1° C. Make note of the calibration in the calibration records. Note the make, model, and serial number of each thermometer or thermistor.
  - Thermometers or thermistors that do not meet the acceptance criteria should be disposed of properly.
  - If the difference is shown to be constant (i.e. + 0.5° C) over the temperature range of the thermometric device, it may still be used provided that the difference is documented for 10 degree increments, and the correcting factor is used in all measurements.
- All field thermometric devices should be checked weekly in the laboratory with a NIST checked thermometer.
- The thermometer or thermistor should be allowed to equilibrate to the temperature of the sample before readings are recorded.
- Temperature readings should be recorded to the nearest 0.5° C.

Specific Conductance Meters

- Conventional conductivity devices consist of two or more platinum electrodes separated by a test solution. The major disadvantage with this type of system is the possibility of polarization or poisoning (fouling) of the electrodes. Periodic cleaning of the electrodes, according to the manufacturer's instructions, should be performed.
- Conductivity varies with temperature. For example, the conductivity of salt water increases 3% per degree C at 0° C, and only 2% per degree C increase at 25° C. Therefore, all meters must be temperature compensated.
- The meter should be calibrated daily using the manufacturer's specifications. If the meter does not read within 5% of the standards, determine what the problem is and correct it before proceeding.
- The meter must be checked in the field with at least one conductivity standard at the end of the sampling day. However, if less than 95% of the conductivity field reference sample results are satisfactory or marginal, conductivity will have to be checked at a minimum of every 4 hours as well as at the end of the day. The chosen standard should be close to the conductance value of the samples. If the meter does not read within 5% of the standard, then the meter must be recalibrated prior to collecting further data.

Dissolved Oxygen Meter

- Annually, the meter should be calibrated in the laboratory using the Azide modification of the Winkler Method. The annual laboratory calibration should consist of the following:
  - Fill a clean container with uncontaminated or deionized water and place the probe into the container.
  - Siphon water from the container into two Biological Oxygen Demand (BOD) bottles.

- Make sure to place siphon hose on the bottom of the bottles and overflow the bottles by three volumes.
- Determine the DO by the Winkler method (see Standard Methods for the Examination of Water and Wastewater, 19th Ed., American Public Health Association, Washington, D.C., 1995, for more details).
- Adjust the DO meter according to manufacturer's instructions.
- Be sure to adjust the meter to the temperature of water in the container, then calibrate the instrument to read the average DO concentration of the two samples determined by the Winkler test.

- Once a day the dissolved oxygen (DO) meter should be calibrated in accordance to the manufacturer's recommendations.
- Before mobilizing, check to make sure there are no air bubbles on or, wrinkles or tears in the probe membrane. If so, replace the membrane and KCl filling solution. Check the leads, contacts, etc. for corrosion and/or shorts if the meter pointer remains off-scale, does not calibrate, or drifts.
- Check the calibration of the DO meter with water saturated air at the end of the sampling day. If a DO meter fails the calibration check, then recalibrate the meter prior to taking any more DO measurements. Refer to the manufacturer's recommendations if the calibration checks fails and the probe appears damage.
- A constant flow of water across the membrane-sample interface is necessary when collecting DO data.
- Dissolved inorganic salts are an interference with the performance of DO probes. For example, the taking of DO readings in salt water is affected by the salinity. Corrections should be made following the manufacturer's instructions.
- Reactive gases, which pass through the membrane, may cause interference. Again, refer to the manufacturer's recommendations when dealing with interferences.
- DO probes are temperature sensitive. A method of temperature compensation is normally provided by the manufacturer if the probe does not compensate for temperature automatically.

Section V. Ground Water Sampling Protocols

Introduction

Sampling of ground water is done such that samples will approximate as closely as possible actual aquifer conditions. The methods should consider the following:

- Well construction and development is carefully documented.
- Purge techniques are documented for each well.
- Field measurements are made with minimal disturbance.
- Samples are collected with minimal disturbance and preserved rapidly.
- Samples are collected in a known and reproducible manner.

Before actually going into the field, maps and previous field logs are used to determine the number of wells to be sampled and the order in which they will be sampled. When wells are known to contain low-level contamination, sampling should proceed from the least contaminated well to the most contaminated. Wells known to be severely contaminated (e.g. presence of free product or trace contaminant concentrations in parts per million) should not be sampled. Prior to visiting wells that are privately owned, the owner should be informed by phone call or letter. Springs will be sampled as a ground water resource such that samples will be taken at the vent or as close as possible to the vent.

Capabilities

The ground water coming from all wells will be examined for the following field analytes: pH, temperature, specific conductance, dissolved oxygen, and depth to water. For all Status Network and certain Temporal Variability Network wells (as stated in Section II), ground water samples will be collected for the following analyte groups: organics (total organic carbon), physical properties (turbidity, specific conductance, color, total suspended solids, and total dissolved solids), microbiology (enterococci, *Escherichia coli*, total coliform, and fecal coliform), metals (calcium, magnesium, sodium, and potassium), and inorganics (inorganic anions- chloride, sulfate, and fluoride; nutrients- nitrate-nitrite, ammonia, kjeldahl nitrogen, total phosphorus, orthophosphate; and alkalinity). Analytes and analytical methods are listed in Table II-2.

Inventory for Sampling Needs

Before traveling to the well site, several inventories are necessary.

- Inventory all paperwork coming from FDEP, including barcode labels, custody sheets, micro land use forms, and field log sheets (all described below).
- Inventory the sampling kits and the acids necessary for sample preservation, by using the container inventory list provided on the back of the custody sheets (Figure V–1.).
- Inventory the equipment necessary for the well sampling, by use of an equipment inventory check-list such as that listed in Figure V–2.

Figure V–1. Back of the Custody Sheet for Ground Water TV and Status Monitoring

GROUND WATER TEMPORAL VARIABILITY & STATUS NETWORK
CONTAINER INVENTORY

LAB	CONTAINER	ANALYSES	DESCRIPTION	SAMPLE PREPARATION
DEP	TOC	TOC	(1) 125 ml plastic	Unfiltered; H_2SO_4 ampule to pH < 2; chill to 4°C
DEP	Turbidity	Turbidity, Color, TDS, TSS	(1) 1 liter plastic	Unfiltered; chill to 4°C
DEP	Bacteria	Enterococci Fecal Coliform	(2) Whirlpaks® 4 oz	Unfiltered; chill to 4°C
DEP	Metals	Ca, K, Na, Mg	(1) 125 ml plastic	Filtered; HNO_3 ampule to pH < 2; chill to 4°C
DEP	Anion	Cl, SO_4, F, o-PO4, Alkalinity, Conductance	(1) 500 ml plastic	Filtered; chill to 4°C
DEP	Nutrient	NO_3+NO_2, NH_3,TKN, P	(1) 500 ml plastic	Filtered; H_2SO_4 ampule to pH < 2; chill to 4°C

Figure V–2. Example of Ground Water Sampling Supplies Inventory List

GROUND WATER SAMPLING INVENTORY

Meters
pH meter ___
batteries ___
probe ___
standards ___
Conductance meter ___
batteries ___
probe ___
standards ___
DO meter ___
batteries ___
probe ___
standards ___
Thermometer/Thermistor ___
condition ___
calibration ___

Pumps
Submersible RediFlow2
condition ___
tubing ___
drop-pipes ___
check valves ___
gasoline ___
generator ___
Centrifugal ___

tubing
drop-pipes ___
check valves ___

Filtration Apparatus
Filters ___

Reagents & Preservatives
Sulfuric Acid Vials ___
Nitric Acid Vails ___
Analyte-Free Water ___
Liquinox ___

Miscellaneous
Aluminum Foil ___
Plastic Garbage Bags ___
Duct Tape ___
Unpowdered Latex Gloves ___
Paper Towels ___
Spray Bottles ___
pH paper ___
Cleaning brushes ___
Butcher Paper ___
Indelible Markers ___
Pens ___
Coolers ___
Ice ___
Water Level Tape ___
Chalk ___

Paperwork
Site Maps ___
Historical Data ___
Micro Land Use Sheets ___
Calibration Notebook ___
Cleaning Notebook ___
Custody Sheets ___
Field Log ___
Barcode Labels ___
Container Inventory ___

Sampling Vehicles
Fueled ___
Oil ___
Clean ___
Spare Tire ___

Date of inventory_____
Signature_____

At the Well

Once at the well site, compare the site's appearance to the description of the site in the historical records. Often, the physical appearance of a site can change dramatically between sampling events. These changes should be documented, and the written descriptions should be made part of the site file.

Several wells may be clustered at a single site. It is imperative that these wells be clearly distinguishable from one another. Each well should be marked with a Florida Unique Well Identification tag, as described below. Site descriptions should illustrate each well. It is very easy to confuse wells and samples at one of these sites. If you are unsure about which well you are at, measure down to the bottom of the well and compare the measured depth with the depth given in the well file. Several samplers have surprised themselves by performing this simple check.

Once you have identified the well to be sampled you will do the following:

1. Note the land uses immediately adjacent to the well.
2. Take the depth to water of the well.
3. Purge the well.
4. Take field measurements of the well water.
5. Collect water samples if any are to be obtained at the well.
6. Tag the well with a Florida Unique Well Identification (FLUWID) Tag and collect its Global Positioning System (GPS) location, if not done previously.
7. Document information concerning the sampling event.

Labeling Sample Containers

At a well site where water samples are to be collected, all the sample containers for that site are labeled prior to filling. Only one set of containers will be out and labeled at any one sample location. Unpowdered latex gloves should be worn while handling the containers. Station identification labels are provided to the sampling agencies by the WM&DMS (Figure V-3). These labels are bar-coded to uniquely identify a sample station. Several labels are provided for each sampling site. A label will be placed vertically on each sample container for a site. The FDEP Central Laboratory places two types of labels on the sample bottles prior to shipping. One identifies the weekly sampling project request number and the sample analytes for that container (Figure V-4). The other provides the production container numbers for a specific sample bottle (Figure V-5). Samplers should write the time and date at which a station is sampled on the laboratory project and sample identification label of each container.

Figure V - 3. Example of Station Identification Label

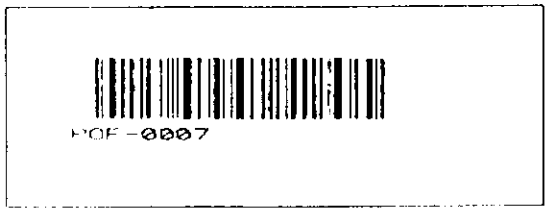


Figure V - 4. Example of Laboratory Project and Sample Identification Label

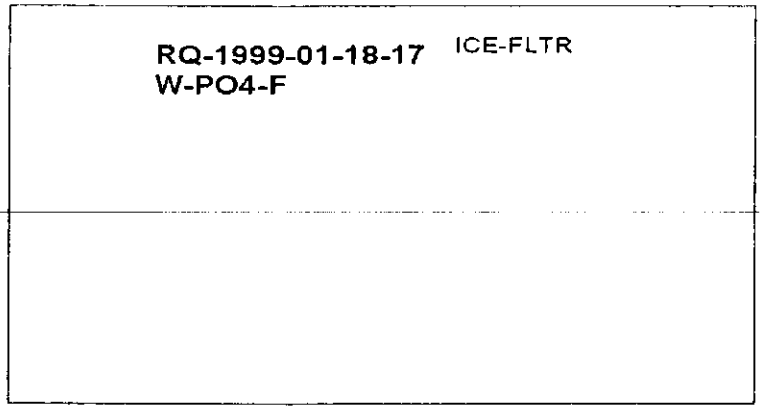
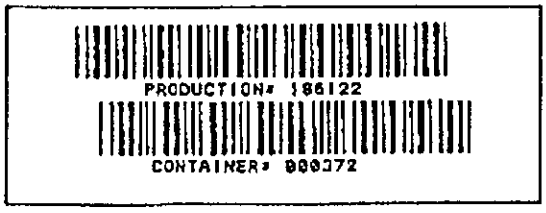


Figure V - 5. Example of Laboratory Production and Container Numbers Label



Documentation

The micro land use form (Figure V–6) is used to document the land uses found within a 300 foot radius of the well. Once the well for sampling is located, fill out the micro land use form. If sampling a well in the TV Network, this form has to be completed once each sampling year and after any changes occur in the land use. The form must be completed for every well in the Status Network while sampling. Attach a barcode label for the well to be sampled in the upper left box of the form, which contains the words station id and station name. Date the form, and then check off the major land use group for the land uses seen within a 300-foot radius of the well. Next check off all features observed within a 300-foot radius of the well. Finally list any comments which pertain to land use immediately surrounding the well.

A standardized field log sheet should be used to document all information pertaining to the purging of the well. The Ambient Monitoring Program will supply field log sheets to contractors (Figure V-7).

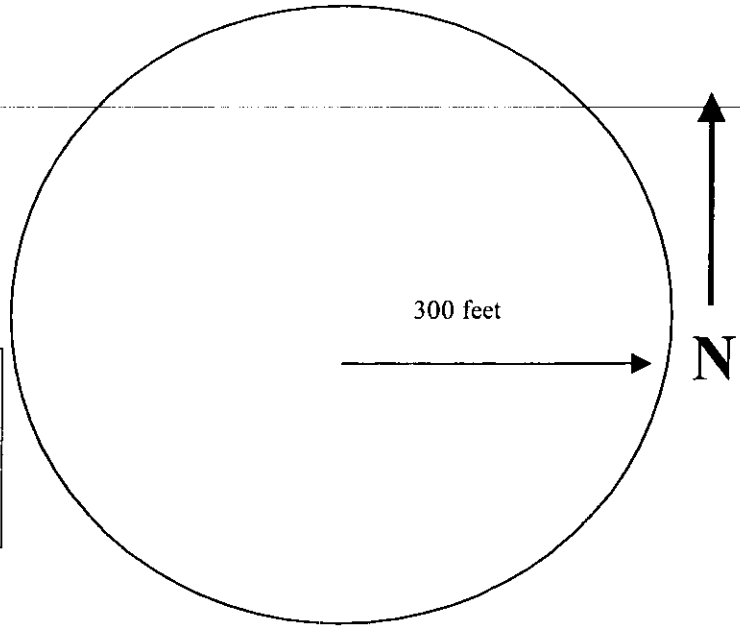
Figure V–6. Example of Micro Land Use Form

FLORIDA AMBIENT MONITORING NETWORK
FEATURES & MICRO LAND USE SHEET

Station ID _____

Station Name _____

Date _____



Major Land Use Group
(Check one)

__ Low Impact (LI)
__ Mining/Excavation ME)
__ Urban/Suburban (US)
__ Intense Agriculture (AG)
__ Industrial (IN)

Check All Features Observed Within 300 Feet Of Well

___(47) Agri. Chemical Mixing/Storage
___(02) Airports
___(52) Animal Feeding Operation
___(10) Borrow Pit
___(21) Canal(s)
___(40) Cave(s)
___(03) Cemetery
___(51) Crops, Field
___(50) Crops, Row
___(22) Ditch, Drainage
___(37) Ditch, Irrigation
___(55) Dry Cleaners
___(41) Food Processing Plant
___(12) Golf Course
___(48) Groves, Citrus
___(49) Groves, Other
___(23) Holding Pond(s), Industrial
___(24) Holding Pond(s), Urban
___(45) Hospitals/Clinics
___(35) Junk Yard
___(53) Kennel(s)
___(25) Lake(s)
___(04) Landfill
___(11) Mine
___(43) Mineral Processing Plant
___(01) Nursery/Greenhouse
___(20) Parking Lot(s)
___(44) Petroleum Processing Plant
___(17) Pipeline(s) & Pump Station
___(46) Power Plant
___(18) Railroad(s)
___(06) Repair Shops (e.g. Automotive)
___(05) Residence
___(26) River
___(16) Roads, Major Highway
___(36) Roads, Other
___(13) Septic Tank(s)
___(07) Service Station
___(14) Sewage Treatment Plant
___(15) Sewage Treatment Sprayfield
___(39) Sinks/Sinkholes
___(27) Spring(s)
___(08) Storage Tanks (Above Ground)
___(09) Storage Tanks (Below Ground)
___(38) Stream(s)
___(42) Timber Processing Plant
___(19) Transmission Lines and Towers
___(29) Water Softener
___(30) Well(s), Injection
___(31) Well(s), Irrigation
___(32) Well(s), Oil & Gas
___(33) Well(s), Private Supply
___(34) Well(s), Public Supply
___(28) Wetland(s)
___(54) Zoos

Comments or other unlisted features

_____

_____

_____

Figure V-7. Ground Water Sampling Field Log Sheet

FLORIDA AMBIENT MONITORING NETWORK
FIELD LOG SHEET

SAMPLING AGENCY: **COUNTY:**
STATION_ID: **STATION:**
OWNER: **PROJECT:**
CASING DIAMETER: **CASING MATERIAL:**
LAND SURFACE ELEVATION: **TOTAL DEPTH:**
MEASURING POINT ELEVATION: **WATERBODY:**

DATE/TIME ON SITE:_____ DATE/TIME OFF SITE: _____

SAMPLER: _____ LAB(s):_____

SAMPLER: _____ FIELD ID:_____

	HELD AT		WETTED AT		DEPTH TO WATER (DTW)	
1.	_____	-	_____	=	_____	(feet from MPE)
2.	_____	-	_____	=	_____	(feet from MPE)

WATER ELEV: (MPE-DTW) _____ feet STICKUP (SU=MPE-LSE): _____ ft

MIN. PURGE VOLUME: _____ - (_____ - _____) x ___ x ___ x 0.1224 = _____ gal
DW DTW SU D D

PURGE RATE: _____ gal/min PURGE PUMP ID:_____

MIN. PURGE TIME: (MIN. PURGE VOLUME/PURGE RATE) _____ min.

DATE/TIME PURGE BEGIN:_____ DATE/TIME PURGE STOP:_____

TOTAL PURGE TIME: _____ min

TOTAL PURGE VOLUME: (PURGE RATE x TOTAL PURGE TIME) _____ gal

FUEL-POWERED UNITS USED ON SITE: _____

SULFUR ODOR:_____ COLOR: _____

DATE/TIME SAMPLING BEGIN: _____ DATE/TIME SAMPLING STOP:_____

SAMPLING DEVICE ID: _____

SAMPLING FLOW-RATE (IF IN-PLACE PLUMBING): _____

Figure V-7. Continued.

QA SAMPLES TAKEN ON SITE: _____

WEATHER CONDITIONS: _____

PERSONNEL/VISITORS ON SITE: _____

WELL CONDITION: _____

WELL TAG: _____

ADDITIONAL COMMENTS: _____

CHEMICAL STABILITY MONITORING

#	TIME	pH	TEMP	SP. COND	Eh	DO	COMMENTS
1							
2							
3							
4							
5							
6							
7							
8							
9							

- Instrument calibrations will be recorded in the instrument calibration logs
- Eh values above must be converted relative to the std. hydrogen electrode.

Florida Unique Well Identification (FLUWID)

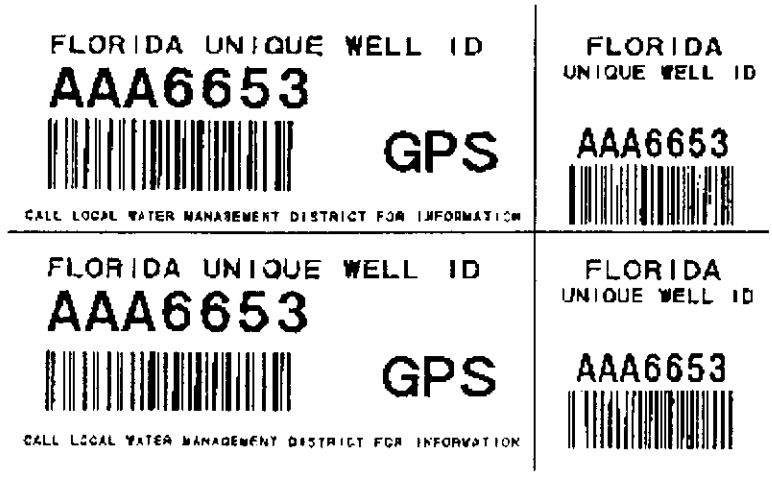
Several agencies regulate wells in Florida, among them the Department of Health (DOH), the Department of Environmental Protection (DEP), the Water Management Districts (WMDs), and the Department of Agriculture and Consumer Services (DACS). In addition, local governments and individual homeowners are interested in their wells. Each agency and program has their own way of identifying the wells that they regulate. Unfortunately, very little of the information in these databases can be shared due to an inability to cross-reference the different naming schemes.

During June of 1995, a plan to facilitate well identification in Leon County was conceived and implemented through the "Model Approach to Well Head Protection" Pilot project in Leon County. With this plan, all of Leon County's wells were tagged with "Florida Unique Well Identification" tags, also referred to as FLUWID tags. The tags uniquely identify each well with a number that does not contain any imbedded information and does not link the well to any particular agency. The only modification to the existing databases that was necessary to incorporate this new tag ID, was the addition of a field into which the FLUWID number could be entered.

The Tag and Information Sheet

The tag number is in an alphanumeric format, XXX### (Figure V-8). Beginning with AAA0001 and ending with ZZZ9999, enough unique numbers exist to print tags for millions of wells. The tags are printed on durable, weatherproof mylar and replacement tags can be printed if needed. Four tags are printed for each well. Three tags are placed on various locations at the well site and the fourth tag is put on the ground water fieldsheet.

Figure V-8. Florida Unique Well Identification (FLUWID) Tag



Inquiries about a tagged well may be made by contacting the agency listed on the tag. For the Ambient Monitoring Networks the contact agency will be the Watershed Monitoring and Data Management Section. The tag will list the contact information as "For Information Call: Florida Department of Environmental Protection at (850) 921-9422". All inquiries will be routed to the appropriate Project Manager who will reply to the data request.

Standard Procedures

1. Everyone who will be using GPS equipment must receive thorough instruction on the basic operating principles of GPS and correct use of GPS equipment and software. There are critical settings in the data logger, which need to be set correctly. Failure to do so will result in data that is of poor quality and its inclusion in a database will corrupt the database.
2. When using a GPS, make every effort to collect the position where the wellhead is located. Accurate measuring devices and compasses must be used if offsets are made.
3. Only DGPS or GPS units capable of collecting data that can be post processed shall be used.
4. *Before tagging a well,* check carefully to see if a Florida Unique Well ID tag has already been placed at that location. This will avoid double tagging a well with two different ID numbers, which defeats the purpose of having a unique ID assigned to each well. Three of the FLUWID tags with the same alphanumeric code, the two large tags and one small tag, should be placed at the well site in different, but highly visible, locations. One large tag should be placed on the well casing or on the pump base. The other large tag should be placed on the pump discharge line or well casing cover. One of the small tags should be placed on the electrical switch box, the building entrance (if only one well is located in that building), or on the pressure tank (if it is within 10 feet of the pump). The fourth tag (last small tag) with the same alphanumeric code should be placed on the ground water fieldsheet.
5. FLUWID tags are printed by FDEP and will be supplied by the staff in the WM&DMS with the ground water fieldsheets.

Sampling of Wells with In-Place Plumbing

Depth to Water Measurement

In many instances, the measurement of depth to water may not be possible because of the in-place plumbing. If the in-place plumbing allows, the water level relative to a known measuring point may be measured using a graduated steel tape and chalk, or an electronic water-level sensor. The depth to water is measured twice to the nearest 0.1 feet; both values are recorded in the field log.

Purging the Well

Before purging the well, consider where the water you are removing from the well will go. Check first for any nearby surface water bodies, and direct the purge hose away from these features. Also, try to direct the purge water away from the well head area. If you have reason to believe the well is severely contaminated, don't sample it until first discussing with your supervisor and FDEP staff. Generally, no special precautions apply to the treatment of purge water because the Status and Temporal Variability Networks monitor ambient ground water with no or low concentrations of contaminants. If sampling is to take place in an area of known contamination, special disposal methods may apply. The purge water will likely be disposed of on-site if the water will infiltrate the same zone from which it was withdrawn. Otherwise, at the direction of the FDEP Project Manager, arrangements will be made to transport the purge water to a sewer system or plant, if the contaminant concentrations are within their treatment specifications.

Purge Volume

The volume of water to be purged depends upon the following: depth and diameter of the well, whether pumps are running continuously or intermittently, how close to the source the sample can be collected, and the presence of any storage/pressure tanks between the sampling point and the pump. If a storage/pressure tank is present, an adequate amount of water must be purged to completely exchange the water of the tank and ensure that the sample collected is representative of the ground water.

- If the pump is continuously running and the sample can be collected prior to a tank, the valve should simply be opened and allowed to flush at maximum velocity for at least 15 minutes.
- If the pump is continuously running and a tank is located ahead of the sample location, the purge must include the entire storage tank volume.
- If the pump is running intermittently, it is necessary to determine, if possible, the volume to be purged, including storage/pressure tanks prior to the sampling point. The pump should then be run continuously at maximum velocity until the required volume has been purged.
- If construction characteristics are not known for a well with an intermittently running pump, the pump should be run continuously for at least 15 minutes and until chemical stability is achieved. Temperature, pH, and conductivity readings are taken at regular intervals. These measurements, as well as dissolved oxygen, should be made in a flow-through chamber to minimize atmospheric contact with the sample. When two consecutive readings of these field analytes agree within the amounts given in Table V-1, then the well is chemically stable. Calibration of the various instruments that can be used to measure pH, dissolved oxygen, specific conductance, and temperature was addressed in Section IV. Instrument operating instructions should be followed when taking measurements.
- The construction of the well and pump and the method for purging should be noted in the field log and custody sheet.

Table V-1. Chemical Stability

TEMPERATURE	0.2°C
SPECIFIC CONDUCTANCE	5% or 5 µS/cm if <100 µS
pH	0.1 s.u.

Measuring Field Analytes

Temperature, pH, specific conductance, and dissolved oxygen readings must be collected within a flow-through chamber to minimize atmospheric contact with the sample. They may be taken at regular time intervals during the final purging process if using the chemical stabilization purge method as stated previously. Final field measurements are collected at the appropriate time interval after an adequate amount of water has been purged. The measurement time intervals will vary with the volume of water to be purged and must be adequately spaced to yield results representative of the aquifer. Calibration of the meters used to collect these analytes was addressed in Section IV. Field measurements must be made according to instrument operating procedures and recorded on the ground water field log sheet.

Sample Collection

After purging and measuring field analytes, the following must be considered for collecting water samples:

- The sample will be taken from the spigot closest to the well head and before any screens, aerators, and filters, etc.
- If possible the sample should also be collected prior to any storage/pressure tank.
- It should be noted in the field log and custody sheet if a sample is collected from a spigot located after a tank.
- Water flow should be slow and laminar while filling sample containers.

Sample containers are filled in a specific order to prevent degradation and contamination of samples. The sample collection sequence is shown on the back of the custody sheet (Figure V–1) and follows here.

1. Arrange one (and only one) complete container set.
2. Inspect containers for flaws. Discard any that look suspicious.
3. Label each container with a barcode label, with the barcode vertical.
4. Write the date/time on the sample container label.
5. As an error check, have another member of the sampling team review the bottles for mislabeling.
6. Wear new unpowdered latex gloves.
7. Inspect containers for flaws. Discard any looking suspicious.
8. Fill the 125 ml plastic container marked W-TOC with unfiltered sample water, leaving some headspace, and cap.
9. Fill the 1 liter plastic container for physical analytes with unfiltered sample water leaving some headspace and cap.
10. Fill the Whirlpaks®, using the following procedure:

a. Wear unpowdered, disposable latex gloves while handling the Whirlpaks®.
b. Tear the top off of the Whirlpak® where it is perforated.
c. Hold the bag such that its mouth is in front of the hands and fingers.
d. Fill the bag with sample water.
e. Press out excess water from the bag such that the Whirlpak® contains approximately 150 ml of sample (to fill line, leaving some airspace).
f. Finally, seal the bag tightly with at least three folds at the top and the wire ties bent in half with the ends twisted together.

11. Filtered samples will be obtained by connecting a new 0.45-micron filter unit to the spigot. The filter should be flushed with at least 250 ml of sample water prior to filling the sample containers.
12. Fill the 125-ml plastic container marked metals with filtered sample water, leaving some headspace, and cap.
13. Fill the 500-ml plastic container marked anions with filtered sample water leaving some headspace and cap.
14. Fill the 500-ml plastic container marked nutrients with filtered sample water, leaving some headspace, and cap.

Sample Preservation

Preservation of samples occurs after all samples have been collected, but within 15 minutes of collection.

Acid Preservation

The acid preservation sequence is designed to reduce cross-contamination. The acids will be provided in polypropylene vials by FDEP WM&DMS. One ml of concentrated American Chemical Society grade nitric or sulfuric acid will be in each 3.5-ml polypropylene vial. Organics and inorganic nutrients samples will be preserved first with sulfuric acid; then the metals sample is preserved with nitric acid. This order will eliminate the possibility of the nutrients becoming contaminated. After adding the acid, the pH values of the samples should be less than 2. This is confirmed by checking an aliquot of the sample with narrow range pH paper. Follow these procedures to preserve the TOC, nutrients, and metals samples with acid:

1. Wear unpowdered, disposable latex gloves and eye protection when handling acids.
2. First, preserve the total organic carbon and nutrients samples in the 125 and 500-ml bottles with sulfuric acid.
3. Unscrew the cap of the 500-ml nutrients bottle being careful that the cap is not dropped.
4. Unscrew the cap on one of the concentrated sulfuric acid vials, and discard this cap in an acid waste container.
5. Pour the 1 ml of acid into the nutrients bottle.
6. Discard the vial in an acid waste container.
7. Cap the sample bottle tightly and invert it to mix the acid with the sample.
8. Confirm that the pH value of the sample is now less than 2 by the following. Uncap the sample bottle, pour a few millimeters of the sample from the container into a disposable cup, and place pH paper that is in the 1 to 2 range in the sample water in

the cup. Alternatively, pour a small amount of sample directly onto the narrow range pH paper over the acid waste container. *Note that the pH paper should not be directly placed into the sample bottle.*

9. Discard the aliquot and disposable cup into the acid waste container after measuring the pH. Do not pour the aliquot back into the sample bottle.
10. Add more acid by following steps 4 through 9 if the pH is greater than 2 pH units until it is lowered adequately. Document this deviation from the typical preservation procedure on the field log and custody sheet.
11. Tightly cap both the nutrients bottle when the pH value is below 2 and set aside.
12. Follow steps 3 through 11 to also preserve the TOC sample with sulfuric acid.
13. Next preserve the metals sample with nitric acid. *Note one must be careful not to contaminate the nutrients with this nitric acid preservative; thus, the nutrients bottle must be capped and out of the way of this process.*
14. Unscrew the cap on the metals bottle being careful that the cap is not dropped
15. Unscrew the cap on one of the concentrated nitric acid vials, and discard this cap in an acid waste container. *Note that the nitric acid is generally distinguishable from the sulfuric acid because it has a yellowish-brown color.*
16. Pour the 1 ml of acid into the 125-ml metals bottle.
17. Discard the vial in an acid waste container.
18. Cap the sample bottle and invert it to mix the acid with the sample.
19. Confirm that the pH of the sample is now less than 2 pH units by the following. Uncap the sample bottle, pour a few millimeters of the sample from the container into a disposable cup, and place pH paper that is in the 1 to 2 range in the sample water in the cup. Alternatively, pour a small amount of sample directly onto the narrow range pH paper over the acid waste container. *Note that the pH paper should not be directly placed into the sample bottle.*
20. Discard the aliquot and disposable cup into the acid waste container after measuring the pH. Do not pour the aliquot back into the sample bottle.
21. Add more acid by following steps 15 through 20 if the pH value is greater than 2 until it is lowered adequately. Document this deviation from the typical preservation procedure on the field log and custody sheet.
22. Tightly cap the metals bottle when the pH is below 2 pH units and set aside.

Storage and Disposal of Acid Preservatives

Acid preservatives are carried in sealed vials and are not opened until the time of sampling. They should be stored away from direct sunlight. Used vials are placed into a sealed container and transported back to the sampling agency's lab. They should be diluted/neutralized to a pH between 5 and 9 s.u. The liquid can then be poured into a sanitary sewer system. The vials should be rinsed several times with tap water, and the water discarded down the drain. Then the container holding the vials should be sealed and placed in the trash.

Preservation on Wet Ice

All samples must be quickly bagged and placed on wet ice after collection and acid preservation according to the following procedures. While more than one complete sample may be placed in a single cooler, under no circumstances should samples be split up between one or more coolers

1. Wear unpowdered, disposable latex gloves while handling sampling containers.
2. Separate the nutrients and total organic carbon sample from other samples by placing it into a zip top baggy.
3. Place the metals sample also into a separate baggy. Note these two steps are an extra precaution to prevent cross-contamination.
4. Place all microbiology samples into a separate zip top baggy to prevent losing them from leakage.
5. Put all samples from a single station into a mesh bag.
6. Then place the bag of samples into a cooler with wet ice in order to chill the samples to 4°C.

Sample Custody

Sample custody is of critical importance to the objectives of the Status and Temporal Variability Monitoring Networks. Although the magnitude and scope of the Networks do not allow for legal chain-of-custody procedures, proper sample custody is a high priority. Data gathered will be incorporated into an existing statewide water quality database. This incoming data must be properly linked to historical data. The database is also a source of public information; therefore, every effort must be made to avoid the association of erroneous analytical results to well or surface water sites. An example of the front of a sample custody sheet for ground water sampling is illustrated in Figure V-9. On the back of the custody sheet, is a container inventory as illustrated in Figure V-1. The container inventory lists the analytes to be measured, the container type that will hold the water sample for a group of analytes, and the methods for preserving the water sample. Sample custody sheets are completed (in carbonless triplicate) by the sampler, one for each return cooler. The following information is included on the custody sheet:

- sampling agency
- project name
- sampler names
- station identifier (label as shown in Figure V-3)
- date and time sample was collected
- specific conductance of the sample water
- pH of the sample water

In addition, a bar-coded label containing the weekly project request number (Figure V-10) is placed in the upper right hand corner of each sample custody sheet used that week. This process enables custody to be verifiable from the field to the lab for each container and sample. If there is any modification to the sample container or of the way the sample is collected, it should be reported in the Comments section of the custody sheet. Mistakes on the sample custody sheet will be deleted by drawing a single line through the error. The two top copies of the custody sheet (white and yellow sheets) are placed in a sealed plastic bag and taped to the inside top of the FDEP cooler for shipment back to the Central Chemistry Lab with the samples. At the FDEP Chemistry Lab, information on the sample custody sheet is used to log in the samples. The other copy of the custody sheet (pink sheet) will be kept by the sampling agency and placed in the field logbook.

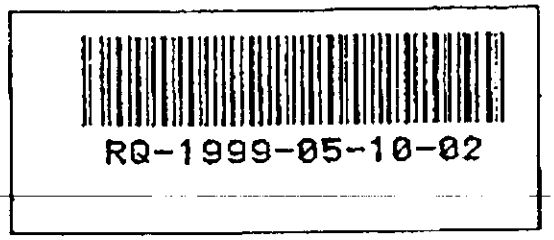
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AMBIENT MONITORING PROGRAM
SAMPLE CUSTODY RECORD

SAMPLING AGENCY	PROJECT	SAMPLER NAMES	LAB PROJECT CODE
			AMBIENT GW-TREND

	STATION IDENTIFIER	SAMPLE INFORMATION	LAB IDENTIFIER
1	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
2	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
3	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
4	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
5	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID

Figure V–9. Example of the Front of the Custody Sheet for Ground Water Sampling

Figure V-10. Example of Weekly Project Request Number Label



Sampling of Wells without In-place Plumbing

Depth to Water Measurement

The water depth relative to a known measuring point is measured using a graduated steel tape and chalk or an electronic water-level sensor. The depth to water is measured twice to the nearest 0.1 feet; both values are recorded in the field log.

Purging the Well

Before purging the well, consider where the water you are removing from the well will go (refer to Purging the Well under **Sampling of Wells with In-Place Plumbing**).

Equipment Used to Purge Wells

- Wells may be purged with any of the following types of pumps: centrifugal, peristaltic, or submersible.
- Unpowdered latex disposable gloves should be worn when handling the pump.
- Fuel driven power sources for the pumps must be located away from the well head and downwind to minimize contamination.
- Pump housing, tubing, and delivery hoses can be composed of inert material, teflon or stainless steel. Sampling may also be composed of non-inert material, polyethylene, polypropylene, or polyvinyl chloride, because no samples will be collected for trace organics.
- All submersible pumps or purge delivery hoses will be equipped with a one-way flow check valve to prevent backflow of purged water into the well.

Purging Procedure

1. A submersible pump or a purge hose connected to a centrifugal or peristaltic pump is lowered into the top of the standing water column so that purging removes the standing water first and then draws replacement water from the formation of interest.

2. If the well recovers at a faster rate than the pump rate and no observable draw down occurs, the pump should be raised until the intake is within one foot of the top of the water column for the duration of purging.
3. If the pump rate is greater than the recovery rate of the well, the pump will have to be lowered, as necessary, to accommodate the draw down.
4. The well is considered purged when one of the following criteria is met:
   a. Three standing water volumes are removed and field analytes subsequently stabilize.
   b. Five standing water volumes are removed.
   c. The well is purged dry once, allowed to recover, purged dry again, and allowed to recover sufficiently to collect field analyte measurements and fill all of the sample containers from a peristaltic or submersible pump.
5. The volume of water that needs to be removed from the well must be measured in order to determine that one of the above criteria is met and to avoid excess purging. One standing water volume in a well is calculated according to Table V-2.
6. Purge rate can be measured with a flow meter and, then, the necessary minimum purge volume divided by the purge rate for the length of time necessary for purging.
7. If a flow meter is not available, the flow rate can be estimated by measuring the time required to fill a container of known volume. The required purge volume is then divided by the estimated flow rate to find the estimated time necessary to purge the well.
8. If a flow meter is used, it should be calibrated periodically via the procedure given in step 7 above.
9. When the well is purged via the chemical stabilization method listed in step 4a above, purging is not considered complete until the well is determined to be chemically stable. Temperature, specific conductance, and pH are monitored and readings recorded at regular intervals until two consecutive measurements, taken after a minimum of three standing water volumes have been removed, agree within the amounts shown in Table V-1. Temperature may not be indicative of chemical stability when measured after using a centrifugal pump. This analyte may, therefore, be omitted in stability readings at the discretion of the sampler. The interval of measurement will be every half-standing water volume. Thus, the minimum amount of water purged should be no less than 3 standing water volumes. These measurements, as well as dissolved oxygen, should be made in a flow-through chamber to minimize atmospheric contact with the sample. Calibration of the various instruments that can be used to measure pH, dissolved oxygen, specific conductance, and temperature was addressed in Section IV. Instrument operating instructions should be followed when taking measurements. If more than 3.5 purge volumes are required to achieve chemical stability, the extra purge volume must be noted in the field log. When the well is stabilized, the final field measurements are recorded in the field log.
10. If samples will be collected using a different pump, the purge pump or hose must be slowly withdrawn from the well to remove the uppermost segment of water while still pumping. Once clear of the water, the pump and/or purge hose should be quickly retrieved to reduce backflow from the pump.

Table V–2. Water Volume Computation.

A single standing water volume, in gallons, is given by the following equation:

$$\text{ONE VOLUME} = (D^2) \times (DW\text{-}DTW) \times 0.041$$

where:
D = casing diameter in inches
DW = depth of well in feet
DTW = depth to water in feet
0.041 = an approximation based on the conversion factor for cubic feet to gallons, inches to feet, and pi, etc.

Measuring Field Analytes

Temperature, pH, specific conductance, and dissolved oxygen readings must be made within a flow chamber to minimize atmospheric contact with the ground water. They may be taken at regular time intervals during the final purging process if using the chemical stabilization purge method as stated previously. The final field measurements are collected at the appropriate time interval after an adequate amount of water has been purged. If a well has been purged dry, the field analytes should be collected from the recovered volume of water. Calibration of the meters used to collect field analytes was addressed in Section IV. Field measurements must be taken according to instrument operating procedures and recorded on the ground water field log sheet.

Sample Collection

The following must be considered when collecting water samples:

- Sampling should take place immediately after purging.
- The maximum time between purging and sampling is six hours unless the well is purged dry.
- If a well is purged completely dry, the time between purging and sampling should not exceed ten hours.
- Sampling will be conducted with a submersible or peristaltic pump. *A centrifugal pump can not be used.*
- The power source for a pump should be located away from the well and downwind to minimize contamination.
- Because no trace organics are being collected; the pump housing, tubing, and delivery hoses can be composed of inert material, teflon or stainless steel, or non-inert material, polyethylene, polypropylene, or polyvinyl chloride.
- A check valve should be present on the pump or delivery hose to prevent water from back-flushing into the well.
- Also a flow-control valve must be present in order to control the flow rate of the sample.
- When handling the pump, disposable unpowdered latex gloves should be worn. Also when handling the sample containers during the sample collection process, a clean pair of disposable unpowdered latex gloves must be worn.

The sample collection sequence is shown on the back of the custody sheet (Figure V-1) and follows here.

1. Wear new unpowdered latex gloves.
2. Arrange one (and only one) complete container set.
3. Inspect containers for flaws. Do not use any that look suspicious.
4. Place a barcode label vertical on each container.
5. As an error check, have another member of the sampling team review the bottles for mislabeling.
6. Write the date/time on the sample container label.
7. Rinse the sample containers, excluding Whirlpaks, with sample water prior to filling If a filtered sample will be collected, rinse containers with filtered water.
8. Fill the 125-ml plastic container marked W-TOC with unfiltered sample water, leaving some headspace, and cap.
9. Fill the 1-liter plastic container for physical analytes with unfiltered sample water leaving some headspace and cap.
10. Fill the Whirlpak® containers with unfiltered sample water. Press out any excess water from each bag such that a Whirlpak® contains approximately 150 ml of sample (to fill line, leaving some headspace). Finally, seal each bag tightly with at least three folds at the top and the wire ties bent in half with the ends twisted together.and close.
11. Filtered samples will be obtained by connecting a new 0.45 micron filter unit to the pump's tubing. The filter should be flushed with at least 250 ml of sample water prior to filling containers.
12. Fill the 125-ml plastic container marked metals with filtered sample water, leaving some headspace, and cap.
13. Fill the 500-ml plastic container marked anions with filtered sample water, leaving some headspace, and cap.
14. Fill the 500-ml plastic container marked nutrients with filtered sample water, leaving some headspace, and cap.
15. Preserve samples and verify the pH of the acidified samples as given in Sample Preservation under **Sampling of Wells with In-Place Plumbing**.
16. Fill out required paperwork as in stated in Sample Custody under **Sampling of Wells with In-Place Plumbing**.

Sampling Springs

Springs are considered to be part of the unconfined aquifer resource, and will be sampled for the ground water analytes shown in Tables II-1 and II-2. The sampling point of a spring should be the vent from which maximum flow occurs. The sample should be collected from as close to the spring vent as possible, using a peristaltic pump, submersible pump, or Van Dorn sampler. If a pump is used, it should be placed in the vent in such a manner that it does not draw sediments or plant material into the sample water. Filtration of the sample should be done using the filtration capsules supplied for ground water sampling. The filter should be flushed with at least 250 ml of

sample water prior to filling the sample containers. Consideration must be given to filtering samples collected with the Van Dorn sampler. This can be accomplished either by attaching a hand pump and filter capsule directly to the Van Dorn sampler, or by using a peristaltic pump to draw the sample from the Van Dorn through the filter capsule and into the sample container. The sample water should be collected into the containers and preserved as previously stated.

Sample Shipment

Proper sample shipment is imperative in the collection of environmental monitoring data. Strict adherence to the following steps for sample shipment will help assure the collection of accurate environmental monitoring data.

- Sample analysis for the FDEP WM&DMS is currently being done by the FDEP Central Laboratory in Tallahassee, so all samples will be returned to this lab.
- Sampling supplies will be shipped from the FDEP Central Laboratory to the sampling agency via United Parcel Service (UPS) no later than two weeks prior to the project begin date.
- Each FDEP shipment will contain sample containers appropriate for the scheduled analyses and sufficient coolers for return shipment.
- Field custody sheets, field log sheets, barcode labels, and container inventories will be provided by WM&DMS staff.
- Preservatives will be provided by the FDEP WM&DMS in advance of sampling.
- A copy of the custody sheet must be included in each cooler. At the end of the day, tape the custody sheets contained in zip top baggies to the inner top of the coolers. It is best to line the inside of the cooler with a large garbage bag prior to filling it with ice. Also, if the cooler has a spigot, place tape over it to prevent it from opening during transit and spilling water. Likewise, the lid must be taped closed to prevent opening during shipment.
- Samples must be shipped daily; however, there will be extraneous circumstances where sample shipment can not occur until the following day. In this case, WM&DMS staff should be notified and the samples shall be kept at 4°C. Samples that are shipped daily also must be kept at 4°C.
- Sample shipment shall be done during Monday through Thursday. No sample shipments shall be made on Fridays due to the fact that the Central lab would receive the samples on Saturdays. The Central lab does not accept samples on Weekends or Holidays.
- Federal Express (FedEx) will be utilized for shipment of samples to the FDEP Central Laboratory. The FDEP laboratory and/or WM&DMS staff will provide FedEx airbills to sampling agencies for use in shipping water quality samples to the FDEP Central Laboratory. These airbills will be pre-printed with DEP's FedEx account number, so that all shipping costs are directed back to FDEP.

Ground Water GPS Procedures

The Status Network will require extensive use of GPS equipment. This equipment will be used for navigation to randomly selected wells or springs and for collection of locational and field data. All participants of the Status Network should be using Trimble Pro XR® GPS equipment with differential correction. The decision to use this type of equipment was based on the institutional knowledge of Pro XR units and for consistency.

All personnel using GPS equipment should be trained in the operation of such equipment and must strictly follow the FDEP Division of Water Resource Management's GPS Standards which can be found at the website, www.dep.state.fl.us. Training has been ongoing within the Division and will continue on as needed.

Accuracy

The Status Network incorporates the use of randomly selected coordinates for the identification of sample stations. The random coordinates or sites are selected as specified in the WM&DMS Overview of the Florida Department of Environmental Protection's Integrated Water Resource Monitoring Efforts and the Design Plan of the Status Network. Due to map errors and scale differences the sites may not fall directly on the intended well or spring. In this case the nearest well or spring should be selected for sampling. Normally the distance should only be a few meters off and is not considered problematic since the Division GPS Standards recommend the National Map Accuracy Standard of 12.2 meters.

Waypoints

Navigation to sites will require the creation of waypoint files. These files will contain the site ID and the corresponding latitude, longitude, and HAE (Height Above Ellipsoid), which is used in the field to navigate to the sites. The HAE should be taken from the data logger near the area of the randomly selected sites. The HAE is obtained from the current position information menu on the data logger. It is not critical that the HAE be exact, but it will help the accuracy of navigation to have it as close as possible. The waypoint file can be created in the office using Pathfinder Office® Software or in the field directly on the data logger. The creation of waypoint files is addressed in the Division of Water Resource Management's GPS Basics Manual, which can be obtained from WM&DMS staff.

Navigation and Date Collection

Navigating to randomly selected ground water sites can present many problems. GPS signals are line-of-sight microwave signals that are easily blocked by any mass, including well houses. To correct, navigate as close as possible to the random point and then read the distance-to-go and bearing to find the location of the resource. The reverse process (called an offset) may be needed to collect the locations of some sites after sampling.

When collecting the location of a well it is important to make sure the GPS antenna is placed as close to the center of the wellhead as possible. If the well is located within a building or if the resource is a spring, an offset will be needed. Offsets are taken by measuring a distance and bearing from some point (Point B) away from the intended point (Point A "the well or spring") and applying those measurements to correct back to the intended point (Point B + distance & bearing = Point A). Always remember, "The GPS knows where it is, tell it where you want it to be" and use a compass and tape measure for accuracy. The offset should be saved and the locational data collected. Once the locational data is captured, the data dictionary questions should be completed and then the file saved. There should only be one saved file per site. Offsets and navigation can be complex and are covered in the GPS Basics Manual. With practice a sampler should become quite proficient.

