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ENV. PROTECTION COMM
OF H.C.

APPLICATION FOR POLLUTION RECOVERY FUND ASSISTANCE

DATE OF APPLICATION: May 1, 2006

A. BASIC ASSISTANCE

1. Applicant: The legal name of the applicant/organization, the organizational unit and the complete mailing address of the applicant.

Name: Dr. Stanley Ewanowski
Organization: Blue Sink/Curiosity Creek Coalition
Address: 11513 Ravine Rd., Tampa, FL 33612

2. Project Manager Information: Give name and title of the representative of the applicant who will be the Environmental Protection Commission's principle contact concerning this application

Name Peter J. Schreuder
Title President
Address 110 W. Country Club Dr., Tampa, FL 33612
Phone Number (813) 932-8844
Project Title Forest Hills Urban Wildlife Habitat and Treatment Wetland
Project Time Start: August 2006 End: August 2007
Total Cost of Project \$ \$105,291
Total EPC share requested \$ \$100,291

3. Assistance Type: **New or Renewal** (check one)

New - Award of funds for initial request within the project period.

Renewal - Award of funds for a project beyond the current project period.

4. Project Location: The specific location(s) of the project. (Attach Site Map)

See attached site map (Figures 1&2)

5. Is the Project for:

Restoration of a polluted area

Mitigation of the effects of pollution

Pollution Control Activity to prevent or minimize pollution

Educational

6. Is the Project directed toward restoring an identified "polluted area" (a geographic area destroyed or altered by dredging or filling or contaminated by an emission or discharge), or toward terminating an identified pollution source?

Identify and explain:

The project is directed to improve and restore the ecology in the F100C flood detention pond (F100C) that was constructed in Forest Hills in 1988. The F100C original area contained rolling sand hills reaching an elevation as high as 39 feet NGVD. This area was permitted to be excavated to the top of underlying clay layer at an approximate elevation of 22 ft NGVD. The excavated sand was used by the FDOT for road construction fill. The City of Tampa converted this borrow pit to the F100C area to alleviate flooding in the Forest Hills neighborhood. This flooding was caused by the fact that two natural surface water flow outlets to absorb the surface water flows from Curiosity Creek were blocked by man-made actions. The first outlet was provided by Blue Sink, which could absorb flood flows as high as 100 cubic feet per second (cfs). This blockage was caused by construction activities at the property of Roger Whitley Chevrolet by a collapsed dam around a storm water detention area. This blockage prevents the surface water from Curiosity Creek and the Ewanowski Spring from reaching Sulphur Springs. The reduction in flow has been estimated to be approximately 10 million gallons per day on an average basis. The second blockage was caused by the construction of Adam Junior High School and Bush Boulevard across the high storm water overflow channel of Curiosity Creek. During very high surface water flows in Curiosity Creek the

water that not absorbed by drainage into Blue Sink used to flow southward and drain into the Hillsborough River. Remnants of that flow system are still visible in the area south of Bush Boulevard.

Because F100C became a flood detention area of the storm water run-off from Curiosity Creek since 1988, it is presumed that a significant contaminant load has accumulated in the mucky and organic sediments in the F100C. At present a surface water pumping station has been built on the south end of F110C. The surface water is now pumped directly and continuously to the Hillsborough River through the Hamner outfall. Because the surface water from Curiosity Creek drains more than 4000 acres of a very highly urbanized part of Hillsborough County north of West Country Club Drive, the contaminant loading is quite significant. This contaminant load will at present pass through F100C fairly unaltered and is discharged unaltered in the Hillsborough River. The proposed project will transform the F100C into a wetland treatment system along with the creation of an urban wildlife habitat, to provide refuge for endangered or threatened bird species, such as the Sand Hill Crane, the Wood Stork, the Florida Scub Jay, aquatic amphibian, and reptiles and other endangered or threatened species, such as the Eastern Indigo Snake, and the Everglade Kite Snail This system will allow the City and County to meet Total Maximum Daily Load (TMDL) standards for the discharge of the Curiosity Creek directly into the Hillsborough River.

7. Is the harm or potential harm to health, safety or welfare of the public or wildlife actual or potential? Does the project seek to alleviate actual or potential harm and what is the severity of the harm and the causal relationship between the "pollution" and the harm?

Identify and explain:

The potential harm to wildlife and health, safety or welfare is actual. At present people will catch and consume fish from the surface water on the south end of F100C. Cleaning the water before it reaches the southern end of the F100C by letting it flow through optimally designed and installed wetland vegetation in F100C will remove contaminants in urban surface water run-off such as metals and manmade organic chemicals that can accumulate in fish tissue.

8. How long has the pollution existed or how long before any harm will be evident?

F100C has been used as a stormwater detention pond since 1988. Contaminants associated with surface water flows in Curiosity Creek have been accumulating since 1988.

9. Identify and describe how the project proposes to alleviate the pollution (addressing technical, practical, and cost effectiveness issues):

At present the surface water flows in Curiosity Creek join the groundwater in the Floridan Aquifer at the Ewanowski spring. During rainfall events that cause an increase in surface water flow in Curiosity Creek, surface water levels will rise forcing the highly contaminated surface water to enter the Ewanowski spring and flow into the Floridan Aquifer. This reverse downward flow of highly contaminated surface water has been documented to contaminate drinking water well in a large area around the Ewanowski spring.

The proposed project will involve lowering the surface water level in Blue Sink, which used to be the terminus point for the flows from Curiosity Creek and the Ewanowski Spring. By keeping the surface water level in Blue Sink down the City of Tampa can insure that the number of occasions during which highly contaminated surface water flows from Curiosity Creek into the underlying Floridan Aquifer can be limited to only a few storm events.

Technically to achieve these objectives it will require the modification and construction of a surface water pumping station at Blue Sink, the construction of a concrete weir, and the modification of the existing vegetation and ecology in F100C to a properly designed and built treatment wetland system. After this work is in place, a detailed water level operating system needs to be designed and implemented by regulating the surface water flow into and from F100C, to best mimic a natural hydro-period.

The project will alleviate the pollution in F100C by using a treatment wetland that will replace the existing assemblage of predominantly nuisance vegetation with Florida native vegetations designed specifically to treat contaminated surface water. The implementation of the project will be quite simple from a technical viewpoint. It will be practical in that the plantings of the required native species can be done according to a specific design. The cost of planting can be kept down by using community groups, (schools, Boy Scouts).

The following tasks are anticipated for the project.

- 1) Document Existing Information
- 2) Document Existing Vegetation and Water Quality
- 3) Prepare Design and Establish Operating Criteria

- 4) First Phase Modification
- 5) Attends Meeting, Prepare Presentations and Reports

10. Is the polluted area one which has previously been subject to commission enforcement and, if so, when and what was the result?

Not applicable

11. If no actual pollution exists and no prior commission enforcement action has occurred, does the project otherwise enhance pollution control activities within the County?

Enhances pollution control

12. Can this Project be divided into separate and independent parts, and if so,

a) what are they?

One part of the project will document what information has been collected so far. The next part of the project tied to the first one is collecting present day water quality data by collecting water samples at two time periods (high and low flows) of the water flowing into F100C from Curiosity Creek and Ewanowski Spring. These water samples will be analyzed for the drinking water standards and group I, II and III parameters. The other step will be the design of the system. But to be able to provide a realistic design it would be better to have all nuisance species removed. This is an independent part of work.

b) how would the costs be allocated between them?

F100C clean-up and Water Quality Sampling and Analyses	\$55,000.00
Evaluation, Criteria and Design	\$50,291.