File Nomenclature

Once at the site, water levels, field measurements, and water quality samples will be collected and recorded onto field sheets before the GPS data is collected. The site location will be collected into the data logger after the lab samples have been collected and micro land use sheets completed. The GPS data file (.ssf file) shall be named similarly to the unique resource code. For example, the Northwest Florida Water Management District un-confined well number 26 in the A reporting unit of the first year cycle is NWA-UA-1026. The data logger file will be NWAUA026. The hyphens and the number one (1) in the number sequence are dropped to accommodate the eight-digit file name size in the data logger. There will only be one site per file.

Data Dictionary

The Status Network will also incorporate the use of a standard data dictionary (A Trimble electronic form) residing in the data logger memory. The data dictionary will contain all of the questions that are found on the field sheets. After the locational data has been collected you should pause the unit and then proceed to answer the questions in the data dictionary by following the field sheets. It is extremely important to collect the location in the data logger first and then pause the unit until all of the data dictionary questions have been answered. Once the data dictionary questions have been answered the "**OK**" key should be pressed to save the file. Many fields in the data dictionary require input and are restricted to certain constraints. For example, the pH range that is allowed to be entered into the data logger is between 0 and 14. The default is set to 0. A value of 0 in the data will signify that a problem had occurred and no data was collected for that analyte at that site. These constraints and defaults are also in other fields throughout the data dictionary.

Section VI. Quality Control Samples- Ground Water

Quality control (QC) samples assess the accuracy and precision of sampling and analytical techniques. For ground water sampling in both the Status and Temporal Variability Networks, the QC samples consist of equipment blanks, field blanks, duplicate samples, and field reference samples. In addition, some agencies will submit analytical reference samples as part of the Ground Water TV Network.

Equipment and Field Blanks

Ideally, equipment blanks are samples of analyte-free water. Analyte-free water is defined as water having concentrations of the target analytes that are below detection. The same sampling and analytical methods used for actual samples will also be used for equipment blank samples. The following lists some of the problems that occur with these blanks:

- The analyte-free water may contain detectable amounts of target compounds.
- Sample collection equipment may be unclean.
- Sample containers may be unclean.
- Sample preservatives may be impure.

Equipment blanks will be taken on precleaned and/or field cleaned equipment. Precleaned equipment refers to equipment that has been cleaned in-house prior to sampling. The total number of blanks that will be taken during a sampling project is dependent upon how many actual samples will be collected. Approximately one blank is taken for every five actual samples. The type of blank that will be collected depends upon how many precleaned sampling equipment sets will be used and how frequent the equipment will have to be decontaminated in the field. If field cleaning is performed during a project, then field cleaned equipment blanks are taken. Otherwise, if all the equipment that is used during a project is precleaned, precleaned blanks are obtained.

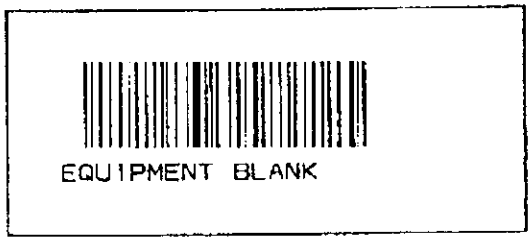
Both types of blanks are prepared in the field prior to using the equipment to collect a sample. It should be noted on the field log sheet what type of blank is being collected at a site. Analyte-free water is ran through all of the sampling equipment and collected into sample containers. Since ground water samples are being collected directly from submersible and peristaltic pumps, the analyte-free water must be circulated through the pumps then captured into containers. A dedicated equipment blank container and a large volume of analyte-free water are needed. Follow these procedures for collecting a blank:

1. Fill a large clean high-density polyethylene container with analyte-free water and transport it into the field.

2. Follow the procedures listed in Section IX if the pump is cleaned in the field before collecting the equipment blank. If the blank is taken on precleaned equipment, the equipment should have been cleaned in the laboratory according to the appropriate procedures in Section IX prior to bringing it in the field.
3. Place the pump into the equipment blank container filled with analyte-free water.
4. Pump 5 volumes of water through the equipment. A volume will depend upon the capacity of the pump and attached tubing.
5. Rinse the sample containers out with the analyte-free water.
6. Then collect the equipment blank sample as if an actual sample.
7. Use the same filtration and preservation methods as with an actual sample.

Equipment blank labels are provided to sampling agencies by FDEP WM&DMS staff (Figure VI-1). These labels should be placed vertically on the sample containers. They are also placed on the custody sheet and field log sheet when equipment blank samples are collected. Equipment blank samples are shipped to the FDEP Central Laboratory with regular samples collected for that day (refer to Section V for further information on sample custody and shipment).

Figure VI-1. Example of Equipment Blank Label

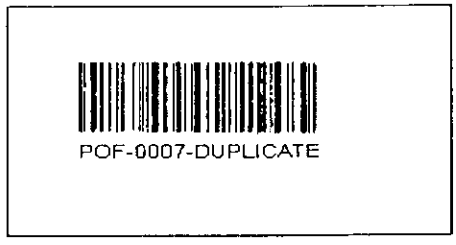


Field blanks must be taken in cases where the only sampling equipment is the sample container, such as with wells with in-place plumbing. They should also be collected if analytes are detected at high levels in equipment blanks. A field blank consists of filling on-site the suite of sample containers with analyte-free water, preserving as with actual samples, sealing the containers, documenting it as a quality assurance sample/field blank, and shipping it to the laboratory as is done with actual field samples. The analyte-free water is not run through the sampling equipment. The custody sheet and field log should indicate that a field blank sample was collected. This procedure is an aid in determining if the equipment blank contamination is a result of tainted acid preservatives or impure analyte-free water instead of unclean sampling equipment.

Duplicate Samples (Optional)

Duplicate samples are collected to measure the variability inherent in the sampling process. A duplicate sample is obtained at a site by duplicating, in rapid succession, the entire sample acquisition procedure that was used to obtain the first sample. It is collected and analyzed for the same analytes as the associated sample. These sequential samples will have different sample times. For ground water duplicates, one kit of containers will be filled with sample water from the pump and preserved appropriately. Then a second kit will be filled from the pump and preserved. Duplicate labels will be provided by the FDEP WM&DMS (Figure VI-2). The labels will be placed vertically on the sample containers. A label will also be put on the field log sheet and custody sheet. The original sample and the duplicate sample must be listed separately on the custody sheet. It is not necessary to collect a second set of field measurements; thus, the same field analyte values can be used for both the original and duplicate samples.

Figure VI-2. Example of Duplicate Label



Field Reference Samples

Reference samples for pH and specific conductance are prepared by the USGS WRD in Ocala, Florida. The USGS determines the most probable (mean) value and standard deviation for each sample. These statistics are then used to evaluate field measurement performance. Reference samples are distributed to each sampling agency by the USGS. The procedures to follow in order to obtain these samples are addressed in Section III. The reference samples are analyzed at a minimum rate of one for every five to ten actual samples. The values of the samples are determined while out in the field after calibrating the instruments. The resulting measurements are reported to FDEP WM&DMS staff, along with the name of the analyst, name of sample site, date of sampling, make and model of instrument, and sample identification number. This information is recorded on a Field Reference Sample Reporting Form (Figure VI-3) and immediately submitted to the WM&DMS Project Manager or QA Officer by fax, telephone, or electronic mail. Results are evaluated quickly. They are given a satisfactory, marginal, or unsatisfactory rating. In case of unsatisfactory or marginal performance, a follow-up reference sample is analyzed. Typical reasons for poor performance on field reference samples are dirty probes, low batteries, contaminated standards, faulty meters, and occasionally analyst error.

Analytical Reference Samples

USGS laboratories in Denver and Ocala prepare lab reference samples for the Ambient Monitoring Network. Multiple-lab analysis is performed to obtain mean values and standard deviations for selected constituents. The samples are then submitted "blind" to the analytical laboratories monthly. The measured values are then compared to the most-probable values. Results are then reviewed with the laboratory to determine if lab accuracy is within control limits.

Each month, 5 analytical reference samples will be submitted to the FDEP Central Laboratory by a subset of sampling agencies, in conjunction with the Ground Water TV Network. Specific instructions for submitting analytical reference samples will be provided to the appropriate agencies by the WM&DMS.

Figure VI-3. Example of Field Reference Sample Reporting Form

FIELD QUALITY CONTROL REFERENCE SAMPLE RESULTS

AGENCY: _____

ANALYST: _____

DATE OF ANALYSIS: _____

PROJECT: _____

pH

SAMPLE ID: _____

INSTRUMENT ID (make, model, and Id #): _____

MEASURED VALUE: _____

COMMENTS: _____

CONDUCTANCE

SAMPLE ID : _____

INSTRUMENT ID (make, model, and Id #): _____

MEASURED VALUE: _____

COMMENTS: _____

Section VII. Surface Water Sampling Protocols

At all surface water sites being monitored for the Temporal Variability and Status Networks, field analytes will be measured then a water sample will be taken. A representative sample of the surface water of interest should be obtained when collecting the water at a site. Samples should be obtained in an approved and reproducible manner. Prior to going into the field, maps and previous field logs are used to determine the number of sites to be sampled and the order in which they will be sampled. Supplies and equipment should be inventoried before each sampling trip as discussed in Section III. An example of an inventory list of equipment and supplies that will be taken in the field for surface water sampling is shown in Figure VII-1. Clean or new equipment must be used at each sample site. Proper cleaning procedures are described in Section IX.

Sampling Locations

Surface Water Temporal Variability Network

For surface water Temporal Variability sites, a reference station that is a permanent landmark, such as a bridge or gage, should have been previously located near the actual sampling point using differentially-corrected Global Positioning System (DGPS). Physical site data should have been documented to ensure that the sampler returns to the same place every month to collect field measurements and a water sample.

Surface Water Status Network

Information on Status sites should have been obtained prior to sampling through reconnaissance procedures. Upon reaching the site, the following presents the location within the waterbody at which sampling occurs for the various resource types in the Status Network.

For low order streams, high order streams, and canals, the field measurements and water sample should be collected in the middle of the waterbody nearest the random location (randomized latitude/longitude) as shown in FigureVII-2. The middle is determined from water edge to water edge. Even if the random location falls within the waterbody closer to a bank, the measurements and sample should be taken in the middle. If a sandbar is present in the middle of the waterbody, then go to the nearest point that can be sampled. This may be the middle of the channel nearest the random point (Figure VII-3). Otherwise, the samplers may have to go to the middle of the waters upstream or downstream from the random point in order to collect measurements and the water sample. The maximum distance from the random point at which a sample point can be located is 50 m upstream or 50 m downstream. The minimum sample depth is 10 cm. If the sample point falls in an area where water is pooled rather than flowing, the measurements and water sample should still be collected from this area.

Figure VII-1. Example of Surface Water Sampling Equipment and Supplies Inventory List

SURFACE WATER SAMPLING CHECKLIST

Sampling Equipment

___ Sampling Truck (cleaned as necessary before sample event)

___ Boat (life jackets, paddles, safety flares)

___ Laptop computer (for Hydrolab operation)

___ Waders, boots, rain gear

___ Hydrolab multimeter (field parameters and profiling)

___ Wildco beta bottle (non wadeable streams)

___ Secchi disk

___ 50ft. fiberglass tape

___ Digital camera

___ GPS unit

Sampling Supplies

___ Hydrolab meter standards and buffers

___ Field sheets, submittal forms, bottle labels, ball point pens, sharpie pens and pencils

___ TV notebook with station info. & maps

___ Two - 48quart ice chest one for samples and one for ice

___ Preservatives: H2SO4, HNO3 and ice

___ pH strips

___ Protective eyewear

___ Non-powdered latex gloves (XL size)

___ 30ml BD syringes & disposable 0.45 um filters (ortho-PO_4)

___ Ziploc bags for samples (sandwich - Whirlpacks®, gal. size – chemistry samples)

___ Laboratory supplied sample bottles

___ Three plastic squirt bottles for cleaning (DI, Liquinox ,and HCl)

___ Two -5gal. Neaprene jugs with DI (one for equipment blanks and one for cleaning)

___ Strapping tape and cooler liners for sample shipping

Other Equipment or Supplies_____

Figure VII-2. Location for Collecting Samples in Low and High Order Streams Plus Canals

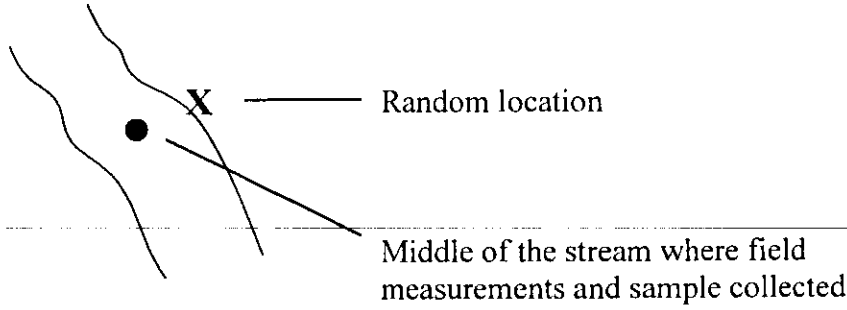
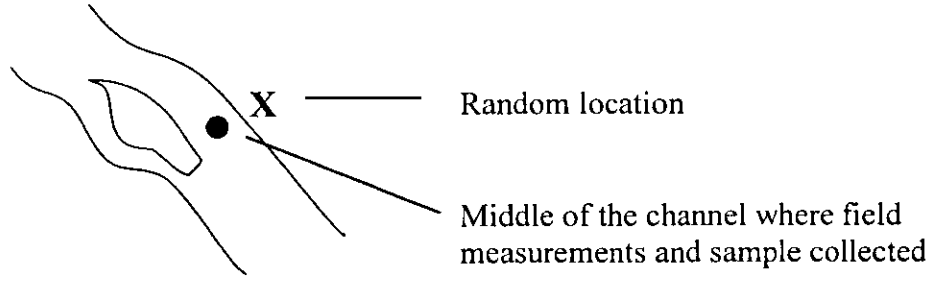
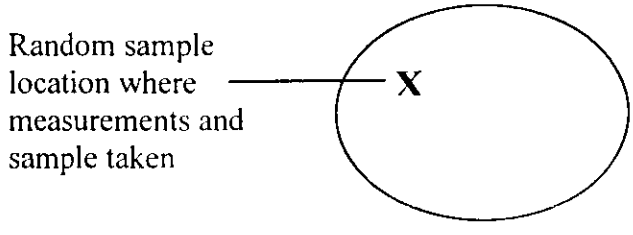


Figure VII-3. Location for Collecting Samples in Streams and Canals if a Sandbar Is Present



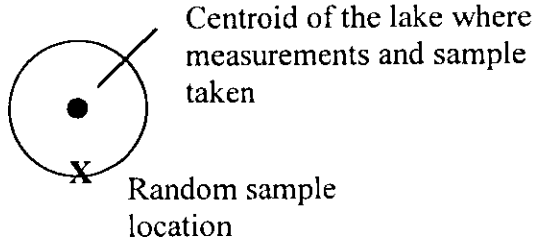
For large lakes, the field measurements and water sample should be collected at the specified random location (randomized latitude and longitude) as illustrated in Figure VII-4. If the random location falls outside the water, then go to nearest point that can be sampled. The minimum sample depth is 10 cm.

Figure VII-4. Location for Collecting Samples in Large Lakes



For small lakes, the field measurements and water sample should be collected in the centroid or most central point of the lake nearest the random location (randomized latitude and longitude) as shown in Figure VII-5. Samplers will have to estimate the centroid. If a sandbar is present in the area, then go to the nearest point that can be sampled. The minimum sample depth is 10 cm.

Figure VII-5. Location for Collecting Samples in Small Lakes



In the case of emergent vegetation covering the random location, access to the random location shall be the governing criterion of sampleability. Generally, accessibility was determined during site-reconnaissance. A site may change between the reconnaissance and sampling period, however. The site is deemed accessible and, therefore, able to be sampled if it can be reached by conventional means, such as boat, airboat, and wading, etc. At the time of sampling, the closest area relatively free from vegetation shall be the actual sampling point. This area should be at least 0.5 meter square, and allow for immersion of the sampling device in such a manner that does not cause excessive agitation of sediment or surrounding vegetation. Minimum water depth is 10 cm.

Field Measurements

The total depth of the water will be measured to 0.1 m from a reference point using metric tape or an electronic measuring device. If an electronic measuring device is used, the manufacturer's instructions should be followed; and at least two readings should be taken to ensure accuracy. The two readings are then averaged for the final total depth. If the total depth is less than 1.5 m, field measurements will be taken at 0.5 m from the surface or at mid-depth whichever is shallower. However, if the total depth is equal to or exceeds 1.5 m, readings will be taken at 0.5 m from the surface and 0.5 m from the bottom. The total depth, field measurement depth, and field measurement values should be recorded on the field log sheet.

At all surface water sampling sites, field measurements will be made for the following analytes:

- pH
- dissolved oxygen
- specific conductance
- temperature
- secchi depth (transparency)

Calibration of the various instruments that can be used to measure pH, dissolved oxygen, specific conductance, and temperature was addressed in Section IV. Instrument operating instructions should be followed when taking measurements. Secchi depth is determined with a circular disk that is 20 cm in diameter, has alternating black and white quadrants on the upper surface, and has a weight on the lower surface. This is the depth that a person can see into the water, that is the transparency of the water. The following is the procedure for using the secchi disk:

1. Remove sunglasses.
2. Lower the secchi disk into shaded water using graduated line (line is marked in 0.1-m increments).
3. Record the depth at which the disk disappears to the 0.1 m.
4. Lower the disk slightly farther.
5. Raise the disk until it reappears, and record this reappearance depth to the 0.1 m.
6. Average these two depths for the secchi depth.
7. Or, if the disk is visible to the bottom of the water, note such.
8. Record any factors that might have affected the accuracy of this measurement, such as choppy water, in the comments section of the field log sheet.

Also, at surface water sites in the Temporal Variability and Status Networks, stage height will be recorded if it is available. This measurement can be obtained from staff gages, continuous recording gages, wire weight gages, tape down measurements, or any existing USGS gaging stations located in close proximity to the sampling sites.

Sample Collection

Analytes

For Temporal Variability monitoring of both streams and lakes and Status monitoring of streams, samples will be collected for the following analyte groups:

- biology- chlorophyll-A
- organics- total organic carbon
- inorganics- inorganic anions (chloride, sulfate, and fluoride), nutrients (nitrate-nitrite, ammonia, kjeldahl nitrogen, total phosphorus, and orthophosphate), and alkalinity
- physical properties- turbidity, specific conductance, color, total suspended solids, and total dissolved solids
- metals- calcium, magnesium, sodium, and potassium, and
- microbiology- fecal coliform and enterococci

For Status monitoring of lakes, samples will be collected for the following analyte groups:

- biology- chlorophyll-A, phytoplankton taxonomy, and algal growth potential
- organics- total organic carbon
- inorganics- inorganic anions (chloride, sulfate, and fluoride), nutrients (nitrate-nitrite, ammonia, kjeldahl nitrogen, total phosphorus, and orthophosphate), and alkalinity
- physical properties- turbidity, specific conductance, color, total suspended solids, and total dissolved solids
- metals- calcium, magnesium, sodium, and potassium
- microbiology- total and fecal coliform, enterococci, and *E. coli*

All samples will be collected unfiltered except for orthophosphate and specific conductance. For these samples, sample water will be placed into a syringe and ran through a 0.45-micron filter attached to the syringe. This filtered water is then captured into a sample container. The FDEP WM&DMS will provide both syringes and filters for filtering these samples. Unfiltered samples will be collected before the filtered sample. The following is the order in which sample water will be collected for particular analytes:

1. biology
2. organics + inorganic nutrients excluding orthophosphate
3. physical properties + inorganic anions + alkalinity
4. metals
5. microbiology
6. inorganic nutrients- orthophosphate + specific conductance

Sample Containers

Sample water will be collected into polyethylene plastic bottles or Whirlpaks® that are provided in pre-cleaned condition by FDEP's Central Chemistry and Biology Laboratory. Table VII-1 lists specific containers for analytes in the order that they should be filled. Only one container should be filled with sample water for the analyte group listed with the exception of bacteria, which requires that two Whirlpaks® be filled. Prior to labeling and filling, all containers should be inspected for flaws. If a flaw is apparent on a container, that container should be discarded.

Labeling Sample Containers

In the field, all the containers for a single sample site are labeled prior to filling. At any one sample location, only one set of containers will be out and labeled. Station identification labels are provided to the sampling agencies by the WM&DMS (Figure VII-6). These labels are barcoded to uniquely identify a sample station. Several labels are provided for each sampling site. A label will be placed vertically on each sample container for a site. The Central Laboratory places two types of labels on the sample bottles prior to shipping. One identifies the weekly sampling project request number and the sample analytes for that container (Figure VII-7). The other provides the production container numbers for a specific sample bottle (Figure VII-8). Samplers should write the time and date at which a station is sampled on the laboratory project and sample identification label of each container. Clean unpowdered latex gloves should be worn while handling these containers.

Table VII-1. Containers for Surface Water Sampling

ANALYTE	CONTAINER LABEL	CONTAINER TYPE
Chlorophyll	Chlorophyll	1 liter opaque plastic bottle
Phytoplankton taxonomy[1]	Phytoplankton	1 liter opaque plastic bottle
Algal Growth Potential[1]	AGP	500 ml plastic bottle
Total Organic Carbon Nitrate + Nitrite Total Kjeldahl Nitrogen Phosphorus	Nutrient	500 ml plastic bottle
Chloride Sulfate Fluoride Alkalinity Color Turbidity Total Dissolved Solids Total Suspended Solids	Anion	1 liter plastic bottle
Calcium Potassium Sodium Magnesium	W-ICP Metals	500 ml plastic bottle
Fecal Coliform *E. coli*	Bacteria	Whirlpacks 4 oz
Orthophosphate Specific Conductance	W-PO4-F W-COND-F	125 ml plastic bottle

[1]Only collected in lakes for the Status Monitoring Network.

Figure VII-6. Example of Station Identification Label

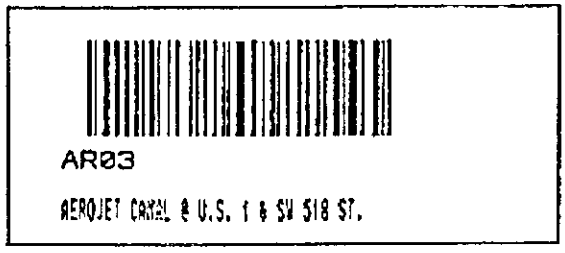


Figure VII-7. Example of Laboratory Project and Sample Identification Label

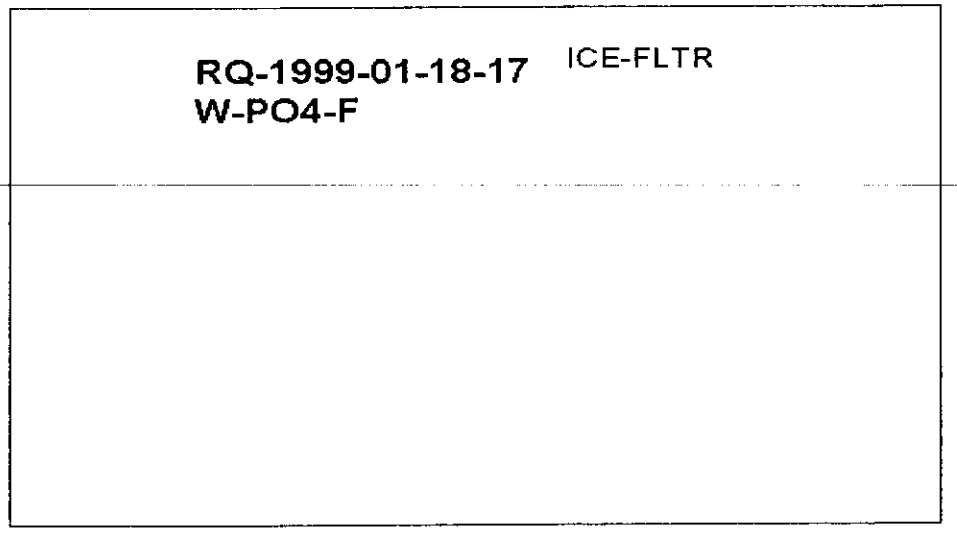
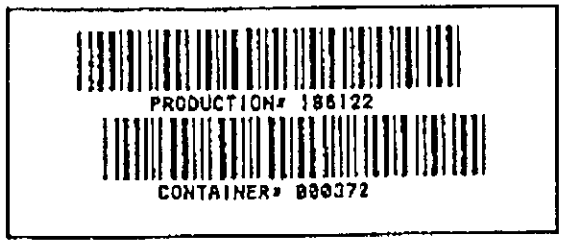


Figure VII-8. Example of Laboratory Production and Container Numbers Label



Sampling Precautions

Samples should be collected from downstream to upstream at a stream or river site. Water is grabbed upstream from the body. When sampling from a fuel powered boat, the samples should be collected upstream from the boat. At all sites, samples should be taken at the farthest, reasonable point from the fuel source and engine if sampling from a boat. If wading in to collect samples, the sediments should not be disturbed.

Sample Collection Depth

When total water depth is equal to or less than one meter, samples will be collected directly into the sample containers at mid-depth. When the water depth is greater than one meter, a Van Dorn horizontal sampling device (Alpha or Beta bottle) will be used to collect water at 0.5 m from the surface. This device can be composed of clear acrylic or polyvinyl chloride. Because no trace organics will be sampled, equipment composed of these non-inert materials can be used to collect surface water samples. The depth at which the sample is collected should be recorded on the field log sheet.

Sample Collection When Total Water Depth Is One Meter or Less

When total water depth is equal to or less than one meter, unfiltered samples are collected directly into the sample containers at mid-depth. To collect a sample into a bottle, follow these procedures:

1. Wear unpowdered, disposable latex gloves while handling the containers during the collection process.
2. Submerse the bottle neck first into the water to the appropriate depth.
3. Invert the bottle such that its neck is upright pointing into the water flow if any.
4. Bring bottle to the surface.
5. Shake and rinse the interior surface with sample water.
6. Then pour water downstream or away from the sample location.
7. Repeat steps 2 through 4.
8. Collect the chlorophyll sample in the 1-liter opaque plastic bottle quickly to avoid degradation by light. Leave some headspace. If sampling for the Status Network in lakes, collect all three of the biology samples quickly to avoid degradation by light.
9. Allow some space in the metals and nutrients containers for acid preservatives by pouring out a small amount, approximately 5 ml, of the sample water away from the sample location; all other bottles leave some headspace.
10. Finally, cap each bottle tightly.

To collect a sample into a Whirlpak®, do the following:

1. Wear unpowdered, disposable latex gloves while handling the Whirlpaks®.
2. Tear the top off of the Whirlpak® where it is perforated.
3. Hold the bag such that its mouth is in front of the hands and fingers.
4. Immerse the bag while it is still closed.
5. Then open the bag gently into the current if there is any.
6. Bring a full bag to the surface to avoid collecting surface film.
7. Press out excess water from the bag such that the Whirlpak® contains approximately 150 ml of sample.
8. Finally, seal the bag tightly with at least three folds at the top and the wire ties bent in half with the ends twisted together.

To obtain the filtered orthophosphate sample, follow these procedures:

1. Leave the cap on the tip and remove the plunger from a new 30 or 60 ml disposable syringe.

2. Lower the syringe into the water to the appropriate depth and invert it such that the opening is pointing into the water flow if any.
3. Bring syringe to surface.
4. With the syringe pointed downstream or away from sample site, remove cap on tip and slowly insert plunger pushing sample water out of the syringe.
5. Remove plunger and replace cap on syringe tip.
6. Repeat steps 2 and 3.
7. Remove cap on tip and attach a new 0.45-micron disk filter to the syringe.
8. Carefully insert the plunger without flushing all of the water through the syringe.
9. Flush the filter with approximately 5 to 10 ml of the sample water, disposing of this water away from the sample site.
10. Then filter a small amount, 10 to 20 ml, of the water into the 125-ml W-PO4-F (orthophosphate) bottle, and rinse the bottle and bottle cap with the filtered water.
11. Dispose of this water away from the sample site.
12. Then push the water out of the syringe, through the filter, and into the 125-ml bottle. *Make sure no unfiltered water, such as water dripping on the outside of the syringe, gets into the bottle.*
13. After emptying the syringe, disconnect the filter, remove the plunger, and replace the cap for the syringe tip.
14. Lower the syringe into the water to the appropriate depth and invert it such that the opening is pointing into the water flow if any.
15. Bring syringe to surface.
16. Quickly remove cap on tip and re-attach the 0.45-micron disk filter to the syringe.
17. Slowly reinsert the plunger and push filtered sample water into the 125-ml bottle, ensuring that no unfiltered water drips into the bottle.
18. Repeat steps 13 through 17 until the 125-ml bottle is filled with a minimum of 100 ml of the filtered water leaving some headspace.
19. Cap the sample bottle tightly.
20. Discard the syringe and filter when done.

Sample Collection When Total Water Depth Is Greater Than One Meter

When the water depth is greater than one meter, a Van Dorn horizontal sampling device (Alpha or Beta bottle) will be used to collect water at 0.5 m from the surface. To accurately measure the sample depth, the line attached to the sampling device should be marked in increments. Following are the procedures to use when collecting unfiltered samples with the Van Dorn bottle:

1. Wear unpowdered, disposable latex gloves when handling the sampling device or sample containers during the collection process.
2. Lower the Van Dorn slowly to the appropriate depth without disturbing the sediments.
3. Rinse it with the sample water.
4. Then collect the sample into the bottle by sending the messenger down to close the ends.
5. Retrieve the device slowly.
6. For unfiltered samples, pour the water directly from the Van Dorn bottle into the sample containers using the spigot/stopcock to control the flow.

7. Rinse the sample bottles with approximately 10 to 20 ml of sample water prior to filling; do not rinse the Whirlpaks®.
8. Collect the chlorophyll sample in the 1-liter opaque plastic bottle quickly to avoid degradation by light, leaving some headspace. If sampling for the Status Network in lakes, collect all three of the biology samples quickly to avoid degradation by light.
9. Leave some space for the acid preservatives in the metals and nutrients bottles, and fill all other bottles leaving some headspace.
10. Cap each bottle tightly.
11. Fill the Whirlpak® to the top with sample water; then press out the excess water from the bag such that it contains approximately 150 ml of sample, to fill line leaving some headspace.
12. Seal each Whirlpak® tightly with at least three folds at the top and the wire ties bent in half with the ends twisted together.

If using only a 2.2 or 3.2 liter Van Dorn bottle, multiple grabs will have to be taken to fill all the sample containers. In this case, follow these procerdures:

1. Take one grab following the steps 1 through 5 as previously listed.
2. Fill the chlorophyll container, using the spigot/stopcock to control the flow, with approximately 10 to 20 ml of sample water to rinse it.
3. Discard the rinse water away from the sample site.
4. Next fill the chlorophyll container with 1 liter of sample water leaving some headspace.
5. If collecting samples at a lake site for the Status Network, fill the 1 L phytoplankton taxonomy container after rinsing.
6. Discard the remaining water in the Van Dorn bottle away from the sample site.
7. If collecting water from a lake site in the Status Network, take a second grab with the Van Dorn and fill the AGP container after rinsing it.
8. Discard any remaining water away from the sample site.
9. Then take another grab with the Van Dorn and rinse and fill the remaining containers, leaving some headspace.

To collect the filtered orthophosphate sample, follow these procedures:

1. Pour approximately 10 to 20 ml of sample water from the Van Dorn bottle into a new 30 or 60 ml syringe after removing the syringe plunger.
2. Rinse the syringe and syringe plunger with this water; then dispose of the water away from the sample site.
3. Remove the syringe plunger.
4. Attach a new 0.45 micron disk filter to the syringe.
5. Fill the syringe with water from the Van Dorn bottle.
6. Carefully insert the plunger without flushing all of the water through the syringe.
7. Flush the filter with approximately 5 to 10 ml of the sample water.
8. Then filter a small amount, 10 to 20 ml, of the water into the 125-ml W-PO4-F (orthophosphate) bottle, and rinse the bottle with the filtered water.
9. Dispose of this water away from the sample site.

10. Then push the water out of the syringe, through the filter, and into the 125-ml bottle. *Make sure no unfiltered water, such as water dripping on the outside of the syringe, gets into the bottle.*
11. After emptying the syringe, disconnect the filter, and pull out the syringe plunger.
12. Replace the filter on the syringe, and fill the syringe again with sample water from the Van Dorn bottle.
13. Reinsert the plunger and attach the filter.
14. Then push the water out of the syringe, through the filter, and into the 125-ml bottle, making sure no unfiltered water drips into the bottle.
15. Repeat steps 11 through 14 until the 125-ml bottle is filled with at least 100 ml of the filtered water, leaving some headspace.
16. Discard the syringe and filter when done.

Sample Preservation

Preservation of samples occurs after all samples have been collected, but within 15 minutes of collection. The preservation of phytoplankton taxonomy samples with Lugol's solution is the only exception.

Lugol's Solution Preservation

The phytoplankton taxonomy samples that are collected at lake sites in the Status Network must be preserved with Lugol's solution. The FDEP Biology Section will preserve these samples upon receipt at the laboratory.

Acid Preservation

The acid preservation sequence is designed to reduce cross-contamination. The acids will be provided in polypropylene vials by FDEP WM&DMS. One ml of concentrated American Chemical Society grade nitric or sulfuric acid will be in each 3.5 ml polypropylene vial. Organics and inorganic nutrients samples will be preserved first with sulfuric acid; then the metals sample is preserved with nitric acid. This order will eliminate the possibility of the nutrients becoming contaminated. After adding the acid, the pH of the samples should be less than 2. This is confirmed by checking an aliquot of the sample with narrow range pH paper. Follow these procedures to preserve the nutrients and metals samples with acid:

1. Wear unpowdered, disposable latex gloves and eye protection when handling acids.
2. First, preserve the total organic carbon and nutrients sample in the 500-ml bottle with sulfuric acid.
3. Unscrew the cap on this bottle being careful not to drop the cap.
4. Unscrew the cap on one of the concentrated sulfuric acid vials, and discard this cap in an acid waste container.
5. Pour the 1 ml of acid into the 500-ml nutrient bottle.
6. Discard the vial in an acid waste container.
7. Cap the sample bottle tightly and invert it to mix the acid with the sample.

8. Confirm that the pH of the sample is now less than 2 by the following steps: Uncap the sample bottle, pour a few millimeters of the sample from the container into a disposable cup, and place pH paper that is in the 1 to 2 range in the sample water in the cup. Alternatively, pour a small amount of sample directly onto the narrow range pH paper over the acid waste container. *Note that the pH paper should not be directly placed into the sample bottle.*
9. Discard the aliquot and disposable cup into the acid waste container after measuring the pH. Do not pour the aliquot back into the sample bottle.
10. Add more acid by following steps 4 through 9 if the pH is greater than 2, until the pH is lowered adequately. Document this deviation in typical preservation procedure on the field log and custody sheet.
11. Tightly cap the nutrients bottle when the pH is below 2 and set aside.
12. Next preserve the metals sample with nitric acid. *Note one must be careful not to contaminate the nutrients with this nitric acid preservative; thus, the nutrients bottle must be capped and out of the way of this process.*
13. Unscrew the cap on the metals bottle being careful not to drop the cap.
14. Unscrew the cap on one of the concentrated nitric acid vials, and discard this cap in an acid waste container. *Note that the nitric acid is generally distinguishable from the sulfuric acid because it has a yellowish-brown color.*
15. Pour the 1 ml of acid into the 500-ml metals bottle.
16. Discard the vial in an acid waste container.
17. Cap the sample bottle and invert it to mix the acid with the sample.
18. Confirm that the pH of the sample is now less than 2 by the following steps: Uncap the sample bottle, pour a few millimeters of the sample from the container into a disposable cup, and place pH paper that is in the 1 to 2 range in the sample water in the cup. Alternatively, pour a small amount of sample directly onto the narrow range pH paper over the acid waste container. *Note that the pH paper should not be directly placed into the sample bottle.*
19. Discard the aliquot and disposable cup into the acid waste container after measuring the pH. Do not pour the aliquot back into the sample bottle.
20. Add more acid by following steps 14 through 19 if the pH is greater than 2, until the pH is lowered adequately. Document this deviation in typical preservation procedure on the field log and custody sheet.
21. Tightly cap the metals bottle when the pH is below 2 and set aside.

Storage and Disposal of Acid Preservatives

Acid preservatives are carried in sealed vials and are not opened until the time of sampling. They should be stored away from direct sunlight. Used vials are placed into a sealed container and transported back to the sampling agency's lab. They should be diluted/neutralized to a pH between 5 and 9. The liquid can then be poured down a sanitary sewer system. The vials should be rinsed several times with tap water, and the water discarded down the drain. Then the container holding the vials should be sealed and placed in the trash.

Preservation on Wet Ice

All samples must be quickly bagged and placed on wet ice after collection and acid preservation according to the following procedures:

1. Wear unpowdered, disposable latex gloves while handling sampling containers.
2. Separate the nutrients and total organic carbon sample from other samples by placing it into a zip top baggy.
3. Also place the metals sample into a separate baggy. Note these two steps are an extra precaution to prevent cross-contamination.
4. Place all microbiology samples into a separate zip top baggy to prevent losing them from leakage.
5. Put all samples from a single station into a mesh bag.
6. Then place the bag of samples into a cooler with wet ice in order to chill the samples to 4°C.

Documentation

Sample documentation begins in the FDEP Central Chemistry and Biology Laboratories with the containers that they prepare for the samples. The containers are connected to the requested analytical work via the sample container type and appropriate labels. The Chemistry Laboratory labels each container with the weekly project request number, analysis type, and preservation requirements prior to shipping them to the sampling agencies (Figure VII-7). The FDEP WM&DMS provides the agencies with station identification labels (Figure VII-6) that are bar coded to uniquely identify a sample station. These are placed on the sample containers. In addition, one label is placed on the sample custody sheet to provide a link between the containers and the custody sheet.

Sample custody is of critical importance to the objectives of the Status and Temporal Variability Monitoring Networks. Although the magnitude and scope of the Networks do not allow for legal chain-of-custody procedures, proper sample custody is a high priority. Data gathered will be incorporated into an existing statewide water quality database. This incoming data must be properly linked to historical data. The database is also a source of public information; therefore, every effort must be made to avoid the association of erroneous analytical results to well or surface water sites. An example of the front of a sample custody sheet for surface water sampling is illustrated in Figure VII-9. On the back of the custody sheet, is a container inventory which is Network and sample site specific as illustrated in Figures VII-10, VII-11, VII-12. The container inventory lists the analytes to be measured, the container type that will hold the water sample for a group of analytes, and the methods for preserving the water sample. Sample custody sheets are completed (in carbonless triplicate) by the sampler, one for each return cooler. The following information is included on the custody sheet:

- sampling agency
- project name
- sampler names
- station identifier (label as shown in Figure VII-6)
- date and time sample was collected
- specific conductance of the sample water
- pH of the sample water

In addition, a barcoded label containing the weekly project request number (Figure VII-13) is placed in the upper right hand corner of each sample custody sheet used that sampling month. This process enables custody to be verifiable from the field to the lab for each container and sample. If there is any modification to the sample container or of the way the sample is collected, it should be reported in the Comments section of the custody sheet.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AMBIENT MONITORING PROGRAM
SAMPLE CUSTODY RECORD

SAMPLING AGENCY	PROJECT	SAMPLER NAMES	LAB PROJECT CODE
			AMBIENT SW-TREND

	STATION IDENTIFIER	SAMPLE INFORMATION	LAB IDENTIFIER
1	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
2	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
3	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
4	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
5	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID

Figure VII-9. Example of the Front of the Custody Sheet for Surface Water Sampling

Figure VII-10. Back of the Custody Sheet for Surface Water TV Sampling

SURFACE WATER TEMPORAL VARIABILITY NETWORK
CONTAINER INVENTORY

LAB	CONTAINER	ANALYSES	DESCRIPTION	SAMPLE PREPARATION
DEP	Chlorophyll	Chlorophyll	(1) 1 liter opaque plastic	Unfiltered; chill to 4°C
DEP	Nutrient	TOC, NO_3+NO_2, NH_3,TKN, P	(1) 500 ml plastic	Unfiltered; H_2SO_4 vial to pH <2; chill to 4°C
DEP	Anion	Cl, SO_4, F, Alkalinity,Color, Turbidity,TDS, TSS	(1) 1 liter plastic	Unfiltered; chill to 4°C
DEP	Metals	Ca, K, Na, Mg	(1) 500 ml plastic	Unfiltered; HNO_3 vial to pH <2; chill to 4°C
DEP	Bacteria	Enterococci Fecal Coliform	(2) Whirlpacks 4 oz	Unfiltered; chill to 4°C
DEP	W-PO4-F W-COND-F	o-PO4 Conductance	(1) 125 ml plastic	Filtered; chill to 4°C

Figure VII-11. Back of the Custody Sheet for Status Sampling of Streams

STATUS NETWORK- STREAMS
CONTAINER INVENTORY

LAB	CONTAINER	ANALYSES	DESCRIPTION	SAMPLE PREPARATION
DEP	Chlorophyll	Chlorophyll	(1) 1 liter opaque plastic	Unfiltered; chill to 4°C
DEP	Nutrient	TOC, NO_3+NO_2, NH_3,TKN, P	(1) 500 ml plastic	Unfiltered; H_2SO_4 vial to pH <2; chill to 4°C
DEP	Anion	Cl, SO_4, F, Alkalinity,Color, Turbidity,TDS, TSS	(1) 1 liter plastic	Unfiltered; chill to 4°C
DEP	Metals	Ca, K, Na, Mg	(1) 500 ml plastic	Unfiltered; HNO_3 vial to pH <2; chill to 4°C
DEP	Bacteria	Enterococci Fecal Coliform	(2) Whirlpacks 4 oz	Unfiltered; chill to 4°C
DEP	W-PO4-F W-COND-F	o-PO4 Conductance	(1) 125 ml plastic	Filtered; chill to 4°C

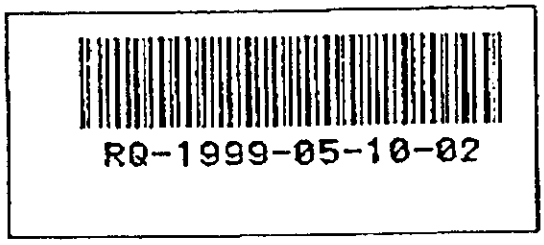
Figure VII-12. Back of the Custody Sheet for Status Sampling of Lakes

STATUS NETWORK- LAKES
CONTAINER INVENTORY

LAB	CONTAINER	ANALYSES	DESCRIPTION	SAMPLE PREPARATION
DEP	Chlorophyll	Chlorophyll	(1) 1 liter opaque plastic	Unfiltered; chill to 4°C
DEP	Phytoplankton Identification	Phytoplankton	(1) 1 liter opaque plastic	Unfiltered; Lugol's Solution; chill to 4°C
DEP	Algal Growth Potential	AGP	(1) 500 ml plastic	Unfiltered; chill to 4°C
DEP	Nutrient	TOC, NO_3+NO_2, NH_3,TKN, P	(1) 500 ml plastic	Unfiltered; H_2SO_4 vial to pH <2; chill to 4°C
DEP	Anion	Cl, SO_4, F, Alkalinity,Color, Turbidity,TDS, TSS	(1) 1 liter plastic	Unfiltered; chill to 4°C
DEP	Metals	Ca, K, Na, Mg	(1) 500 ml plastic	Unfiltered; HNO_3 vial to pH <2; chill to 4°C
DEP	Bacteria	Enterococci Fecal Coliform	(2) Whirlpacks 4 oz	Unfiltered; chill to 4°C
DEP	W-PO4-F W-COND-F	o-PO4 Conductance	(1) 125 ml plastic	Filtered; chill to 4°C

Mistakes on the sample custody sheet will be deleted by drawing a single line through the error. The two top copies of the custody sheet (white and yellow sheets) are placed in a sealed plastic bag and taped to the inside top of the FDEP cooler for shipment back to the Central Chemistry Lab with the samples. At the FDEP Chemistry Lab, information on the sample custody sheet is used to log in the samples. The other copy of the custody sheet (pink sheet) will be kept by the sampling agency and placed in the field logbook.

Figure VII-13. Example of Weekly Project Request Number Label



Field sheets for the Status and Temporal Variability Networks are shown in Figures VII-14 and VII-15. These sheets will be provided to the sampling agencies by the FDEP WM&DMS. The information to be recorded on the Surface Water Temporal Variability (Figure VII-14) and Status Field Sheets (Figure VII-15) consists of the following:

- Station identification
- Date
- Time that sample is collected
- Weather conditions
- Total water depth
- Secchi depth
- Stage (if applicable)
- Sample collection depth
- Field measurement depth
- Dissolved oxygen
- pH
- Temperature
- Specific conductance
- If QAQC sample, what type and when collected
- Comments, if any
- Barcode label
- Samplers' signatures

Entries on field sheets should be made with waterproof ink. Prior to visiting a site, information from the most previous visit to the site, if available, is reviewed; and a copy of the log sheet will be on-site so that reference can be made to it during sampling. Copies of sample custody sheets and field log sheets are kept in the field log notebook along with any other records pertaining to sampling. Copies of the notebooks will be kept on hand at the sampling agencies.

Figure VII-14. Field Sheet for the Surface Water TV Monitoring Network

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SURFACE WATER TEMPORAL VARIABILITY
NETWORK FIELD SHEET

Station Information

STATION ID:_____ DATE:_____ (MM/DD/YYYY) TIME:_____ (24 hr) (Time when Sample was Collected)

WATERBODY TYPE: (Circle One) Small Lake (<10HA) Large Lake (>10HA)

Low Order Stream (1-4 order) High Order Stream (>4 order)

WEATHER CONDITIONS (Circle One) Clear Partly Cloudy Cloudy Rain

Water Quality Measurements

Total Water Depth _____ (meters) (Average of 2 measurements if taken electronically) Secchi Depth _____ (meters) Stage (If applicable) _____ (Feet)

Depth from which laboratory samples were collected: _____ (meters)

Field Measurements:

Depth Collected	pH	D.O.	Temperature	Conductivity
Depth Collected	pH	D.O.	Temperature	Conductivity

*COMMENTS:*_____

QA/QC TAKEN? (Circle One) Time Collected

DUPLICATE _____

EQUIPMENT BLANK _____

Place Barcode Label Here

Sampler's Signatures: _____

WMS-SWTV
October 1999

Figure VII-15. Field Sheet for the Surface Water Status Monitoring Network

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

STATUS NETWORK SURFACE WATER FIELD SHEET

Station Information

STATION ID:_____ DATE:_____ (MM/DD/YYYY) TIME:_____ (Time when Sample was Collected) (24 hr)

WATERBODY TYPE: (Circle One) Small Lake (<10HA) Large Lake (>10HA)

Low Order Stream (1-4 order) High Order Stream (>4 order)

WEATHER CONDITIONS (Circle One) Clear Partly Cloudy Cloudy Rain

Water Quality Measurements

Total Water Depth _____ (meters) (Average of 2 measurements if taken electronically) Secchi Depth _____ (meters) Stage (If applicable) _____ (Feet)

Stream Flow(Circle One) No Flow Flow within Banks Flood

Lake Level(Circle One) Low Normal High

Depth from which laboratory samples were collected: _____ (meters)

Field Measurements:

Depth Collected	pH	D.O.	Temperature	Conductivity
Depth Collected	pH	D.O.	Temperature	Conductivity

*COMMENTS:*_____

QA/QC (Circle One) Time Collected

DUPLICATE _____

EQUIP BLANK_____

Place Barcode Label Here

Sampler's Signatures: _____

_____

WMS-SNSW
October 1999

Sample Shipment

Proper sample shipment is imperative in the collection of environmental monitoring data. Strict adherence to the following steps for sample shipment will help assure the collection of accurate environmental monitoring data.

- Sample analysis for the FDEP WM&DMS is currently being done by the FDEP Central Laboratory in Tallahassee; therefore, all samples will be returned to this lab.
- Sampling supplies will be shipped from the FDEP Central Laboratory to the sampling agency via United Parcel Service (UPS) no later than two weeks prior to the project begin date.
- Each FDEP shipment will contain sample containers appropriate for the scheduled analyses and sufficient coolers for return shipment.
- Field custody sheets, field log sheets, barcode labels, and container inventories will be provided by WM&DMS staff.
- Preservatives will be provided by the FDEP WM&DMS in advance of sampling.
- A copy of the custody sheet must be included in each cooler. At the end of the day, tape the custody sheets contained in zip top baggies to the inner top of the coolers. It is best to line the inside of the cooler with a large garbage bag prior to filling it with ice. Also, if the cooler has a spigot, place tape over it to prevent it from opening during transit and spilling water. Likewise, the lid must be taped closed to prevent opening during shipment.
- Samples must be shipped daily; however, there will be extraneous circumstances where sample shipment can not occur until the following day. In this case, WM&DMS staff should be notified and the samples shall be kept at 4°C. Samples that are shipped daily also must be kept at 4°C.
- Sample shipment shall be done during Monday through Thursday. No sample shipments shall be made on Fridays due to the fact that the Central lab would receive the samples on Saturdays. The Central lab does not accept samples on Weekends or Holidays.
- Federal Express (FedEx) will be utilized for shipment of samples to the FDEP Central Laboratory. The FDEP laboratory and/or WM&DMS staff will provide FedEx airbills to sampling agencies for use in shipping water quality samples to the FDEP Central Laboratory. These airbills will be pre-printed with DEP's FedEx account number, so that all shipping costs are directed back to FDEP.

GPS Procedures

The Status Network will require extensive use of GPS equipment. This equipment will be used for navigation to randomly selected sites as well as collection of locational and field data. All participants of the Status Network should be using Trimble Pro XR® GPS equipment with differential correction. The decision to use this type of equipment was based on institutional knowledge of Pro XR units and for consistency.

All personnel using GPS equipment should be trained in the operation of such equipment and strictly follow the Division of Water Resource Management's GPS Standards which can be found at the website, www.dep.state.fl.us. Training has been ongoing within the Division and will continue as needed.

Accuracy

The Status Network incorporates the use of randomly selected coordinates for the selection of sample stations. The random coordinates or sites are selected as spelled out in the IWRM Design Plan. Due to map errors and scale differences the sites may not fall directly on intended water bodies. In this case the nearest waterbody should be selected. Normally the distance should only be a few meters off and is not considered problematic since the Division GPS Standards recommend the National Map Accuracy Standard of 12.2 meters.

Waypoints

Navigation to these sites will require the creation of waypoint files. These files will contain the site ID and the corresponding latitude, longitude, and HAE (Height Above Ellipsoid) which is used in the field to navigate to the sites. The HAE should be taken from the data logger near the area of the randomly selected sites, which is obtained from the current position information menu on the data logger. It is not critical that the HAE be exact, but it will help the accuracy of navigation to have it as close as possible. The waypoint file can be created in the office using Pathfinder Office® Software or in the field directly on the data logger. The creation of waypoint files is covered in the Division of Water Resource Management's GPS Basics Manual which is available from WM&DMS staff.

Navigation

Navigating to surface water sites presents many problems, especially for low order streams and small lakes. Heavy tree canopies typically cover these waterbodies. GPS signals are line-of-sight microwave signals that are easily blocked by any mass, including tree canopies. To correct this problem, navigate as close as possible to the selected site and then note the direction and distance to go, from the data logger. Proceed to the point by using a compass and tape measure. Pacing your steps can be done if a steady bearing is kept on the compass (12.2 meters are equal to approximately 40 feet). Using an estimation of one pace, approximately equal to three feet, one should get within 40 feet of a location with practice. Likewise, when collecting the positions of the sites, tree canopies can block signals. Doing the reverse of what is done to navigate to the site can solve this problem. Walk away from the site, while measuring your bearing and distance from the site. When the signals are received collect the position with the measurements applied to the position as an offset. Remember to convert the bearing 180 degrees so the offset is applied back in the opposite direction. These exercises are covered in the GPS Basics Manual and with practice a sampler will become competent at doing them.

File Nomenclature

Once at the site, the water quality measurements will be taken and recorded onto field sheets before the GPS data is collected. The site location will be collected into the data logger after the lab samples have been obtained and all data recorded on field sheets. The GPS data file (.ssf file) shall be named similarly to the unique resource code. For example, the Northwest Florida Water Management District's large lake number 26 in the A reporting unit of the first year cycle

is a site known as NWA-LL-1026. The data logger file will be NWALL026. The hyphens and the number one (1) in the number sequence are dropped to accommodate the eight-digit file name size in the data logger. There will only be one site per file.

Data Dictionary

The Status Network will also incorporate the use of a standard data dictionary (A Trimble electronic form) residing in the data logger memory. The data dictionary will contain all of the questions that are found on the field sheets. After the locational data has been collected you should pause the unit and then proceed to answer the questions in the data dictionary by following the field sheets. It is extremely important to collect the location in the data logger first and then pause the unit until all of the data dictionary questions have been answered. Once the data dictionary questions have been answered the "**OK**" key should be pressed to save the file. Many fields in the data dictionary require input and are restricted to certain constraints. For example, the pH range allowed to be entered into the data logger is between 0 and 14. No numbers less then 0 or more than 14 will be accepted by the data logger. The default is set to 0. A value of 0 in the data will signify that a problem had occurred and no data was collected for that analyte at that site. These constraints and defaults are also in other fields throughout the data dictionary.

Section VIII. Quality Control Samples- Surface Water

Quality control samples are collected to assess accuracy, precision, and representativeness. For surface water sampling in the Status and Temporal Variability Networks, the following types of QC samples are collected: field reference samples, equipment and field blanks, and duplicate samples. Analytical reference samples are currently not being submitted as part of surface water sampling. If surface water samplers later become involved in this program, refer to the information provided about analytical reference samples in Section VI.

Field Reference Samples

The USGS Laboratory in Ocala is under contract to prepare and distribute field reference samples for the Status and TV Networks. The procedures to follow in order to obtain these samples are addressed in Section III. The samples are prepared to a known pH or specific conductance. The USGS determines the most probable (mean) value and standard deviation for each sample. These statistics are then used to evaluate field measurement performance. These samples are carried into the field and analyzed at a rate of one for every 5-10 actual samples. The values are recorded on a Field Reference Sample Reporting Form (an example is shown in Section VI) and immediately submitted to the FDEP WM&DMS Project Manager or QA Officer by fax, telephone, or electronic mail. If the values differ substantially from the most-probable values, the sampling agency will be contacted immediately, and corrective action should ensue. Dirty probes, low batteries, contaminated standards, faulty meters, and sometimes analyst error, can cause poor performance on field reference samples.

Equipment and Field Blanks

Equipment blanks are samples of analyte-free water, collected for the purpose of assessing the cleanliness of the sampling and measurement system. If equipment blanks are discovered to contain impurities, it is assumed that these impurities will also affect the measured concentrations in actual samples, contributing to elevated concentrations of naturally occurring substances. Analyte-free water is defined as water which, when analyzed in the same manner as actual samples, has no detectable concentrations of target compounds. There are several potential causes for blank detections, including:

- The water treatment system that is serving as the source of the blank water may not be 100% effective for all analytes of concern.
- The containers used to transport the analyte-free water into the field may not be clean.
- The sampling equipment from which the blank is collected (or through which it is filtered) may not be clean.

- The sample containers used to hold the sample may not be clean.
- The preservatives may be impure.
- The sampling process itself may be exposing the sample to contaminants (as in the case of volatile organic sampling).

Equipment blanks will be taken on precleaned and/or field cleaned equipment. Precleaned equipment refers to equipment that has been cleaned in-house prior to sampling. The total number of blanks that will be taken during a sampling project is dependent upon how many actual samples will be collected. Equipment blanks are collected at a rough frequency of 20%. The type of blank that will be collected depends upon how many precleaned sampling equipment sets will be used and how frequent the equipment will have to be decontaminated in the field. If any field cleaning is performed during a project, then field cleaned equipment blanks are taken. Otherwise, if all the equipment that is used during a project is precleaned, precleaned blanks are obtained.

The following steps describe proper collection of equipment blanks:

1. Fill a large clean high-density polyethylene (HDPE) container with analyte-free water and transport it to the field. This water should be from the same source as the analyte-free water used in the final rinse of the equipment cleaning process.
2. Fill the pre-cleaned sampling device, e.g. a Van Dorn sampler, with analyte-free water, and discard the water.
3. Fill again. Then fill an entire suite of sample containers, as with an actual water sample, using the same preservation and filtration methods.
4. Label all blank containers with the equipment blank labels provided with the project paperwork (example is shown in Section VI), and ship the blank sample along with regular samples to the lab. Equipment blanks should be listed on the custody sheet. Refer to Section VII for further information on sample custody and shipment.
5) Check the lab results for detections. If frequent detections are noted, consult with the FDEP WM&DMS QA Officer.

Field blanks must be taken in cases where the only sampling equipment is the sample container. They should also be collected if analytes are detected at high levels in equipment blanks. These blanks consist of filling on-site a suite of sample containers with analyte-free water from the HDPE water container, preserving as with actual samples, sealing the containers, documenting them as quality assurance samples/field blanks, and shipping them to the laboratory as is done with actual field samples. The custody sheet and field log should indicate that a field blank sample was collected. This procedure is an aid in determining if the equipment blank contamination is a result of the analyte-free water not being "analyte-free", the water container being dirty, or acid preservatives being fouled.

Duplicate Samples (Optional)

Duplicate samples are collected for the purpose of assessing overall precision of the sampling and analytical process. The following steps describe collection of duplicate samples.

1. Collect a water sample with a clean sampling device.
2. Fill, label, and preserve all containers for the sample.
3. Place in cooler.
4. Using the same sampling device(s), collect a second sample in the same manner as the first.
5. For filtered samples, a new filter should be used.
6. Fill, label, and preserve all containers for the sample (an example of a duplicate label is shown in Section VI).
7. Place in cooler.
8. Both samples should be listed on the custody sheet as separate samples. The second sample should be given a different sampling time and field id than the first.
9. FDEP WM&DMS staff will review the results to see if the values reasonably agree.

Section IX. Equipment Cleaning

Introduction

All equipment must be either precleaned (in-house) or field cleaned before using it to collect water samples. These cleaning procedures are to be used by field personnel for cleaning sampling and other equipment, both in-house and in the field. They are in accordance with the Environmental Protection Agency Region 4 Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, May 1996 (with March 1997 revisions), and Department of Environmental Protection Standard Operating Procedures for Laboratory Operations and Sample Collection Activities, Florida Department of Environmental Protection, September 1992 (DEP-QA-001/92). The EPA document can be found at the website, www.epa.gov/region04/sesd, and the DEP document can be found at the website, www.dep.state.fl.us.

Specifications for Cleaning Materials

Specifications for standard cleaning materials referred to in this section are as follows:

- Soap shall be a standard brand of phosphate-free laboratory detergent such as Liquinox®.
- Tap water may be used from any municipal water treatment system. Use of an untreated potable water supply is not an acceptable substitute for tap water.
- Analyte-free water (deionized water) is water which, when analyzed for target compounds using the requested analytical methods, yields no detections.

Handling and Containers for Cleaning Solutions

Improperly handled cleaning solutions may easily become contaminated. Storage and application containers must be constructed of the proper materials to ensure their integrity. Following are acceptable materials used for containing the specified cleaning solutions:

- Soap must be kept in clean plastic, metal, or glass containers until used. It should be poured directly from the container during use.
- Tap water may be kept in clean tanks, hand pressure sprayers, squeeze bottles, or applied directly from a hose.
- Analyte-free water must be stored in clean glass, stainless steel, or plastic containers that can be closed to the environment. It can be applied from plastic squeeze bottles.

Safety Procedures for Cleaning Operations

Some of the materials used to implement the cleaning procedures can be harmful if used improperly. Caution should be exercised by all field investigators and all applicable safety procedures should be followed. At a minimum, the following precautions should be taken in the field during these cleaning operations:

- Safety glasses with splash shields or goggles, and latex gloves will be worn during all cleaning operations.
- No eating, smoking, drinking, chewing, or any hand to mouth contact should be permitted during cleaning operations.

Cleaning Procedures for Specific Equipment

Table IX-1 lists specific equipment, references of the procedures for cleaning the equipment, and frequency for in-house and in-field cleaning of the equipment. The cleaning procedures are described here.

Water Level Measuring Devices

1. Wash with soap and tap water.
2. Rinse with tap water.
3. In-house protocols must include the use of HOT tap water and cleaning in a contaminant-free environment. Hot detergent solutions and water rinses are not required for in-field decontamination.
4. Rinse with analyte-free water.
5. Allow to air dry overnight if cleaning in-house.
6. Wrap equipment in aluminum foil (with tab for easy removal) seal in plastic, and date if storing.

Pumps

Submersible pumps

1. Pump exterior must be cleaned per the following:
   a. Clean with tap water and lab grade soap (Liquinox or equivalent) using a brush, if necessary, to remove particulate matter or surface film.
   b. Rinse thoroughly with tap water. HOT tap water should be used if cleaning in-house.
   c. Rinse with 10% reagent grade hydrochloric acid (HCL), when cleaning in-house. The acid rinse should not be used on steel sampling equipment. This acid rinse is not required when cleaning in-field.
   d. Rinse thoroughly with analyte-free water. Enough water shall be used to ensure that all equipment surfaces are flushed with water.
   e. Then allow to air dry as long as possible.

f. Clean sampling equipment shall be wrapped (if appropriate) in aluminum foil, or in untreated butcher paper to prevent contamination during storage or transport to the field.
g. If no further sampling is to be performed, equipment must be rinsed with tap water immediately after use and taken back to the lab to be cleaned in-house.
h. In-house protocols must include the use of HOT tap water and cleaning in a contaminant-free environment. Hot detergent solutions and water rinses are not required for in-field decontamination.
i. It is not recommended to clean heavily contaminated equipment in the field. Such rigorous cleaning procedures should be performed at the base of operations. Cleaning at the base of operations or in the field should consider the following:
   - In extreme cases, it may be necessary to steam clean the field equipment before cleaning with soap and water.
   - If the field equipment cannot be cleaned utilizing these procedures, it should be discarded, unless further cleaning with stronger solvents and/or oxidizing solutions are effective.

2. Pump internal cavity and mechanism must be cleaned as follows:
   a. If for purging only, then the pump must be completely flushed with potable water prior to purging the next well.
   b. If for purging and sampling, then it must be completely disassembled (if so designed) and decontaminated between each well.
   c. If the pump cannot be (practically) disassembled, then the internal cavity/mechanism must be cleaned by pumping copious amounts of lab-grade soap solution, tap water, and DI water.
   d. In-house protocols must include the use of HOT tap water and cleaning in a contaminant-free environment. Hot detergent solutions and water rinses are not required for in-field decontamination.
2. Tubing should be cleaned as stated below.

Above Ground Pumps Used for Purging and Sampling

1. Pumps used for purging only
   a. Exterior of the pump must be free of oil and grease.
   b. Tubing should be cleaned as stated below.
2. Pumps used for sampling
   a. Exterior of pump must be cleaned with a detergent wash followed by tap and analyte-free water rinses.
   b. Tubing should be cleaned as stated below.
   c. In-house protocols must include the use of HOT tap water and cleaning in a contaminant-free environment. Hot detergent solutions and water rinses are not required for in-field decontamination.

<u>Tubing</u>

Miscellaneous Non-Inert Tubing Types (tygon, rubber, HDPE, PVC, etc.)

1. New Tubing
   a. As a general rule, new tubing may be used without preliminary cleaning.

b. New tubing shall be protected from potential environmental contamination by wrapping in aluminum foil, sealing in plastic bags or in the original sealed packaging.
c. If new tubing is exposed to potential contamination, the exterior and interior shall be thoroughly rinsed with hot tap water followed by a thorough rinse with deionized water.
d. If new tubing is to be used to collect samples, the tubing shall be thoroughly rinsed with sample water (i.e. pump sample water though the tubing) before collecting samples.

2. Reused Tubing
   a. Flush tubing with soapy solution of hot tap water and laboratory detergent.
   b. Rinse exterior and interior thoroughly with tap water.
   c. Rinse exterior and interior thoroughly with deionized water.
   d. In the lab, the tubing shall be flushed with 10% HCl, followed by thorough rinsing with DI water. This acid rinse is not required when cleaning in-field.
   e. Wrap tubing and cap ends in aluminum foil and seal in plastic to prevent contamination during storage and transport.
   f. In-house protocols must include the use of HOT tap water and cleaning in a contaminant-free environment. Hot detergent solutions and water rinses are not required for in-field decontamination.

Van Dorn Sampler

1. Clean with tap water and lab grade soap (Liquinox or equivalent) using a brush, if necessary, to remove particulate matter or surface film.
2. Rinse thoroughly with tap water.
3. Rinse with 10% reagent grade HCl, if cleaning in-house. The acid rinse should not be used on steel sampling equipment.
4. Rinse thoroughly with analyte-free water. Enough water shall be used to ensure that all equipment surfaces are flushed with water.
5. Allow to air dry as long as possible.
6. Clean sampling equipment shall be wrapped (if appropriate) in aluminum foil, or in untreated butcher paper to prevent contamination during storage or transport to the field.
7. If no further sampling is to be performed, equipment must be rinsed with tap water immediately after use and taken back to the lab to be cleaned in-house.
8. In-house protocols must include the use of HOT tap water and cleaning in a contaminant-free environment. Hot detergent solutions and water rinses are not required for in-field decontamination.
9. It is not recommended to clean heavily contaminated equipment in the field. Such rigorous cleaning procedures should be performed at the base of operations. Cleaning at the base of operations or in the field should consider the following:
   - In extreme cases, it may be necessary to steam clean the field equipment before cleaning with soap and water.
   - If the field equipment cannot be cleaned utilizing these procedures, it should be discarded, unless further cleaning with stronger solvents and/or oxidizing solutions are effective.

NOTE: If metals- calcium, magnesium, sodium, and potassium- are detected in equipment blanks, after the cleaning procedure, then sampling equipment (excluding stainless steel equipment) will have to be rinsed with 10% reagent grade HCl, prior to rinsing with analyte-free water, when field cleaning.

Polyethylene Analyte-free Water Containers (In-House Cleaning Only)

1. New Containers
   a. Clean with HOT tap water and lab grade soap (Liquinox or equivalent).
   b. Rinse thoroughly with HOT tap water.
   c. Rinse with 10% reagent grade HCl.
   d. Rinse thoroughly with analyte-free water. Enough water shall be used to ensure that all equipment surfaces are flushed with water.
   e. Allow to air dry as long as possible.
   f. Cap with teflon film, aluminum foil or the bottle cap. Note: the bottle cap shall be equipped with a teflon liner. Aluminum foil or teflon film may be used as liner material.
2. Reused Containers
   a. Immediately after being emptied, cap with aluminum foil, teflon film or the container cap.
   b. Wash container exterior with lab-grade detergent and HOT tap water.
   c. Rinse exterior and interior thoroughly with analyte-free water.
   d. Invert and allow to drain and dry.
   e. Fill container with analyte-free water and cap tightly with aluminum foil, teflon film or the container cap. Note: the bottle cap shall be equipped with a teflon liner. Aluminum foil or teflon film may be used as liner material.

NOTE: Analyte-free water shall not be stored for more than one week in a polyethylene container.

Handling and Storage of Cleaned Equipment

Handling and storage of clean equipment will be done according to Appendices B.1.6 and C.1.5 (EPA Region 4, 1996). After cleaning, equipment should be handled only by personnel wearing clean gloves to prevent re-contamination. In addition, the equipment should be moved away (preferably upwind) from the cleaning area to prevent recontamination. If the equipment is not to be immediately re-used it should be covered with plastic sheeting or wrapped in aluminum foil, after air drying, to prevent re-contamination. The area where the equipment is kept prior to re-use must be free of contaminants. Clean equipment should be appropriately labeled and placed in an area free of contaminants.

Disposal of Cleaning Materials

Disposal of cleaning materials, both in-house and in-field, must be done properly. Used detergents may be disposed of through a sanitary sewer system. Hydrochloric acid cleaning solutions should be diluted/neutralized to a pH between 5 and 9, and flushed down a sanitary sewer system. If used to clean in-field, the material should be captured and diluted/neutralized to a pH between 5 and 9. Then it can be flushed down a sanitary sewer system. Any solvents must be collected and handled by a commercial disposal or recycling contractor.

Documentation of Cleaning

Documentation of cleaning will be maintained for each item of sampling equipment. Each equipment item will be made identifiable by means of serial numbers, tags, or labeled carrying cases. A cleaning log will be kept with subsections for each equipment item. The name of the person performing the cleaning, the date of cleaning, the location of cleaning, and any deviations from the approved cleaning procedure will be entered into this cleaning log. After cleaning, equipment should be allowed to air dry completely; then it is wrapped as specified in the cleaning procedure and tagged, marked, or labeled with the date of cleaning and any deviation from procedures.

Table IX-1. Cleaning Procedures and Frequencies

EQUIPMENT ITEM	IN-HOUSE CLEANING PROCEDURE	FREQUENCY	IN-FIELD CLEANING PROCEDURE[2]	FREQUENCY
Water-level measuring devices	EPA Appendix C.5.1	weekly	EPA Appendix B.2.4	between sample sites
Pumps[1]	DEP QA SOP Section 4.1.8 (omitting solvent rinse)	weekly	DEP QA SOP Sections 4.1.8 (omitting acid and solvent rinses)	between sample sites
Tubing[1]	DEP QA SOP Section 4.1.7.5 (substituting 10% HCl for 10% HNO_3)	weekly	DEP QA SOP Section 4.1.7.5 (omitting acid rinse)	between sample sites
Van Dorn sampler (Alpha/Beta bottle)[1]	DEP QA SOP Section 4.1.4.1 (omitting solvent rinse)	weekly	DEP QA SOP Section 4.1.4.1 (omitting acid and solvent rinses)	between sample sites
Polyethylene analyte-free water containers	DEP QA SOP Section 4.1.10 (omitting solvent rinse)	prior to refilling	procedure not performed in field	n/a

[1]If it is discovered that a heavily contaminated site has been sampled, then the equipment used to sample the site will be identified from the field log sheet. That equipment will be taken out of circulation until it can be cleaned according to DEP QA SOP Section 4.1.4.1, note 2. Furthermore, results for all other sites sampled with that equipment will be carefully examined for the offending contaminants, and if detected, will be marked as possible false positive.

[2]An acid rinse will not be required for sampling equipment during in-field decontamination unless metals- calcium, magnesium, sodium, and potassium- are detected in equipment blanks. If metals are detected, the equipment, excluding stainless steel equipment, will have to be rinsed with 10% HCl prior to rinsing with analyte-free water.

Section X. Field Performance Audits

External Audits

External audits of each sampling agency are conducted by the Department of Environmental Protection's Watershed Monitoring and Data Management Section QA Officer and/or Project Manager. A minimum of two surface water audits and one ground water audit will be performed on each contracted sampling agency, and a minimum of one surface water audit will be performed on each sub-contracted sampling agency.

These audits generally consist of an on-site review of sample custody practices, equipment decontamination procedures, purging methods for ground water sampling, field measurement techniques, and sample collection protocols (see Attachment X-1 for the Field Audit Form). Results of the audits are given to the Project Manager of the sampling agency and areas in need of improvement are noted. These areas will be documented in the quarterly QA Report, with the addition of a description of any corrective actions taken as a result. Future external audits will focus on these areas to ensure that corrective action has been taken.

Internal Audits

Internal audits of sampling agency field personnel are conducted by the sampling agency QA Officer and/or Project Manager. A minimum of one surface water audit and one ground water audit will be performed. The findings of these audits will be documented in the quarterly QA Report.

Section XI. Quality Assurance Reports

Quality Assurance Reports will be prepared by the QA Officer and/or Project Manager of the sampling agency and submitted quarterly. These reports will have a title page and include a summary of audits conducted, list of quality control samples analyzed, discussion of any significant QA problems encountered, and description of action taken to correct these problems during the quarter (see Attachment XI-1 for an example of the format). Reports will be submitted to the appropriate Project Manager at the Department of Environmental Protection's Watershed Monitoring and Data Management Section. The Project Manager will provide copies to the WM&DMS QA Officer. The WM&DMS should receive the QA Reports within 30 days after a quarter ends. The beginning month of each quarter is defined as 1st quarter October, 2nd quarter January, 3rd quarter April, and 4th quarter July. Reports are kept on file with the DEP WM&DMS for documentation of significant QA problems.

ATTACHMENT X-1

FIELD AUDIT FORM

FIELD AUDIT

STATUS AND TEMPORAL VARIABILITY MONITORING NETWORKS
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
2600 BLAIR STONE ROAD
TALLAHASSEE, FL 32399-2400
Telephone (850) 922-5820

SAMPLING AGENCY_____
PROJECT NAME_____
FIELD PERSONNEL_____
_____
_____

AUDIT TYPE: **Internal** _____ **Announced**_____ **Surface Water**_____
External_____ **Unannounced**____ **Ground Water**_____
Both SW & GW_____

AUDITOR NAME(S)_____
_____

AUDIT DATE_____ **SITE**_____

Instructions for use of this form: This form is to be used for both surface and ground water audits in the Status and Temporal Variability Networks when there are no known problems. The information requested here is the minimum needed for a successful audit, therefore all items should be completed with a "Y", "N", or n/a (not applicable). A detailed explanation should be provided in the Comments when a method deviates from what is listed in the Quality Assurance Plan #900456 and the Sampling Manual. The question number should be shown with the explanation of the deviation. Additional information can also be provided; attach more sheets if necessary.

SECTION 1
GENERAL INFORMATION

(1)	Were paperwork (labels, field sheets, and custody sheets), sample kits, acid preservatives, and equipment inventoried prior to going into the field	Y	N
(2)	Were the sampling manual and instrument service manual in field vehicle	Y	N
(3)	Were reagents, instrument calibration, and maintenance records up to date	Y	N
(4)	Was blank water analyte-free (De-ionized water), check source of water	Y	N
(5)	Was the DI water transported into the field in a polyethylene container	Y	N
(6)	Were all of the sampling equipment precleaned and cleaning log current	Y	N
(7)	Were the reagents and equipment properly stored	Y	N
(8)	What information was available to the samplers concerning sample sites:		
	(a) Maps with sample locations marked	Y	N
	(b) Field log books containing historic data	Y	N
	(c) Well tags on wells	Y	N
	(d) Reference stations at surface water sites	Y	N
	(e) DGPS Coordinates	Y	N
(9)	Were instruments calibrated or checked in the field	Y	N
(10)	Were instruments calibrated properly and bracketed expected range	Y	N

COMMENTS:

SECTION 2
FIELD PROCEDURES- GROUND WATER

(11)	Was the wellhead properly labeled	Y	N
(12)	Were well measurements taken properly	Y	N
(13)	Which one of the following pumps was used to purge the well:		
	(a) Centrifugal	Y	N
	(b) Peristaltic	Y	N
	(c) Submersible	Y	N
	(d) Dedicated pump on a well with in-place plumbing	Y	N
(14)	If purging a well without in-place plumbing, which one of the following criteria was met to ensure that the well was adequately purged:		
	(a) Three standing water volumes removed and field analytes stabilized	Y	N
	(b) Five standing water volumes removed	Y	N
	(c) Well purged dry, allowed to recover, and purged dry again	Y	N
(15)	If purging a well with in-place plumbing, which of the following was done to ensure that the well was adequately purged:		
	(a) Because of continuously running pump on well and no storage tank prior to the sample location, the valve was simply opened and allowed to flush at maximum velocity for at least 15 minutes	Y	N
	(b) Because of continuously running pump on well and a storage tank prior to the sample location, purge included entire storage tank volume	Y	N
	(c) Because purge volume could be determined, the pump was run continuously at maximum velocity until the required volume purged	Y	N
	(d) Because of unknown well construction, pump was run continuously for a minimum of 15 minutes and until chemical stability achieved	Y	N
(16)	Were the purge and rinse water disposed of properly away from the well	Y	N
(17)	If sampling a well without in-place plumbing, which of the following pumps was used:		
	(a) Peristaltic	Y	N
	(b) Submersible	Y	N
(18)	Were the sample containers rinsed with sample prior to filling	Y	N
(19)	Was a new 0.45-micron filter rinsed with sample water then used to collect the metals, anions, and nutrients samples	Y	N
(20)	Were sample containers filled in the correct order	Y	N
(21)	Were TOC, nutrients, and metals samples preserved with the appropriate acid and pH tested within 15 minutes of collection	Y	N
(22)	Were gloves and protective eyewear worn while handling acids	Y	N
(23)	Were bacteria, TOC, nutrients, and metals samples segregated into zip top baggies before placing them in the mesh bag with other samples from the site	Y	N
(24)	Were waste materials disposed of or stored properly in field	Y	N
(25)	Was the Microland Use form completed in the field	Y	N

COMMENTS:

SECTION 3
FIELD PROCEDURES- SURFACE WATER

(26)	Was the total water depth measured properly to 0.1 m	Y	N
(27)	Which of the following waterbody types was sampled:		
	(a) High order stream	Y	N
	(b) Low order stream	Y	N
	(c) Large lake	Y	N
	(d) Small lake	Y	N
(28)	If sampling at a Status Network site, were the field measurements and sample collected in the proper location within the waterbody	Y	N
(29)	Were field measurements taken at the proper depth(s)	Y	N
(30)	Was secchi depth properly determined	Y	N
(31)	If stage height was obtained, which of the following devices provided the measurement:		
	(a) Staff gauge	Y	N
	(b) Continuous recording gage	Y	N
	(c) Wire weight gage	Y	N
	(d) Tape down measurement	Y	N
	(e) USGS gaging station data source	Y	N
(32)	Was the water sample collected at the appropriate depth	Y	N
(33)	The sample was collected by which of the following methods:		
	(a) Directly into sample containers	Y	N
	(b) With a Van Dorn horizontal sampling device then into the containers	Y	N
	(c) With a Van Dorn, poured into a churn then into sample containers	Y	N
(34)	Were any sediments disturbed during the collection process	Y	N
(35)	Were the sample containers rinsed with sample water prior to filling	Y	N
(36)	If sampling at a lake site for the Status Network, were the algal growth potential and phytoplankton taxonomy analytes collected into the proper bottles	Y	N
(37)	Was a new 0.45-micron filter used to collect the orthophosphate sample	Y	N
(38)	Were sample containers filled in the proper order	Y	N
(39)	Were the nutrients and metals samples preserved properly with acid	Y	N
(40)	Were gloves and protective eyewear worn while handling preservatives	Y	N
(41)	Were the bacteria, metals, and nutrients samples segregated into zip top baggies before placing them into the mesh bag with other samples from the same site	Y	N

COMMENTS:

SECTION 4
QUALITY CONTROL SAMPLES

(42)	Were the field reference samples analyzed under field conditions	Y	N
(43)	Were the field reference sample results satisfactory	Y	N
(44)	Was an equipment blank prepared with clean equipment and analyte-free water prior to collecting a sample	Y	N
(45)	Was the equipment blank collected as if an actual sample	Y	N
(46)	Were duplicate samples taken in parallel and recorded appropriately on the field log sheet and custody sheet	Y	N

COMMENTS:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

SECTION 5
CHAIN-OF-CUSTODY

(47)	Were all the samples properly labeled	Y	N
(48)	Were all the samples from a single site put together in a mesh bag	Y	N
(49)	Were samples immediately placed on ice after collection and preservation	Y	N
(50)	Were the samples protected from melted ice in the shipping container	Y	N
(51)	Was the custody sheet completed properly, with RQ and bagged	Y	N

COMMENTS:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

SECTION 6
MISCELLANEOUS

(52)	Was sampling equipment adequately cleaned between sample sites	Y	N
(53)	In general, were the samples obtained in a reproducible manner	Y	N
(54)	Were there any anomalous conditions or deviations from usual sampling	Y	N
(55)	Was GPS used to determine site location	Y	N
(56)	Has at least one of the samplers on site attended the USGS Water Quality Field Techniques Class or DEP Status and TV Networks Sampling Workshop	Y	N
(57)	**WAS OVERALL SAMPLING PERFORMANCE ACCEPTABLE**	**Y**	**N**

COMMENTS:

SECTION 7
ADDITIONAL COMMENTS

ATTACHMENT XI-1

EXAMPLE OF QUARTERLY QUALITY ASSURANCE REPORT

QUALITY ASSURANCE REPORT FOR FDEP AMBIENT MONITORING PROGRAM

GROUND WATER AND SURFACE WATER TEMPORAL VARIABILITY AND STATUS MONITORING NETWORKS

For the Time Period:

January 1, 2000 to March 31, 2000

Water Management District

Prepared by:

John Doe
Water Management District
0000 Blair Stone Road
Tallahassee, FL 32399

John Doe
Project Manager

Date

Jane Smith
Quality Assurance Officer

Date

Internal Field Audits

One internal surface water field audit was performed by our Quality Assurance Officer during this quarter. See enclosed Field Audit Sheet.

External Field Audits

No external field audits were performed during this quarter. One external ground water audit is scheduled with FDEP QA Officer for next quarter.

Quality Control Samples

Surface Water TV Network: 3 equipment blanks and 3 duplicate samples were collected, and 3 sets of pH and specific conductance field reference samples were analyzed this quarter.

Surface Water Status Network: Sampling was not scheduled this quarter for the Status Surface Water Monitoring Network.

Ground Water TV Network: 2 equipment blanks and 2 duplicate samples were collected, and 4 sets of pH and specific conductance field reference samples were analyzed this quarter.

Ground Water Status Network: 3 equipment blanks and 3 duplicate samples were collected, and 3 sets of pH and specific conductance field reference samples were analyzed during confined aquifer sampling this quarter.

Significant QA/QC Problems

Only one problem arose. One day during the quarter, samplers forgot to bring Liquinox into the field to decontaminate the Van Dorn bottle between sample sites.

Corrective Action

Another sampling crew was able to bring Liquinox out to the crew that forgot it so that they could properly decontaminate equipment between sites and continue sampling for the remainder of the day. To eliminate this from happening in the future, a written sampling supplies checklist was developed. Both samplers go through the list to make sure their sampling vehicle is properly equipped prior to leaving for the first sample site. As a result, there have been no further incidents.

ATTACHMENT G

INSTRUCTIONS FOR SAMPLE SHIPMENT

1. Sample analysis for the Department of Environmental Protection's (DEP) Watershed Monitoring Section (WMS – formerly known as the Ground Water Quality Monitoring Program (GWQMP)) is currently being done by the DEP Central Laboratory in Tallahassee, so all sample containers will be returned to this lab.

2. A copy of the **custody sheet** must be included **in each cooler**. At the end of the day, tape the custody sheets in ziplocks to the inner top of the coolers. It is best to line the inside of the cooler with a large garbage bag prior to loading it up with ice. Also, if the cooler has a spigot, place duct tape over it to prevent it from opening during transit and spilling ice water.

3. It is not necessary to ship every day. If samples are held overnight, it is imperative they remain at a temperature of 4 degrees Celsius. Samples should not be shipped on Friday.

4. Sampling equipment will be shipped from the DEP Central Laboratory to the sampling agency via United Parcel Service (UPS), no later than one week prior to the project begin date.

5. Each DEP shipment will contain sample containers appropriate for the scheduled analyses and sufficient coolers for return shipment.

6. Field custody sheets, field log sheets, barcode labels, and container inventories will be provided by DEP Watershed Monitoring Subsection staff.

7. Preservatives will be provided by the DEP Watershed Monitoring Subsection in advance of sampling.

8. Federal Express (FEDEX) will be utilized for return shipment of samples to the DEP Central Laboratory. The DEP laboratory and/or WMS staff will provide FEDEX airbills to sampling agencies for use in returning water quality samples to the DEP Central Laboratory. These airbills will be pre-printed with DEP's FEDEX account number, so that all shipping costs are directed back to DEP.

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ATTACHMENT H
REQUIRED ELECTRONIC FORMAT

Florida Department of Environmental Protection Status and Trend Monitoring Networks

From Field Sample Database Data Dictionary Version 2.1

Required Field Measurements - Surface Water

MEASUREMENT[1]	UNITS	STORET CODE
Water Temperature, field	°C	00010
pH, field	Std. units	00406
Specific Conductance @ 25 C, field[2]	µmho/cm @ 25°C	00094
Salinity[2]	parts/thousand	00480
Dissolved Oxygen, field	milligrams/L	00299
Secchi Depth (transparency)[3]	Meters	00078
Total Depth @ Sampling Site[4]	Meters	82903
Stream Stage[5]	Feet	00065
Sample Depth	Meters	90068

[1] = Measurements which are not taken, but required, should be listed as zero values with the 'O' value qualifier.
[2] = Specific Conductance will be reported for fresh waters and salinity will be reported for saline waters.
[3] = If disc is visible on bottom of water body the value reported should be '>' + the value of the total depth with the 'L' value qualifier.
[4] = If sampling done from a fixed point.
[5] = Surface water temporal variability sites only, where available.

Required Field Measurements - Ground Water

MEASUREMENT[1]	UNITS	STORET CODE
pH, field	Std. units	00406
Specific Conductance @ 25 C, field	UMHOS/CM @ 25°C	00094
Water Temperature, field	°C	00010
Dissolved Oxygen, field	milligrams/L	00299
Depth to Water from Measuring Pt.	Feet	72109
Elevation of Measuring Pt.	Feet above or below NGVD	82514
Microlanduse[2]	NA	84147

[1] = Once per year at temporal variability sites.

All sample data will be transferred to the Department by the Contractor in Trimble SSF data files, or in the structures below. Equivalent convertible electronic spreadsheet files are acceptable.

Acceptable File Transfer Formats

DBF Format:

NAME	TYPE	TOTAL CHARACTERS OR DIGITS	DECIMAL DIGITS
STATION	CHARACTER	25	N/A
PARAM_CODE	NUMERIC	5	0
PARAM_NAME	CHARACTER	40	N/A
TEXT_VALUE	CHARACTER	11	N/A
VAL_QUAL	CHARACTER	5	N/A
SAMP_DATE	CHARACTER	8	N/A
SAMP_TIME	CHARACTER	4	N/A
SAMP_SEQ	CHARACTER	2	N/A
SAMP_TYPE	CHARACTER	1	N/A
PROJECT	CHARACTER	30	N/A
COMMENT	CHARACTER	80	N/A

MS Excel © format:

NAME	TYPE	TOTAL CHARACTERS OR DIGITS	DECIMAL DIGITS
STATION	TEXT*	25	N/A
PARAM_CODE	NUMERIC	5	0
PARAM_NAME	TEXT	40	N/A
TEXT_VALUE	TEXT	11	N/A
VAL_QUAL	TEXT	5	N/A
SAMP_DATE	TEXT	8	N/A
SAMP_TIME	TEXT	4	N/A
SAMP_SEQ	TEXT	2	N/A
PROJECT	TEXT	30	N/A
COMMENT	TEXT	80	N/A

* = All text columns will be left justified

Please refer to the Watershed Monitoring Section's (WMS) Field Database Data Dictionary Version 2.0 for data element definitions.

FORMAT FOR WMS **STATION DATA** :

NAME	TYPE	TOTAL CHARACTERS OR DIGITS	DECIMAL DIGITS
*STATION_ID	CHARACTER	16	N/A
*STATION	CHARACTER	25	N/A
ALIAS_ID	CHARACTER	50	N/A
* COUNTYNAME	CHARACTER	20	N/A
*AGENCYCODE	CHARACTER	4	N/A
*USGS_HYDRO	CHARACTER	8	N/A
*WB_TYPE	CHARACTER	30	N/A
*WATERBODY	CHARACTER	40	N/A
*LATITUDE	CHARACTER	10	N/A
*LONGITUDE	CHARACTER	10	N/A
*LOC_METHOD	CHARACTER	4	N/A
*LOC_DATUM	CHARACTER	1	N/A
COMMENT1	CHARACTER	80	N/A
COMMENT2	CHARACTER	80	N/A
COMMENT3	CHARACTER	80	N/A

An asterisk(*) in front of a field name indicates that the field is required for data transfer.

Explanations of each of the above fields are available in the *Watershed Monitoring Section Data Management Standard Operating Procedures And Data Dictionaries* document.

ACCEPTABLE MAGNETIC MEDIA FOR
GWIS DATA EXCHANGE:

1. *Floppy diskettes:*
   MS DOS format
   1.44 megabyte 3 1/2 inch

2. *Iomega 100 Megabyte Zip disks*

3. *650 / 700 Megabyte CD-ROM disks*

Data transfer via FTP or e-mail attachment is also acceptable.

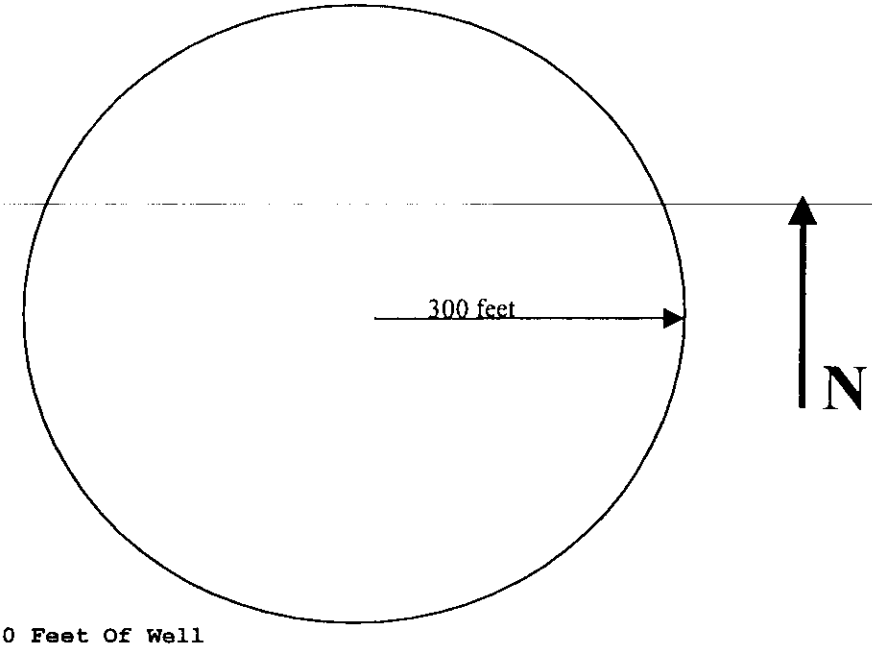
ATTACHMENT I

FLORIDA AMBIENT MONITORING NETWORK
FEATURES & MICRO LAND USE SHEET

Station ID

Station Name

Date



Major Land Use Group
(Check one)

__ Low Impact (LI)
__ Mining/Excavation (ME)
__ Urban/Suburban (US)
__ Intense Agriculture (AG)
__ Industrial (IN)

Check All Features Observed Within 300 Feet Of Well

___(47) Agri. Chemical Mixing/Storage
___(02) Airports
___(52) Animal Feeding Operation
___(10) Borrow Pit
___(21) Canal(s)
___(40) Cave(s)
___(03) Cemetery
___(51) Crops, Field
___(50) Crops, Row
___(22) Ditch, Drainage
___(37) Ditch, Irrigation
___(55) Drycleaners
___(41) Food Processing Plant
___(12) Golf Course
___(48) Groves, Citrus
___(49) Groves, Other
___(23) Holding Pond(s), Industrial
___(24) Holding Pond(s), Urban
___(45) Hospitals/Clinics
___(35) Junk Yard
___(53) Kennel(s)
___(25) Lake(s)
___(04) Landfill
___(11) Mine
___(43) Mineral Processing Plant
___(01) Nursery/Greenhouse
___(20) Parking Lot(s)
___(44) Petroleum Processing Plant
___(17) Pipeline(s) & Pump Station
___(46) Power Plant
___(18) Railroad(s)
___(06) Repair Shops (e.g. Automotive)
___(05) Residence
___(26) River
___(16) Roads, Major Highway
___(36) Roads, Other
___(13) Septic Tank(s)
___(07) Service Station
___(14) Sewage Treatment Plant
___(15) Sewage Treatment Sprayfield
___(39) Sinks/Sinkholes
___(27) Spring(s)
___(08) Storage Tanks (Above Ground)
___(09) Storage Tanks (Below Ground)
___(38) Stream(s)
___(42) Timber Processing Plant
___(19) Transmission Lines and Towers
___(29) Water Softener
___(30) Well(s), Injection
___(31) Well(s), Irrigation
___(32) Well(s), Oil & Gas
___(33) Well(s), Private Supply
___(34) Well(s), Public Supply
___(28) Wetland(s)
___(54) Zoos

Comments or other unlisted features

WMS-MCLU
October 1999

ATTACHMENT J

*GLOBAL POSITIONING SYSTEM (GPS) STANDARDS**

Introduction

In 1995, the DEP Division of Water Facilities purchased 22 Trimble GPS units at a cost of over $11,000 each. These units are capable of collecting data in several different ways that produce different levels of accuracy. GPS locational data has also been collected using other brands and models of GPS units. Simply stating that locational data was collected with a GPS unit does not give the user enough information to use the data to its fullest potential. It has become apparent that consistency is needed and it would be desirable to develop some standards for the use of GPS equipment to maintain the utility of any data collected. As the technology progresses, highly accurate data is becoming easier to achieve. As more local governments obtain parcel maps, the need for our data to be accurate increases. There is a wide variety of GPS activities in the Department, therefore according to the Department GPS Standards, each program is required to adopt specific operational procedures.

The following operational procedures have been adopted by the DEP Division of Water Facilities. These procedures were developed by a committee, composed of representatives from each of the Bureaus, which included a wide variety of users of both GPS data and the GPS equipment.

This document refers to GPS locational data only.

Definition of terms:

Resultant Accuracy-the accuracy of a position, line or area feature that includes a combination of error caused by GPS data collection, human error, and error introduced by datum conversion (X percentage of time the position is within Y meters of truth).

PDOP- Position Dilution of Precision, refers to a measure of the geometry of the satellites in the sky. A low PDOP means that the satellites are oriented in such a way to give you a good (accurate) position.

* Condensed from the DEP Division of Water Facilities' *Global Positioning System Standards* document

GPS- Global Positioning System, refers to method of obtaining accurate latitude and longitude information using Department of Defense Satellites.

GPS Locational Data- Data that was collected using a GPS unit, specified with a minimum accuracy of 12.2 meters for the purposes of this document (5.0 meters for data collected for the Ambient Monitoring Program).

GIS- Geographic Information Systems; refers to a variety of software and hardware that have the ability to display, store, analyze and output geographically referenced spatial data.

Point feature- Anything that can be represented as a point on a map, e.g., well, valve, manhole covers.

Line feature- Anything that can be represented as a line on a map, e.g., roads, pipes, boundaries.

Area feature- Anything that can be represented as a polygon with area on a map, e.g., wetlands, ponds, buildings.

Requirements:

Accuracy Standards

The accuracy standard for GPS data collection for the Ambient Monitoring Program shall be 5 meters.

Methodology/Equipment

Recognizing that these accuracy standards can be met using different equipment, there is no standard make or model of GPS equipment that must be used. However, several requirements for equipment must be followed:

1) Real-time collection method, being more cost and time effective, shall be used whenever possible. Post processing of GPS data is acceptable when signal deficiencies prohibit real time differential correction. As technology improves, other methods may be assessed and added to this document.[1]

2) The GPS receiver used shall have a minimum of eight channels.

[1] If selective availability is eliminated, accuracy of non-differentially corrected data will need to be reassessed.

3) The Division reserves the authority to test the validity of accuracy of all GPS equipment used to collect GPS locational data for the Division.

4) Every effort shall be made to use the GPS equipment to its fullest capability where feasible.

5) All equipment shall have: a signal to noise ratio filter, PDOP filter, Elevation mask filter, and shall be able to average the required minimum number of positions to create a point feature.

Collecting point features

There are three different ways to collect the data necessary to describe a point feature:

1) Data collected at the location;

2) Data collected off of the location, adjusted for offset;

3) Data collected off of the location, not adjusted for offset (not to exceed program specified limits).

Offsets in Point features:

Offsets should only be considered when collecting data that is further than 5 meters from the actual feature. Offsets shall be made using a tape measure and compass, keeping in mind that compass accuracy is dependent on large metal objects and power lines. A maximum distance of 25 meters should not be exceeded without the use of additional equipment such as an inclinometer, laser or optical range finder. Vertical distance measurements and or inclination may be estimated when offset is under 25 meters. All horizontal distances shall be measured.

All offset measurements with electronic devices must be made twice. This only takes seconds and provides an acceptable basis of comparison or error check. Laser or optical range finders are fast and very accurate when used correctly, but can often miss their target. By their nature, these instruments require a very good aim.

The list above is the order in which data collection is preferred. For example, collecting data at the location is the most desirable. If this is not possible, use an offset feature of the equipment and make the correction. The third option is the

last choice and is not desirable, but it is understood that it may be the only option in some cases. All of these scenarios must have the resultant accuracy of the data within 5 meters.

Operational Procedures:

Training

Proper training and maintenance of equipment is vital to the quality of the data. Annual training is necessary to keep GPS skills current. A training and certification program should be established to insure all users of GPS are competently trained. In support of this, the Division of Water Facilities has a GPS Coordinator to oversee that the above requirements can and will be met.

Navigation

If it is desirable to navigate back to a point feature, it is recommended that height above ellipsoid (HAE) be recorded for each point. This field is intrinsic in most files created when the original GPS data is collected by the unit.

Minimum Settings

All GPS units used to collect data for the DEP Division of Water Facilities should be configured with the following minimum settings:

PDOP <6.0
Signal-To-Noise Ratio >6.0
Elevation mask 15°
Minimum positions ≥25
Minimum of 4 satellites
1 second Logging interval of point features
Coordinate system must be latitude/longitude

Maintenance of raw data

The following fields should be maintained in raw data files. These areas should be addressed in storing and the retrieval of GPS data:

Accuracy
Latitude/Longitude
Datum (recommend WGS 84*)
Height Above Ellipsoid (Necessary for accurate navigation)

~~The only way to assure the effective storage of this data is to archive the raw~~ data files. Archival copies of the original GPS data collected from the unit shall be maintained, and provided to DEP Ambient Monitoring Section along with other field data collected for the Program.

The standard datum for GPS locational data shall be WGS 84. Conversions shall not be made to the archival copies because they will introduce error.

Quality Assurance and Quality Control

Quality control can be accomplished by periodic point feature collection of high accuracy survey marks. Six month intervals and no more than 5 meters deviation from such survey point are recommended.

Quality control can be accomplished by the collection of duplicate point features of a given high accuracy survey mark. The deviation between points shall be no more than 2.5 meters.

Additional Comments:

Trimble GPS units will be available on temporary loan to Contractors who do not have access to appropriate GPS hardware. Training in the use of these units will be provided by DEP for Ambient Program contract staff.

Technical support / questions regarding the above requirements, equipment loans and training for the Ambient Monitoring Program should be directed to:

Primary contact: ***Andy Roach*, (850) 921-9923; SUNCOM 291-9923;**
Andrew.Roach@dep.state.fl.us

Secondary contact: **Tom Biernacki, (850) 921-9595; SUNCOM 291-9595;**
Thomas.Biernacki@dep.state.fl.us

EXHIBIT 1 – *Status Network Sampling Index Periods*

Month	Confined Aquifer		Unconfined Aquifer		Low Order Streams or Small Streams		High Order Streams or Large Rivers		Small Lakes		Large Lakes		Total Number of Samples *
	N	P	N	P	N	P	N	P	N	P	N	P	
January	20	30											50
February	20	30											50
March	20	30							30				80
April				45	30				30				105
May				45	30			45					120
June			30					45			30		105
July			30				30			45	30		135
August						45	30			45			120
September						45							45
October												45	45
November												45	45
December													0

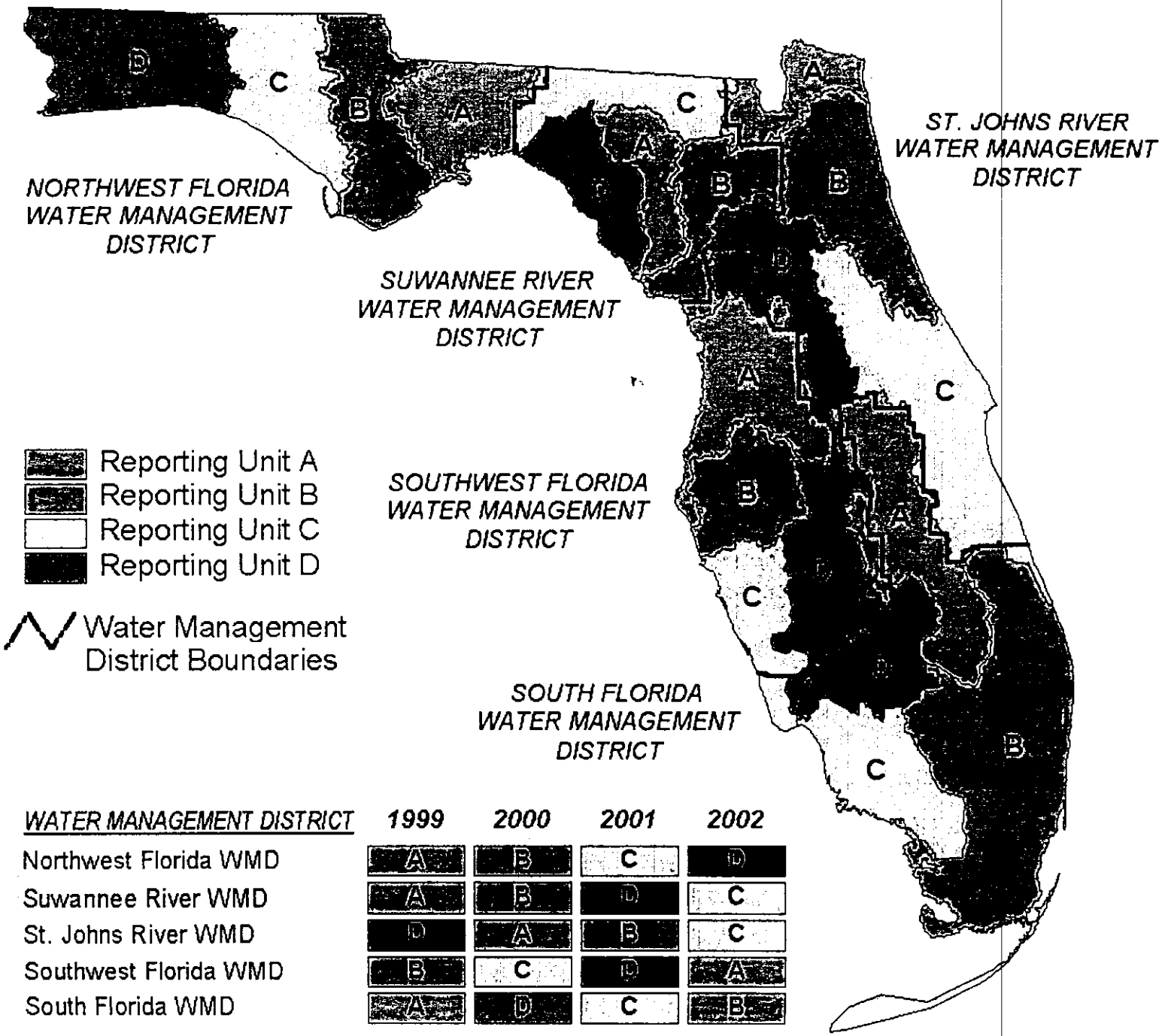
N = North Florida (NWFWMD, SRWMD); **P** = Peninsular Florida (SJRWMD, SWFWMD, SFWMD)

Primary Index Period

Overflow Index Period

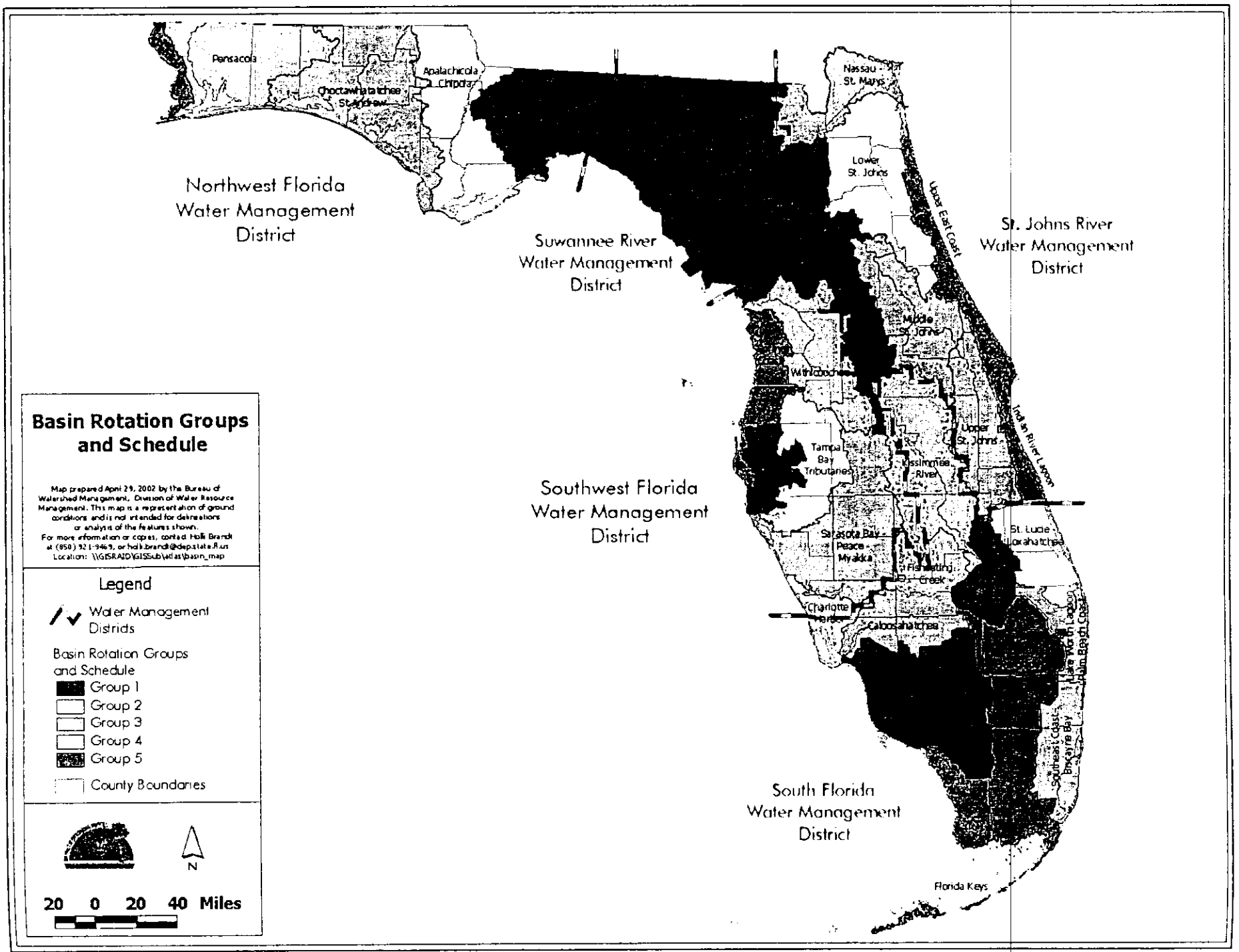
* Total does not include QA samples

EXHIBIT 2 – *Status Network Reporting Units*



WATER MANAGEMENT DISTRICT	1999	2000	2001	2002
Northwest Florida WMD	A	B	C	D
Suwannee River WMD	A	B	D	C
St. Johns River WMD	D	A	B	C
Southwest Florida WMD	B	C	D	A
South Florida WMD	A	D	C	B

EXHIBIT 3 – *Watershed Monitoring Basins*



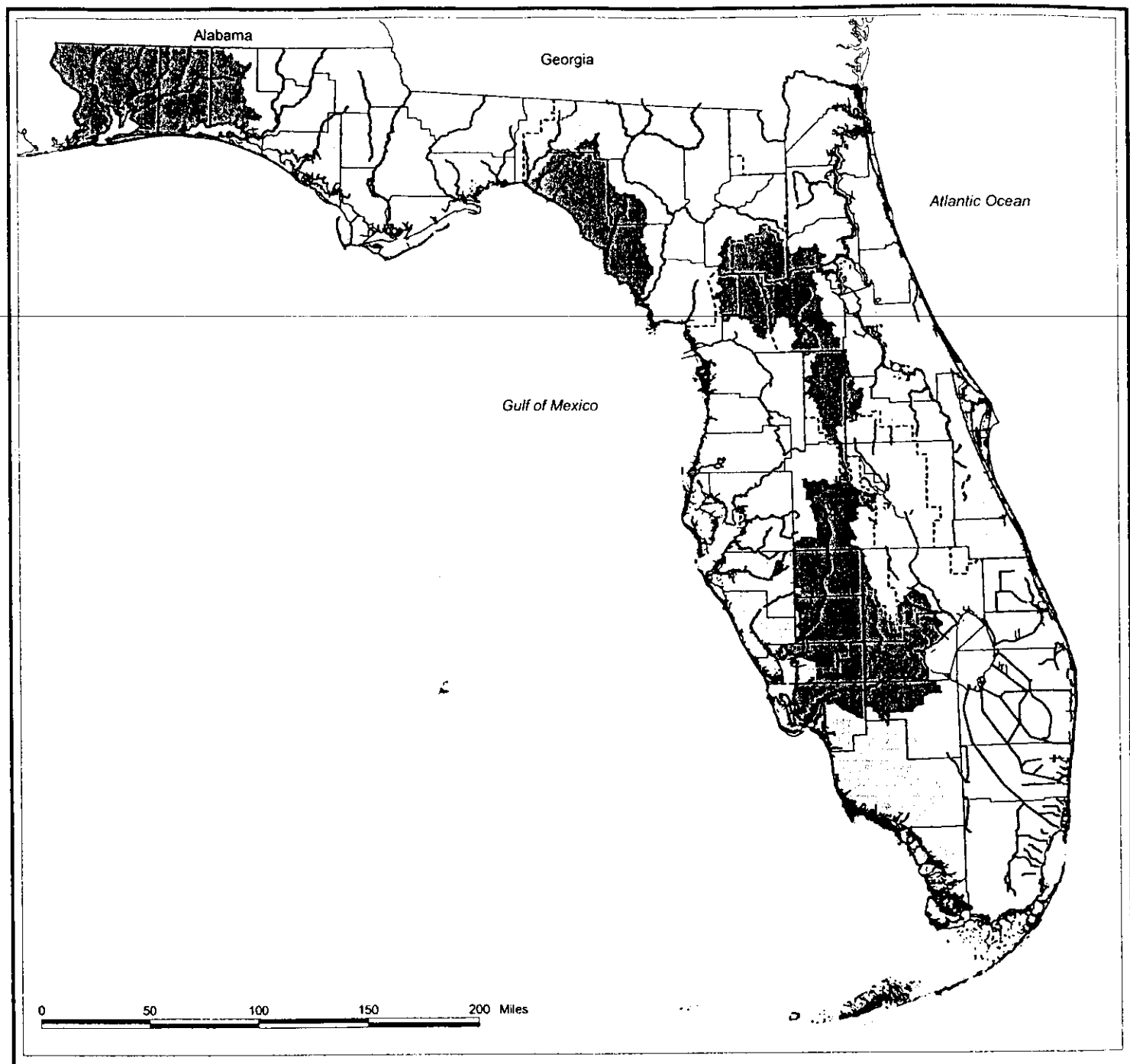


Exhibit 4. Large Rivers and Canals

This map is for display purposes only, not for analysis. April 26, 2002
Contact (850) 922-2804 Divison of Water Resource Management
Bureau of Watershed Management , GIS section for more details.

N

KEY

WMS Tier 1 Status Network Reporting Units
- A
- B
- C
- D

Hydrography

Florida Counties with Shoreline

Water Management Districts

EXHIBIT "M"

C-13805

DEP AGREEMENT NO. G0029

STATE OF FLORIDA
GRANT AGREEMENT
PURSUANT TO
ENVIRONMENTAL PROTECTION AGENCY GRANT AWARD(S)

THIS AGREEMENT is entered into between the STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, whose address is 3900 Commonwealth Boulevard, Tallahassee, Florida 32399 (hereinafter referred to as the "Department" or "DEP") and the SOUTH FLORIDA WATER MANAGEMENT DISTRICT, whose address is 3301 Gun Club Road, West Palm Beach, Florida 33406 (hereinafter referred to as "Grantee" or "Recipient"), a political subdivision of the State of Florida, to perform sampling of the surface water temporal variability network in the South Florida Water Management District area.

WHEREAS, the Department has received Clean Water Act Section 604(b) grant funds (CFDA 66.419) from the U.S. Environmental Protection Agency (EPA) for surface water programs in the State of Florida; and,

WHEREAS, the Department desires to use funds from the above grant to obtain sampling of the surface water temporal variability network in the water management district managed by the Grantee; and,

WHEREAS, the Grantee has agreed to provide the services needed for sampling of the surface water temporal variability network in its district; and,

WHEREAS, the Grantee is responsible for complying with the appropriate federal guidelines in performance of its activities pursuant to this Agreement.

NOW, THEREFORE, in consideration of the premises and the mutual benefits to be derived herefrom, the Department and the Grantee do hereby agree as follows:

1. The Grantee does hereby agree to perform in accordance with the terms and conditions set forth in this Agreement, **Attachment A** (Project Work Plan), and all attachments and exhibits named herein which are attached hereto and incorporated by reference. For purposes of this Agreement, the terms "Contract" and "Agreement" and the terms "Grantee", "Recipient" and "Contractor", are used interchangeably.

2. This Agreement shall begin October 1, 2002 or the date of execution, whichever date is later, and shall remain in effect until October 31, 2003, by which date all requirements shall have been completed. This Agreement may be renewed for a maximum of three additional years after the initial Agreement period. Renewal shall be in writing and subject to the same terms and conditions of this Agreement. All renewals are contingent upon satisfactory performance by the Grantee and the availability of funds. This Agreement may be amended to provide for additional services if additional funding is made available by EPA and/or the Legislature.

3. A. As consideration for the services rendered by the Grantee under the terms of this Agreement, the Department shall pay the Grantee on a combination fee schedule/cost reimbursement basis in an amount not to exceed $50,999.32 toward the total project cost described in **Attachment A.**

   B. The Grantee shall be compensated on a fee schedule/cost reimbursement basis for all eligible project costs upon receipt and acceptance of an invoice which contains the information requested in the Sample Payment Request Summary Form (provided as **Attachment B**). For cost reimbursement activities, in addition to the summary form, the Grantee must provide from its accounting system, a listing of expenditures charged against this Agreement. The listing shall include, at a minimum, a description of the goods or services purchased, date of the transaction, voucher number, amount paid, and vendor name.

Travel expenses are included in the fee schedule amount of this Agreement, and no additional travel expenses shall be authorized.

C. In addition to the invoicing requirements contained in paragraph 3.B. above, the Department will periodically request proof of a transaction (invoice, payroll register, etc.) to evaluate the appropriateness of costs to the Agreement pursuant to State and Federal guidelines (including cost allocation guidelines), as appropriate. This information, when requested, must be provided within 30 calendar days of such request. The Grantee may also be required to submit a cost allocation plan to the Department in support of its multipliers (overhead, indirect, general administrative costs, and fringe benefits). All bills for amounts due under this Agreement shall be submitted in detail sufficient for a proper pre-audit and post-audit thereof. Allowable costs for Federal Programs can be found under 48 CFR Part 31 at http://www.access.gpo.gov/nara/cfr/cfr-table-earch.html and OMB Circulars A-87, A-122, A-21, at http://www.whitehouse.gov/omb/circulars/index.html#numerical.

D. The parties hereto understand and agree that this Agreement does not require a cost sharing or match on the part of the Grantee.

E. Allowable costs will be determined in accordance with the cost principles applicable to the organization incurring the costs. For purposes of this Agreement, the following cost principles are incorporated by reference.

Organization Type	Applicable Cost Principles
State, local or Indian tribal government.	OMB Circular A-87
Private non-profit organization other than an (1) institution of higher education, (2) hospital, or (3) organization named in OMB Circular A-122 as not subject to that circular.	OMB Circular A-122
Education Institutions	OMB Circular A-21
For-profit organization other than a hospital and an organization named in OMB A-122 as not subject to that circular.	48 CFR Part 31, Contract Cost Principles and Procedures, or uniform cost accounting standards that comply with cost principles acceptable to the federal agency.

F. The table below identifies the funding supporting this Agreement and EPA Grants providing the funds.

EPA Grant Number	CFDA	Program Title	Funding Amount
60403	66.419	Water Pollution Control State and Interstate Program Support	$50,999.32
		Total Funding:	$50,999.32

4. The State of Florida's performance and obligation to pay under this Agreement is contingent upon an annual appropriation by the Legislature. The parties hereto understand that this Agreement is not a commitment of future appropriations.

5. A. The Grantee shall submit quarterly invoices in conjunction with quarterly progress reports. The Grantee's quarterly progress reports shall contain the information requested in the Sample Progress Reporting Form, attached hereto and made a part hereof as **Attachment C.** Quarterly reports shall be submitted to the Department's Grant Manager no later than twenty (20) days following the completion of the quarterly reporting period. It is hereby understood and agreed by the parties that the term "quarterly" shall reflect the calendar quarters ending March 31, June 30, September 30 and December 31. The Department's Grant Manager shall have ten (10) calendar days to review deliverables submitted by the Grantee.

B. The Grantee agrees to comply with the requirements of EPA's Program for Utilization of Small, Minority, and Women's Business Enterprises in procurement under this Agreement.

1. The Grantee accepts the Minority Business Enterprise/Women's Business Enterprise (MBE/WBE) "fair Share" goals and objectives negotiated with EPA as follows:

Florida Fair Share Goals	
Industry	Goal
SRF Construction (both SRFs)	11% MBE and 3% WBE
Architectural & Engineering Services	10% MBE and 15% WBE
Commodities	7% MBE and 17% WBE
Contractual Services	14% MBE and 36% WBE
Construction (non SRF)	10% MBE and 11% WBE

2. If the Grantee does not want to rely on the applicable State's MBE/WBE goals, the Grantee agrees to submit proposed MBE/WBE goals based on availability of qualified minority and women-owned business to do work in the relevant market for construction, services, supplies and equipment. "Fair Share" objectives must be submitted to the EPA Grants Management Office, 61 Forsyth Street, Atlanta, GA 30303 within thirty (30) calendar days of award and approved by EPA no later than thirty (30) calendar days thereafter. Copies of all correspondence with EPA shall also be forwarded to the Department's Grant Manager.

3. The Grantee agrees to ensure, to the fullest extent possible, that at least the applicable "fair share" objectives of Federal funds for prime contracts or subcontracts for supplies, construction, equipment or services are made available to organizations owned or controlled by socially and economically disadvantaged individuals, women and Historically Black Colleges and Universities.

4. The Grantee agrees to include in its bid documents the applicable "fair share" objectives and require all of its prime contractors to include in their bid documents for subcontracts the negotiated "fair share" percentages.

5. The Grantee agrees to follow the six affirmative steps or positive efforts stated in 40 C.F.R. 30.44(b), 40 C.F.R. 31.36(e), or 40 C.F.R. 35.6580, as appropriate, and retain records documenting compliance.

6. The Grantee agrees to submit a report documenting MBE/WBE utilization under federal grants in conjunction with the required quarterly progress report (see paragraph 5.A).

7. If race and/or gender neutral efforts prove inadequate to achieve a "fair share" objective, the Grantee agrees to notify the Department and EPA in advance of any race and/or gender conscious action it plans to take to more closely achieve the "fair share" objective.

8. In accordance with Section 129 of Public Law 100-590, the Small Business Administration Reauthorization and Amendment Act of 1988, the recipient agrees to utilize and to encourage any prime contractors under this Agreement to utilize small businesses located in rural areas to the maximum extent possible. The Grantee agrees to follow the six affirmative steps stated in 40 C.F.R. 30.44(b), 40 C.F.R. 31.36, or 40 C.F.R. 35.6580, as appropriate, in the award of any contracts under this Agreement.

C. Pursuant to EPA Order 1000.25, dated January 24, 1990, the recipient agrees to use recycled paper for all reports which are prepared as a part of this Agreement and delivered to the Department. This requirement does not apply to reports which are prepared on forms supplied by EPA. This requirement applies even when the cost of recycled paper is higher than that of virgin paper.

D. The following language shall be included in all final documents issued as a result of an agreement funded in whole or in part by federal sources to acknowledge the federal government's participation in the project.

> "This project and the preparation of this report (or booklet, pamphlet, etc as appropriate) was funded in part by a Water Pollution Control State and Interstate Program Support grant from the Environmental Protection Agency through an agreement/contract with the Watershed Monitoring and Data Management Section of the Florida Department of Environmental Protection. The total cost of the project was _____, of which $_____ or __ percent was provided by the Environmental Protection Agency."

6. Each party hereto agrees that it shall be solely responsible for the negligent or wrongful acts of its employees and agents. However, nothing contained herein shall constitute a waiver by either party of its sovereign immunity or the provisions of Section 768.28, Florida Statutes.

7. A. This Agreement may be terminated in whole or in part in writing by either party in the event of substantial failure by the other party to fulfill its obligations under this Agreement through no fault of the terminating party, provided that no termination may be effected unless the other party is given: (1) not less than thirty (30) calendar days' written notice (delivered by Certified Mail, return receipt requested) of intent to terminate and (2) an opportunity for consultation with the terminating party prior to termination.

B. This Agreement may be terminated in whole or in part in writing by either party for its convenience, provided that the other party is given: (1) not less than ten (10) calendar days' written notice (delivered by Certified Mail, return receipt requested) of intent to terminate, and (2) an opportunity for consultation with the terminating party prior to termination.

C. The parties hereto may agree to terminate this Agreement for convenience as evidenced by written amendment of this Agreement. The amendment shall establish the effective date of the termination and the procedures for proper closeout of the Agreement.

D. This Agreement may be unilaterally canceled by the Department for refusal by the Grantee to allow public access to all documents, papers, letters, or other material made or received by the Grantee in conjunction with this Agreement, unless the records are exempt from Section 24(a) of Article I of the State Constitution and Section 119.07(1), Florida Statutes.

8. If the Grantee materially fails to comply with the terms and conditions of this Agreement, including any Federal or State statutes, rules or regulations, applicable to this Agreement, the Department may take one or more of the following actions, as appropriate for the circumstances.

A. Temporarily withhold cash payments pending correction of the deficiency by the Grantee.

B. Disallow (that is, deny both use of funds and any applicable matching credit for) all or part of the cost of the activity or action not in compliance.

C. Wholly or partly suspend or terminate this Agreement.

D. Withhold further awards for the project or program.

E. Take other remedies that may be legally available.

F. Costs of the Grantee resulting from obligations incurred by the Grantee during a suspension or after termination of the Agreement are not allowable unless the Department expressly authorizes them in the

notice of suspension or termination. Other Grantee costs during suspension or after termination which are necessary and not reasonably avoidable are allowable if the following apply.

1. The costs result from obligations which were properly incurred by the recipient before the effective date of suspension or termination, are not in anticipation of it, and in the case of termination, are noncancellable.

2. The cost would be allowable if the Agreement were not suspended or expired normally at the end of the funding period in which the termination takes place.

G. The remedies identified above, do not preclude the Grantee from being subject to debarment and suspension under Executive Orders 12549 and 12689.

9. A. The Grantee shall maintain books, records and documents directly pertinent to performance under this Agreement in accordance with generally accepted accounting principles consistently applied. The Department, the State, or their authorized representatives shall have access to such records for audit purposes during the term of this Agreement and for five years following Agreement completion. In the event any work is subgranted or subcontracted, the Grantee shall similarly require each subgrantee and subcontractor to maintain and allow access to such records for audit purposes.

B. The Grantee agrees that if any litigation, claim, or audit is started before the expiration of the record retention period established above, the records shall be retained until all litigation, claims or audit findings involving the records have been resolved and final action taken.

C. Records for real property and equipment acquired with Federal funds shall be retained for five years following final disposition.

10. In addition to the provisions contained in paragraph 9 above, the Grantee shall comply with the applicable provisions contained in **Attachment D**. A revised copy of **Attachment D**, Exhibit-1, must be provided to the Grantee with each amendment which authorizes a funding increase or decrease. The revised Exhibit-1 shall summarize the funding sources supporting the Agreement for purposes of assisting the Grantee in complying with the requirements of **Attachment D**. If the Grantee fails to receive a revised copy of **Attachment D**, Exhibit-1, the Grantee shall notify the Grants Development and Review Manager to request a copy of the updated information.

11. A. The Grantee is hereby authorized to enter into contracts with Broward, Dade, Lee and Collier Counties in the performance of services under this Agreement. For purposes of this Agreement, all sample analysis will be performed by the DEP Central Laboratory under separate agreement with the DEP's Ambient Monitoring Section. The Grantee shall not subcontract work under this Agreement with any entity other than those specified herein, without the prior written consent of the Department's Grant Manager. When applicable, and upon receipt of such consent in writing, the Grantee shall cause the names of the firms responsible for such portions of the work to appear on such work. The Grantee agrees to be responsible for the fulfillment of all work elements included in any subcontract and agrees to be responsible for the payment of all monies due under any subcontract. It is understood and agreed by the Grantee that the Department shall not be liable to any subcontractor for any expenses or liabilities incurred under the subcontract and that the Grantee shall be solely liable to the subcontractor for all expenses and liabilities incurred under the subcontract.

B. The Department of Environmental Protection supports diversity in its procurement program and requests that all subcontracting opportunities afforded by this Agreement embrace diversity enthusiastically. The award of subcontracts should reflect the full diversity of the citizens of the State of Florida. The Department will be glad to furnish a list of minority owned businesses for consideration in subcontracting opportunities.

12. A. The Grantee certifies that no Federal appropriated funds have been paid or will be paid, on or after December 22, 1989, by or on behalf of the Grantee, to any person for influencing or attempting to

influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress, in connection with the awarding, renewal, amending or modifying of any Federal contract, grant, or cooperative agreement. If any non-Federal funds are used for lobbying activities as described above, the Grantee shall submit **Attachment E**, Standard Form-LLL, "Disclosure of Lobbying Activities" (attached hereto and made a part hereof), and shall file quarterly updates of any material changes. The Grantee shall require the language of this certification to be included in all subcontracts, and all subcontractors shall certify and disclose accordingly. **[40 CFR 34]**

B. In accordance with Section 216.347, Florida Statutes, the Grantee is hereby prohibited from using funds provided by this Agreement for the purpose of lobbying the Legislature, the judicial branch or a state agency.

C. Pursuant to the Lobbying Disclosure Act of 1995, any organization described in Section 501(c)4 of the Internal Revenue Code of 1986 shall not be eligible for subgrants under this Agreement, unless such organization warrants that it does not, and will not, engage in lobbying activities prohibited by the Act as a special condition of the subgrant. This restriction does not apply to loans made pursuant to approved revolving loan programs or to contracts awarded using proper procurement procedures.

13. The Grantee shall comply with all applicable federal, state and local rules and regulations in performing under this Agreement. The Grantee acknowledges that this requirement includes compliance with all applicable federal, state and local health and safety rules and regulations. The Grantee further agrees to include this provision in all subcontracts issued as a result of this Agreement.

14. The Department's Grant Manager (which may also be referred to as the Department's Project Manager) for this Agreement is identified below.

Tracy Wade	
Florida Department of Environmental Protection	
Watershed Monitoring and Data Management	
2600 Blair Stone Road, MS 3525	
Tallahassee, Florida 32399-2400	
Telephone No.:	850/245-8516
SunCom No.:	205-8516
Fax No.:	850/245-8554
SunCom Fax No.:	205-8554
E-mail Address:	tracy.wade@dep.state.fl.us

15. The Grantee's Grant Manager (which may also be referred to as the Grantee's Project Manager) for this Agreement is identified below.

Carole Maddox	
South Florida Water Management District	
8894 Belvedere Road	
West Palm Beach, Florida 33411	
Telephone No.:	561/753-2400, ext. 4758
Fax No.:	561/791-4094
E-mail Address:	cmillima@sfwmd.gov

16. To the extent required by law, the Grantee will be self-insured against, or will secure and maintain during the life of this Agreement, Workers' Compensation Insurance for all of his employees connected with the work of this project and, in case any work is subcontracted, the Grantee shall require the subcontractor similarly to provide Workers' Compensation Insurance for all of the latter's employees unless such employees are covered by the protection afforded by the Grantee. Such self-insurance program or insurance coverage shall comply fully with the Florida Workers' Compensation law. In case any class of employees engaged in hazardous work under this

Agreement is not protected under Workers' Compensation statutes, the Grantee shall provide, and cause each subcontractor to provide, adequate insurance satisfactory to the Department, for the protection of his employees not otherwise protected.

17. The Grantee warrants and represents that it is self-funded for liability insurance, appropriate and allowable under Florida law, and that such self-insurance offers protection applicable to the Grantee's officers, employees, servants and agents while acting within the scope of their employment with the Grantee.

18. The Grantee covenants that it presently has no interest and shall not acquire any interest which would conflict in any manner or degree with the performance of services required.

19. Upon satisfactory completion of this Agreement, the Grantee may retain ownership of the equipment purchased under this Agreement. However, the Grantee shall complete and sign a Property Reporting Form, provided as **Attachment F**, and forward it along with the appropriate invoice to the Department's Grant Manager. The following terms shall apply:

    A. The Grantee shall have use of the equipment for the authorized purposes of the contractual arrangement as long as the required work is being performed.

    B. The Grantee is responsible for the implementation of adequate maintenance procedures to keep the equipment in good operating condition.

    C. The Grantee is responsible for any loss, damage, or theft of, and any loss, damage or injury caused by the use of, non-expendable personal property or equipment purchased with state funds and held in his possession for use in a contractual arrangement with the Department.

20. All reports produced and other data gathered by the Grantee for the purpose of this Agreement shall become the joint property of the DEP and the Grantee without restrictions or limitations upon their use and shall be made available by the Grantee at any time upon request of the DEP.

21. The Department may at any time, by written order designated to be a change order, make any change in the work within the general scope of this Agreement (e.g., specifications, time, method or manner of performance, requirements, etc.). All change orders are subject to the mutual agreement of both parties as evidenced in writing. Any change order which causes an increase or decrease in the Grantee's cost or time shall require formal amendment to this Agreement.

22. The Hotel and Motel Fire Safety Act of 1990 (Public Law 101-391) establishes a number of fire safety standards which must be met for hotels and motels. The Grantee acknowledges that Federal funds may not be used to sponsor a conference, meeting, or training seminar held in a hotel or motel which does not meet the requirements of the Hotel and Motel Safety Act of 1990.

23. A. No person, on the grounds of race, creed, color, national origin, age, sex, or disability, shall be excluded from participation in; be denied the proceeds or benefits of; or be otherwise subjected to discrimination in performance of this Agreement.

    B. An entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid on a contract to provide goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not award or perform work as a contractor, supplier, subcontractor, or consultant under contract with any public entity, and may not transact business with any public entity. The Florida Department of Management Services is responsible for maintaining the discriminatory vendor list and intends to post the list on its website. Questions regarding the discriminatory vendor list may be directed to the Florida Department of Management Services, Office of Supplier Diversity at 850/487-0915.

24. A. In accordance with Executive Order 12549, Debarment and Suspension **(40 CFR 32)**, the Grantee shall agree and certify that neither it, nor its principals, is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency; and, that the Grantee shall not knowingly enter into any lower tier contract, or other covered transaction, with a person who is similarly debarred or suspended from participating in this covered transaction, unless authorized in writing by EPA to the Department.

B. Upon execution of this Agreement by the Grantee, the Grantee shall complete, sign and return a copy of the form entitled "Certification Regarding Debarments, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Federally Funded Transactions", attached hereto and made a part hereof as **Attachment G**.

C. As required by paragraphs A and B above, the Grantee shall include the language of this section, and **Attachment G** in all subcontracts or lower tier agreements executed to support the Grantee's work under this Agreement.

25. The Environmental Protection Agency and Department, reserve a royalty-free, nonexclusive, and irrevocable license to reproduce, publish or otherwise use, and to authorize others to use, for government purposes:

A. The copyright in any work developed under a grant, subgrant, or contract under a grant or subgrant.

B. Any rights of copyright to which a grantee, subgrantee or a contractor purchases ownership with grant support.

26. The Grantee agrees to comply with, and include as appropriate in contracts and subgrants, the provisions contained in **Attachment H, Contract Provisions,** attached hereto and made a part hereof. In addition, the Grantee acknowledges that the applicable regulations listed in **Attachment I, Regulations,** attached hereto and made a part hereof, shall apply to this Agreement.

27. This Agreement represents the entire agreement of the parties. Any alterations, variations, changes, modifications or waivers of provisions of this Agreement shall only be valid when they have been reduced to writing, duly signed by each of the parties hereto, and attached to the original of this Agreement, unless otherwise provided herein.

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IN WITNESS WHEREOF, the parties have caused this Agreement to be duly executed, the day and year last written below.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

By: _____
Title: PROCUREMENT DIRECTOR

Date: 10/10/02

3301 Gun Club Road
West Palm Beach, Florida 33406

FEID No.: 59-6015290

Approved as to form and legality:

_____
SFWMD Attorney

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

By: _____ for MD
Director, Division of Water Resource Management or designee

Date: 10-4-02

_____
DEP Grant Manager

_____
DEP Contracts Administrator

Approved as to form and legality:

_____
DEP Attorney

List of attachments/exhibits included as part of this Agreement:

Specify Type	Letter/ Number	Description (include number of pages)
Attachment	A	Project Work Plan (4 Pages)
Attachment	B	Sample Payment Request Summary Form (1 Page)
Attachment	C	Sample Progress Report Form (1 Page)
Attachment	D	Special Audit Requirements (5 Pages)
Attachment	E	Disclosure of Lobbying Activities (2 Pages)
Attachment	F	Property Reporting Form (1 Page)
Attachment	G	Certification Regarding Debarment/Suspension (2 Pages)
Attachment	H	Contract Provisions (3 Pages)
Attachment	I	Regulations (1 Page)
Attachment	J	Status and Temporal Variability Monitoring Networks Sampling Manual (91 Pages)
Attachment	K	Instructions for Sample Shipment (1 Page)
Attachment	L	Required Electronic Format (3 Pages)
Exhibit	1	Surface Water Temporal Variability (TV) Fixed Sites (2 Pages)
Exhibit	2	Surface Water Temporal Variability (SWTV) Network Monitoring Indicator/Analyte List (1 Page)
Attachment	M	Global Positioning System (GPS) Standards (5 Pages)

ATTACHMENT A

PROJECT WORK PLAN

(Service Period: October 1, 2002 or Agreement Execution, whichever date is later, through October 31, 2003)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

The Department of Environmental Protection (DEP) has requested the assistance of the South Florida Water Management District (SFWMD) in collecting and interpreting surface water quality data from rivers, streams and lakes within the boundaries of the Water Management District (WMD), as part of the statewide Integrated Water Resources Monitoring (IWRM) Network. A description of the work to be performed is outlined below:

QUALITY ASSURANCE

The Grantee and approved subcontracting agencies and entities who will be conducting water quality sampling under this agreement shall follow procedures and methods specified in the DEP *"Status and Temporal Variability Monitoring Networks Sampling Manual"* (**ATTACHMENT J**), except for variances agreed to by DEP under contract GW190 (SFWMD contract C-13805). This replaces the DEP *Comprehensive Quality Assurance Project Plan* document and supplements. Requests for variances to the procedures outlined in **ATTACHMENT J** may be submitted to the DEP Watershed Monitoring and Data Management Section QA Officer in writing. Variances will be scrutinized on a case-by-case basis.

For purposes of this Agreement, all sample analysis will be performed by the DEP Central Laboratory under separate agreement with the Department's Watershed Monitoring and Data Management Section, and data will be provided to the Grantee in SFWMD – specified format.

All samples shall be shipped in accordance with **ATTACHMENT K**, *Instructions for Sample Shipment*.

STORET

All water quality data collected under this Agreement shall be submitted to the Department in an approved standardized electronic format. An example of the approved format is included as **ATTACHMENT L**. This format will assist the Department in the preparation of data, collected under this Agreement, for entry into STORET using a computer conversion program. The Department will be responsible for assuring that data collected under this agreement is entered into the STORET system, and verification of the final storage. In addition to the above, a printed copy of the project field data, along with supporting Quality Assurance data, shall be kept and maintained by the Grantee for the duration of this agreement, and provided to DEP upon request. This includes results from any blanks, duplicates, spikes, blind samples and standards

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QUALIFIED SAMPLER

The Grantee shall ensure that at least one (two if possible) *qualified sampler* is present during all sample collection. For the purposes of this Agreement, a *qualified sampler* shall be one who has taken the USGS sampling course or the DEP Sampling Techniques Workshop within the past 5 years

AGREEMENT TASKS

The Grantee shall collect surface water quality samples for the Watershed Monitoring Program within the boundaries of the South Florida Water Management District. Each activity to be performed has been identified and described as a separate task:

TASK I - SAMPLE COLLECTION
Fee Schedule Task Cost: $48,424.32
($192.16 per sample)

Task Service Period: October 1, 2002 or Agreement Execution, whichever is later, through September 30, 2003.

Collect an estimated 252 surface water quality samples from the Surface Water Temporal Variability (SWTV) Network, and forward to DEP designated lab(s) for analysis. This estimate includes:

- Approximately 204 SWTV samples (17 sites sampled monthly) from designated river, stream and lake sites within the water management district. **EXHIBIT 1** contains the SWTV sampling station list.

- Approximately 48 QA samples.

Sample collection includes:

- On-site analysis for field analytes and field reference samples (see **ATTACHMENT L**);

- Measurement of sample location using differentially-correcting Global Positioning System (DGPS) technology. DGPS units will be provided by DEP if necessary. All DGPS data must meet or exceed DEP protocols for accuracy (**ATTACHMENT M**), and be provided in DEP-specified electronic format (see **ATTACHMENT L**);

- For SWTV sites, locate a reference station at each sampling location with DGPS. The reference station should be a permanent landmark located as close to the actual sampling point as possible. All present and future sampling locations should be reported relative (distance/azimuth) to this reference station.

- Physical site data, in electronic format using DEP-specified software. This includes land ownership, depiction of actual sample location relative to GPS measurement point (if offset required), digital photographs, and any additional pertinent information which may potentially affect water quality. Provide sketch maps depicting site location and directions (sketch maps can be submitted on paper or scanned electronically in JPEG format).

- Stage height at time of sampling. Measurements of surface water elevation can be obtained from staff gages, continuous recording gages, wire weight gages, or tape down measurements or any existing USGS gaging stations located in close proximity (within 5 river miles) to the sampling sites;

Samples shall be collected for all indicators identified in **EXHIBIT 2.** Samples should be collected monthly at 25 – 35 day intervals. All samples shall be shipped in accordance with **ATTACHMENT K**, *Instructions for Sample Shipment.*

Field audits shall be performed in accordance with **ATTACHMENT J.**

TASK II - DATA MANAGEMENT AND DATA INTERPRETATION
Task Cost: **Included in unit cost for Task I**

Task Service Period: October 1, 2002 or Agreement Execution, whichever is later, through October 31, 2003.

Grantee staff will edit data supplied to the Grantee and approve distribution to the public via GWIS (Generalized Water Information System) updates. Data review will follow written standard operating procedures and timetables. Field data will be submitted to DEP in approved electronic format (**ATTACHMENT L**) within 45 days of the end of the sampling event. DEP reserves the right to require the use of DEP-supplied field data entry software if data is not submitted in DEP-approved format. Grantee staff will also review and edit data interpretations regarding Ambient Monitoring Program data. All applicable data will be computerized in DEP-approved format (see **ATTACHMENT L**). Updates to station information will be provided to DEP quarterly as necessary.

TASK III - ATTEND PROGRAM MEETINGS
Task Cost: **Included in unit cost for Task I**

Task Service Period: October 1, 2002 or Agreement Execution, whichever is later, through September 30, 2003.

One or more Grantee staff will attend three triannual Watershed Monitoring Program meetings. Each of these meetings will last approximately three days. Appropriate Grantee staff will attend up to three other meetings scheduled by DEP such as sampling courses, training workshops, or other meetings as required.

TASK IV - PURCHASE EQUIPMENT
Cost Reimbursement Task Cost: **$2,575.00**

Task Service Period: October 1, 2002 or Agreement Execution, whichever is later, through September 30, 2003.

Itemize proposed equipment purchases under this Agreement costing $1,000 or more below, and complete ATTACHMENT F. The subsequent purchase of non-expendable equipment not listed below, costing $1,000 or more is not authorized under this Agreement. However, the Department reserves the right to amend this Agreement to provide for equipment purchases in the event it is deemed necessary.

1) Turbidimeters _____ est. $ 2,575.00

TASK V - REPORTS

Task Cost: **Included in unit cost for Task I**

Task Service Period: October 1, **2002 or Agreement Execution, whichever is later, through** October 31, 2003.

Progress Reports and invoices are to be submitted every three months by Grantee to DEP. Quarterly Quality Assurance Reports and field data sheets should be attached to the Quarterly Progress Reports. A Final Comprehensive Report that summarizes all tasks associated with this Agreement, including sampling site updates shall be submitted no later than October 31, 2003.

TASK VI – ADDITIONAL RESOURCES

DEP will extend the OPS position established in DEP contract GW190 (SFWMD contract C-13805) currently utilized by SFWMD at $29,000.00.

DEP will extend the loan of the Trimble GPS units to SFWMD to cover the Agreement term October 1, 2002 to October 31, 2003.

REPORTING REQUIREMENTS

Each progress report shall indicate work performed during the reporting period, percentage of project completed, work scheduled for the next reporting period, and include quarterly quality assurance reports, problems encountered and planned solutions.

PAYMENTS

The Grantee shall submit invoices every three (3) months, based on the percentage of overall project completion, in conjunction with progress reports as required herein. A final invoice must be submitted no later than October 31, 2003, to assure the availability of funding for final payment.

The Department shall have fourteen (14) calendar days from receipt of a deliverable to determine satisfactory performance. If said deliverable is acceptable to the Department, the invoice shall be processed for payment with the invoice processing time beginning on the date the Department approved the work product submitted by the Grantee.

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ATTACHMENT B

SAMPLE PAYMENT REQUEST SUMMARY FORM

(Note: This form is not required as long as all information appears on invoice.)

GRANTEE: _____ **GRANTEE'S GRANT MANAGER:** _____

DEP AGREEMENT NO.: _____ **PAYMENT REQUEST NO.:** _____

DATE OF REQUEST: _____ **PERFORMANCE PERIOD:** _____

AMOUNT REQUESTED: $_____ **PERCENT MATCHING REQUIRED:** N/A

GRANT EXPENDITURES SUMMARY SECTION

[Effective Date of Grant through End-of-Grant Period]

CATEGORY OF EXPENDITURE	Total Contract	Completed This Quarter	AMOUNT OF THIS REQUEST
Sampling (Includes Tasks I, II, III &V) **Unit Price Per Sample:** $_____	$	#	$
Equipment purchases (Task IV)	$	N/A	$
TOTAL Cost	$	N/A	$
Less Total Cumulative Payments of	$	N/A	N/A
Less Total This Request:	$		
TOTAL REMAINING IN GRANT	$	#	N/A

GRANTEE CERTIFICATION

The undersigned certifies that the amount being requested for reimbursement above was for items that were charged to and utilized only for the above cited grant activities.

Grantee's Grant Manager	Grantee's Fiscal Agent
Print Name	Print Name
Telephone Number	Telephone Number

ATTACHMENT C

SAMPLE PROGRESS REPORTING FORM

(Note: This Form is not required as long as all information appears in Progress Report.)

DEP Agreement No.:	G0029		
Grantee Name:	South Florida Water Management District		
Grantee Address:			
Grantee's Grant Manager:		**Telephone No.:**	
Quarterly Reporting Period:			
DEP Project Number and Title:			
Grantee Project No:			
Report #:			

By TASK provide a summary of project accomplishments to date. (Include a comparison of actual accomplishments to the objectives established for the period, any anticipated delays, explanation of cost overruns or high unit costs. If goals were not met, provide reasons why.)
List and attach copies of any relevant work products being submitted for the project for this reporting period (e.g., report data sets, links, etc.)

This report is submitted in accordance with the reporting requirements of DEP Agreement No. G0029 and accurately reflects the activities and costs associated with the subject project.

Signature of Grantee's Grant Manager

Date

ATTACHMENT D

SPECIAL AUDIT REQUIREMENTS

The administration of resources awarded by the Department of Environmental Protection *(which may be referred to as the "Department", "DEP", "FDEP" or "Grantor", or other name in the contract/agreement)* to the recipient *(which may be referred to as the "Contractor", Grantee" or other name in the contract/agreement)* may be subject to audits and/or monitoring by the Department of Environmental Protection, as described in this attachments.

MONITORING

In addition to reviews of audits conducted in accordance with OMB Circular A-133 and Section 215.97, F.S., as revised (see "AUDITS" below), monitoring procedures may include, but not be limited to, on-site visits by Department staff, limited scope audits as defined by OMB Circular A-133, as revised, and/or other procedures. By entering into this Agreement, the recipient agrees to comply and cooperate with any monitoring procedures/processes deemed appropriate by the Department of Environmental Protection. In the event the Department of Environmental Protection determines that a limited scope audit of the recipient is appropriate, the recipient agrees to comply with any additional instructions provided by the Department to the recipient regarding such audit. The recipient further agrees to comply and cooperate with any inspections, reviews, investigations, or audits deemed necessary by the Comptroller or Auditor General.

AUDITS

PART I: FEDERALLY FUNDED

This part is applicable if the recipient is a State or local government or a non-profit organization as defined in OMB Circular A-133, as revised.

1. In the event that the recipient expends $300,000 or more in Federal awards in its fiscal year, the recipient must have a single or program-specific audit conducted in accordance with the provisions of OMB Circular A-133, as revised. EXHIBIT 1 to this Agreement indicates Federal funds awarded through the Department of Environmental Protection by this Agreement. In determining the Federal awards expended in its fiscal year, the recipient shall consider all sources of Federal awards, including Federal resources received from the Department of Environmental Protection. The determination of amounts of Federal awards expended should be in accordance with the guidelines established by OMB Circular A-133, as revised. An audit of the recipient conducted by the Auditor General in accordance with the provisions of OMB Circular A-133, as revised, will meet the requirements of this part.

2. In connection with the audit requirements addressed in Part I, paragraph 1., the recipient shall fulfill the requirements relative to auditee responsibilities as provided in Subpart C of OMB Circular A-133, as revised.

3. If the recipient expends less than $300,000 in Federal awards in its fiscal year, an audit conducted in accordance with the provisions of OMB Circular A-133, as revised, is not required. In the event that the recipient expends less than $300,000 in Federal awards in its fiscal year and elects to have an audit conducted in accordance with the provisions of OMB Circular A-133, as revised, the cost of the audit must be paid from non-Federal resources (i.e., the cost of such an audit must be paid from recipient resources obtained from other than Federal entities).

4. The recipient may access information regarding the Catalog of Federal Domestic Assistance (CFDA) via the internet at http://aspe.os.dhhs.gov/cfda.

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PART II: STATE FUNDED

This part is applicable if the recipient is a nonstate entity as defined by Section 215.97(2)(l), Florida Statutes.

1. In the event that the recipient expends a total amount of State financial assistance equal to or in excess of $300,000 in any fiscal year of such recipient, the recipient must have a State single or project-specific audit for such fiscal year in accordance with Section 215.97, Florida Statutes; applicable rules of the Executive Office of the Governor and the Comptroller; and Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditor General. EXHIBIT 1 to this Agreement indicates State financial assistance awarded through the Department of Environmental Protection by this Agreement. In determining the State financial assistance expended in its fiscal year, the recipient shall consider all sources of State financial assistance, including State financial assistance received from the Department of Environmental Protection, other state agencies, and other nonstate entities. State financial assistance does not include Federal direct or pass-through awards and resources received by a nonstate entity for Federal program matching requirements.

2. In connection with the audit requirements addressed in Part II, paragraph 1, the recipient shall ensure that the audit complies with the requirements of Section 215.97(7), Florida Statutes. This includes submission of a financial reporting package as defined by Section 215.97(2)(d), Florida Statutes, and Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditor General.

3. If the recipient expends less than $300,000 in State financial assistance in its fiscal year, an audit conducted in accordance with the provisions of Section 215.97, Florida Statutes, is not required. In the event that the recipient expends less than $300,000 in State financial assistance in its fiscal year and elects to have an audit conducted in accordance with the provisions of Section 215.97, Florida Statutes, the cost of the audit must be paid from the non-State entity's resources (i.e., the cost of such an audit must be paid from the recipient's resources obtained from other than State entities).

4. For information regarding the Florida Catalog of State Financial Assistance (CSFA), a recipient should access the Florida Single Audit Act website located at http://sun6.dms.state.fl.us/fsaa/catalog.htm or the Governor's Office of Policy and Budget website located at http://www.eog.state.fl.us/ for assistance. In addition to the above websites, the following websites may be accessed for information: Legislature's Website http://www.leg.state.fl.us/, Governor's Website http://www.flgov.com/, Department of Banking and Finance's Website http://www.dbf.state.fl.us/, and the Auditor General's Website http://www.state.fl.us/audgen.

PART III: OTHER AUDIT REQUIREMENTS

(NOTE: This part would be used to specify any additional audit requirements imposed by the State awarding entity that are solely a matter of that State awarding entity's policy (i.e., the audit is not required by Federal or State laws and is not in conflict with other Federal or State audit requirements). Pursuant to Section 215.97(7)(m), Florida Statutes, State agencies may conduct or arrange for audits of State financial assistance that are in addition to audits conducted in accordance with Section 215.97, Florida Statutes. In such an event, the State awarding agency must arrange for funding the full cost of such additional audits.)

PART IV: REPORT SUBMISSION

1. Copies of reporting packages for audits conducted in accordance with OMB Circular A-133, as revised, and required by PART I of this Agreement shall be submitted, when required by Section .320 (d), OMB Circular A-133, as revised, by or on behalf of the recipient directly to each of the following:

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A. The Department of Environmental Protection at each of the following addresses:

Audit Director
Florida Department of Environmental Protection
Office of the Inspector General, MS 40
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

B. The Federal Audit Clearinghouse designated in OMB Circular A-133, as revised (the number of copies required by Sections .320 (d)(1) and (2), OMB Circular A-133, as revised, should be submitted to the Federal Audit Clearinghouse), at the following address:

Federal Audit Clearinghouse
Bureau of the Census
1201 East 10th Street
Jeffersonville, IN 47132

C. Other Federal agencies and pass-through entities in accordance with Sections .320 (e) and (f), OMB Circular A-133, as revised.

2. Pursuant to Section .320(f), OMB Circular A-133, as revised, the recipient shall submit a copy of the reporting package described in Section .320(c), OMB Circular A-133, as revised, and any management letters issued by the auditor, to the Department of Environmental Protection at each of the following addresses:

Audit Director
Florida Department of Environmental Protection
Office of the Inspector General, MS 40
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

3. Copies of financial reporting packages required by PART II of this Agreement shall be submitted by or on behalf of the recipient directly to each of the following:

A. The Department of Environmental Protection at each of the following addresses:

Audit Director
Florida Department of Environmental Protection
Office of the Inspector General, MS 40
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

B. The Auditor General's Office at the following address:

State of Florida Auditor General
Room 401, Claude Pepper Building
111 West Madison Street
Tallahassee, Florida 32399-1450

4. Copies of reports or management letters required by PART III of this Agreement shall be submitted by or on behalf of the recipient directly to the Department of Environmental Protection at each of the following addresses:

Audit Director
Florida Department of Environmental Protection
Office of the Inspector General, MS 40
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

5. Any reports, management letters, or other information required to be submitted to the Department of Environmental Protection pursuant to this Agreement shall be submitted timely in accordance with OMB Circular A-133, Florida Statutes, or Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditor General, as applicable.

6. Recipients, when submitting financial reporting packages to the Department of Environmental Protection for audits done in accordance with OMB Circular A-133, or Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditor General, should indicate the date that the reporting package was delivered to the recipient in correspondence accompanying the reporting package.

PART V: RECORD RETENTION

The recipient shall retain sufficient records demonstrating its compliance with the terms of this Agreement for a period of **5** years from the date the audit report is issued, and shall allow the Department of Environmental Protection, or its designee, Comptroller, or Auditor General access to such records upon request. The recipient shall ensure that audit working papers are made available to the Department of Environmental Protection, or its designee, Comptroller, or Auditor General upon request for a period of **3** years from the date the audit report is issued, unless extended in writing by the Department of Environmental Protection.

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EXHIBIT – 1

FUNDS AWARDED TO THE RECIPIENT PURSUANT TO THIS AGREEMENT CONSIST OF THE FOLLOWING:

Federal Resources Awarded to the Recipient Pursuant to this Agreement Consist of the Following:

Federal Program Number	Federal Agency	CFDA Number	CFDA Title	Funding Amount	State Appropriation Category
Original Agreement	Environmental Protection Agency	66.419	Water Pollution Control State and Interstate Program Support	$50,999.32	140076

State Resources Awarded to the Recipient Pursuant to this Agreement Consist of the Following Matching Resources for Federal Programs:

Federal Program Number	Federal Agency	CFDA	CFDA Title	Funding Amount	State Appropriation Category

State Resources Awarded to the Recipient Pursuant to this Agreement Consist of the Following Resources Subject to Section 215.97, F.S.:

State Program Number	Funding Source	State Fiscal Year	CSFA Number	CSFA Title or Funding Source Description	Funding Amount	State Appropriation Category

Total Award	$50,999.32	

For each program identified above, the recipient shall comply with the program requirements described in the Catalog of Federal Domestic Assistance (CFDA) [http://aspe.os.dhhs.gov/cfda] and/or the Florida Catalog of State Financial Assistance (CSFA) [http://sun6.dms.state.fl.us/fsaa/catalog.htm]. The services/purposes for which the funds are to be used are included in the Contract scope of services/work. Any match required by the recipient is clearly indicated in the Contract.

ATTACHMENT E

Approved by OMB
0348-0046

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

1. Type of Federal Action:	2. Status of Federal Action:	3. Report Type:
☐ a. contract b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	☐ a. bid/offer/application b. initial award c. post-award	☐ a. initial filing b. material change **For Material Change Only:** year_____ quarter_____ date of last report_____

4. Name and Address of Reporting Entity:	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:
☐ Prime ☐ Subawardee Tier _____, *if known:* **Congressional District,** *if known:*	**Congressional District,** *if known:*
6. Federal Department/Agency:	**7. Federal Program Name/Description:** CFDA Number, *if applicable:* _____
8. Federal Action Number, *if known:*	**9. Award Amount,** *if known:* $
10. a. Name and Address of Lobbying Entity *(if individual, last name, first name, MI):*	**b. Individuals Performing Services** *(including address if different from No. 10a)* *(last name, first name, MI):*

(attach Continuation Sheet(s) SF-LLLA, if necessary)

11.	
Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.	**Signature:** _____ **Print Name:** _____ **Title:** _____ **Telephone No.:** _____ **Date:** _____
Federal Use Only:	Authorized for Local Reproduction Standard Form - LLL (Rev 7 - 97)

Form DEP 55-221 (01/01)

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.

2. Identify the status of the covered Federal action.

3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by the reporting entity for this covered Federal action.

4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.

5. If the organization filing the report in item 4 checks "Subawardee", then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.

6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.

7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.

8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."

9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

10. (a) Enter the full name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.

    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).

11. The certifying official shall sign and date the form, print his/her name, title and telephone number.

ATTACHMENT F

PROPERTY REPORTING FORM FOR DEP AGREEMENT NO. G0029
(For Property With Grantee Assigned Property Control Numbers)

GRANTEE: List non-expendable equipment/personal property* costing $1,000 or more purchased under the above Agreement. Also list all upgrades* under this Agreement, costing $1,000 or more, of property previously purchased under a DEP Agreement (identify the property upgraded and the applicable DEP Agreement on a separate sheet). Complete the serial no./cost, location/address and property control number columns of this form. The Grantee shall establish a unique identifier for tracking all personal property purchased under this Agreement and shall report the inventory of said property, on an annual basis, to the Department's Grant Manager, by DEP Agreement number, no later than January 31st for each year this Agreement is in effect.

DESCRIPTION	SERIAL NO./COST**	LOCATION/ADDRESS	GRANTEE ASSIGNED PROPERTY CONTROL NUMBER

*Not including software. **Attach copy of invoice, bill of sale, or other documentation to support purchase.

GRANTEE:	Grantee's Grant Manager:	Date:

BELOW FOR DEP USE ONLY

DEP GRANT MANAGER: **Maintain this document with a copy of the invoices supporting the cost of each item identified above in your Agreement file. If the Agreement is a cost reimbursement Agreement, make sure to send invoices supporting the cost of the items to Finance and Accounting for the processing of the Grantee's invoice for payment.**

DEP Grant Manager Signature: _____ Date: _____

DEP FINANCE AND ACCOUNTING: No processing required by Finance & Accounting as the Grantee is responsible for retaining ownership of the equipment/property upon satisfactory completion of the Agreement

DEP PROPERTY MANAGEMENT: No processing required by the Property Management section as the Grantee will retain ownership of the equipment/property upon satisfactory completion of the Agreement.

ATTACHMENT G

CERTIFICATION REGARDING DEBARMENTS, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION-LOWER TIER FEDERALLY FUNDED TRANSACTIONS

DEP AGREEMENT NO: G0029

1. The undersigned hereby certifies that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. The undersigned also certifies that it and its principals:

   (a) Have not within a three-year period preceding this certification been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State anti-trust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

   (b) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 2.(a) of this Certification; and

   (c) Have not within a three-year period preceding this certification had one or more public transactions (Federal, State or local) terminated for cause or default.

3. Where the undersigned is unable to certify to any of the statements in this certification, an explanation shall be attached to this certification.

Dated this 10th day of October, 2002

By _____
Authorized Signature/Contractor

FRANK HAYDEN, PROCUREMENT DIRECTOR
Typed Name/Title

S FL WATER MANAGEMENT DISTRICT
Contractor's Firm Name

3301 GUN CLUB ROAD
Street Address

BUILDING B-1
Building, Suite Number

WEST PALM BEACH, FL 33406
City/State/Zip Code

561-682-2043
Area Code/Telephone Number

INSTRUCTIONS FOR CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION-LOWER TIER FEDERALLY FUNDED TRANSACTIONS

1. By signing and submitting this form, the certifying party is providing the certification set out below.

2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the certifying party knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the Department of Environmental Protection (DEP) or agencies with which this transaction originated may pursue available remedies, including suspension and/or debarment.

3. The certifying party shall provide immediate written notice to the person to which this contract is submitted if at any time the certifying party learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

4. The terms covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal, and voluntarily excluded, as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this contract is submitted for assistance in obtaining a copy of those regulations.

5. The certifying party agrees by submitting this contract that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier contract, or other covered transaction with a person who is proposed for debarment under 48 CFR 9, subpart 9.4, debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the DEP or agency with which this transaction originated.

6. The certifying party further agrees by executing this contract that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all contracts or lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not is proposed for debarment under 48 CFR 9, subpart 9.4, debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List (Telephone No. (202) 501-4740 or (202) 501-4873.)

8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is proposed for debarment under 48 CFR 9, subpart 9.4, suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the DEP or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

ATTACHMENT H
Contract Provisions

All contracts awarded by a recipient, including small purchases, shall contain the following provisions as applicable:

1. **Equal Employment Opportunity** - All contracts shall contain a provision requiring compliance with Executive Order (E.O.) 11246, "Equal Employment Opportunity," as amended by E.O. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and as supplemented by regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

2. **Copeland "Anti-Kickback" Act (18 U.S.C. 874 and 40 U.S.C. 276c)** - All contracts and subgrants in excess of $2000 for construction or repair awarded by recipients and subrecipients shall include a provision for compliance with the Copeland "Anti-Kickback" Act (18 U.S.C. 874), as supplemented by Department of Labor regulations (29 CFR part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he is otherwise entitled. The recipient shall report all suspected or reported violations to the Federal awarding agency.

3. **Davis-Bacon Act, as amended (40 U.S.C. 276a to a-7)** - When required by Federal program legislation, all construction contracts awarded by the recipients and subrecipients of more than $2000 shall include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 276a to a-7) and as supplemented by Department of Labor regulations (29 CFR part 5, "Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction"). Under this Act, contractors shall be required to pay wages to laborers and mechanics at a rate not less than the minimum wages specified in a wage determination made by the Secretary of Labor. In addition, contractors shall be required to pay wages not less than once a week. The recipient shall place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation and the award of a contract shall be conditioned upon the acceptance of the wage determination. The recipient shall report all suspected or reported violations to the Federal awarding agency.

4. **Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333)** - Where applicable, all contracts awarded by recipients in excess of $2000 for construction contracts and in excess of $2500 for other contracts that involve the employment of mechanics or laborers shall include a provision for compliance with Sections 102 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333), as supplemented by Department of Labor regulations (29 CFR part 5). Under Section 102 of the Act, each contractor shall be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than 1 ½ times the basic rate of pay for all hours worked in excess of 40 hours in the work week. Section 107 of the Act is applicable to construction work and provides that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

5. **Rights to Inventions Made Under a Contract or Agreement** - Contracts or agreements for the performance of experimental, developmental, or research work shall provide for the rights of the Federal Government and the recipient in any resulting invention in accordance with 37 CFR part 401,

"Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

6. **Clean Air Act (42 U.S.C. 7401 et seq.) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq.)** - Contracts and subgrants of amounts in excess of $100,000 shall contain a provision that requires the recipient to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401 et seq.) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251 et seq.). Violations shall be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

7. **Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)** - Contractors who apply or bid for an award of $100,000 or more shall file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient.

8. **Debarment and Suspension (E.O.s 12549 and 12689)** - No contract shall be made to parties listed on the General Services Administration's List of Parties Excluded from Federal Procurement or Nonprocurement Programs in accordance with E.O.s 12549 and 12689, "Debarment and Suspension." This list contains the names of parties debarred, suspended, or otherwise excluded by agencies, and contractors declared ineligible under statutory or regulatory authority other than E.O. 12549. Contractors with awards that exceed the small purchase threshold shall provide the required certification regarding its exclusion status and that of its principal employees.

9. **Section 508 of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1368) and Section 1424(e) of the Safe Drinking Water Act (42 U.S.C. 300h-3(e))** - Contracts and subgrants of amounts in excess of $100,000 shall contain a provision that requires the recipient to agree to comply with all applicable standards, orders or regulations issued pursuant to Section 508 of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1368) and Section 1424(e) of the Safe Drinking Water Act (42 U.S.C. 300h-3(e)). Violations shall be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

10. **Compliance with all Federal statutes relating to nondiscrimination** - These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352), which prohibits discrimination on the basis of sex; (b) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 795), which prohibits discrimination on the basis of handicaps; (c) the Age Discrimination Act of 1975, as amended (42 U.S.C. 6101-6107), which prohibits discrimination on the basis of age; (d) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (e) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (f) Sections 523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. 290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (g) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. 3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (h) any other nondiscrimination provisions in the specific statute(s) made; and, (i) the requirements of any other nondiscrimination statute(s) that may apply.

11. **Compliance with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646)** that provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.

12. **Compliance with the provisions of the Hatch Act (5 U.S.C. 1501 – 1508 and 7324 – 7328)** that limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

13. **Compliance, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234)** that requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is $10,000 or more.

14. **Compliance with environmental standards which may be prescribed to the following:** (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order 11514; (b) notification of violating facilities pursuant to E.O. 11738; (c) protection of wetlands pursuant to E.O. 11990; (d) evaluation of flood hazards in floodplains in accordance with E.O. 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. 1451 et seq.); (f) conformity with Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. 7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).

15. **Compliance with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271 et seq.)** related to protecting components or potential components of the national wild and scenic rivers system.

16. **Compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470), E.O. 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. 469a-1 et seq.).**

17. **Compliance with P.L. 93-348** regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.

18. **Compliance with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. 2131 et seq.)** pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this Agreement.

19. **Compliance with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4801 et seq.)** that prohibits the use of lead-based paint in construction or rehabilitation of residence structures.

20. **Compliance with the mandatory standards and policies relating to energy efficiency** that are contained in the State energy conservation plan issued in accordance with the Energy Policy and Conservation Act (Pub. L. 94-163, 89 Stat. 871).

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ATTACHMENT I

REGULATIONS

Formal regulations concerning administrative procedures for EPA grants appear in Title 40 of the Code of Federal Regulations. Grant program administrative regulations appear in Subchapter B; other regulations of general applicability appear in Subchapter A. Other EPA regulations also impact grant programs. The following list contains regulations and Office of Management and Budget Circulars which may apply to the work performed under this Agreement.

Subchapter A - General	
40 C.F.R. 4	Uniform relocation assistance and real property acquisition for federal and federally assisted programs
40 C.F.R. 12	Nondiscrimination on the basis of handicap in programs or activities conducted by EPA
40 C.F.R. 29	Intergovernmental review of EPA programs and activities
40 C.F.R. 30	Uniform administrative requirements for grants and agreements with institutions of higher education, hospitals and other nonprofit organizations
Subchapter B – Grants and Other Federal Assistance	
40 C.F.R. 31	Uniform administrative requirements for grants and cooperative agreements to state and local governments
40 C.F.R. 32	Governmentwide debarment and suspension (nonprocurement) and governmentwide requirements for drug-free work place (grants); Clean Air Act and Clean Water Act ineligibility of facilities in performance of federal contracts, grants and loans
40 C.F.R. 34	New restrictions on lobbying
40 C.F.R. 35	State and local assistance
Other Federal Regulations	
48 C.F.R. 31	Contract Cost Principles and Procedures, or uniform cost accounting standards that comply with cost principles acceptable to the federal agency
Office of Management and Budget Circulars	
A-21	Cost Principles for Educational Institutions
A-87	Cost Principles for State, Local, and Indian Tribal Governments
A-122	Cost Principles for Non-Profit Organizations
A-133	Audit Requirements

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ATTACHMENT J

Status and Temporal Variability Monitoring Networks

Sampling Manual

Florida Department of Environmental Protection
2600 Blair Stone Road, Tallahassee, Florida 32399-2400
September 2001

Status and Temporal Variability Monitoring Networks

Sampling Manual

Prepared by:

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Joe North

Watershed Monitoring and Data Management Section
Florida Department of Environmental Protection

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Section I. Introduction

The Watershed Monitoring and Data Management Section (WM&DMS) of the Florida Department of Environmental Protection (FDEP) will annually host a water sampling workshop for the Florida Status and Temporal Variability (TV) Monitoring Networks. The purpose of the workshop is to provide a consistent state-wide approach to water sampling conducted for the two networks. The need for a single sampling protocol is especially important, since many agencies participate in the sampling effort. Furthermore, the long-term nature of the program requires that variations in sampling procedures over time be minimized and that deliberate changes to these procedures occur in a controlled fashion. The procedures recommended within are approved procedures; however, many are specific to the two networks and may not be directly applicable to other programs.

The Status and Temporal Variability Monitoring Networks are a multi-agency cooperative effort. Participants include state, local, and federal agencies, as well as privately owned companies. Naturally, with this number of groups involved in sampling and analysis, coordination and communication are essential. If at any time questions arise regarding the two networks, don't hesitate to contact the FDEP WM&DMS at (850) 921-9422.

Section II. Description of Networks

The Ambient Monitoring Network consists of two projects. The Status Network is a probability-based network designed to randomly sample Florida's water quality resources, for the purpose of making statistical inferences about water quality status. The Temporal Variability Network is a fixed-station-monitoring network designed to detect both short-term variability and long-term trends.

Status Network

The purpose of the Status Network is to characterize the environmental conditions of Florida's water resources and to determine if those conditions are changing over time. To accomplish this, the state has been divided into 20 geographic reporting units, all of which will be sampled over a 5-year period. During any given year, sampling will be conducted in 5 reporting units, one from each water management district. [Under this strategy, 5 reporting units will be sampled twice during the 5-year cycle, the other 15 reporting units will be sampled once only.] The water resources to be characterized include confined aquifers, unconfined aquifers, high-order streams (Horton order greater than 4), low-order streams (Horton order 4 or less), small lakes (1-10 hectares), and large lakes (over 10 hectares). Each year, and for each active reporting unit, 30 sampling stations from each of the six water resources will be selected at random (900 stations per year). Samples will be collected from these stations during resource-specific index periods and analyzed for the constituents listed in Table II-1. The analytical methods for each constituent are listed in Table II-2. The Watershed Monitoring and Data Management Section, the five water management districts, and selected county environmental protection agencies will collect samples. The FDEP Central Chemistry and Biology Laboratories in Tallahassee, Florida, will analyze all samples. For further information on the design of the Status Network, refer to Overview of the Florida Department of Environmental Protection's Integrated Water Resource Monitoring Efforts and the Design Plan of the Status Network written by WM&DMS staff.

Temporal Variability Network

The purpose of the Temporal Variability (TV) Network is to characterize site-specific water quality variability at selected sampling sites. There are 79 surface water TV stations located on Florida lakes and streams. The surface water TV stations are monitored monthly for the constituents listed in Table II-3. Table II-2 lists the methods that will be used for the analysis of each constituent.

There are 47 ground water TV stations tapping confined or unconfined aquifers. Unconfined wells will be sampled monthly, and confined wells will be sampled quarterly. The analytes to be measured will depend on whether or not the well is in an actively monitored reporting unit (see above for description of reporting unit). Wells located in actively monitored reporting units will be analyzed for the analytes shown in Table II-3. Wells not located in actively monitored reporting units will be analyzed for field measurements only (pH, specific conductance, temperature, dissolved oxygen, and water level). For further information regarding the Temporal Variability Network, refer to the Watershed Monitoring and Data Management Section's Overview of the Florida Department of Environmental Protection's Integrated Water Resource Monitoring Efforts and the Design Plan of the Status Network.

Table II-1. Status Monitoring Indicator List

INDICATOR	LAKES (lg)	LAKES (sm)	STREAMS (ho)	STREAMS (lo)	AQUIFERS
Calcium	T	T	T	T	D
Magnesium	T	T	T	T	D
Sodium	T	T	T	T	D
Potassium	T	T	T	T	D
Chloride	T	T	T	T	D
Sulfate	T	T	T	T	D
Fluoride	T	T	T	T	D
Alkalinity	T	T	T	T	D
Nitrate + Nitrite	T	T	T	T	D
Ammonia	T	T	T	T	D
Kjeldahl Nitrogen	T	T	T	T	D
Phosphorous	T	T	T	T	D
Specific Conductance	D	D	D	D	D
Orthophosphate	D	D	D	D	D
Organic Carbon	T	T	T	T	T
Dissolved Solids	T	T	T	T	T
Suspended Solids	T	T	T	T	T
Turbidity	T	T	T	T	T
Color	T	T	T	T	T
Fecal Coliform	T	T	T	T	T
Enterococci	T	T	T	T	T
Chlorophyll-A	T	T	T	T	
Algal Growth Potential	T	T			
Phytoplankton	T	T			
Water Temperature	X	X	X	X	X
pH	X	X	X	X	X
Specific Conductance/Salinity	X	X	X	X	X
Dissolved Oxygen	X	X	X	X	X
Secchi Depth	X	X	X	X	
Total Depth	X	X	X	X	
Sample Depth	X	X	X	X	
Depth to Water (from LSE)					X
Land Surface Elevation (LSE)					X
Microlanduse					X
T total sample/ D filtered sample/ X other sample or measurement					

Table II-2. Analytical Methods for Status and Temporal Variability Networks

ANALYTE[1]	ANALYSIS METHOD[2,3]
Field Measurements	
pH	EPA 600/4-79-020, Method 150.1
Temperature	EPA 600/4-79-020, Method 170.1
Specific Conductance	EPA 600/4-79-020, Method 120.1
Dissolved Oxygen	EPA 600/4-79-020, Method 360.1
Depth to Water	Steel tape and chalk/electronic indicator[4]
Total Water Depth	Steel tape/electronic measuring device[4]
Secchi Depth[5]	Welch (1948); EPA 620/R-97/001
Biology	
Chlorophyll-A[5]	SM 10200 H (modified)
Phytoplankton Taxonomy[6]	SM 10200 F.1; 10200 F.2
Algal Growth Potential[6]	EPA 600/9-78-018 (modified)
Microbiology	
Total Coliform	EPA 600/8-78-017, p. 109; SM 9222 B
Fecal Coliform	EPA 600/8-78-017, p. 125; SM 9222 D
Enterococci	SM 9230 C
Escherichia coli	SM 9213 D
Organics	
Total Organic Carbon	EPA 600/4-79-020, Method 415.1
Nutrients[7]	
Nitrate-Nitrite	EPA 600/4-79-020, Method 353.2
Ammonia	EPA 600/4-79-020, Method 350.1
Total Kjeldahl Nitrogen	EPA 600/4-79-020, Method 351.2
Total Phosphorus	EPA 600/4-79-020, Method 365.1
Orthophosphate	EPA 600/4-79-020, Method 365.1
Inorganic Anions[8]	
Chloride	EPA 600/4-79-020, Method 300.0
Sulfate	EPA 600/4-79-020, Method 300.0
Fluoride	EPA 600/4-79-020, Method 340.2

Table II-2. Continued

ANALYTE[1]	ANALYSIS METHOD[2,3]
Metals[8]	
Calcium	EPA 600/4-79-020, Method 200.7
Magnesium	EPA 600/4-79-020, Method 200.7
Sodium	EPA 600/4-79-020, Method 200.7
Potassium	EPA 600/4-79-020, Method 200.7
Physical Properties	
Alkalinity[8]	EPA 600/4-79-020, Method 310.1
Turbidity	EPA 600/4-79-020, Method 180.1
Specific Conductance (Lab)	EPA 600/4-79-020, Method 120.1
Color	EPA 600/4-79-020, Method 110.2
Total Suspended Solids	EPA 600/4-79-020, Method 160.1
Total Dissolved Solids	EPA 600/4-79-020, Method 160.2

[1]Analyte measured in unfiltered samples for ground water and surface water matrices unless otherwise noted

[2]Field analytes measured by sampling agency; Biology and Microbiology analytes measured by DEP Biology Laboratory; all other analytes measured by DEP Central Chemistry Lab

[3]Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020, revised March 1983; Welch, P.S., 1948, Limnological Methods, Blakiston Co., Philadelphia; Environmental Monitoring and Assessment Program Surface Waters: Field Operations Manual for Lakes, EPA 620/R-97/001, 1997; Selenastrum capricornutum printz Algal Assay Bottle Test: Experimental Design, Application, and Data Interpretation Protocol, EPA 600/9-78-018, 1978; Microbiological Methods for Monitoring the Environment- Water and Wastes, EPA 600/8-78-017, 1978; Standard Methods for the Examination of Water and Wastewater (designated SM), 19th Ed., American Public Health Association, Washington, DC, 1995

[4]Measurements using an electronic indicator or measuring device shall follow manufacturer's instructions

[5]Measured only in unfiltered surface water

[6]Measured only in water samples from lakes for the Status Network

[7]Measured in filtered ground water samples and unfiltered surface water samples, except ortho-phosphate which is measured in both filtered ground water and surface water samples

[8]Measured in filtered ground water samples and unfiltered surface water samples

Table II-3. Temporal Variability Monitoring Indicator List

INDICATOR	SURFACE WATER	GROUND WATER[1]
Calcium	T	D
Magnesium	T	D
Sodium	T	D
Potassium	T	D
Chloride	T	D
Sulfate	T	D
Fluoride	T	D
Alkalinity	T	D
Nitrate + Nitrite	T	D
Ammonia	T	D
Kjeldahl Nitrogen	T	D
Phosphorous	T	D
Specific Conductance	D	D
Orthophosphate	D	D
Organic Carbon	T	T
Dissolved Solids	T	T
Suspended Solids	T	T
Turbidity	T	T
Color	T	T
Fecal Coliform	T	T
Enterococci	T	T
Chlorophyll-A	T	
Water Temperature	X	X
pH	X	X
Specific Conductance/Salinity	X	X
Dissolved Oxygen	X	X
Secchi Depth	X	
Total Depth	X	
Sample Depth	X	
Depth to Water (from LSE)		X
Land Surface Elevation (LSE)		X
T total sample/ D filtered sample/ X other sample or measurement		
[1]Active Reporting Unit only. Inactive Reporting Units monitored for field measurements only.		

Section III. Project Preparation

Sampling Schedule

Sample schedules will be provided to the sampling agencies. They will list the types of projects for which each agency is scheduled for, and the numbers of samples, equipment blanks, and duplicates to be collected for each project. If sampling cannot be done according to this schedule, your Project Manager must notify FDEP WM&DMS staff as soon as possible so that others involved in the project (e.g. laboratories, etc.) can be notified of the change.

Sampling Kit Shipments

The FDEP Central Laboratory has been instructed to ship all containers for a project no later than two weeks prior to the beginning of the project. The containers will be shipped in coolers addressed to the Project Manager. Pre-printed Federal Express airbills for return shipment will also be shipped inside the coolers. If the container shipment is not received at the sampling agency 7 days prior to the first day of sampling, please notify WM&DMS staff.

Project Paperwork

The FDEP WM&DMS staff will ship the paperwork needed for a sampling project to each sampling agency. This package will be mailed no later than two weeks prior to the beginning of a project. Check the package to make sure it contains all of the following items:

For Ground Water (GWTV) and Surface Water (SWTV) Temporal Variability Monitoring:

- Custody sheets
- Station identification (bar-coded) container labels
- RQ (Requisition) labels
- Field sheets
- Micro land use forms (once annually for GW only)

For Status Monitoring

- Custody sheets
- Station identification (bar-coded) container labels
- RQ (Requisition) labels
- Field log sheets

- Micro land use forms (GW only)

Preservatives

FDEP WM&DMS staff will supply preservatives for both Status and TV samples. These preservatives are contained in vials, each of which has enough pre-measured preservative to adequately preserve one sample container. It is the responsibility of the sampling agency to keep an inventory of preservatives. To order more preservatives, please notify the WM&DMS Quality Assurance Officer at (850) 922-5820, *two months in advance* of completely exhausting supplies.

Filters

FDEP WM&DMS staff will supply filter devices for filtering of surface and ground water samples. For surface water samples, orthophosphate ($o\text{-}PO_4$) is filtered using a disposable syringe and a filter disk. For ground water samples, a disposable in-line filter capsule is used to filter anions, nutrients, and metals. Inventories should be periodically checked to ensure enough supplies are available. Requests for additional filters should be made well in advance of sampling by calling (850) 922-5820.

Field Reference Samples

The U.S. Geological Survey Water Resources Division Laboratory (USGS WRD) in Ocala supplies field reference samples to sampling agencies. Shipments to the sampling agencies are generally made once or twice a year, so plenty of samples should be on hand. These samples should be analyzed at a rate of 1 per 5-10 actual samples, for both pH and specific conductance. Inventories should be periodically checked and requests for additional field reference samples should be made well in advance of sampling. Requests should be made either by calling the WM&DMS QA Officer at (850) 922-5820 or contacting the USGS by electronic mail at ocalaman@usgs.gov. Faxes can also be sent to the USGS at (352) 237-7081. When requesting supplies from the USGS; specify name and sampling agency, provide a description and quantity of items needed, mention how fast the supplies are needed, and list current mailing address.

Container Inventory

Soon after receiving the containers, they should be inventoried. Check the FDEP lab shipment to ensure that all necessary containers and preservatives have arrived, using the inventory list on the

back of the custody sheet. Remember that it is the sampling agency's responsibility to ensure that enough supplies are available. Do not forget to include Quality Control (QC) samples. Container inventories are shown in Sections V and VII. If there are any questions, call either the FDEP lab or WM&DMS staff.

Supplies and Equipment Inventory

Prior to beginning a project, conduct an inventory of all sampling supplies and equipment needed. A checklist can be helpful in ensuring that the proper supplies and equipment are available. A checklist can also be helpful when checking cleanliness and working order of sampling equipment. Checklists will vary for different agencies. Examples of checklists are shown in Sections V and VII.

Historical Data

Prior to visiting a sample site, it is imperative that documentation from previous visits be reviewed, if available. Important information can be obtained from the documentation including average purging time, calibration ranges, and expected field measurements. If possible, take a printed copy of the field notes to the site so they can be compared with the current observations. If discrepancies are found, be sure to note them in the field logbook. Finally, check to see that the information in the station file is complete. Often relevant information is missing. If so, try to obtain that information in the field.

Section IV. Instrument Calibration Procedures

Introduction

The following are the minimum calibration requirements needed to ensure that an instrument is capable of producing acceptable data.

General Calibration Considerations

Field equipment shall be fully calibrated daily for pH, specific conductance, and dissolved oxygen (DO). Refer to equipment manufacturer's recommendations for calibration procedures.

Once the meter has been calibrated, pH, conductivity, and DO checks shall take place at the end of the sampling day. The pH meter will be checked against the pH 7 buffer, the specific conductance meter against a single standard, and DO will be checked with water saturated air. If a field meter fails a calibration check, then a complete calibration must be performed prior to collecting further data.

The minimum frequency of the pH and conductivity checks are contingent upon field reference sample results. At least 95% of the results must be satisfactory or marginal. If this is not met, then the minimum frequency for the checks will be every 4 hours, and at the end of the sampling day, until satisfactory performance can be assured.

Records of each system calibration and calibration check must be maintained in a calibration log. The method used to calibrate, time and date of calibration, standard(s) used, resulting meter response, actions taken, and the results of the calibration should be listed. Optionally, the meter name, model number, and identification number (if applicable) may be entered.

Documentation on calibration standards (e.g., buffers, KCl, and other reagents) must be maintained.

- At a minimum, the date of receipt, expiration dates (noted on the bottle label), and date of first use shall be noted on the standard container.
- Expiration dates must be followed.
- If reagents or standards are prepared from stock chemicals, they must be analytical reagent grade or better. NOTE: Potassium chloride standards must be of primary standard grade.

Calibration of Specific Meters

Multiprobe Meters

Calibration should be performed according to manufacturer's specific instructions on a daily basis. Checks should be conducted as listed in the following for the individual meters.

---

pH Meters

- The pH meter is calibrated on a daily basis according to manufacturer's instructions. Use buffer solutions (pH of 4, 7, 10) purchased from commercial vendors for calibration. Do not reuse buffers. Each meter/electrode system must be calibrated at a minimum of two points, at least three pH units apart, bracketing the expected sample pH. Check historical data for expected pH or use pH paper on an aliquot to estimate. Values must be within 0.1 standard units of the actual buffer values, or the meter must be recalibrated.
- A calibration check must be made at the end of the sampling day.
- If less than 95% of the pH field reference sample values are not satisfactory or marginal, the minimum frequency for checks will be every 4 hours as well as at the end of the sampling day. The pH meter is checked against the pH = 7 buffer. The value must be within 0.1 standard units of the actual buffer value, or the meter must be recalibrated.
- There are several interferences to keep in mind with pH measurement:
  - Sodium interferences that occur at pH > or = 10 can be reduced or eliminated by using a low sodium error electrode;
  - Coatings of oils, greases, and particulates may impair the electrode's response. The electrode bulb should be patted dry with lint-free paper or cloth and rinsed with deionized water. If not, acetone may be used to clean very hard to remove films, but must be used sparingly so the electrode surface is not damaged.
  - Temperature effects on the electometric measurement of pH and conductivity are controlled by using instruments having automatic temperature compensation (ATC) or by calibrating the meter at the temperature of the samples.
  - Poorly buffered solutions with low specific conductance (<200 µS/cm) may cause fluctuations in the pH readings. Equilibrate the electrode by immersing it in an aliquot of sample for several minutes before taking pH readings.
- Under normal conditions a pH measurement should be accurate to +/- 0.1 pH units.

Thermometers/Thermistors

- Temperature determinations can be made with any field-grade mercury-filled, alcohol-filled, or dial-type Celsius thermometer as well as an electronic thermistor.
- All field thermometric devices shall be checked annually in the laboratory against a National Institute of Standards and Technology (NIST) precision thermometer.

- The annual check should consist of the following:
  - Temperatures should agree within +/- 0.1° C. Make note of the calibration in the calibration records. Note the make, model, and serial number of each thermometer or thermistor.
  - Thermometers or thermistors that do not meet the acceptance criteria should be disposed of properly.
  - If the difference is shown to be constant (i.e. + 0.5° C) over the temperature range of the thermometric device, it may still be used provided that the difference is documented for 10 degree increments, and the correcting factor is used in all measurements.
- All field thermometric devices should be checked weekly in the laboratory with a NIST checked thermometer.
- The thermometer or thermistor should be allowed to equilibrate to the temperature of the sample before readings are recorded.
- Temperature readings should be recorded to the nearest 0.5° C.

Specific Conductance Meters

- Conventional conductivity devices consist of two or more platinum electrodes separated by a test solution. The major disadvantage with this type of system is the possibility of polarization or poisoning (fouling) of the electrodes. Periodic cleaning of the electrodes, according to the manufacturer's instructions, should be performed.
- Conductivity varies with temperature. For example, the conductivity of salt water increases 3% per degree C at 0° C, and only 2% per degree C increase at 25° C. Therefore, all meters must be temperature compensated.
- The meter should be calibrated daily using the manufacturer's specifications. If the meter does not read within 5% of the standards, determine what the problem is and correct it before proceeding.
- The meter must be checked in the field with at least one conductivity standard at the end of the sampling day. However, if less than 95% of the conductivity field reference sample results are satisfactory or marginal, conductivity will have to be checked at a minimum of every 4 hours as well as at the end of the day. The chosen standard should be close to the conductance value of the samples. If the meter does not read within 5% of the standard, then the meter must be recalibrated prior to collecting further data.

Dissolved Oxygen Meter

- Annually, the meter should be calibrated in the laboratory using the Azide modification of the Winkler Method. The annual laboratory calibration should consist of the following:
  - Fill a clean container with uncontaminated or deionized water and place the probe into the container.
  - Siphon water from the container into two Biological Oxygen Demand (BOD) bottles.

- Make sure to place siphon hose on the bottom of the bottles and overflow the bottles by three volumes.
- Determine the DO by the Winkler method (see Standard Methods for the Examination of Water and Wastewater, 19th Ed., American Public Health Association, Washington, D.C., 1995, for more details).
- Adjust the DO meter according to manufacturer's instructions.
- Be sure to adjust the meter to the temperature of water in the container, then calibrate the instrument to read the average DO concentration of the two samples determined by the Winkler test.

- Once a day the dissolved oxygen (DO) meter should be calibrated in accordance to the manufacturer's recommendations.
- Before mobilizing, check to make sure there are no air bubbles on or, wrinkles or tears in the probe membrane. If so, replace the membrane and KCl filling solution. Check the leads, contacts, etc. for corrosion and/or shorts if the meter pointer remains off-scale, does not calibrate, or drifts.
- Check the calibration of the DO meter with water saturated air at the end of the sampling day. If a DO meter fails the calibration check, then recalibrate the meter prior to taking any more DO measurements. Refer to the manufacturer's recommendations if the calibration checks fails and the probe appears damage.
- A constant flow of water across the membrane-sample interface is necessary when collecting DO data.
- Dissolved inorganic salts are an interference with the performance of DO probes. For example, the taking of DO readings in salt water is affected by the salinity. Corrections should be made following the manufacturer's instructions.
- Reactive gases, which pass through the membrane, may cause interference. Again, refer to the manufacturer's recommendations when dealing with interferences.
- DO probes are temperature sensitive. A method of temperature compensation is normally provided by the manufacturer if the probe does not compensate for temperature automatically.

Section V. Ground Water Sampling Protocols

Introduction

Sampling of ground water is done such that samples will approximate as closely as possible actual aquifer conditions. The methods should consider the following:

- Well construction and development is carefully documented.
- Purge techniques are documented for each well.
- Field measurements are made with minimal disturbance.
- Samples are collected with minimal disturbance and preserved rapidly.
- Samples are collected in a known and reproducible manner.

Before actually going into the field, maps and previous field logs are used to determine the number of wells to be sampled and the order in which they will be sampled. When wells are known to contain low-level contamination, sampling should proceed from the least contaminated well to the most contaminated. Wells known to be severely contaminated (e.g. presence of free product or trace contaminant concentrations in parts per million) should not be sampled. Prior to visiting wells that are privately owned, the owner should be informed by phone call or letter. Springs will be sampled as a ground water resource such that samples will be taken at the vent or as close as possible to the vent.

Capabilities

The ground water coming from all wells will be examined for the following field analytes: pH, temperature, specific conductance, dissolved oxygen, and depth to water. For all Status Network and certain Temporal Variability Network wells (as stated in Section II), ground water samples will be collected for the following analyte groups: organics (total organic carbon), physical properties (turbidity, specific conductance, color, total suspended solids, and total dissolved solids), microbiology (enterococci, *Escherichia coli*, total coliform, and fecal coliform), metals (calcium, magnesium, sodium, and potassium), and inorganics (inorganic anions- chloride, sulfate, and fluoride; nutrients- nitrate-nitrite, ammonia, kjeldahl nitrogen, total phosphorus, orthophosphate; and alkalinity). Analytes and analytical methods are listed in Table II-2.

Inventory for Sampling Needs

Before traveling to the well site, several inventories are necessary.

- Inventory all paperwork coming from FDEP, including barcode labels, custody sheets, micro land use forms, and field log sheets (all described below).
- Inventory the sampling kits and the acids necessary for sample preservation, by using the container inventory list provided on the back of the custody sheets (Figure V–1.).
- Inventory the equipment necessary for the well sampling, by use of an equipment inventory check-list such as that listed in Figure V–2.

Figure V–1. Back of the Custody Sheet for Ground Water TV and Status Monitoring

GROUND WATER TEMPORAL VARIABILITY & STATUS NETWORK
CONTAINER INVENTORY

LAB	CONTAINER	ANALYSES	DESCRIPTION	SAMPLE PREPARATION
DEP	TOC	TOC	(1) 125 ml plastic	Unfiltered; H_2SO_4 ampule to pH < 2; chill to 4°C
DEP	Turbidity	Turbidity, Color, TDS, TSS	(1) 1 liter plastic	Unfiltered; chill to 4°C
DEP	Bacteria	Enterococci Fecal Coliform	(2) Whirlpaks® 4 oz	Unfiltered; chill to 4°C
DEP	Metals	Ca, K, Na, Mg	(1) 125 ml plastic	Filtered; HNO_3 ampule to pH < 2; chill to 4°C
DEP	Anion	Cl, SO_4, F, o-PO4, Alkalinity, Conductance	(1) 500 ml plastic	Filtered; chill to 4°C
DEP	Nutrient	NO_3+NO_2, NH_3,TKN, P	(1) 500 ml plastic	Filtered; H_2SO_4 ampule to pH < 2; chill to 4°C

Figure V–2. Example of Ground Water Sampling Supplies Inventory List

GROUND WATER SAMPLING INVENTORY

Meters
pH meter ___
batteries ___
probe ___
standards ___
Conductance meter ___
batteries ___
probe ___
standards ___
DO meter ___
batteries ___
probe ___
standards ___
Thermometer/Thermistor ___
condition ___
calibration ___

Pumps
Submersible RediFlow2
condition ___
tubing ___
drop-pipes ___
check valves ___
gasoline ___
generator ___
Centrifugal ___

tubing
drop-pipes ___
check valves ___

Filtration Apparatus
Filters ___

Reagents & Preservatives
Sulfuric Acid Vials ___
Nitric Acid Vails ___
Analyte-Free Water ___
Liquinox ___

Miscellaneous
Aluminum Foil ___
Plastic Garbage Bags ___
Duct Tape ___
Unpowdered Latex Gloves ___
Paper Towels ___
Spray Bottles ___
pH paper ___
Cleaning brushes ___
Butcher Paper ___
Indelible Markers ___
Pens ___
Coolers ___
Ice ___
Water Level Tape ___
Chalk ___

Paperwork
Site Maps ___
Historical Data ___
Micro Land Use Sheets ___
Calibration Notebook ___
Cleaning Notebook ___
Custody Sheets ___
Field Log ___
Barcode Labels ___
Container Inventory ___

Sampling Vehicles
Fueled ___
Oil ___
Clean ___
Spare Tire ___

Date of inventory_____
Signature_____

At the Well

Once at the well site, compare the site's appearance to the description of the site in the historical records. Often, the physical appearance of a site can change dramatically between sampling events. These changes should be documented, and the written descriptions should be made part of the site file.

Several wells may be clustered at a single site. It is imperative that these wells be clearly distinguishable from one another. Each well should be marked with a Florida Unique Well Identification tag, as described below. Site descriptions should illustrate each well. It is very easy to confuse wells and samples at one of these sites. If you are unsure about which well you are at, measure down to the bottom of the well and compare the measured depth with the depth given in the well file. Several samplers have surprised themselves by performing this simple check.

Once you have identified the well to be sampled you will do the following:

1. Note the land uses immediately adjacent to the well.
2. Take the depth to water of the well.
3. Purge the well.
4. Take field measurements of the well water.
5. Collect water samples if any are to be obtained at the well.
6. Tag the well with a Florida Unique Well Identification (FLUWID) Tag and collect its Global Positioning System (GPS) location, if not done previously.
7. Document information concerning the sampling event.

Labeling Sample Containers

At a well site where water samples are to be collected, all the sample containers for that site are labeled prior to filling. Only one set of containers will be out and labeled at any one sample location. Unpowdered latex gloves should be worn while handling the containers. Station identification labels are provided to the sampling agencies by the WM&DMS (Figure V-3). These labels are bar-coded to uniquely identify a sample station. Several labels are provided for each sampling site. A label will be placed vertically on each sample container for a site. The FDEP Central Laboratory places two types of labels on the sample bottles prior to shipping. One identifies the weekly sampling project request number and the sample analytes for that container (Figure V-4). The other provides the production container numbers for a specific sample bottle (Figure V-5). Samplers should write the time and date at which a station is sampled on the laboratory project and sample identification label of each container.

Figure V - 3. Example of Station Identification Label

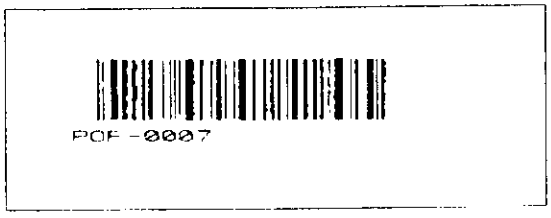


Figure V - 4. Example of Laboratory Project and Sample Identification Label

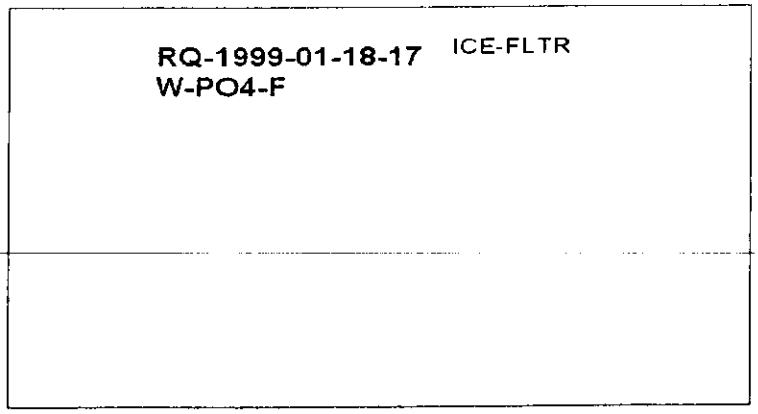
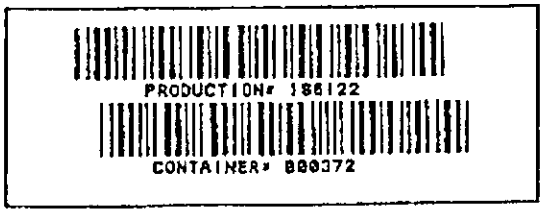


Figure V - 5. Example of Laboratory Production and Container Numbers Label



Documentation

The micro land use form (Figure V–6) is used to document the land uses found within a 300 foot radius of the well. Once the well for sampling is located, fill out the micro land use form. If sampling a well in the TV Network, this form has to be completed once each sampling year and after any changes occur in the land use. The form must be completed for every well in the Status Network while sampling. Attach a barcode label for the well to be sampled in the upper left box of the form, which contains the words station id and station name. Date the form, and then check off the major land use group for the land uses seen within a 300-foot radius of the well. Next check off all features observed within a 300-foot radius of the well. Finally list any comments which pertain to land use immediately surrounding the well.

A standardized field log sheet should be used to document all information pertaining to the purging of the well. The Ambient Monitoring Program will supply field log sheets to contractors (Figure V-7).

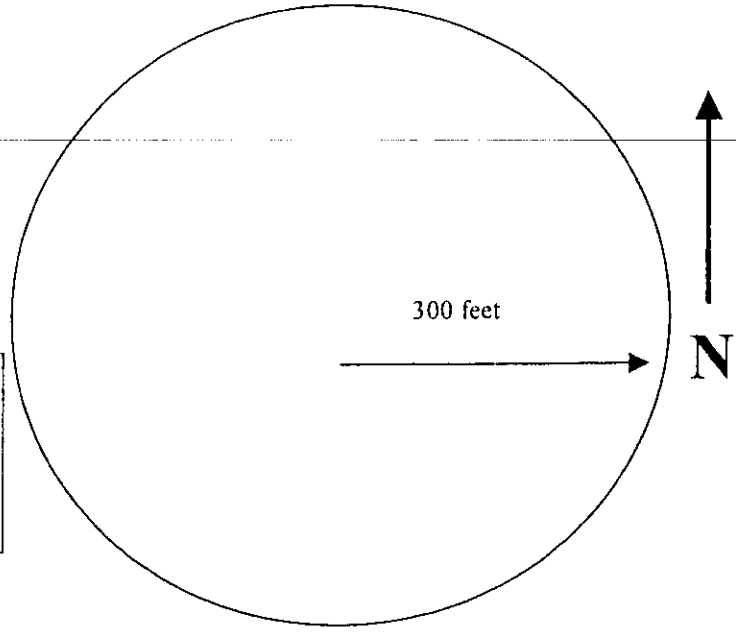
Figure V–6. Example of Micro Land Use Form

FLORIDA AMBIENT MONITORING NETWORK
FEATURES & MICRO LAND USE SHEET

Station ID

Station Name

Date



Major Land Use Group
(Check one)

__ Low Impact (LI)
__ Mining/Excavation ME)
__ Urban/Suburban (US)
__ Intense Agriculture (AG)
__ Industrial (IN)

Check All Features Observed Within 300 Feet Of Well

___(47) Agri. Chemical Mixing/Storage
___(02) Airports
___(52) Animal Feeding Operation
___(10) Borrow Pit
___(21) Canal(s)
___(40) Cave(s)
___(03) Cemetery
___(51) Crops, Field
___(50) Crops, Row
___(22) Ditch, Drainage
___(37) Ditch, Irrigation
___(55) Dry Cleaners
___(41) Food Processing Plant
___(12) Golf Course
___(48) Groves, Citrus
___(49) Groves, Other
___(23) Holding Pond(s), Industrial
___(24) Holding Pond(s), Urban
___(45) Hospitals/Clinics
___(35) Junk Yard
___(53) Kennel(s)
___(25) Lake(s)
___(04) Landfill
___(11) Mine
___(43) Mineral Processing Plant
___(01) Nursery/Greenhouse
___(20) Parking Lot(s)
___(44) Petroleum Processing Plant
___(17) Pipeline(s) & Pump Station
___(46) Power Plant
___(18) Railroad(s)
___(06) Repair Shops (e.g. Automotive)
___(05) Residence
___(26) River
___(16) Roads, Major Highway
___(36) Roads, Other
___(13) Septic Tank(s)
___(07) Service Station
___(14) Sewage Treatment Plant
___(15) Sewage Treatment Sprayfield
___(39) Sinks/Sinkholes
___(27) Spring(s)
___(08) Storage Tanks (Above Ground)
___(09) Storage Tanks (Below Ground)
___(38) Stream(s)
___(42) Timber Processing Plant
___(19) Transmission Lines and Towers
___(29) Water Softener
___(30) Well(s), Injection
___(31) Well(s), Irrigation
___(32) Well(s), Oil & Gas
___(33) Well(s), Private Supply
___(34) Well(s), Public Supply
___(28) Wetland(s)
___(54) Zoos

Comments or other unlisted features

_____

_____

_____

Figure V-7. Ground Water Sampling Field Log Sheet

FLORIDA AMBIENT MONITORING NETWORK
FIELD LOG SHEET

SAMPLING AGENCY: **COUNTY:**
STATION_ID: **STATION:**
OWNER: **PROJECT:**
CASING DIAMETER: **CASING MATERIAL:**
LAND SURFACE ELEVATION: **TOTAL DEPTH:**
MEASURING POINT ELEVATION: **WATERBODY:**

DATE/TIME ON SITE:_____ DATE/TIME OFF SITE: _____

SAMPLER: _____ LAB(s):_____

SAMPLER: _____ FIELD ID:_____

	HELD AT		WETTED AT		DEPTH TO WATER (DTW)	
1.	_____	-	_____	=	_____	(feet from MPE)
2.	_____	-	_____	=	_____	(feet from MPE)

WATER ELEV: (MPE-DTW) _____ feet STICKUP (SU=MPE-LSE): _____ ft

MIN. PURGE VOLUME: _____ - (_____ - _____) x ___ x ___ x 0.1224 = _____ gal
DW DTW SU D D

PURGE RATE: _____ gal/min PURGE PUMP ID:_____

MIN. PURGE TIME: (MIN. PURGE VOLUME/PURGE RATE) _____ min.

DATE/TIME PURGE BEGIN:_____ DATE/TIME PURGE STOP:_____

TOTAL PURGE TIME: _____ min

TOTAL PURGE VOLUME: (PURGE RATE x TOTAL PURGE TIME) _____ gal

FUEL-POWERED UNITS USED ON SITE: _____

SULFUR ODOR:_____ COLOR: _____

DATE/TIME SAMPLING BEGIN: _____ DATE/TIME SAMPLING STOP:_____

SAMPLING DEVICE ID: _____ _____

SAMPLING FLOW-RATE (IF IN-PLACE PLUMBING): _____

Figure V-7. Continued.

QA SAMPLES TAKEN ON SITE: _____

WEATHER CONDITIONS: _____

PERSONNEL/VISITORS ON SITE: _____

WELL CONDITION: _____

WELL TAG: _____

ADDITIONAL COMMENTS: _____

CHEMICAL STABILITY MONITORING

#	TIME	pH	TEMP	SP. COND	Eh	DO	COMMENTS
1							
2							
3							
4							
5							
6							
7							
8							
9							

- Instrument calibrations will be recorded in the instrument calibration logs
- Eh values above must be converted relative to the std. hydrogen electrode.

Florida Unique Well Identification (FLUWID)

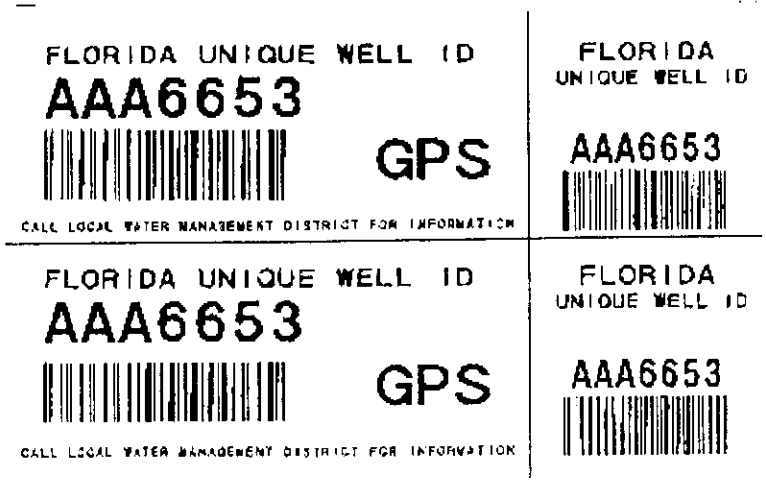
Several agencies regulate wells in Florida, among them the Department of Health (DOH), the Department of Environmental Protection (DEP), the Water Management Districts (WMDs), and the Department of Agriculture and Consumer Services (DACS). In addition, local governments and individual homeowners are interested in their wells. Each agency and program has their own way of identifying the wells that they regulate. Unfortunately, very little of the information in these databases can be shared due to an inability to cross-reference the different naming schemes.

During June of 1995, a plan to facilitate well identification in Leon County was conceived and implemented through the "Model Approach to Well Head Protection" Pilot project in Leon County. With this plan, all of Leon County's wells were tagged with "Florida Unique Well Identification" tags, also referred to as FLUWID tags. The tags uniquely identify each well with a number that does not contain any imbedded information and does not link the well to any particular agency. The only modification to the existing databases that was necessary to incorporate this new tag ID, was the addition of a field into which the FLUWID number could be entered.

The Tag and Information Sheet

The tag number is in an alphanumeric format, XXX### (Figure V-8). Beginning with AAA0001 and ending with ZZZ9999, enough unique numbers exist to print tags for millions of wells. The tags are printed on durable, weatherproof mylar and replacement tags can be printed if needed. Four tags are printed for each well. Three tags are placed on various locations at the well site and the fourth tag is put on the ground water fieldsheet.

Figure V-8. Florida Unique Well Identification (FLUWID) Tag



Inquiries about a tagged well may be made by contacting the agency listed on the tag. For the Ambient Monitoring Networks the contact agency will be the Watershed Monitoring and Data Management Section. The tag will list the contact information as "For Information Call: Florida Department of Environmental Protection at (850) 921-9422". All inquiries will be routed to the appropriate Project Manager who will reply to the data request.

Standard Procedures

1. Everyone who will be using GPS equipment must receive thorough instruction on the basic operating principles of GPS and correct use of GPS equipment and software. There are critical settings in the data logger, which need to be set correctly. Failure to do so will result in data that is of poor quality and its inclusion in a database will corrupt the database.
2. When using a GPS, make every effort to collect the position where the wellhead is located. Accurate measuring devices and compasses must be used if offsets are made.
3. Only DGPS or GPS units capable of collecting data that can be post processed shall be used.
4. *Before tagging a well*, check carefully to see if a Florida Unique Well ID tag has already been placed at that location. This will avoid double tagging a well with two different ID numbers, which defeats the purpose of having a unique ID assigned to each well. Three of the FLUWID tags with the same alphanumeric code, the two large tags and one small tag, should be placed at the well site in different, but highly visible, locations. One large tag should be placed on the well casing or on the pump base. The other large tag should be placed on the pump discharge line or well casing cover. One of the small tags should be placed on the electrical switch box, the building entrance (if only one well is located in that building), or on the pressure tank (if it is within 10 feet of the pump). The fourth tag (last small tag) with the same alphanumeric code should be placed on the ground water fieldsheet.
5. FLUWID tags are printed by FDEP and will be supplied by the staff in the WM&DMS with the ground water fieldsheets.

Sampling of Wells with In-Place Plumbing

Depth to Water Measurement

In many instances, the measurement of depth to water may not be possible because of the in-place plumbing. If the in-place plumbing allows, the water level relative to a known measuring point may be measured using a graduated steel tape and chalk, or an electronic water-level sensor. The depth to water is measured twice to the nearest 0.1 feet; both values are recorded in the field log.

Purging the Well

Before purging the well, consider where the water you are removing from the well will go. Check first for any nearby surface water bodies, and direct the purge hose away from these features. Also, try to direct the purge water away from the well head area. If you have reason to believe the well is severely contaminated, don't sample it until first discussing with your supervisor and FDEP staff. Generally, no special precautions apply to the treatment of purge water because the Status and Temporal Variability Networks monitor ambient ground water with no or low concentrations of contaminants. If sampling is to take place in an area of known contamination, special disposal methods may apply. The purge water will likely be disposed of on-site if the water will infiltrate the same zone from which it was withdrawn. Otherwise, at the direction of the FDEP Project Manager, arrangements will be made to transport the purge water to a sewer system or plant, if the contaminant concentrations are within their treatment specifications.

Purge Volume

The volume of water to be purged depends upon the following: depth and diameter of the well, whether pumps are running continuously or intermittently, how close to the source the sample can be collected, and the presence of any storage/pressure tanks between the sampling point and the pump. If a storage/pressure tank is present, an adequate amount of water must be purged to completely exchange the water of the tank and ensure that the sample collected is representative of the ground water.

- If the pump is continuously running and the sample can be collected prior to a tank, the valve should simply be opened and allowed to flush at maximum velocity for at least 15 minutes.
- If the pump is continuously running and a tank is located ahead of the sample location, the purge must include the entire storage tank volume.
- If the pump is running intermittently, it is necessary to determine, if possible, the volume to be purged, including storage/pressure tanks prior to the sampling point. The pump should then be run continuously at maximum velocity until the required volume has been purged.
- If construction characteristics are not known for a well with an intermittently running pump, the pump should be run continuously for at least 15 minutes and until chemical stability is achieved. Temperature, pH, and conductivity readings are taken at regular intervals. These measurements, as well as dissolved oxygen, should be made in a flow-through chamber to minimize atmospheric contact with the sample. When two consecutive readings of these field analytes agree within the amounts given in Table V-1, then the well is chemically stable. Calibration of the various instruments that can be used to measure pH, dissolved oxygen, specific conductance, and temperature was addressed in Section IV. Instrument operating instructions should be followed when taking measurements.
- The construction of the well and pump and the method for purging should be noted in the field log and custody sheet.

Table V-1. Chemical Stability

TEMPERATURE	0.2°C
SPECIFIC CONDUCTANCE	5% or 5 µS/cm if <100 µS
pH	0.1 s.u.

Measuring Field Analytes

Temperature, pH, specific conductance, and dissolved oxygen readings must be collected within a flow-through chamber to minimize atmospheric contact with the sample. They may be taken at regular time intervals during the final purging process if using the chemical stabilization purge method as stated previously. Final field measurements are collected at the appropriate time interval after an adequate amount of water has been purged. The measurement time intervals will vary with the volume of water to be purged and must be adequately spaced to yield results representative of the aquifer. Calibration of the meters used to collect these analytes was addressed in Section IV. Field measurements must be made according to instrument operating procedures and recorded on the ground water field log sheet.

Sample Collection

After purging and measuring field analytes, the following must be considered for collecting water samples:

- The sample will be taken from the spigot closest to the well head and before any screens, aerators, and filters, etc.
- If possible the sample should also be collected prior to any storage/pressure tank.
- It should be noted in the field log and custody sheet if a sample is collected from a spigot located after a tank.
- Water flow should be slow and laminar while filling sample containers.

Sample containers are filled in a specific order to prevent degradation and contamination of samples. The sample collection sequence is shown on the back of the custody sheet (Figure V-1) and follows here.

1. Arrange one (and only one) complete container set.
2. Inspect containers for flaws. Discard any that look suspicious.
3. Label each container with a barcode label, with the barcode vertical.
4. Write the date/time on the sample container label.
5. As an error check, have another member of the sampling team review the bottles for mislabeling.
6. Wear new unpowdered latex gloves.
7. Inspect containers for flaws. Discard any looking suspicious.
8. Fill the 125 ml plastic container marked W-TOC with unfiltered sample water, leaving some headspace, and cap.
9. Fill the 1 liter plastic container for physical analytes with unfiltered sample water leaving some headspace and cap.
10. Fill the Whirlpaks®, using the following procedure:

a. Wear unpowdered, disposable latex gloves while handling the Whirlpaks®.
b. Tear the top off of the Whirlpak® where it is perforated.
c. Hold the bag such that its mouth is in front of the hands and fingers.
d. Fill the bag with sample water.
e. Press out excess water from the bag such that the Whirlpak® contains approximately 150 ml of sample (to fill line, leaving some airspace).
f. Finally, seal the bag tightly with at least three folds at the top and the wire ties bent in half with the ends twisted together.

11. Filtered samples will be obtained by connecting a new 0.45-micron filter unit to the spigot. The filter should be flushed with at least 250 ml of sample water prior to filling the sample containers.
12. Fill the 125-ml plastic container marked metals with filtered sample water, leaving some headspace, and cap.
13. Fill the 500-ml plastic container marked anions with filtered sample water leaving some headspace and cap.
14. Fill the 500-ml plastic container marked nutrients with filtered sample water, leaving some headspace, and cap.

Sample Preservation

Preservation of samples occurs after all samples have been collected, but within 15 minutes of collection.

Acid Preservation

The acid preservation sequence is designed to reduce cross-contamination. The acids will be provided in polypropylene vials by FDEP WM&DMS. One ml of concentrated American Chemical Society grade nitric or sulfuric acid will be in each 3.5-ml polypropylene vial. Organics and inorganic nutrients samples will be preserved first with sulfuric acid; then the metals sample is preserved with nitric acid. This order will eliminate the possibility of the nutrients becoming contaminated. After adding the acid, the pH values of the samples should be less than 2. This is confirmed by checking an aliquot of the sample with narrow range pH paper. Follow these procedures to preserve the TOC, nutrients, and metals samples with acid:

1. Wear unpowdered, disposable latex gloves and eye protection when handling acids.
2. First, preserve the total organic carbon and nutrients samples in the 125 and 500-ml bottles with sulfuric acid.
3. Unscrew the cap of the 500-ml nutrients bottle being careful that the cap is not dropped.
4. Unscrew the cap on one of the concentrated sulfuric acid vials, and discard this cap in an acid waste container.
5. Pour the 1 ml of acid into the nutrients bottle.
6. Discard the vial in an acid waste container.
7. Cap the sample bottle tightly and invert it to mix the acid with the sample.
8. Confirm that the pH value of the sample is now less than 2 by the following. Uncap the sample bottle, pour a few millimeters of the sample from the container into a disposable cup, and place pH paper that is in the 1 to 2 range in the sample water in

the cup. Alternatively, pour a small amount of sample directly onto the narrow range pH paper over the acid waste container. *Note that the pH paper should not be directly placed into the sample bottle.*

9. Discard the aliquot and disposable cup into the acid waste container after measuring the pH. Do not pour the aliquot back into the sample bottle.
10. Add more acid by following steps 4 through 9 if the pH is greater than 2 pH units until it is lowered adequately. Document this deviation from the typical preservation procedure on the field log and custody sheet.
11. Tightly cap both the nutrients bottle when the pH value is below 2 and set aside.
12. Follow steps 3 through 11 to also preserve the TOC sample with sulfuric acid.
13. Next preserve the metals sample with nitric acid. *Note one must be careful not to contaminate the nutrients with this nitric acid preservative; thus, the nutrients bottle must be capped and out of the way of this process.*
14. Unscrew the cap on the metals bottle being careful that the cap is not dropped
15. Unscrew the cap on one of the concentrated nitric acid vials, and discard this cap in an acid waste container. *Note that the nitric acid is generally distinguishable from the sulfuric acid because it has a yellowish-brown color.*
16. Pour the 1 ml of acid into the 125-ml metals bottle.
17. Discard the vial in an acid waste container.
18. Cap the sample bottle and invert it to mix the acid with the sample.
19. Confirm that the pH of the sample is now less than 2 pH units by the following. Uncap the sample bottle, pour a few millimeters of the sample from the container into a disposable cup, and place pH paper that is in the 1 to 2 range in the sample water in the cup. Alternatively, pour a small amount of sample directly onto the narrow range pH paper over the acid waste container. *Note that the pH paper should not be directly placed into the sample bottle.*
20. Discard the aliquot and disposable cup into the acid waste container after measuring the pH. Do not pour the aliquot back into the sample bottle.
21. Add more acid by following steps 15 through 20 if the pH value is greater than 2 until it is lowered adequately. Document this deviation from the typical preservation procedure on the field log and custody sheet.
22. Tightly cap the metals bottle when the pH is below 2 pH units and set aside.

Storage and Disposal of Acid Preservatives

Acid preservatives are carried in sealed vials and are not opened until the time of sampling. They should be stored away from direct sunlight. Used vials are placed into a sealed container and transported back to the sampling agency's lab. They should be diluted/neutralized to a pH between 5 and 9 s.u. The liquid can then be poured into a sanitary sewer system. The vials should be rinsed several times with tap water, and the water discarded down the drain. Then the container holding the vials should be sealed and placed in the trash.

Preservation on Wet Ice

All samples must be quickly bagged and placed on wet ice after collection and acid preservation according to the following procedures. While more than one complete sample may be placed in a single cooler, under no circumstances should samples be split up between one or more coolers.

1. Wear unpowdered, disposable latex gloves while handling sampling containers.
2. Separate the nutrients and total organic carbon sample from other samples by placing it into a zip top baggy.
3. Place the metals sample also into a separate baggy. Note these two steps are an extra precaution to prevent cross-contamination.
4. Place all microbiology samples into a separate zip top baggy to prevent losing them from leakage.
5. Put all samples from a single station into a mesh bag.
6. Then place the bag of samples into a cooler with wet ice in order to chill the samples to 4°C.

Sample Custody

Sample custody is of critical importance to the objectives of the Status and Temporal Variability Monitoring Networks. Although the magnitude and scope of the Networks do not allow for legal chain-of-custody procedures, proper sample custody is a high priority. Data gathered will be incorporated into an existing statewide water quality database. This incoming data must be properly linked to historical data. The database is also a source of public information; therefore, every effort must be made to avoid the association of erroneous analytical results to well or surface water sites. An example of the front of a sample custody sheet for ground water sampling is illustrated in Figure V-9. On the back of the custody sheet, is a container inventory as illustrated in Figure V-1. The container inventory lists the analytes to be measured, the container type that will hold the water sample for a group of analytes, and the methods for preserving the water sample. Sample custody sheets are completed (in carbonless triplicate) by the sampler, one for each return cooler. The following information is included on the custody sheet:

- sampling agency
- project name
- sampler names
- station identifier (label as shown in Figure V-3)
- date and time sample was collected
- specific conductance of the sample water
- pH of the sample water

In addition, a bar-coded label containing the weekly project request number (Figure V-10) is placed in the upper right hand corner of each sample custody sheet used that week. This process enables custody to be verifiable from the field to the lab for each container and sample. If there is any modification to the sample container or of the way the sample is collected, it should be reported in the Comments section of the custody sheet. Mistakes on the sample custody sheet will be deleted by drawing a single line through the error. The two top copies of the custody sheet (white and yellow sheets) are placed in a sealed plastic bag and taped to the inside top of the FDEP cooler for shipment back to the Central Chemistry Lab with the samples. At the FDEP Chemistry Lab, information on the sample custody sheet is used to log in the samples. The other copy of the custody sheet (pink sheet) will be kept by the sampling agency and placed in the field logbook.

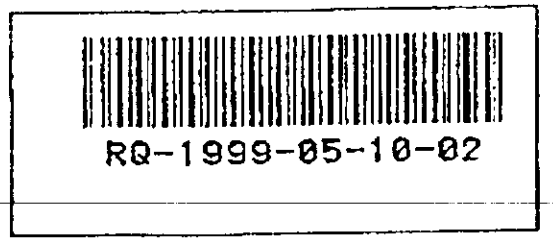
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AMBIENT MONITORING PROGRAM
SAMPLE CUSTODY RECORD

SAMPLING AGENCY	PROJECT	SAMPLER NAMES	LAB PROJECT CODE
			AMBIENT GW-TREND

	STATION IDENTIFIER	SAMPLE INFORMATION	LAB IDENTIFIER
1	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
2	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
3	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
4	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
5	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID

Figure V–9. Example of the Front of the Custody Sheet for Ground Water Sampling

Figure V-10. Example of Weekly Project Request Number Label



Sampling of Wells without In-place Plumbing

Depth to Water Measurement

The water depth relative to a known measuring point is measured using a graduated steel tape and chalk or an electronic water-level sensor. The depth to water is measured twice to the nearest 0.1 feet; both values are recorded in the field log.

Purging the Well

Before purging the well, consider where the water you are removing from the well will go (refer to Purging the Well under **Sampling of Wells with In-Place Plumbing**).

Equipment Used to Purge Wells

- Wells may be purged with any of the following types of pumps: centrifugal, peristaltic, or submersible.
- Unpowdered latex disposable gloves should be worn when handling the pump.
- Fuel driven power sources for the pumps must be located away from the well head and downwind to minimize contamination.
- Pump housing, tubing, and delivery hoses can be composed of inert material, teflon or stainless steel. Sampling may also be composed of non-inert material, polyethylene, polypropylene, or polyvinyl chloride, because no samples will be collected for trace organics.
- All submersible pumps or purge delivery hoses will be equipped with a one-way flow check valve to prevent backflow of purged water into the well.

Purging Procedure

1. A submersible pump or a purge hose connected to a centrifugal or peristaltic pump is lowered into the top of the standing water column so that purging removes the standing water first and then draws replacement water from the formation of interest.

2. If the well recovers at a faster rate than the pump rate and no observable draw down occurs, the pump should be raised until the intake is within one foot of the top of the water column for the duration of purging.
3. If the pump rate is greater than the recovery rate of the well, the pump will have to be lowered, as necessary, to accommodate the draw down.
4. The well is considered purged when one of the following criteria is met:
   a. Three standing water volumes are removed and field analytes subsequently stabilize.
   b. Five standing water volumes are removed.
   c. The well is purged dry once, allowed to recover, purged dry again, and allowed to recover sufficiently to collect field analyte measurements and fill all of the sample containers from a peristaltic or submersible pump.
5. The volume of water that needs to be removed from the well must be measured in order to determine that one of the above criteria is met and to avoid excess purging. One standing water volume in a well is calculated according to Table V-2.
6. Purge rate can be measured with a flow meter and, then, the necessary minimum purge volume divided by the purge rate for the length of time necessary for purging.
7. If a flow meter is not available, the flow rate can be estimated by measuring the time required to fill a container of known volume. The required purge volume is then divided by the estimated flow rate to find the estimated time necessary to purge the well.
8. If a flow meter is used, it should be calibrated periodically via the procedure given in step 7 above.
9. When the well is purged via the chemical stabilization method listed in step 4a above, purging is not considered complete until the well is determined to be chemically stable. Temperature, specific conductance, and pH are monitored and readings recorded at regular intervals until two consecutive measurements, taken after a minimum of three standing water volumes have been removed, agree within the amounts shown in Table V-1. Temperature may not be indicative of chemical stability when measured after using a centrifugal pump. This analyte may, therefore, be omitted in stability readings at the discretion of the sampler. The interval of measurement will be every half-standing water volume. Thus, the minimum amount of water purged should be no less than 3 standing water volumes. These measurements, as well as dissolved oxygen, should be made in a flow-through chamber to minimize atmospheric contact with the sample. Calibration of the various instruments that can be used to measure pH, dissolved oxygen, specific conductance, and temperature was addressed in Section IV. Instrument operating instructions should be followed when taking measurements. If more than 3.5 purge volumes are required to achieve chemical stability, the extra purge volume must be noted in the field log. When the well is stabilized, the final field measurements are recorded in the field log.
10. If samples will be collected using a different pump, the purge pump or hose must be slowly withdrawn from the well to remove the uppermost segment of water while still pumping. Once clear of the water, the pump and/or purge hose should be quickly retrieved to reduce backflow from the pump.

Table V–2. Water Volume Computation.

A single standing water volume, in gallons, is given by the following equation:

$$\text{ONE VOLUME} = (D^2) \times (DW\text{-}DTW) \times 0.041$$

where:
D = casing diameter in inches
DW = depth of well in feet
DTW = depth to water in feet
0.041 = an approximation based on the conversion factor for cubic feet to gallons, inches to feet, and pi, etc.

Measuring Field Analytes

Temperature, pH, specific conductance, and dissolved oxygen readings must be made within a flow chamber to minimize atmospheric contact with the ground water. They may be taken at regular time intervals during the final purging process if using the chemical stabilization purge method as stated previously. The final field measurements are collected at the appropriate time interval after an adequate amount of water has been purged. If a well has been purged dry, the field analytes should be collected from the recovered volume of water. Calibration of the meters used to collect field analytes was addressed in Section IV. Field measurements must be taken according to instrument operating procedures and recorded on the ground water field log sheet.

Sample Collection

The following must be considered when collecting water samples:

- Sampling should take place immediately after purging.
- The maximum time between purging and sampling is six hours unless the well is purged dry.
- If a well is purged completely dry, the time between purging and sampling should not exceed ten hours.
- Sampling will be conducted with a submersible or peristaltic pump. *A centrifugal pump can not be used.*
- The power source for a pump should be located away from the well and downwind to minimize contamination.
- Because no trace organics are being collected; the pump housing, tubing, and delivery hoses can be composed of inert material, teflon or stainless steel, or non-inert material, polyethylene, polypropylene, or polyvinyl chloride.
- A check valve should be present on the pump or delivery hose to prevent water from back-flushing into the well.
- Also a flow-control valve must be present in order to control the flow rate of the sample.
- When handling the pump, disposable unpowdered latex gloves should be worn. Also when handling the sample containers during the sample collection process, a clean pair of disposable unpowdered latex gloves must be worn.

The sample collection sequence is shown on the back of the custody sheet (Figure V-1) and follows here.

1. Wear new unpowdered latex gloves.
2. Arrange one (and only one) complete container set.
3. Inspect containers for flaws. Do not use any that look suspicious.
4. Place a barcode label vertical on each container.
5. As an error check, have another member of the sampling team review the bottles for mislabeling.
6. Write the date/time on the sample container label.
7. Rinse the sample containers, excluding Whirlpaks, with sample water prior to filling If a filtered sample will be collected, rinse containers with filtered water.
8. Fill the 125-ml plastic container marked W-TOC with unfiltered sample water, leaving some headspace, and cap.
9. Fill the 1-liter plastic container for physical analytes with unfiltered sample water leaving some headspace and cap.
10. Fill the Whirlpak® containers with unfiltered sample water. Press out any excess water from each bag such that a Whirlpak® contains approximately 150 ml of sample (to fill line, leaving some headspace). Finally, seal each bag tightly with at least three folds at the top and the wire ties bent in half with the ends twisted together.and close.
11. Filtered samples will be obtained by connecting a new 0.45 micron filter unit to the pump's tubing. The filter should be flushed with at least 250 ml of sample water prior to filling containers.
12. Fill the 125-ml plastic container marked metals with filtered sample water, leaving some headspace, and cap.
13. Fill the 500-ml plastic container marked anions with filtered sample water, leaving some headspace, and cap.
14. Fill the 500-ml plastic container marked nutrients with filtered sample water, leaving some headspace, and cap.
15. Preserve samples and verify the pH of the acidified samples as given in Sample Preservation under **Sampling of Wells with In-Place Plumbing**.
16. Fill out required paperwork as in stated in Sample Custody under **Sampling of Wells with In-Place Plumbing**.

Sampling Springs

Springs are considered to be part of the unconfined aquifer resource, and will be sampled for the ground water analytes shown in Tables II-1 and II-2. The sampling point of a spring should be the vent from which maximum flow occurs. The sample should be collected from as close to the spring vent as possible, using a peristaltic pump, submersible pump, or Van Dorn sampler. If a pump is used, it should be placed in the vent in such a manner that it does not draw sediments or plant material into the sample water. Filtration of the sample should be done using the filtration capsules supplied for ground water sampling. The filter should be flushed with at least 250 ml of

sample water prior to filling the sample containers. Consideration must be given to filtering samples collected with the Van Dorn sampler. This can be accomplished either by attaching a hand pump and filter capsule directly to the Van Dorn sampler, or by using a peristaltic pump to draw the sample from the Van Dorn through the filter capsule and into the sample container. The sample water should be collected into the containers and preserved as previously stated.

Sample Shipment

Proper sample shipment is imperative in the collection of environmental monitoring data. Strict adherence to the following steps for sample shipment will help assure the collection of accurate environmental monitoring data.

- Sample analysis for the FDEP WM&DMS is currently being done by the FDEP Central Laboratory in Tallahassee, so all samples will be returned to this lab.
- Sampling supplies will be shipped from the FDEP Central Laboratory to the sampling agency via United Parcel Service (UPS) no later than two weeks prior to the project begin date.
- Each FDEP shipment will contain sample containers appropriate for the scheduled analyses and sufficient coolers for return shipment.
- Field custody sheets, field log sheets, barcode labels, and container inventories will be provided by WM&DMS staff.
- Preservatives will be provided by the FDEP WM&DMS in advance of sampling.
- A copy of the custody sheet must be included in each cooler. At the end of the day, tape the custody sheets contained in zip top baggies to the inner top of the coolers. It is best to line the inside of the cooler with a large garbage bag prior to filling it with ice. Also, if the cooler has a spigot, place tape over it to prevent it from opening during transit and spilling water. Likewise, the lid must be taped closed to prevent opening during shipment.
- Samples must be shipped daily; however, there will be extraneous circumstances where sample shipment can not occur until the following day. In this case, WM&DMS staff should be notified and the samples shall be kept at 4°C. Samples that are shipped daily also must be kept at 4°C.
- Sample shipment shall be done during Monday through Thursday. No sample shipments shall be made on Fridays due to the fact that the Central lab would receive the samples on Saturdays. The Central lab does not accept samples on Weekends or Holidays.
- Federal Express (FedEx) will be utilized for shipment of samples to the FDEP Central Laboratory. The FDEP laboratory and/or WM&DMS staff will provide FedEx airbills to sampling agencies for use in shipping water quality samples to the FDEP Central Laboratory. These airbills will be pre-printed with DEP's FedEx account number, so that all shipping costs are directed back to FDEP.

Ground Water GPS Procedures

The Status Network will require extensive use of GPS equipment. This equipment will be used for navigation to randomly selected wells or springs and for collection of locational and field data. All participants of the Status Network should be using Trimble Pro XR® GPS equipment with differential correction. The decision to use this type of equipment was based on the institutional knowledge of Pro XR units and for consistency.

All personnel using GPS equipment should be trained in the operation of such equipment and must strictly follow the FDEP Division of Water Resource Management's GPS Standards which can be found at the website, www.dep.state.fl.us. Training has been ongoing within the Division and will continue on as needed.

Accuracy

The Status Network incorporates the use of randomly selected coordinates for the identification of sample stations. The random coordinates or sites are selected as specified in the WM&DMS Overview of the Florida Department of Environmental Protection's Integrated Water Resource Monitoring Efforts and the Design Plan of the Status Network. Due to map errors and scale differences the sites may not fall directly on the intended well or spring. In this case the nearest well or spring should be selected for sampling. Normally the distance should only be a few meters off and is not considered problematic since the Division GPS Standards recommend the National Map Accuracy Standard of 12.2 meters.

Waypoints

Navigation to sites will require the creation of waypoint files. These files will contain the site ID and the corresponding latitude, longitude, and HAE (Height Above Ellipsoid), which is used in the field to navigate to the sites. The HAE should be taken from the data logger near the area of the randomly selected sites. The HAE is obtained from the current position information menu on the data logger. It is not critical that the HAE be exact, but it will help the accuracy of navigation to have it as close as possible. The waypoint file can be created in the office using Pathfinder Office® Software or in the field directly on the data logger. The creation of waypoint files is addressed in the Division of Water Resource Management's GPS Basics Manual, which can be obtained from WM&DMS staff.

Navigation and Date Collection

Navigating to randomly selected ground water sites can present many problems. GPS signals are line-of-sight microwave signals that are easily blocked by any mass, including well houses. To correct, navigate as close as possible to the random point and then read the distance-to-go and bearing to find the location of the resource. The reverse process (called an offset) may be needed to collect the locations of some sites after sampling.

When collecting the location of a well it is important to make sure the GPS antenna is placed as close to the center of the wellhead as possible. If the well is located within a building or if the resource is a spring, an offset will be needed. Offsets are taken by measuring a distance and bearing from some point (Point B) away from the intended point (Point A "the well or spring") and applying those measurements to correct back to the intended point (Point B + distance & bearing = Point A). Always remember, "The GPS knows where it is, tell it where you want it to be" and use a compass and tape measure for accuracy. The offset should be saved and the locational data collected. Once the locational data is captured, the data dictionary questions should be completed and then the file saved. There should only be one saved file per site. Offsets and navigation can be complex and are covered in the GPS Basics Manual. With practice a sampler should become quite proficient.

File Nomenclature

Once at the site, water levels, field measurements, and water quality samples will be collected and recorded onto field sheets before the GPS data is collected. The site location will be collected into the data logger after the lab samples have been collected and micro land use sheets completed. The GPS data file (.ssf file) shall be named similarly to the unique resource code. For example, the Northwest Florida Water Management District un-confined well number 26 in the A reporting unit of the first year cycle is NWA-UA-1026. The data logger file will be NWAUA026. The hyphens and the number one (1) in the number sequence are dropped to accommodate the eight-digit file name size in the data logger. There will only be one site per file.

Data Dictionary

The Status Network will also incorporate the use of a standard data dictionary (A Trimble electronic form) residing in the data logger memory. The data dictionary will contain all of the questions that are found on the field sheets. After the locational data has been collected you should pause the unit and then proceed to answer the questions in the data dictionary by following the field sheets. It is extremely important to collect the location in the data logger first and then pause the unit until all of the data dictionary questions have been answered. Once the data dictionary questions have been answered the "**OK**" key should be pressed to save the file. Many fields in the data dictionary require input and are restricted to certain constraints. For example, the pH range that is allowed to be entered into the data logger is between 0 and 14. The default is set to 0. A value of 0 in the data will signify that a problem had occurred and no data was collected for that analyte at that site. These constraints and defaults are also in other fields throughout the data dictionary.

Section VI. Quality Control Samples- Ground Water

Quality control (QC) samples assess the accuracy and precision of sampling and analytical techniques. For ground water sampling in both the Status and Temporal Variability Networks, the QC samples consist of equipment blanks, field blanks, duplicate samples, and field reference samples. In addition, some agencies will submit analytical reference samples as part of the Ground Water TV Network.

Equipment and Field Blanks

Ideally, equipment blanks are samples of analyte-free water. Analyte-free water is defined as water having concentrations of the target analytes that are below detection. The same sampling and analytical methods used for actual samples will also be used for equipment blank samples. The following lists some of the problems that occur with these blanks:

- The analyte-free water may contain detectable amounts of target compounds.
- Sample collection equipment may be unclean.
- Sample containers may be unclean.
- Sample preservatives may be impure.

Equipment blanks will be taken on precleaned and/or field cleaned equipment. Precleaned equipment refers to equipment that has been cleaned in-house prior to sampling. The total number of blanks that will be taken during a sampling project is dependent upon how many actual samples will be collected. Approximately one blank is taken for every five actual samples. The type of blank that will be collected depends upon how many precleaned sampling equipment sets will be used and how frequent the equipment will have to be decontaminated in the field. If field cleaning is performed during a project, then field cleaned equipment blanks are taken. Otherwise, if all the equipment that is used during a project is precleaned, precleaned blanks are obtained.

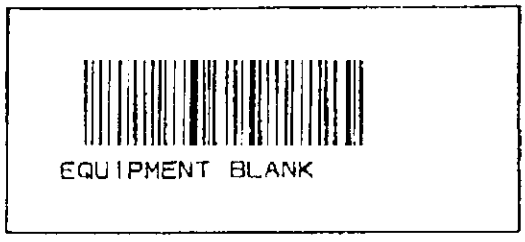
Both types of blanks are prepared in the field prior to using the equipment to collect a sample. It should be noted on the field log sheet what type of blank is being collected at a site. Analyte-free water is ran through all of the sampling equipment and collected into sample containers. Since ground water samples are being collected directly from submersible and peristaltic pumps, the analyte-free water must be circulated through the pumps then captured into containers. A dedicated equipment blank container and a large volume of analyte-free water are needed. Follow these procedures for collecting a blank:

1. Fill a large clean high-density polyethylene container with analyte-free water and transport it into the field.

2. Follow the procedures listed in Section IX if the pump is cleaned in the field before collecting the equipment blank. If the blank is taken on precleaned equipment, the equipment should have been cleaned in the laboratory according to the appropriate procedures in Section IX prior to bringing it in the field.
3. Place the pump into the equipment blank container filled with analyte-free water.
4. Pump 5 volumes of water through the equipment. A volume will depend upon the capacity of the pump and attached tubing.
5. Rinse the sample containers out with the analyte-free water.
6. Then collect the equipment blank sample as if an actual sample.
7. Use the same filtration and preservation methods as with an actual sample.

Equipment blank labels are provided to sampling agencies by FDEP WM&DMS staff (Figure VI-1). These labels should be placed vertically on the sample containers. They are also placed on the custody sheet and field log sheet when equipment blank samples are collected. Equipment blank samples are shipped to the FDEP Central Laboratory with regular samples collected for that day (refer to Section V for further information on sample custody and shipment).

Figure VI-1. Example of Equipment Blank Label

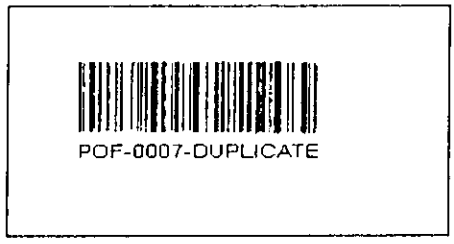


Field blanks must be taken in cases where the only sampling equipment is the sample container, such as with wells with in-place plumbing. They should also be collected if analytes are detected at high levels in equipment blanks. A field blank consists of filling on-site the suite of sample containers with analyte-free water, preserving as with actual samples, sealing the containers, documenting it as a quality assurance sample/field blank, and shipping it to the laboratory as is done with actual field samples. The analyte-free water is not run through the sampling equipment. The custody sheet and field log should indicate that a field blank sample was collected. This procedure is an aid in determining if the equipment blank contamination is a result of tainted acid preservatives or impure analyte-free water instead of unclean sampling equipment.

Duplicate Samples (Optional)

Duplicate samples are collected to measure the variability inherent in the sampling process. A duplicate sample is obtained at a site by duplicating, in rapid succession, the entire sample acquisition procedure that was used to obtain the first sample. It is collected and analyzed for the same analytes as the associated sample. These sequential samples will have different sample times. For ground water duplicates, one kit of containers will be filled with sample water from the pump and preserved appropriately. Then a second kit will be filled from the pump and preserved. Duplicate labels will be provided by the FDEP WM&DMS (Figure VI-2). The labels will be placed vertically on the sample containers. A label will also be put on the field log sheet and custody sheet. The original sample and the duplicate sample must be listed separately on the custody sheet. It is not necessary to collect a second set of field measurements; thus, the same field analyte values can be used for both the original and duplicate samples.

Figure VI-2. Example of Duplicate Label



Field Reference Samples

Reference samples for pH and specific conductance are prepared by the USGS WRD in Ocala, Florida. The USGS determines the most probable (mean) value and standard deviation for each sample. These statistics are then used to evaluate field measurement performance. Reference samples are distributed to each sampling agency by the USGS. The procedures to follow in order to obtain these samples are addressed in Section III. The reference samples are analyzed at a minimum rate of one for every five to ten actual samples. The values of the samples are determined while out in the field after calibrating the instruments. The resulting measurements are reported to FDEP WM&DMS staff, along with the name of the analyst, name of sample site, date of sampling, make and model of instrument, and sample identification number. This information is recorded on a Field Reference Sample Reporting Form (Figure VI-3) and immediately submitted to the WM&DMS Project Manager or QA Officer by fax, telephone, or electronic mail. Results are evaluated quickly. They are given a satisfactory, marginal, or unsatisfactory rating. In case of unsatisfactory or marginal performance, a follow-up reference sample is analyzed. Typical reasons for poor performance on field reference samples are dirty probes, low batteries, contaminated standards, faulty meters, and occasionally analyst error.

Analytical Reference Samples

USGS laboratories in Denver and Ocala prepare lab reference samples for the Ambient Monitoring Network. Multiple-lab analysis is performed to obtain mean values and standard deviations for selected constituents. The samples are then submitted "blind" to the analytical laboratories monthly. The measured values are then compared to the most-probable values. Results are then reviewed with the laboratory to determine if lab accuracy is within control limits.

Each month, 5 analytical reference samples will be submitted to the FDEP Central Laboratory by a subset of sampling agencies, in conjunction with the Ground Water TV Network. Specific instructions for submitting analytical reference samples will be provided to the appropriate agencies by the WM&DMS.

Figure VI-3. Example of Field Reference Sample Reporting Form

FIELD QUALITY CONTROL REFERENCE SAMPLE RESULTS

AGENCY: _____

ANALYST: _____

DATE OF ANALYSIS: _____

PROJECT: _____

pH

SAMPLE ID: _____

INSTRUMENT ID (make, model, and Id #): _____

MEASURED VALUE: _____

COMMENTS: _____

CONDUCTANCE

SAMPLE ID : _____

INSTRUMENT ID (make, model, and Id #): _____

MEASURED VALUE: _____

COMMENTS: _____

Section VII. Surface Water Sampling Protocols

At all surface water sites being monitored for the Temporal Variability and Status Networks, field analytes will be measured then a water sample will be taken. A representative sample of the surface water of interest should be obtained when collecting the water at a site. Samples should be obtained in an approved and reproducible manner. Prior to going into the field, maps and previous field logs are used to determine the number of sites to be sampled and the order in which they will be sampled. Supplies and equipment should be inventoried before each sampling trip as discussed in Section III. An example of an inventory list of equipment and supplies that will be taken in the field for surface water sampling is shown in Figure VII-1. Clean or new equipment must be used at each sample site. Proper cleaning procedures are described in Section IX.

Sampling Locations

Surface Water Temporal Variability Network

For surface water Temporal Variability sites, a reference station that is a permanent landmark, such as a bridge or gage, should have been previously located near the actual sampling point using differentially-corrected Global Positioning System (DGPS). Physical site data should have been documented to ensure that the sampler returns to the same place every month to collect field measurements and a water sample.

Surface Water Status Network

Information on Status sites should have been obtained prior to sampling through reconnaissance procedures. Upon reaching the site, the following presents the location within the waterbody at which sampling occurs for the various resource types in the Status Network.

For low order streams, high order streams, and canals, the field measurements and water sample should be collected in the middle of the waterbody nearest the random location (randomized latitude/longitude) as shown in FigureVII-2. The middle is determined from water edge to water edge. Even if the random location falls within the waterbody closer to a bank, the measurements and sample should be taken in the middle. If a sandbar is present in the middle of the waterbody, then go to the nearest point that can be sampled. This may be the middle of the channel nearest the random point (Figure VII-3). Otherwise, the samplers may have to go to the middle of the waters upstream or downstream from the random point in order to collect measurements and the water sample. The maximum distance from the random point at which a sample point can be located is 50 m upstream or 50 m downstream. The minimum sample depth is 10 cm. If the sample point falls in an area where water is pooled rather than flowing, the measurements and water sample should still be collected from this area.

Figure VII-1. Example of Surface Water Sampling Equipment and Supplies Inventory List

SURFACE WATER SAMPLING CHECKLIST

Sampling Equipment

___ Sampling Truck (cleaned as necessary before sample event)

___ Boat (life jackets, paddles, safety flares)

___ Laptop computer (for Hydrolab operation)

___ Waders, boots, rain gear

___ Hydrolab multimeter (field parameters and profiling)

___ Wildco beta bottle (non wadeable streams)

___ Secchi disk

___ 50ft. fiberglass tape

___ Digital camera

___ GPS unit

Sampling Supplies

___ Hydrolab meter standards and buffers

___ Field sheets, submittal forms, bottle labels, ball point pens, sharpie pens and pencils

___ TV notebook with station info. & maps

___ Two - 48quart ice chest one for samples and one for ice

___ Preservatives: H2SO4, HNO3 and ice

___ pH strips

___ Protective eyewear

___ Non-powdered latex gloves (XL size)

___ 30ml BD syringes & disposable 0.45 um filters (ortho-PO_4)

___ Ziploc bags for samples (sandwich - Whirlpacks®, gal. size – chemistry samples)

___ Laboratory supplied sample bottles

___ Three plastic squirt bottles for cleaning (DI, Liquinox ,and HCl)

___ Two -5gal. Neaprene jugs with DI (one for equipment blanks and one for cleaning)

___ Strapping tape and cooler liners for sample shipping

Other Equipment or Supplies_____

Figure VII-2. Location for Collecting Samples in Low and High Order Streams Plus Canals

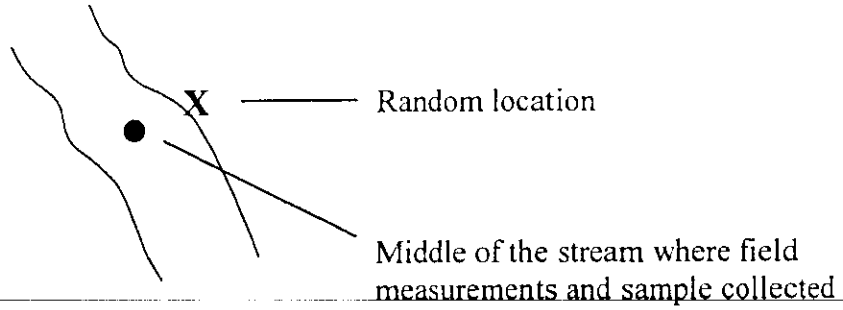
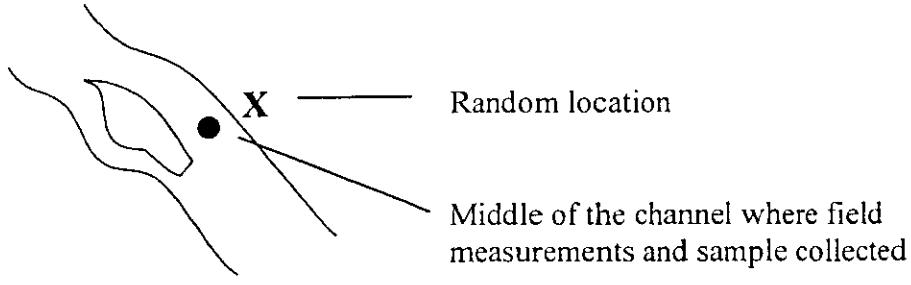
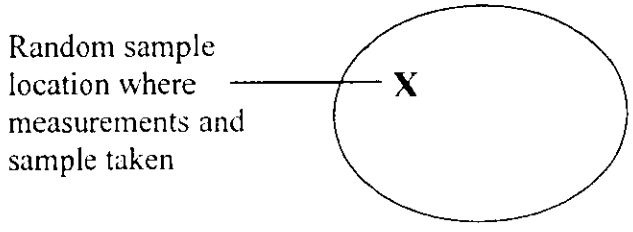


Figure VII-3. Location for Collecting Samples in Streams and Canals if a Sandbar Is Present



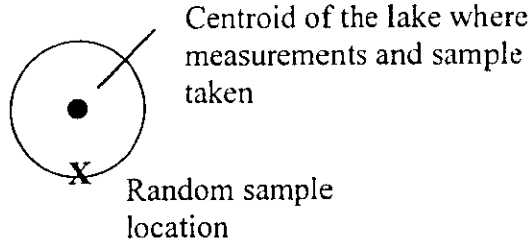
For large lakes, the field measurements and water sample should be collected at the specified random location (randomized latitude and longitude) as illustrated in Figure VII-4. If the random location falls outside the water, then go to nearest point that can be sampled. The minimum sample depth is 10 cm.

Figure VII-4. Location for Collecting Samples in Large Lakes



For small lakes, the field measurements and water sample should be collected in the centroid or most central point of the lake nearest the random location (randomized latitude and longitude) as shown in Figure VII-5. Samplers will have to estimate the centroid. If a sandbar is present in the area, then go to the nearest point that can be sampled. The minimum sample depth is 10 cm.

Figure VII-5. Location for Collecting Samples in Small Lakes



In the case of emergent vegetation covering the random location, access to the random location shall be the governing criterion of sampleability. Generally, accessibility was determined during site-reconnaissance. A site may change between the reconnaissance and sampling period, however. The site is deemed accessible and, therefore, able to be sampled if it can be reached by conventional means, such as boat, airboat, and wading, etc. At the time of sampling, the closest area relatively free from vegetation shall be the actual sampling point. This area should be at least 0.5 meter square, and allow for immersion of the sampling device in such a manner that does not cause excessive agitation of sediment or surrounding vegetation. Minimum water depth is 10 cm.

Field Measurements

The total depth of the water will be measured to 0.1 m from a reference point using metric tape or an electronic measuring device. If an electronic measuring device is used, the manufacturer's instructions should be followed; and at least two readings should be taken to ensure accuracy. The two readings are then averaged for the final total depth. If the total depth is less than 1.5 m, field measurements will be taken at 0.5 m from the surface or at mid-depth whichever is shallower. However, if the total depth is equal to or exceeds 1.5 m, readings will be taken at 0.5 m from the surface and 0.5 m from the bottom. The total depth, field measurement depth, and field measurement values should be recorded on the field log sheet.

At all surface water sampling sites, field measurements will be made for the following analytes:

- pH
- dissolved oxygen
- specific conductance
- temperature
- secchi depth (transparency)

Calibration of the various instruments that can be used to measure pH, dissolved oxygen, specific conductance, and temperature was addressed in Section IV. Instrument operating instructions should be followed when taking measurements. Secchi depth is determined with a circular disk that is 20 cm in diameter, has alternating black and white quadrants on the upper surface, and has a weight on the lower surface. This is the depth that a person can see into the water, that is the transparency of the water. The following is the procedure for using the secchi disk:

1. Remove sunglasses.
2. Lower the secchi disk into shaded water using graduated line (line is marked in 0.1-m increments).
3. Record the depth at which the disk disappears to the 0.1 m.
4. Lower the disk slightly farther.
5. Raise the disk until it reappears, and record this reappearance depth to the 0.1 m.
6. Average these two depths for the secchi depth.
7. Or, if the disk is visible to the bottom of the water, note such.
8. Record any factors that might have affected the accuracy of this measurement, such as choppy water, in the comments section of the field log sheet.

Also, at surface water sites in the Temporal Variability and Status Networks, stage height will be recorded if it is available. This measurement can be obtained from staff gages, continuous recording gages, wire weight gages, tape down measurements, or any existing USGS gaging stations located in close proximity to the sampling sites.

Sample Collection

Analytes

For Temporal Variability monitoring of both streams and lakes and Status monitoring of streams, samples will be collected for the following analyte groups:

- biology- chlorophyll-A
- organics- total organic carbon
- inorganics- inorganic anions (chloride, sulfate, and fluoride), nutrients (nitrate-nitrite, ammonia, kjeldahl nitrogen, total phosphorus, and orthophosphate), and alkalinity
- physical properties- turbidity, specific conductance, color, total suspended solids, and total dissolved solids
- metals- calcium, magnesium, sodium, and potassium, and
- microbiology- fecal coliform and enterococci

For Status monitoring of lakes, samples will be collected for the following analyte groups:

- biology- chlorophyll-A, phytoplankton taxonomy, and algal growth potential
- organics- total organic carbon
- inorganics- inorganic anions (chloride, sulfate, and fluoride), nutrients (nitrate-nitrite, ammonia, kjeldahl nitrogen, total phosphorus, and orthophosphate), and alkalinity
- physical properties- turbidity, specific conductance, color, total suspended solids, and total dissolved solids
- metals- calcium, magnesium, sodium, and potassium
- microbiology- total and fecal coliform, enterococci, and *E. coli*

All samples will be collected unfiltered except for orthophosphate and specific conductance. For these samples, sample water will be placed into a syringe and ran through a 0.45-micron filter attached to the syringe. This filtered water is then captured into a sample container. The FDEP WM&DMS will provide both syringes and filters for filtering these samples. Unfiltered samples will be collected before the filtered sample. The following is the order in which sample water will be collected for particular analytes:

1. biology
2. organics + inorganic nutrients excluding orthophosphate
3. physical properties + inorganic anions + alkalinity
4. metals
5. microbiology
6. inorganic nutrients- orthophosphate + specific conductance

Sample Containers

Sample water will be collected into polyethylene plastic bottles or Whirlpaks® that are provided in pre-cleaned condition by FDEP's Central Chemistry and Biology Laboratory. Table VII-1 lists specific containers for analytes in the order that they should be filled. Only one container should be filled with sample water for the analyte group listed with the exception of bacteria, which requires that two Whirlpaks® be filled. Prior to labeling and filling, all containers should be inspected for flaws. If a flaw is apparent on a container, that container should be discarded.

Labeling Sample Containers

In the field, all the containers for a single sample site are labeled prior to filling. At any one sample location, only one set of containers will be out and labeled. Station identification labels are provided to the sampling agencies by the WM&DMS (Figure VII-6). These labels are barcoded to uniquely identify a sample station. Several labels are provided for each sampling site. A label will be placed vertically on each sample container for a site. The Central Laboratory places two types of labels on the sample bottles prior to shipping. One identifies the weekly sampling project request number and the sample analytes for that container (Figure VII-7). The other provides the production container numbers for a specific sample bottle (Figure VII-8). Samplers should write the time and date at which a station is sampled on the laboratory project and sample identification label of each container. Clean unpowdered latex gloves should be worn while handling these containers.

Table VII-1. Containers for Surface Water Sampling

ANALYTE	CONTAINER LABEL	CONTAINER TYPE
Chlorophyll	Chlorophyll	1 liter opaque plastic bottle
Phytoplankton taxonomy[1]	Phytoplankton	1 liter opaque plastic bottle
Algal Growth Potential[1]	AGP	500 ml plastic bottle
Total Organic Carbon Nitrate + Nitrite Total Kjeldahl Nitrogen Phosphorus	Nutrient	500 ml plastic bottle
Chloride Sulfate Fluoride Alkalinity Color Turbidity Total Dissolved Solids Total Suspended Solids	Anion	1 liter plastic bottle
Calcium Potassium Sodium Magnesium	W-ICP Metals	500 ml plastic bottle
Fecal Coliform *E. coli*	Bacteria	Whirlpacks 4 oz
Orthophosphate Specific Conductance	W-PO4-F W-COND-F	125 ml plastic bottle

[1]Only collected in lakes for the Status Monitoring Network.

Figure VII-6. Example of Station Identification Label

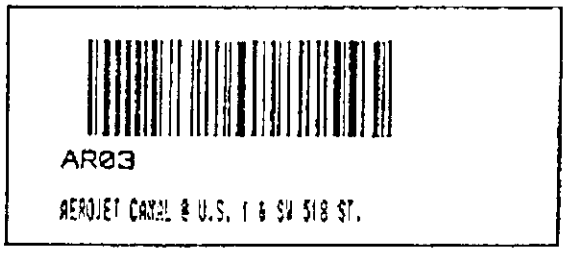


Figure VII-7. Example of Laboratory Project and Sample Identification Label

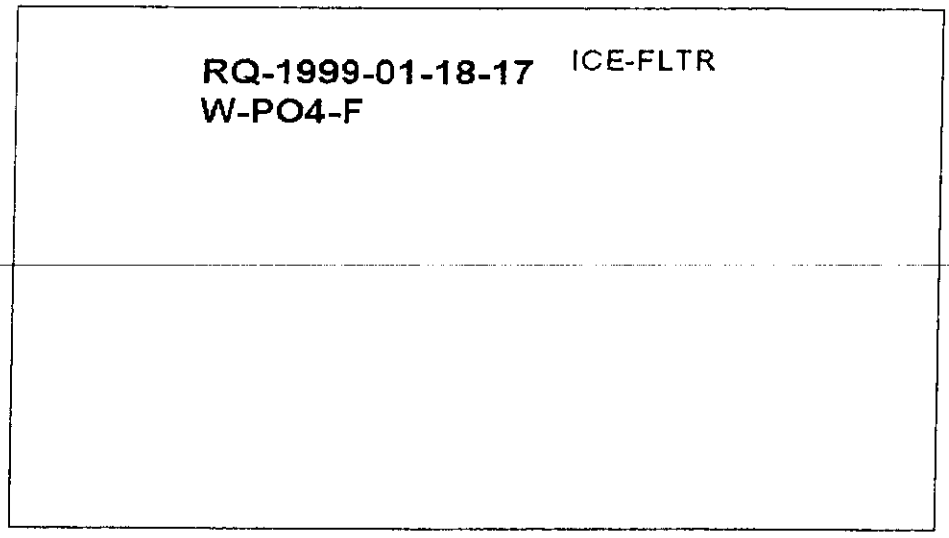
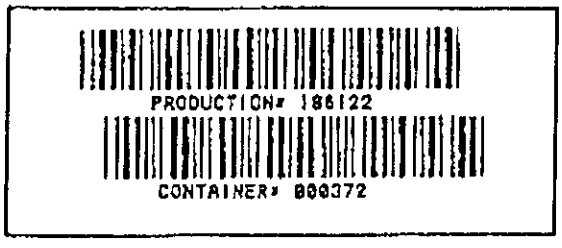


Figure VII-8. Example of Laboratory Production and Container Numbers Label



Sampling Precautions

Samples should be collected from downstream to upstream at a stream or river site. Water is grabbed upstream from the body. When sampling from a fuel powered boat, the samples should be collected upstream from the boat. At all sites, samples should be taken at the farthest, reasonable point from the fuel source and engine if sampling from a boat. If wading in to collect samples, the sediments should not be disturbed.

Sample Collection Depth

When total water depth is equal to or less than one meter, samples will be collected directly into the sample containers at mid-depth. When the water depth is greater than one meter, a Van Dorn horizontal sampling device (Alpha or Beta bottle) will be used to collect water at 0.5 m from the surface. This device can be composed of clear acrylic or polyvinyl chloride. Because no trace organics will be sampled, equipment composed of these non-inert materials can be used to collect surface water samples. The depth at which the sample is collected should be recorded on the field log sheet.

Sample Collection When Total Water Depth Is One Meter or Less

When total water depth is equal to or less than one meter, unfiltered samples are collected directly into the sample containers at mid-depth. To collect a sample into a bottle, follow these procedures:

1. Wear unpowdered, disposable latex gloves while handling the containers during the collection process.
2. Submerse the bottle neck first into the water to the appropriate depth.
3. Invert the bottle such that its neck is upright pointing into the water flow if any.
4. Bring bottle to the surface.
5. Shake and rinse the interior surface with sample water.
6. Then pour water downstream or away from the sample location.
7. Repeat steps 2 through 4.
8. Collect the chlorophyll sample in the 1-liter opaque plastic bottle quickly to avoid degradation by light. Leave some headspace. If sampling for the Status Network in lakes, collect all three of the biology samples quickly to avoid degradation by light.
9. Allow some space in the metals and nutrients containers for acid preservatives by pouring out a small amount, approximately 5 ml, of the sample water away from the sample location; all other bottles leave some headspace.
10. Finally, cap each bottle tightly.

To collect a sample into a Whirlpak®, do the following:

1. Wear unpowdered, disposable latex gloves while handling the Whirlpaks®.
2. Tear the top off of the Whirlpak® where it is perforated.
3. Hold the bag such that its mouth is in front of the hands and fingers.
4. Immerse the bag while it is still closed.
5. Then open the bag gently into the current if there is any.
6. Bring a full bag to the surface to avoid collecting surface film.
7. Press out excess water from the bag such that the Whirlpak® contains approximately 150 ml of sample.
8. Finally, seal the bag tightly with at least three folds at the top and the wire ties bent in half with the ends twisted together.

To obtain the filtered orthophosphate sample, follow these procedures:

1. Leave the cap on the tip and remove the plunger from a new 30 or 60 ml disposable syringe.

2. Lower the syringe into the water to the appropriate depth and invert it such that the opening is pointing into the water flow if any.
3. Bring syringe to surface.
4. With the syringe pointed downstream or away from sample site, remove cap on tip and slowly insert plunger pushing sample water out of the syringe.
5. Remove plunger and replace cap on syringe tip.
6. Repeat steps 2 and 3.
7. Remove cap on tip and attach a new 0.45-micron disk filter to the syringe.
8. Carefully insert the plunger without flushing all of the water through the syringe.
9. Flush the filter with approximately 5 to 10 ml of the sample water, disposing of this water away from the sample site.
10. Then filter a small amount, 10 to 20 ml, of the water into the 125-ml W-PO4-F (orthophosphate) bottle, and rinse the bottle and bottle cap with the filtered water.
11. Dispose of this water away from the sample site.
12. Then push the water out of the syringe, through the filter, and into the 125-ml bottle. *Make sure no unfiltered water, such as water dripping on the outside of the syringe, gets into the bottle.*
13. After emptying the syringe, disconnect the filter, remove the plunger, and replace the cap for the syringe tip.
14. Lower the syringe into the water to the appropriate depth and invert it such that the opening is pointing into the water flow if any.
15. Bring syringe to surface.
16. Quickly remove cap on tip and re-attach the 0.45-micron disk filter to the syringe.
17. Slowly reinsert the plunger and push filtered sample water into the 125-ml bottle, ensuring that no unfiltered water drips into the bottle.
18. Repeat steps 13 through 17 until the 125-ml bottle is filled with a minimum of 100 ml of the filtered water leaving some headspace.
19. Cap the sample bottle tightly.
20. Discard the syringe and filter when done.

Sample Collection When Total Water Depth Is Greater Than One Meter

When the water depth is greater than one meter, a Van Dorn horizontal sampling device (Alpha or Beta bottle) will be used to collect water at 0.5 m from the surface. To accurately measure the sample depth, the line attached to the sampling device should be marked in increments. Following are the procedures to use when collecting unfiltered samples with the Van Dorn bottle:

1. Wear unpowdered, disposable latex gloves when handling the sampling device or sample containers during the collection process.
2. Lower the Van Dorn slowly to the appropriate depth without disturbing the sediments.
3. Rinse it with the sample water.
4. Then collect the sample into the bottle by sending the messenger down to close the ends.
5. Retrieve the device slowly.
6. For unfiltered samples, pour the water directly from the Van Dorn bottle into the sample containers using the spigot/stopcock to control the flow.

7. Rinse the sample bottles with approximately 10 to 20 ml of sample water prior to filling; do not rinse the Whirlpaks®.
8. Collect the chlorophyll sample in the 1-liter opaque plastic bottle quickly to avoid degradation by light, leaving some headspace. If sampling for the Status Network in lakes, collect all three of the biology samples quickly to avoid degradation by light.
9. Leave some space for the acid preservatives in the metals and nutrients bottles, and fill all other bottles leaving some headspace.
10. Cap each bottle tightly.
11. Fill the Whirlpak® to the top with sample water; then press out the excess water from the bag such that it contains approximately 150 ml of sample, to fill line leaving some headspace.
12. Seal each Whirlpak® tightly with at least three folds at the top and the wire ties bent in half with the ends twisted together.

If using only a 2.2 or 3.2 liter Van Dorn bottle, multiple grabs will have to be taken to fill all the sample containers. In this case, follow these procerdures:

1. Take one grab following the steps 1 through 5 as previously listed.
2. Fill the chlorophyll container, using the spigot/stopcock to control the flow, with approximately 10 to 20 ml of sample water to rinse it.
3. Discard the rinse water away from the sample site.
4. Next fill the chlorophyll container with 1 liter of sample water leaving some headspace.
5. If collecting samples at a lake site for the Status Network, fill the 1 L phytoplankton taxonomy container after rinsing.
6. Discard the remaining water in the Van Dorn bottle away from the sample site.
7. If collecting water from a lake site in the Status Network, take a second grab with the Van Dorn and fill the AGP container after rinsing it.
8. Discard any remaining water away from the sample site.
9. Then take another grab with the Van Dorn and rinse and fill the remaining containers, leaving some headspace.

To collect the filtered orthophosphate sample, follow these procedures:

1. Pour approximately 10 to 20 ml of sample water from the Van Dorn bottle into a new 30 or 60 ml syringe after removing the syringe plunger.
2. Rinse the syringe and syringe plunger with this water; then dispose of the water away from the sample site.
3. Remove the syringe plunger.
4. Attach a new 0.45 micron disk filter to the syringe.
5. Fill the syringe with water from the Van Dorn bottle.
6. Carefully insert the plunger without flushing all of the water through the syringe.
7. Flush the filter with approximately 5 to 10 ml of the sample water.
8. Then filter a small amount, 10 to 20 ml, of the water into the 125-ml W-PO4-F (orthophosphate) bottle, and rinse the bottle with the filtered water.
9. Dispose of this water away from the sample site.

10. Then push the water out of the syringe, through the filter, and into the 125-ml bottle. *Make sure no unfiltered water, such as water dripping on the outside of the syringe, gets into the bottle.*
11. After emptying the syringe, disconnect the filter, and pull out the syringe plunger.
12. Replace the filter on the syringe, and fill the syringe again with sample water from the Van Dorn bottle.
13. Reinsert the plunger and attach the filter.
14. Then push the water out of the syringe, through the filter, and into the 125-ml bottle, making sure no unfiltered water drips into the bottle.
15. Repeat steps 11 through 14 until the 125-ml bottle is filled with at least 100 ml of the filtered water, leaving some headspace.
16. Discard the syringe and filter when done.

Sample Preservation

Preservation of samples occurs after all samples have been collected, but within 15 minutes of collection. The preservation of phytoplankton taxonomy samples with Lugol's solution is the only exception.

Lugol's Solution Preservation

The phytoplankton taxonomy samples that are collected at lake sites in the Status Network must be preserved with Lugol's solution. The FDEP Biology Section will preserve these samples upon receipt at the laboratory.

Acid Preservation

The acid preservation sequence is designed to reduce cross-contamination. The acids will be provided in polypropylene vials by FDEP WM&DMS. One ml of concentrated American Chemical Society grade nitric or sulfuric acid will be in each 3.5 ml polypropylene vial. Organics and inorganic nutrients samples will be preserved first with sulfuric acid; then the metals sample is preserved with nitric acid. This order will eliminate the possibility of the nutrients becoming contaminated. After adding the acid, the pH of the samples should be less than 2. This is confirmed by checking an aliquot of the sample with narrow range pH paper. Follow these procedures to preserve the nutrients and metals samples with acid:

1. Wear unpowdered, disposable latex gloves and eye protection when handling acids.
2. First, preserve the total organic carbon and nutrients sample in the 500-ml bottle with sulfuric acid.
3. Unscrew the cap on this bottle being careful not to drop the cap.
4. Unscrew the cap on one of the concentrated sulfuric acid vials, and discard this cap in an acid waste container.
5. Pour the 1 ml of acid into the 500-ml nutrient bottle.
6. Discard the vial in an acid waste container.
7. Cap the sample bottle tightly and invert it to mix the acid with the sample.

8. Confirm that the pH of the sample is now less than 2 by the following steps: Uncap the sample bottle, pour a few millimeters of the sample from the container into a disposable cup, and place pH paper that is in the 1 to 2 range in the sample water in the cup. Alternatively, pour a small amount of sample directly onto the narrow range pH paper over the acid waste container. *Note that the pH paper should not be directly placed into the sample bottle.*
9. Discard the aliquot and disposable cup into the acid waste container after measuring the pH. Do not pour the aliquot back into the sample bottle.
10. Add more acid by following steps 4 through 9 if the pH is greater than 2, until the pH is lowered adequately. Document this deviation in typical preservation procedure on the field log and custody sheet.
11. Tightly cap the nutrients bottle when the pH is below 2 and set aside.
12. Next preserve the metals sample with nitric acid. *Note one must be careful not to contaminate the nutrients with this nitric acid preservative; thus, the nutrients bottle must be capped and out of the way of this process.*
13. Unscrew the cap on the metals bottle being careful not to drop the cap.
14. Unscrew the cap on one of the concentrated nitric acid vials, and discard this cap in an acid waste container. *Note that the nitric acid is generally distinguishable from the sulfuric acid because it has a yellowish-brown color.*
15. Pour the 1 ml of acid into the 500-ml metals bottle.
16. Discard the vial in an acid waste container.
17. Cap the sample bottle and invert it to mix the acid with the sample.
18. Confirm that the pH of the sample is now less than 2 by the following steps: Uncap the sample bottle, pour a few millimeters of the sample from the container into a disposable cup, and place pH paper that is in the 1 to 2 range in the sample water in the cup. Alternatively, pour a small amount of sample directly onto the narrow range pH paper over the acid waste container. *Note that the pH paper should not be directly placed into the sample bottle.*
19. Discard the aliquot and disposable cup into the acid waste container after measuring the pH. Do not pour the aliquot back into the sample bottle.
20. Add more acid by following steps 14 through 19 if the pH is greater than 2, until the pH is lowered adequately. Document this deviation in typical preservation procedure on the field log and custody sheet.
21. Tightly cap the metals bottle when the pH is below 2 and set aside.

Storage and Disposal of Acid Preservatives

Acid preservatives are carried in sealed vials and are not opened until the time of sampling. They should be stored away from direct sunlight. Used vials are placed into a sealed container and transported back to the sampling agency's lab. They should be diluted/neutralized to a pH between 5 and 9. The liquid can then be poured down a sanitary sewer system. The vials should be rinsed several times with tap water, and the water discarded down the drain. Then the container holding the vials should be sealed and placed in the trash.

Preservation on Wet Ice

All samples must be quickly bagged and placed on wet ice after collection and acid preservation according to the following procedures:

1. Wear unpowdered, disposable latex gloves while handling sampling containers.
2. Separate the nutrients and total organic carbon sample from other samples by placing it into a zip top baggy.
3. Also place the metals sample into a separate baggy. Note these two steps are an extra precaution to prevent cross-contamination.
4. Place all microbiology samples into a separate zip top baggy to prevent losing them from leakage.
5. Put all samples from a single station into a mesh bag.
6. Then place the bag of samples into a cooler with wet ice in order to chill the samples to 4°C.

Documentation

Sample documentation begins in the FDEP Central Chemistry and Biology Laboratories with the containers that they prepare for the samples. The containers are connected to the requested analytical work via the sample container type and appropriate labels. The Chemistry Laboratory labels each container with the weekly project request number, analysis type, and preservation requirements prior to shipping them to the sampling agencies (Figure VII-7). The FDEP WM&DMS provides the agencies with station identification labels (Figure VII-6) that are bar coded to uniquely identify a sample station. These are placed on the sample containers. In addition, one label is placed on the sample custody sheet to provide a link between the containers and the custody sheet.

Sample custody is of critical importance to the objectives of the Status and Temporal Variability Monitoring Networks. Although the magnitude and scope of the Networks do not allow for legal chain-of-custody procedures, proper sample custody is a high priority. Data gathered will be incorporated into an existing statewide water quality database. This incoming data must be properly linked to historical data. The database is also a source of public information; therefore, every effort must be made to avoid the association of erroneous analytical results to well or surface water sites. An example of the front of a sample custody sheet for surface water sampling is illustrated in Figure VII-9. On the back of the custody sheet, is a container inventory which is Network and sample site specific as illustrated in Figures VII-10, VII-11, VII-12. The container inventory lists the analytes to be measured, the container type that will hold the water sample for a group of analytes, and the methods for preserving the water sample. Sample custody sheets are completed (in carbonless triplicate) by the sampler, one for each return cooler. The following information is included on the custody sheet:

- sampling agency
- project name
- sampler names
- station identifier (label as shown in Figure VII-6)
- date and time sample was collected
- specific conductance of the sample water
- pH of the sample water

In addition, a barcoded label containing the weekly project request number (Figure VII-13) is placed in the upper right hand corner of each sample custody sheet used that sampling month. This process enables custody to be verifiable from the field to the lab for each container and sample. If there is any modification to the sample container or of the way the sample is collected, it should be reported in the Comments section of the custody sheet.

Figure VII-9. Example of the Front of the Custody Sheet for Surface Water Sampling

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AMBIENT MONITORING PROGRAM
SAMPLE CUSTODY RECORD

SAMPLING AGENCY	PROJECT	SAMPLER NAMES	LAB PROJECT CODE
			AMBIENT SW-TREND

	STATION IDENTIFIER	SAMPLE INFORMATION	LAB IDENTIFIER
1	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
2	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
3	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
4	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID
5	Station ID Station Name	Sample Date: _____ Sample Time: _____ Sp. Cond: _____ pH: _____ Comments: _____	Lab Sample ID

Figure VII-10. Back of the Custody Sheet for Surface Water TV Sampling

SURFACE WATER TEMPORAL VARIABILITY NETWORK
CONTAINER INVENTORY

LAB	CONTAINER	ANALYSES	DESCRIPTION	SAMPLE PREPARATION
DEP	Chlorophyll	Chlorophyll	(1) 1 liter opaque plastic	Unfiltered; chill to 4°C
DEP	Nutrient	TOC, NO_3+NO_2, NH_3,TKN, P	(1) 500 ml plastic	Unfiltered; H_2SO_4 vial to pH <2; chill to 4°C
DEP	Anion	Cl, SO_4, F, Alkalinity,Color, Turbidity,TDS, TSS	(1) 1 liter plastic	Unfiltered; chill to 4°C
DEP	Metals	Ca, K, Na, Mg	(1) 500 ml plastic	Unfiltered; HNO_3 vial to pH <2; chill to 4°C
DEP	Bacteria	Enterococci Fecal Coliform	(2) Whirlpacks 4 oz	Unfiltered; chill to 4°C
DEP	W-PO4-F W-COND-F	o-PO4 Conductance	(1) 125 ml plastic	Filtered; chill to 4°C

Figure VII-11. Back of the Custody Sheet for Status Sampling of Streams

STATUS NETWORK- STREAMS
CONTAINER INVENTORY

LAB	CONTAINER	ANALYSES	DESCRIPTION	SAMPLE PREPARATION
DEP	Chlorophyll	Chlorophyll	(1) 1 liter opaque plastic	Unfiltered; chill to 4°C
DEP	Nutrient	TOC, NO_3+NO_2, NH_3,TKN, P	(1) 500 ml plastic	Unfiltered; H_2SO_4 vial to pH <2; chill to 4°C
DEP	Anion	Cl, SO_4, F, Alkalinity,Color, Turbidity,TDS, TSS	(1) 1 liter plastic	Unfiltered; chill to 4°C
DEP	Metals	Ca, K, Na, Mg	(1) 500 ml plastic	Unfiltered; HNO_3 vial to pH <2; chill to 4°C
DEP	Bacteria	Enterococci Fecal Coliform	(2) Whirlpacks 4 oz	Unfiltered; chill to 4°C
DEP	W-PO4-F W-COND-F	o-PO4 Conductance	(1) 125 ml plastic	Filtered; chill to 4°C

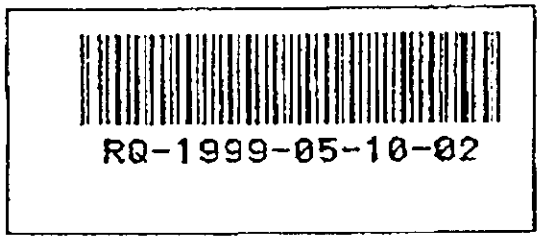
Figure VII-12. Back of the Custody Sheet for Status Sampling of Lakes

STATUS NETWORK- LAKES
CONTAINER INVENTORY

LAB	CONTAINER	ANALYSES	DESCRIPTION	SAMPLE PREPARATION
DEP	Chlorophyll	Chlorophyll	(1) 1 liter opaque plastic	Unfiltered; chill to 4°C
DEP	Phytoplankton Identification	Phytoplankton	(1) 1 liter opaque plastic	Unfiltered; Lugol's Solution; chill to 4°C
DEP	Algal Growth Potential	AGP	(1) 500 ml plastic	Unfiltered; chill to 4°C
DEP	Nutrient	TOC, NO_3+NO_2, NH_3,TKN, P	(1) 500 ml plastic	Unfiltered; H_2SO_4 vial to pH <2; chill to 4°C
DEP	Anion	Cl, SO_4, F, Alkalinity,Color, Turbidity,TDS, TSS	(1) 1 liter plastic	Unfiltered; chill to 4°C
DEP	Metals	Ca, K, Na, Mg	(1) 500 ml plastic	Unfiltered; HNO_3 vial to pH <2; chill to 4°C
DEP	Bacteria	Enterococci Fecal Coliform	(2) Whirlpacks 4 oz	Unfiltered; chill to 4°C
DEP	W-PO4-F W-COND-F	o-PO4 Conductance	(1) 125 ml plastic	Filtered; chill to 4°C

Mistakes on the sample custody sheet will be deleted by drawing a single line through the error. The two top copies of the custody sheet (white and yellow sheets) are placed in a sealed plastic bag and taped to the inside top of the FDEP cooler for shipment back to the Central Chemistry Lab with the samples. At the FDEP Chemistry Lab, information on the sample custody sheet is used to log in the samples. The other copy of the custody sheet (pink sheet) will be kept by the sampling agency and placed in the field logbook.

Figure VII-13. Example of Weekly Project Request Number Label



Field sheets for the Status and Temporal Variability Networks are shown in Figures VII-14 and VII-15. These sheets will be provided to the sampling agencies by the FDEP WM&DMS. The information to be recorded on the Surface Water Temporal Variability (Figure VII-14) and Status Field Sheets (Figure VII-15) consists of the following:

- Station identification
- Date
- Time that sample is collected
- Weather conditions
- Total water depth
- Secchi depth
- Stage (if applicable)
- Sample collection depth
- Field measurement depth
- Dissolved oxygen
- pH
- Temperature
- Specific conductance
- If QAQC sample, what type and when collected
- Comments, if any
- Barcode label
- Samplers' signatures

Entries on field sheets should be made with waterproof ink. Prior to visiting a site, information from the most previous visit to the site, if available, is reviewed; and a copy of the log sheet will be on-site so that reference can be made to it during sampling. Copies of sample custody sheets and field log sheets are kept in the field log notebook along with any other records pertaining to sampling. Copies of the notebooks will be kept on hand at the sampling agencies.

Figure VII-14. Field Sheet for the Surface Water TV Monitoring Network

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SURFACE WATER TEMPORAL VARIABILITY
NETWORK FIELD SHEET

Station Information

STATION ID:_____ DATE:_____ (MM/DD/YYYY) TIME:_____ (24 hr) (Time when Sample was Collected)

WATERBODY TYPE: (Circle One) Small Lake (<10HA) Large Lake (>10HA)

Low Order Stream (1-4 order) High Order Stream (>4 order)

WEATHER CONDITIONS (Circle One) Clear Partly Cloudy Cloudy Rain

Water Quality Measurements

Total Water Depth _____ (meters) (Average of 2 measurements if taken electronically) Secchi Depth _____ (meters) Stage (If applicable) _____ (Feet)

Depth from which laboratory samples were collected: _____ (meters)

Field Measurements:

Depth Collected	pH	D.O.	Temperature	Conductivity
Depth Collected	pH	D.O.	Temperature	Conductivity

*COMMENTS:*_____

QA/QC TAKEN?
(Circle One) Time Collected

DUPLICATE ____

EQUIPMENT BLANK ____

Place Barcode Label Here

Sampler's Signatures: _____

WMS-SWTV
October 1999

Figure VII-15. Field Sheet for the Surface Water Status Monitoring Network

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

STATUS NETWORK SURFACE WATER FIELD SHEET

Station Information

STATION ID:_____ DATE:_____ (MM/DD/YYYY) TIME:_____ (Time when Sample was Collected) (24 hr)

WATERBODY TYPE: (Circle One) Small Lake (<10HA) Large Lake (>10HA)

Low Order Stream (1-4 order) High Order Stream (>4 order)

WEATHER CONDITIONS (Circle One) Clear Partly Cloudy Cloudy Rain

Water Quality Measurements

Total Water Depth _____ (meters) (Average of 2 measurements if taken electronically) Secchi Depth _____ (meters) Stage (If applicable) _____ (Feet)

Stream Flow(Circle One) No Flow Flow within Banks Flood

Lake Level(Circle One) Low Normal High

Depth from which laboratory samples were collected: _____ (meters)

Field Measurements:

Depth Collected	pH	D.O.	Temperature	Conductivity
Depth Collected	pH	D.O.	Temperature	Conductivity

*COMMENTS:*_____

QA/QC (Circle One) Time Collected

DUPLICATE _____

EQUIP BLANK_____

Place Barcode Label Here

Sampler's Signatures: _____

_____

WMS-SNSW
October 1999

Sample Shipment

Proper sample shipment is imperative in the collection of environmental monitoring data. Strict adherence to the following steps for sample shipment will help assure the collection of accurate environmental monitoring data.

- Sample analysis for the FDEP WM&DMS is currently being done by the FDEP Central Laboratory in Tallahassee; therefore, all samples will be returned to this lab.
- Sampling supplies will be shipped from the FDEP Central Laboratory to the sampling agency via United Parcel Service (UPS) no later than two weeks prior to the project begin date.
- Each FDEP shipment will contain sample containers appropriate for the scheduled analyses and sufficient coolers for return shipment.
- Field custody sheets, field log sheets, barcode labels, and container inventories will be provided by WM&DMS staff.
- Preservatives will be provided by the FDEP WM&DMS in advance of sampling.
- A copy of the custody sheet must be included in each cooler. At the end of the day, tape the custody sheets contained in zip top baggies to the inner top of the coolers. It is best to line the inside of the cooler with a large garbage bag prior to filling it with ice. Also, if the cooler has a spigot, place tape over it to prevent it from opening during transit and spilling water. Likewise, the lid must be taped closed to prevent opening during shipment.
- Samples must be shipped daily; however, there will be extraneous circumstances where sample shipment can not occur until the following day. In this case, WM&DMS staff should be notified and the samples shall be kept at 4°C. Samples that are shipped daily also must be kept at 4°C.
- Sample shipment shall be done during Monday through Thursday. No sample shipments shall be made on Fridays due to the fact that the Central lab would receive the samples on Saturdays. The Central lab does not accept samples on Weekends or Holidays.
- Federal Express (FedEx) will be utilized for shipment of samples to the FDEP Central Laboratory. The FDEP laboratory and/or WM&DMS staff will provide FedEx airbills to sampling agencies for use in shipping water quality samples to the FDEP Central Laboratory. These airbills will be pre-printed with DEP's FedEx account number, so that all shipping costs are directed back to FDEP.

GPS Procedures

The Status Network will require extensive use of GPS equipment. This equipment will be used for navigation to randomly selected sites as well as collection of locational and field data. All participants of the Status Network should be using Trimble Pro XR® GPS equipment with differential correction. The decision to use this type of equipment was based on institutional knowledge of Pro XR units and for consistency.

All personnel using GPS equipment should be trained in the operation of such equipment and strictly follow the Division of Water Resource Management's GPS Standards which can be found at the website, www.dep.state.fl.us. Training has been ongoing within the Division and will continue as needed.

Accuracy

The Status Network incorporates the use of randomly selected coordinates for the selection of sample stations. The random coordinates or sites are selected as spelled out in the IWRM Design Plan. Due to map errors and scale differences the sites may not fall directly on intended water bodies. In this case the nearest waterbody should be selected. Normally the distance should only be a few meters off and is not considered problematic since the Division GPS Standards recommend the National Map Accuracy Standard of 12.2 meters.

Waypoints

Navigation to these sites will require the creation of waypoint files. These files will contain the site ID and the corresponding latitude, longitude, and HAE (Height Above Ellipsoid) which is used in the field to navigate to the sites. The HAE should be taken from the data logger near the area of the randomly selected sites, which is obtained from the current position information menu on the data logger. It is not critical that the HAE be exact, but it will help the accuracy of navigation to have it as close as possible. The waypoint file can be created in the office using Pathfinder Office® Software or in the field directly on the data logger. The creation of waypoint files is covered in the Division of Water Resource Management's GPS Basics Manual which is available from WM&DMS staff.

Navigation

Navigating to surface water sites presents many problems, especially for low order streams and small lakes. Heavy tree canopies typically cover these waterbodies. GPS signals are line-of-sight microwave signals that are easily blocked by any mass, including tree canopies. To correct this problem, navigate as close as possible to the selected site and then note the direction and distance to go, from the data logger. Proceed to the point by using a compass and tape measure. Pacing your steps can be done if a steady bearing is kept on the compass (12.2 meters are equal to approximately 40 feet). Using an estimation of one pace, approximately equal to three feet, one should get within 40 feet of a location with practice. Likewise, when collecting the positions of the sites, tree canopies can block signals. Doing the reverse of what is done to navigate to the site can solve this problem. Walk away from the site, while measuring your bearing and distance from the site. When the signals are received collect the position with the measurements applied to the position as an offset. Remember to convert the bearing 180 degrees so the offset is applied back in the opposite direction. These exercises are covered in the GPS Basics Manual and with practice a sampler will become competent at doing them.

File Nomenclature

Once at the site, the water quality measurements will be taken and recorded onto field sheets before the GPS data is collected. The site location will be collected into the data logger after the lab samples have been obtained and all data recorded on field sheets. The GPS data file (.ssf file) shall be named similarly to the unique resource code. For example, the Northwest Florida Water Management District's large lake number 26 in the A reporting unit of the first year cycle

is a site known as NWA-LL-1026. The data logger file will be NWALL026. The hyphens and the number one (1) in the number sequence are dropped to accommodate the eight-digit file name size in the data logger. There will only be one site per file.

Data Dictionary

The Status Network will also incorporate the use of a standard data dictionary (A Trimble electronic form) residing in the data logger memory. The data dictionary will contain all of the questions that are found on the field sheets. After the locational data has been collected you should pause the unit and then proceed to answer the questions in the data dictionary by following the field sheets. It is extremely important to collect the location in the data logger first and then pause the unit until all of the data dictionary questions have been answered. Once the data dictionary questions have been answered the "**OK**" key should be pressed to save the file. Many fields in the data dictionary require input and are restricted to certain constraints. For example, the pH range allowed to be entered into the data logger is between 0 and 14. No numbers less then 0 or more than 14 will be accepted by the data logger. The default is set to 0. A value of 0 in the data will signify that a problem had occurred and no data was collected for that analyte at that site. These constraints and defaults are also in other fields throughout the data dictionary.

Section VIII. Quality Control Samples- Surface Water

Quality control samples are collected to assess accuracy, precision, and representativeness. For surface water sampling in the Status and Temporal Variability Networks, the following types of QC samples are collected: field reference samples, equipment and field blanks, and duplicate samples. Analytical reference samples are currently not being submitted as part of surface water sampling. If surface water samplers later become involved in this program, refer to the information provided about analytical reference samples in Section VI.

Field Reference Samples

The USGS Laboratory in Ocala is under contract to prepare and distribute field reference samples for the Status and TV Networks. The procedures to follow in order to obtain these samples are addressed in Section III. The samples are prepared to a known pH or specific conductance. The USGS determines the most probable (mean) value and standard deviation for each sample. These statistics are then used to evaluate field measurement performance. These samples are carried into the field and analyzed at a rate of one for every 5-10 actual samples. The values are recorded on a Field Reference Sample Reporting Form (an example is shown in Section VI) and immediately submitted to the FDEP WM&DMS Project Manager or QA Officer by fax, telephone, or electronic mail. If the values differ substantially from the most-probable values, the sampling agency will be contacted immediately, and corrective action should ensue. Dirty probes, low batteries, contaminated standards, faulty meters, and sometimes analyst error, can cause poor performance on field reference samples.

Equipment and Field Blanks

Equipment blanks are samples of analyte-free water, collected for the purpose of assessing the cleanliness of the sampling and measurement system. If equipment blanks are discovered to contain impurities, it is assumed that these impurities will also affect the measured concentrations in actual samples, contributing to elevated concentrations of naturally occurring substances. Analyte-free water is defined as water which, when analyzed in the same manner as actual samples, has no detectable concentrations of target compounds. There are several potential causes for blank detections, including:

- The water treatment system that is serving as the source of the blank water may not be 100% effective for all analytes of concern.
- The containers used to transport the analyte-free water into the field may not be clean.
- The sampling equipment from which the blank is collected (or through which it is filtered) may not be clean.

- The sample containers used to hold the sample may not be clean.
- The preservatives may be impure.
- The sampling process itself may be exposing the sample to contaminants (as in the case of volatile organic sampling).

Equipment blanks will be taken on precleaned and/or field cleaned equipment. Precleaned equipment refers to equipment that has been cleaned in-house prior to sampling. The total number of blanks that will be taken during a sampling project is dependent upon how many actual samples will be collected. Equipment blanks are collected at a rough frequency of 20%. The type of blank that will be collected depends upon how many precleaned sampling equipment sets will be used and how frequent the equipment will have to be decontaminated in the field. If any field cleaning is performed during a project, then field cleaned equipment blanks are taken. Otherwise, if all the equipment that is used during a project is precleaned, precleaned blanks are obtained.

The following steps describe proper collection of equipment blanks:

1. Fill a large clean high-density polyethylene (HDPE) container with analyte-free water and transport it to the field. This water should be from the same source as the analyte-free water used in the final rinse of the equipment cleaning process.
2. Fill the pre-cleaned sampling device, e.g. a Van Dorn sampler, with analyte-free water, and discard the water.
3. Fill again. Then fill an entire suite of sample containers, as with an actual water sample, using the same preservation and filtration methods.
4. Label all blank containers with the equipment blank labels provided with the project paperwork (example is shown in Section VI), and ship the blank sample along with regular samples to the lab. Equipment blanks should be listed on the custody sheet. Refer to Section VII for further information on sample custody and shipment.
5) Check the lab results for detections. If frequent detections are noted, consult with the FDEP WM&DMS QA Officer.

Field blanks must be taken in cases where the only sampling equipment is the sample container. They should also be collected if analytes are detected at high levels in equipment blanks. These blanks consist of filling on-site a suite of sample containers with analyte-free water from the HDPE water container, preserving as with actual samples, sealing the containers, documenting them as quality assurance samples/field blanks, and shipping them to the laboratory as is done with actual field samples. The custody sheet and field log should indicate that a field blank sample was collected. This procedure is an aid in determining if the equipment blank contamination is a result of the analyte-free water not being "analyte-free", the water container being dirty, or acid preservatives being fouled.

Duplicate Samples (Optional)

Duplicate samples are collected for the purpose of assessing overall precision of the sampling and analytical process. The following steps describe collection of duplicate samples.

1. Collect a water sample with a clean sampling device.
2. Fill, label, and preserve all containers for the sample.
3. Place in cooler.
4. Using the same sampling device(s), collect a second sample in the same manner as the first.
5. For filtered samples, a new filter should be used.
6. Fill, label, and preserve all containers for the sample (an example of a duplicate label is shown in Section VI).
7. Place in cooler.
8. Both samples should be listed on the custody sheet as separate samples. The second sample should be given a different sampling time and field id than the first.
9. FDEP WM&DMS staff will review the results to see if the values reasonably agree.

Section IX. Equipment Cleaning

Introduction

All equipment must be either precleaned (in-house) or field cleaned before using it to collect water samples. These cleaning procedures are to be used by field personnel for cleaning sampling and other equipment, both in-house and in the field. They are in accordance with the Environmental Protection Agency Region 4 Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, May 1996 (with March 1997 revisions), and Department of Environmental Protection Standard Operating Procedures for Laboratory Operations and Sample Collection Activities, Florida Department of Environmental Protection, September 1992 (DEP-QA-001/92). The EPA document can be found at the website, www.epa.gov/region04/sesd, and the DEP document can be found at the website, www.dep.state.fl.us.

Specifications for Cleaning Materials

Specifications for standard cleaning materials referred to in this section are as follows:

- Soap shall be a standard brand of phosphate-free laboratory detergent such as Liquinox®.
- Tap water may be used from any municipal water treatment system. Use of an untreated potable water supply is not an acceptable substitute for tap water.
- Analyte-free water (deionized water) is water which, when analyzed for target compounds using the requested analytical methods, yields no detections.

Handling and Containers for Cleaning Solutions

Improperly handled cleaning solutions may easily become contaminated. Storage and application containers must be constructed of the proper materials to ensure their integrity. Following are acceptable materials used for containing the specified cleaning solutions:

- Soap must be kept in clean plastic, metal, or glass containers until used. It should be poured directly from the container during use.
- Tap water may be kept in clean tanks, hand pressure sprayers, squeeze bottles, or applied directly from a hose.
- Analyte-free water must be stored in clean glass, stainless steel, or plastic containers that can be closed to the environment. It can be applied from plastic squeeze bottles.

Safety Procedures for Cleaning Operations

Some of the materials used to implement the cleaning procedures can be harmful if used improperly. Caution should be exercised by all field investigators and all applicable safety procedures should be followed. At a minimum, the following precautions should be taken in the field during these cleaning operations:

- Safety glasses with splash shields or goggles, and latex gloves will be worn during all cleaning operations.
- No eating, smoking, drinking, chewing, or any hand to mouth contact should be permitted during cleaning operations.

Cleaning Procedures for Specific Equipment

Table IX-1 lists specific equipment, references of the procedures for cleaning the equipment, and frequency for in-house and in-field cleaning of the equipment. The cleaning procedures are described here.

Water Level Measuring Devices

1. Wash with soap and tap water.
2. Rinse with tap water.
3. In-house protocols must include the use of HOT tap water and cleaning in a contaminant-free environment. Hot detergent solutions and water rinses are not required for in-field decontamination.
4. Rinse with analyte-free water.
5. Allow to air dry overnight if cleaning in-house.
6. Wrap equipment in aluminum foil (with tab for easy removal) seal in plastic, and date if storing.

Pumps

Submersible pumps

1. Pump exterior must be cleaned per the following:
   a. Clean with tap water and lab grade soap (Liquinox or equivalent) using a brush, if necessary, to remove particulate matter or surface film.
   b. Rinse thoroughly with tap water. HOT tap water should be used if cleaning in-house.
   c. Rinse with 10% reagent grade hydrochloric acid (HCL), when cleaning in-house. The acid rinse should not be used on steel sampling equipment. This acid rinse is not required when cleaning in-field.
   d. Rinse thoroughly with analyte-free water. Enough water shall be used to ensure that all equipment surfaces are flushed with water.
   e. Then allow to air dry as long as possible.

f. Clean sampling equipment shall be wrapped (if appropriate) in aluminum foil, or in untreated butcher paper to prevent contamination during storage or transport to the field.
g. If no further sampling is to be performed, equipment must be rinsed with tap water immediately after use and taken back to the lab to be cleaned in-house.
h. In-house protocols must include the use of HOT tap water and cleaning in a contaminant-free environment. Hot detergent solutions and water rinses are not required for in-field decontamination.
i. It is not recommended to clean heavily contaminated equipment in the field. Such rigorous cleaning procedures should be performed at the base of operations. Cleaning at the base of operations or in the field should consider the following:
   - In extreme cases, it may be necessary to steam clean the field equipment before cleaning with soap and water.
   - If the field equipment cannot be cleaned utilizing these procedures, it should be discarded, unless further cleaning with stronger solvents and/or oxidizing solutions are effective.

2. Pump internal cavity and mechanism must be cleaned as follows:
   a. If for purging only, then the pump must be completely flushed with potable water prior to purging the next well.
   b. If for purging and sampling, then it must be completely disassembled (if so designed) and decontaminated between each well.
   c. If the pump cannot be (practically) disassembled, then the internal cavity/mechanism must be cleaned by pumping copious amounts of lab-grade soap solution, tap water, and DI water.
   d. In-house protocols must include the use of HOT tap water and cleaning in a contaminant-free environment. Hot detergent solutions and water rinses are not required for in-field decontamination.
2. Tubing should be cleaned as stated below.

Above Ground Pumps Used for Purging and Sampling

1. Pumps used for purging only
   a. Exterior of the pump must be free of oil and grease.
   b. Tubing should be cleaned as stated below.
2. Pumps used for sampling
   a. Exterior of pump must be cleaned with a detergent wash followed by tap and analyte-free water rinses.
   b. Tubing should be cleaned as stated below.
   c. In-house protocols must include the use of HOT tap water and cleaning in a contaminant-free environment. Hot detergent solutions and water rinses are not required for in-field decontamination.

Tubing

Miscellaneous Non-Inert Tubing Types (tygon, rubber, HDPE, PVC, etc.)

1. New Tubing
   a. As a general rule, new tubing may be used without preliminary cleaning.

b. New tubing shall be protected from potential environmental contamination by wrapping in aluminum foil, sealing in plastic bags or in the original sealed packaging.
c. If new tubing is exposed to potential contamination, the exterior and interior shall be thoroughly rinsed with hot tap water followed by a thorough rinse with deionized water.
d. If new tubing is to be used to collect samples, the tubing shall be thoroughly rinsed with sample water (i.e. pump sample water though the tubing) before collecting samples.

2. Reused Tubing
   a. Flush tubing with soapy solution of hot tap water and laboratory detergent.
   b. Rinse exterior and interior thoroughly with tap water.
   c. Rinse exterior and interior thoroughly with deionized water.
   d. In the lab, the tubing shall be flushed with 10% HCl, followed by thorough rinsing with DI water. This acid rinse is not required when cleaning in-field.
   e. Wrap tubing and cap ends in aluminum foil and seal in plastic to prevent contamination during storage and transport.
   f. In-house protocols must include the use of HOT tap water and cleaning in a contaminant-free environment. Hot detergent solutions and water rinses are not required for in-field decontamination.

Van Dorn Sampler

1. Clean with tap water and lab grade soap (Liquinox or equivalent) using a brush, if necessary, to remove particulate matter or surface film.
2. Rinse thoroughly with tap water.
3. Rinse with 10% reagent grade HCl, if cleaning in-house. The acid rinse should not be used on steel sampling equipment.
4. Rinse thoroughly with analyte-free water. Enough water shall be used to ensure that all equipment surfaces are flushed with water.
5. Allow to air dry as long as possible.
6. Clean sampling equipment shall be wrapped (if appropriate) in aluminum foil, or in untreated butcher paper to prevent contamination during storage or transport to the field.
7. If no further sampling is to be performed, equipment must be rinsed with tap water immediately after use and taken back to the lab to be cleaned in-house.
8. In-house protocols must include the use of HOT tap water and cleaning in a contaminant-free environment. Hot detergent solutions and water rinses are not required for in-field decontamination.
9. It is not recommended to clean heavily contaminated equipment in the field. Such rigorous cleaning procedures should be performed at the base of operations. Cleaning at the base of operations or in the field should consider the following:
   - In extreme cases, it may be necessary to steam clean the field equipment before cleaning with soap and water.
   - If the field equipment cannot be cleaned utilizing these procedures, it should be discarded, unless further cleaning with stronger solvents and/or oxidizing solutions are effective.

NOTE: If metals- calcium, magnesium, sodium, and potassium- are detected in equipment blanks, after the cleaning procedure, then sampling equipment (excluding stainless steel equipment) will have to be rinsed with 10% reagent grade HCl, prior to rinsing with analyte-free water, when field cleaning.

Polyethylene Analyte-free Water Containers (In-House Cleaning Only)

1. New Containers
   a. Clean with HOT tap water and lab grade soap (Liquinox or equivalent).
   b. Rinse thoroughly with HOT tap water.
   c. Rinse with 10% reagent grade HCl.
   d. Rinse thoroughly with analyte-free water. Enough water shall be used to ensure that all equipment surfaces are flushed with water.
   e. Allow to air dry as long as possible.
   f. Cap with teflon film, aluminum foil or the bottle cap. Note: the bottle cap shall be equipped with a teflon liner. Aluminum foil or teflon film may be used as liner material.
2. Reused Containers
   a. Immediately after being emptied, cap with aluminum foil, teflon film or the container cap.
   b. Wash container exterior with lab-grade detergent and HOT tap water.
   c. Rinse exterior and interior thoroughly with analyte-free water.
   d. Invert and allow to drain and dry.
   e. Fill container with analyte-free water and cap tightly with aluminum foil, teflon film or the container cap. Note: the bottle cap shall be equipped with a teflon liner. Aluminum foil or teflon film may be used as liner material.

NOTE: Analyte-free water shall not be stored for more than one week in a polyethylene container.

Handling and Storage of Cleaned Equipment

Handling and storage of clean equipment will be done according to Appendices B.1.6 and C.1.5 (EPA Region 4, 1996). After cleaning, equipment should be handled only by personnel wearing clean gloves to prevent re-contamination. In addition, the equipment should be moved away (preferably upwind) from the cleaning area to prevent recontamination. If the equipment is not to be immediately re-used it should be covered with plastic sheeting or wrapped in aluminum foil, after air drying, to prevent re-contamination. The area where the equipment is kept prior to re-use must be free of contaminants. Clean equipment should be appropriately labeled and placed in an area free of contaminants.

Disposal of Cleaning Materials

Disposal of cleaning materials, both in-house and in-field, must be done properly. Used detergents may be disposed of through a sanitary sewer system. Hydrochloric acid cleaning solutions should be diluted/neutralized to a pH between 5 and 9, and flushed down a sanitary sewer system. If used to clean in-field, the material should be captured and diluted/neutralized to a pH between 5 and 9. Then it can be flushed down a sanitary sewer system. Any solvents must be collected and handled by a commercial disposal or recycling contractor.

Documentation of Cleaning

Documentation of cleaning will be maintained for each item of sampling equipment. Each equipment item will be made identifiable by means of serial numbers, tags, or labeled carrying cases. A cleaning log will be kept with subsections for each equipment item. The name of the person performing the cleaning, the date of cleaning, the location of cleaning, and any deviations from the approved cleaning procedure will be entered into this cleaning log. After cleaning, equipment should be allowed to air dry completely; then it is wrapped as specified in the cleaning procedure and tagged, marked, or labeled with the date of cleaning and any deviation from procedures.

Table IX-1. Cleaning Procedures and Frequencies

EQUIPMENT ITEM	IN-HOUSE CLEANING PROCEDURE	FREQUENCY	IN-FIELD CLEANING PROCEDURE[2]	FREQUENCY
Water-level measuring devices	EPA Appendix C.5.1	weekly	EPA Appendix B.2.4	between sample sites
Pumps[1]	DEP QA SOP Section 4.1.8 (omitting solvent rinse)	weekly	DEP QA SOP Sections 4.1.8 (omitting acid and solvent rinses)	between sample sites
Tubing[1]	DEP QA SOP Section 4.1.7.5 (substituting 10% HCl for 10% HNO_3)	weekly	DEP QA SOP Section 4.1.7.5 (omitting acid rinse)	between sample sites
Van Dorn sampler (Alpha/Beta bottle)[1]	DEP QA SOP Section 4.1.4.1 (omitting solvent rinse)	weekly	DEP QA SOP Section 4.1.4.1 (omitting acid and solvent rinses)	between sample sites
Polyethylene analyte-free water containers	DEP QA SOP Section 4.1.10 (omitting solvent rinse)	prior to refilling	procedure not performed in field	n/a

[1]If it is discovered that a heavily contaminated site has been sampled, then the equipment used to sample the site will be identified from the field log sheet. That equipment will be taken out of circulation until it can be cleaned according to DEP QA SOP Section 4.1.4.1, note 2. Furthermore, results for all other sites sampled with that equipment will be carefully examined for the offending contaminants, and if detected, will be marked as possible false positive.

[2]An acid rinse will not be required for sampling equipment during in-field decontamination unless metals- calcium, magnesium, sodium, and potassium- are detected in equipment blanks. If metals are detected, the equipment, excluding stainless steel equipment, will have to be rinsed with 10% HCl prior to rinsing with analyte-free water.

Section X. Field Performance Audits

External Audits

External audits of each sampling agency are conducted by the Department of Environmental Protection's Watershed Monitoring and Data Management Section QA Officer and/or Project Manager. A minimum of two surface water audits and one ground water audit will be performed on each contracted sampling agency, and a minimum of one surface water audit will be performed on each sub-contracted sampling agency.

These audits generally consist of an on-site review of sample custody practices, equipment decontamination procedures, purging methods for ground water sampling, field measurement techniques, and sample collection protocols (see Attachment X-1 for the Field Audit Form). Results of the audits are given to the Project Manager of the sampling agency and areas in need of improvement are noted. These areas will be documented in the quarterly QA Report, with the addition of a description of any corrective actions taken as a result. Future external audits will focus on these areas to ensure that corrective action has been taken.

Internal Audits

Internal audits of sampling agency field personnel are conducted by the sampling agency QA Officer and/or Project Manager. A minimum of one surface water audit and one ground water audit will be performed. The findings of these audits will be documented in the quarterly QA Report.

Section XI. Quality Assurance Reports

Quality Assurance Reports will be prepared by the QA Officer and/or Project Manager of the sampling agency and submitted quarterly. These reports will have a title page and include a summary of audits conducted, list of quality control samples analyzed, discussion of any significant QA problems encountered, and description of action taken to correct these problems during the quarter (see Attachment XI-1 for an example of the format). Reports will be submitted to the appropriate Project Manager at the Department of Environmental Protection's Watershed Monitoring and Data Management Section. The Project Manager will provide copies to the WM&DMS QA Officer. The WM&DMS should receive the QA Reports within 30 days after a quarter ends. The beginning month of each quarter is defined as 1st quarter October, 2nd quarter January, 3rd quarter April, and 4th quarter July. Reports are kept on file with the DEP WM&DMS for documentation of significant QA problems.

ATTACHMENT X-1

FIELD AUDIT FORM

FIELD AUDIT

STATUS AND TEMPORAL VARIABILITY MONITORING NETWORKS
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
2600 BLAIR STONE ROAD
TALLAHASSEE, FL 32399-2400
Telephone (850) 922-5820

SAMPLING AGENCY_____
PROJECT NAME_____
FIELD PERSONNEL_____
_____
_____

AUDIT TYPE: **Internal** _____ **Announced**_____ **Surface Water**_____
External_____ **Unannounced**____ **Ground Water**_____
Both SW & GW_____

AUDITOR NAME(S)_____
_____

AUDIT DATE_____ **SITE**_____

Instructions for use of this form: This form is to be used for both surface and ground water audits in the Status and Temporal Variability Networks when there are no known problems. The information requested here is the minimum needed for a successful audit, therefore all items should be completed with a "Y", "N", or n/a (not applicable). A detailed explanation should be provided in the Comments when a method deviates from what is listed in the Quality Assurance Plan #900456 and the Sampling Manual. The question number should be shown with the explanation of the deviation. Additional information can also be provided; attach more sheets if necessary.

SECTION 1
GENERAL INFORMATION

(1)	Were paperwork (labels, field sheets, and custody sheets), sample kits, acid preservatives, and equipment inventoried prior to going into the field	Y	N
(2)	Were the sampling manual and instrument service manual in field vehicle	Y	N
(3)	Were reagents, instrument calibration, and maintenance records up to date	Y	N
(4)	Was blank water analyte-free (De-ionized water), check source of water	Y	N
(5)	Was the DI water transported into the field in a polyethylene container	Y	N
(6)	Were all of the sampling equipment precleaned and cleaning log current	Y	N
(7)	Were the reagents and equipment properly stored	Y	N
(8)	What information was available to the samplers concerning sample sites:		
	(a) Maps with sample locations marked	Y	N
	(b) Field log books containing historic data	Y	N
	(c) Well tags on wells	Y	N
	(d) Reference stations at surface water sites	Y	N
	(e) DGPS Coordinates	Y	N
(9)	Were instruments calibrated or checked in the field	Y	N
(10)	Were instruments calibrated properly and bracketed expected range	Y	N

COMMENTS:

SECTION 2
FIELD PROCEDURES- GROUND WATER

(11)	Was the wellhead properly labeled	Y	N
(12)	Were well measurements taken properly	Y	N
(13)	Which one of the following pumps was used to purge the well:		
	(a) Centrifugal	Y	N
	(b) Peristaltic	Y	N
	(c) Submersible	Y	N
	(d) Dedicated pump on a well with in-place plumbing	Y	N
(14)	If purging a well without in-place plumbing, which one of the following criteria was met to ensure that the well was adequately purged:		
	(a) Three standing water volumes removed and field analytes stabilized	Y	N
	(b) Five standing water volumes removed	Y	N
	(c) Well purged dry, allowed to recover, and purged dry again	Y	N
(15)	If purging a well with in-place plumbing, which of the following was done to ensure that the well was adequately purged:		
	(a) Because of continuously running pump on well and no storage tank prior to the sample location, the valve was simply opened and allowed to flush at maximum velocity for at least 15 minutes	Y	N
	(b) Because of continuously running pump on well and a storage tank prior to the sample location, purge included entire storage tank volume	Y	N
	(c) Because purge volume could be determined, the pump was run continuously at maximum velocity until the required volume purged	Y	N
	(d) Because of unknown well construction, pump was run continuously for a minimum of 15 minutes and until chemical stability achieved	Y	N
(16)	Were the purge and rinse water disposed of properly away from the well	Y	N
(17)	If sampling a well without in-place plumbing, which of the following pumps was used:		
	(a) Peristaltic	Y	N
	(b) Submersible	Y	N
(18)	Were the sample containers rinsed with sample prior to filling	Y	N
(19)	Was a new 0.45-micron filter rinsed with sample water then used to collect the metals, anions, and nutrients samples	Y	N
(20)	Were sample containers filled in the correct order	Y	N
(21)	Were TOC, nutrients, and metals samples preserved with the appropriate acid and pH tested within 15 minutes of collection	Y	N
(22)	Were gloves and protective eyewear worn while handling acids	Y	N
(23)	Were bacteria, TOC, nutrients, and metals samples segregated into zip top baggies before placing them in the mesh bag with other samples from the site	Y	N
(24)	Were waste materials disposed of or stored properly in field	Y	N
(25)	Was the Microland Use form completed in the field	Y	N

COMMENTS:

_____

_____

_____

SECTION 3
FIELD PROCEDURES- SURFACE WATER

(26)	Was the total water depth measured properly to 0.1 m	Y	N
(27)	Which of the following waterbody types was sampled:		
	(a) High order stream	Y	N
	(b) Low order stream	Y	N
	(c) Large lake	Y	N
	(d) Small lake	Y	N
(28)	If sampling at a Status Network site, were the field measurements and sample collected in the proper location within the waterbody	Y	N
(29)	Were field measurements taken at the proper depth(s)	Y	N
(30)	Was secchi depth properly determined	Y	N
(31)	If stage height was obtained, which of the following devices provided the measurement:		
	(a) Staff gauge	Y	N
	(b) Continuous recording gage	Y	N
	(c) Wire weight gage	Y	N
	(d) Tape down measurement	Y	N
	(e) USGS gaging station data source	Y	N
(32)	Was the water sample collected at the appropriate depth	Y	N
(33)	The sample was collected by which of the following methods:		
	(a) Directly into sample containers	Y	N
	(b) With a Van Dorn horizontal sampling device then into the containers	Y	N
	(c) With a Van Dorn, poured into a churn then into sample containers	Y	N
(34)	Were any sediments disturbed during the collection process	Y	N
(35)	Were the sample containers rinsed with sample water prior to filling	Y	N
(36)	If sampling at a lake site for the Status Network, were the algal growth potential and phytoplankton taxonomy analytes collected into the proper bottles	Y	N
(37)	Was a new 0.45-micron filter used to collect the orthophosphate sample	Y	N
(38)	Were sample containers filled in the proper order	Y	N
(39)	Were the nutrients and metals samples preserved properly with acid	Y	N
(40)	Were gloves and protective eyewear worn while handling preservatives	Y	N
(41)	Were the bacteria, metals, and nutrients samples segregated into zip top baggies before placing them into the mesh bag with other samples from the same site	Y	N

COMMENTS:

SECTION 4
QUALITY CONTROL SAMPLES

(42)	Were the field reference samples analyzed under field conditions	Y	N
(43)	Were the field reference sample results satisfactory	Y	N
(44)	Was an equipment blank prepared with clean equipment and analyte-free water prior to collecting a sample	Y	N
(45)	Was the equipment blank collected as if an actual sample	Y	N
(46)	Were duplicate samples taken in parallel and recorded appropriately on the field log sheet and custody sheet	Y	N

COMMENTS:

SECTION 5
CHAIN-OF-CUSTODY

(47)	Were all the samples properly labeled	Y	N
(48)	Were all the samples from a single site put together in a mesh bag	Y	N
(49)	Were samples immediately placed on ice after collection and preservation	Y	N
(50)	Were the samples protected from melted ice in the shipping container	Y	N
(51)	Was the custody sheet completed properly, with RQ and bagged	Y	N

COMMENTS:

SECTION 6
MISCELLANEOUS

(52)	Was sampling equipment adequately cleaned between sample sites	Y	N
(53)	In general, were the samples obtained in a reproducible manner	Y	N
(54)	Were there any anomalous conditions or deviations from usual sampling	Y	N
(55)	Was GPS used to determine site location	Y	N
(56)	Has at least one of the samplers on site attended the USGS Water Quality Field Techniques Class or DEP Status and TV Networks Sampling Workshop	Y	N
(57)	**WAS OVERALL SAMPLING PERFORMANCE ACCEPTABLE**	**Y**	**N**

COMMENTS:

SECTION 7
ADDITIONAL COMMENTS

ATTACHMENT XI-1

EXAMPLE OF QUARTERLY QUALITY ASSURANCE REPORT

QUALITY ASSURANCE REPORT FOR FDEP AMBIENT MONITORING PROGRAM

GROUND WATER AND SURFACE WATER TEMPORAL VARIABILITY AND STATUS MONITORING NETWORKS

For the Time Period:

January 1, 2000 to March 31, 2000

Water Management District

Prepared by:

John Doe
Water Management District
0000 Blair Stone Road
Tallahassee, FL 32399

_____ _____

John Doe
Project Manager

Date

_____ _____

Jane Smith
Quality Assurance Officer

Date

Internal Field Audits

One internal surface water field audit was performed by our Quality Assurance Officer during this quarter. See enclosed Field Audit Sheet.

External Field Audits

No external field audits were performed during this quarter. One external ground water audit is scheduled with FDEP QA Officer for next quarter.

Quality Control Samples

Surface Water TV Network: 3 equipment blanks and 3 duplicate samples were collected, and 3 sets of pH and specific conductance field reference samples were analyzed this quarter.

Surface Water Status Network: Sampling was not scheduled this quarter for the Status Surface Water Monitoring Network.

Ground Water TV Network: 2 equipment blanks and 2 duplicate samples were collected, and 4 sets of pH and specific conductance field reference samples were analyzed this quarter.

Ground Water Status Network: 3 equipment blanks and 3 duplicate samples were collected, and 3 sets of pH and specific conductance field reference samples were analyzed during confined aquifer sampling this quarter.

Significant QA/QC Problems

Only one problem arose. One day during the quarter, samplers forgot to bring Liquinox into the field to decontaminate the Van Dorn bottle between sample sites.

Corrective Action

Another sampling crew was able to bring Liquinox out to the crew that forgot it so that they could properly decontaminate equipment between sites and continue sampling for the remainder of the day. To eliminate this from happening in the future, a written sampling supplies checklist was developed. Both samplers go through the list to make sure their sampling vehicle is properly equipped prior to leaving for the first sample site. As a result, there have been no further incidents.

ATTACHMENT K

INSTRUCTIONS FOR SAMPLE SHIPMENT

1. Sample analysis for the Department of Environmental Protection's (DEP) Watershed Monitoring Section (WMS – formerly known as the Ground Water Quality Monitoring Program (GWQMP)) is currently being done by the DEP Central Laboratory in Tallahassee, so all sample containers will be returned to this lab.

2. A copy of the **custody sheet** must be included **in each cooler**. At the end of the day, tape the custody sheets in ziplocks to the inner top of the coolers. It is best to line the inside of the cooler with a large garbage bag prior to loading it up with ice. Also, if the cooler has a spigot, place duct tape over it to prevent it from opening during transit and spilling ice water.

3. It is not necessary to ship every day. If samples are held overnight, it is imperative they remain at a temperature of 4 degrees Celsius. Samples should not be shipped on Friday.

4. Sampling equipment will be shipped from the DEP Central Laboratory to the sampling agency via United Parcel Service (UPS), no later than one week prior to the project begin date.

5. Each DEP shipment will contain sample containers appropriate for the scheduled analyses and sufficient coolers for return shipment.

6. Field custody sheets, field log sheets, barcode labels, and container inventories will be provided by DEP Watershed Monitoring Subsection staff.

7. Preservatives will be provided by the DEP Watershed Monitoring Subsection in advance of sampling.

8. Federal Express (FEDEX) will be utilized for return shipment of samples to the DEP Central Laboratory. The DEP laboratory and/or WMS staff will provide FEDEX airbills to sampling agencies for use in returning water quality samples to the DEP Central Laboratory. These airbills will be pre-printed with DEP's FEDEX account number, so that all shipping costs are directed back to DEP.

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ATTACHMENT L
REQUIRED ELECTRONIC FORMAT

Florida Department of Environmental Protection
Status and Trend Monitoring Networks

From Field Sample Database Data Dictionary
Version 2.1

Required Field Measurements - Surface Water

MEASUREMENT[1]	UNITS	STORET CODE
Water Temperature, field	°C	00010
pH, field	Std. units	00406
Specific Conductance @ 25 C, field[2]	µmho/cm @ 25°C	00094
Salinity[2]	parts/thousand	00480
Dissolved Oxygen, field	milligrams/L	00299
Secchi Depth (transparency) [3]	Meters	00078
Total Depth @ Sampling Site[4]	Meters	82903
Stream Stage[5]	Feet	00065
Sample Depth	Meters	90068

[1] = Measurements which are not taken, but required, should be listed as zero values with the 'O' value qualifier.
[2] = Specific Conductance will be reported for fresh waters and salinity will be reported for saline waters.
[3] = If disc is visible on bottom of water body the value reported should be '>' + the value of the total depth with the 'L' value qualifier.
[4] = If sampling done from a fixed point.
[5] = Surface water temporal variability sites only, where available.

Required Field Measurements - Ground Water

MEASUREMENT[1]	UNITS	STORET CODE
pH, field	Std. units	00406
Specific Conductance @ 25 C, field	UMHOS/CM @ 25°C	00094
Water Temperature, field	°C	00010
Dissolved Oxygen, field	milligrams/L	00299
Depth to Water from Measuring Pt.	Feet	72109
Elevation of Measuring Pt.	Feet above or below NGVD	82514
Microlanduse[2]	NA	84147

[1] = Once per year at temporal variability sites.

ATTACHMENT L
REQUIRED ELECTRONIC FORMAT

Please refer to the Watershed Monitoring Section's (WMS) Field Database Data Dictionary Version 2.0 for data element definitions.

FORMAT FOR WMS **STATION DATA** :

NAME	TYPE	TOTAL CHARACTERS OR DIGITS	DECIMAL DIGITS
*STATION_ID	CHARACTER	16	N/A
*STATION	CHARACTER	25	N/A
ALIAS_ID	CHARACTER	50	N/A
* COUNTYNAME	CHARACTER	20	N/A
*AGENCYCODE	CHARACTER	4	N/A
*USGS_HYDRO	CHARACTER	8	N/A
*WB_TYPE	CHARACTER	30	N/A
*WATERBODY	CHARACTER	40	N/A
*LATITUDE	CHARACTER	10	N/A
*LONGITUDE	CHARACTER	10	N/A
*LOC_METHOD	CHARACTER	4	N/A
*LOC_DATUM	CHARACTER	1	N/A
COMMENT1	CHARACTER	80	N/A
COMMENT2	CHARACTER	80	N/A
COMMENT3	CHARACTER	80	N/A

An asterisk(*) in front of a field name indicates that the field is required for data transfer.

Explanations of each of the above fields are available in the *Watershed Monitoring Section Data Management Standard Operating Procedures And Data Dictionaries* document.

ACCEPTABLE MAGNETIC MEDIA FOR
GWIS DATA EXCHANGE:

1. *Floppy diskettes:*
   MS DOS format
   1.44 megabyte 3 1/2 inch

2. *Iomega 100 Megabyte Zip disks*

3. *650 / 700 Megabyte CD-ROM disks*

Data transfer via FTP or e-mail attachment is also acceptable.

EXHIBIT 1: SURFACE WATER TEMPORAL VARIABILITY (TV) FIXED SITES

South Florida Water Management District area:

7/19/98

ID NO	SITE DESCRIPTION	USGS HUC ID#	COUNTY	LAT	LONG	CONTINUOUS GAGE? AND PERIOD OF RECORD	CURRENT WQ SAMPLED BY ?
LOWER HUC BASIN SITES (NON-WADEABLE STREAMS):							
C25S50	UPSTREAM OF WEIR S50 ON C-25	03080203	ST. LUCIE	272818	802012	*no*	SFWMD
S65E	KISSIMMEE RIVER AT S-65E	03090101	OKEECHOBEE	271335	805742	USGS (1929-P)	SFWMD
SE10	ST. LUCIE CANAL BELOW LOCK	03090202	MARTIN	270639	801706	USGS (1953-P)	SFWMD
FISHCR27	FISHEATING CREEK AT U.S. 27	03090103	GLADES	265556	811854	USGS (1931-P)	LEE COUNTY
CALOOSRVR	CALOOSAHATCHEE RIVER @ SR 79 NEAR OLGA	03090205	LEE	264325	814155	USGS (1966-P)	LEE COUNTY
HILLSCAN	HILLSBORO CANAL NEAR MARGATE	03090202	BROWARD	261948	801245	USGS (1976-P)	BROWARD COUNTY
MGGC@31	GOLDEN GATE CANAL AT SR 31	03090204	COLLIER	261004	814601	*no*	COLLIER COUNTY
BARRNRVR	BARRON R. @ SR 29 NEAR COPELAND	03090204	COLLIER	255728	812119	USGS (1951-P)	COLLIER COUNTY
MR08	MIAMI RIVER @ NW 42 AVE & OKEECHOBEE RD	03090202	DADE	254837	801552	USGS (1959-P)	MIAMI-DADE DERM
AR03	AEROJET CANAL AT U.S. 1 AND SW 518 ST	03090202	DADE	251720	802635	USGS (1969-P)	MIAMI-DADE DERM
OTHER NON-WADEABLE STREAM SITES:							
S-8	MIAMI CANAL AT S-8 NEAR LAKE HARBOR	03090202	BROWARD	261953	804629	USGS (1962-P)	SFWMD
WADEABLE STREAM SITES:							
ENP-P36	CENTRAL SHARK SLOUGH-BARREN POND	03090202	DADE	253139	804745	*no*	SFWMD
COASTAL STREAM SITES:							
BL03	BLACK CREEK CANAL @ SW 97 AVE & 236 ST	03090202	DADE	253242	802046	USGS (1971-P)	MIAMI-DADE DERM
LARGE LAKE SITES:							
S65	LOWER LAKE KISSIMMEE ON C-38 @SR 60	03090101	OSCEOLA	274814	811153	USGS (1970-P)	SFWMD
S68	LAKE ISOTOKPOGA	03090101	HIGHLANDS	272335	811657	*no*	SFWMD
L008	LAKE OKEECHOBEE - CENTRAL	03090201	GLADES	265695	805350	*no*	SFWMD
SMALL LAKE SITES:							
LKTRAFRD	LAKE TRAFFORD CENTER	03090204	COLLIER	262522	812937	*no*	COLLIER COUNTY

17 SITES TOTAL:

2 sites are in Broward County;
4 sites are in Dade County;
3 sites are in Collier County;
1 site is in Lee County

11 (85% of stream sites) have active USGS continuous-record streamflow-gaging stations;

10 are lower HUC Basin (Non-Wadeable Stream) sites
1 is other Non-Wadeable Stream site (not located at lower end of HUC)
1 is Wadeable Stream site
1 is Coastal Stream site
3 are Large Lake sites
1 is Small Lake site

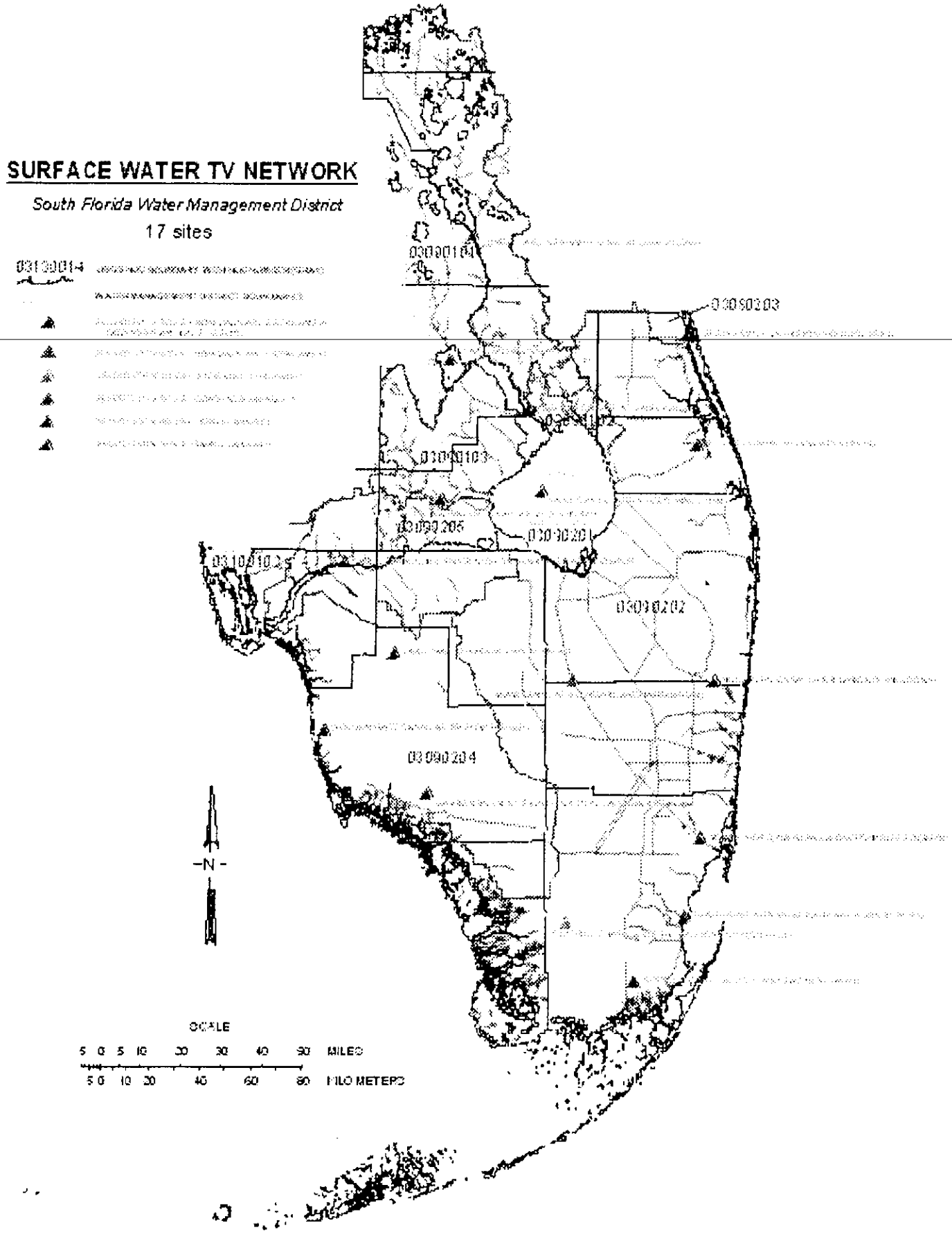

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EXHIBIT 2

SURFACE WATER TEMPORAL VARIABILITY (SWTV) NETWORK
Monitoring Indicator / Analyte list

FIELD INDICATORS	LABORATORY ANALYTES
Water Temperature	Sodium
pH	Potassium
Specific Conductance (fresh water) and/or Salinity (saline water)	Calcium
	Magnesium
Dissolved Oxygen (DO)	Chloride
Stage	Fluoride
Velocity	Sulfate
Time	Nitrate + Nitrite
Date	Ammonia
Secchi Depth	Total Kjeldahl Nitrogen (TKN)
Total Depth	Ortho-Phosphate (filtered)
Sample Depth	Total Phosphorus
	Total Organic Carbon (TOC)
	Color
	Turbidity
	Total Suspended Solids (TSS)
	Alkalinity
	Total Dissolved Solids (TDS)
	Fecal Coliform
	Enterococci
	Chlorophyll-a (lakes and non-wadeable rivers only)

ATTACHMENT M

*GLOBAL POSITIONING SYSTEM (GPS) STANDARDS**

Introduction

In 1995, the DEP Division of Water Facilities purchased 22 Trimble GPS units at a cost of over $11,000 each. These units are capable of collecting data in several different ways that produce different levels of accuracy. GPS locational data has also been collected using other brands and models of GPS units. Simply stating that locational data was collected with a GPS unit does not give the user enough information to use the data to its fullest potential. It has become apparent that consistency is needed and it would be desirable to develop some standards for the use of GPS equipment to maintain the utility of any data collected. As the technology progresses, highly accurate data is becoming easier to achieve. As more local governments obtain parcel maps, the need for our data to be accurate increases. There is a wide variety of GPS activities in the Department, therefore according to the Department GPS Standards, each program is required to adopt specific operational procedures.

The following operational procedures have been adopted by the DEP Division of Water Facilities. These procedures were developed by a committee, composed of representatives from each of the Bureaus, which included a wide variety of users of both GPS data and the GPS equipment.

This document refers to GPS locational data only.

Definition of terms:

Resultant Accuracy-the accuracy of a position, line or area feature that includes a combination of error caused by GPS data collection, human error, and error introduced by datum conversion (X percentage of time the position is within Y meters of truth).

PDOP- Position Dilution of Precision, refers to a measure of the geometry of the satellites in the sky. A low PDOP means that the satellites are oriented in such a way to give you a good (accurate) position.

* Condensed from the DEP Division of Water Facilities' *Global Positioning System Standards* document

GPS- Global Positioning System, refers to method of obtaining accurate latitude and longitude information using Department of Defense Satellites.

GPS Locational Data- Data that was collected using a GPS unit, specified with a minimum accuracy of 12.2 meters for the purposes of this document (5.0 meters for data collected for the Ambient Monitoring Program).

GIS- Geographic Information Systems; refers to a variety of software and hardware that have the ability to display, store, analyze and output geographically referenced spatial data.

Point feature- Anything that can be represented as a point on a map, e.g., well, valve, manhole covers.

Line feature- Anything that can be represented as a line on a map, e.g., roads, pipes, boundaries.

Area feature- Anything that can be represented as a polygon with area on a map, e.g., wetlands, ponds, buildings.

Requirements:

Accuracy Standards

The accuracy standard for GPS data collection for the Ambient Monitoring Program shall be 5 meters.

Methodology/Equipment

Recognizing that these accuracy standards can be met using different equipment, there is no standard make or model of GPS equipment that must be used. However, several requirements for equipment must be followed:

1) Real-time collection method, being more cost and time effective, shall be used whenever possible. Post processing of GPS data is acceptable when signal deficiencies prohibit real time differential correction. As technology improves, other methods may be assessed and added to this document.[1]

2) The GPS receiver used shall have a minimum of eight channels.

[1] If selective availability is eliminated, accuracy of non-differentially corrected data will need to be reassessed.

3) The Division reserves the authority to test the validity of accuracy of all GPS equipment used to collect GPS locational data for the Division.

4) Every effort shall be made to use the GPS equipment to its fullest capability where feasible.

5) All equipment shall have: a signal to noise ratio filter, PDOP filter, Elevation mask filter, and shall be able to average the required minimum number of positions to create a point feature.

Collecting point features

There are three different ways to collect the data necessary to describe a point feature:

1) Data collected at the location;

2) Data collected off of the location, adjusted for offset;

3) Data collected off of the location, not adjusted for offset (not to exceed program specified limits).

Offsets in Point features:

Offsets should only be considered when collecting data that is further than 5 meters from the actual feature. Offsets shall be made using a tape measure and compass, keeping in mind that compass accuracy is dependent on large metal objects and power lines. A maximum distance of 25 meters should not be exceeded without the use of additional equipment such as an inclinometer, laser or optical range finder. Vertical distance measurements and or inclination may be estimated when offset is under 25 meters. All horizontal distances shall be measured.

All offset measurements with electronic devices must be made twice. This only takes seconds and provides an acceptable basis of comparison or error check. Laser or optical range finders are fast and very accurate when used correctly, but can often miss their target. By their nature, these instruments require a very good aim.

The list above is the order in which data collection is preferred. For example, collecting data at the location is the most desirable. If this is not possible, use an offset feature of the equipment and make the correction. The third option is the last choice and is not desirable, but it is understood that it may be the only

option in some cases. All of these scenarios must have the resultant accuracy of the data within 5 meters.

Operational Procedures:

Training

Proper training and maintenance of equipment is vital to the quality of the data. Annual training is necessary to keep GPS skills current. A training and certification program should be established to insure all users of GPS are competently trained. In support of this, the Division of Water Facilities has a GPS Coordinator to oversee that the above requirements can and will be met.

Navigation

If it is desirable to navigate back to a point feature, it is recommended that height above ellipsoid (HAE) be recorded for each point. This field is intrinsic in most files created when the original GPS data is collected by the unit.

Minimum Settings

All GPS units used to collect data for the DEP Division of Water Facilities should be configured with the following minimum settings:

PDOP <6.0
Signal-To-Noise Ratio >6.0
Elevation mask 15°
Minimum positions ≥25
Minimum of 4 satellites
1 second Logging interval of point features
Coordinate system must be latitude/longitude

Maintenance of raw data

The following fields should be maintained in raw data files. These areas should be addressed in storing and the retrieval of GPS data:

Accuracy

Latitude/Longitude
Datum (recommend WGS 84*)
Height Above Ellipsoid (Necessary for accurate navigation)

The only way to assure the effective storage of this data is to archive the raw data files. Archival copies of the original GPS data collected from the unit shall be maintained, and provided to DEP Ambient Monitoring Section along with other field data collected for the Program.

The standard datum for GPS locational data shall be WGS 84. Conversions shall not be made to the archival copies because they will introduce error.

Quality Assurance and Quality Control

Quality control can be accomplished by periodic point feature collection of high accuracy survey marks. Six month intervals and no more than 5 meters deviation from such survey point are recommended.

Quality control can be accomplished by the collection of duplicate point features of a given high accuracy survey mark. The deviation between points shall be no more than 2.5 meters.

Additional Comments:

Trimble GPS units will be available on temporary loan to Contractors who do not have access to appropriate GPS hardware. Training in the use of these units will be provided by DEP for Ambient Program contract staff.

Technical support / questions regarding the above requirements, equipment loans and training for the Ambient Monitoring Program should be directed to:

Primary contact: ***Andy Roach*, (850) 921-9923; SUNCOM 291-9923;**
Andrew.Roach@dep.state.fl.us

Secondary contact: **Tom Biernacki, (850) 921-9595; SUNCOM 291-9595;**
Thomas.Biernacki@dep.state.fl.us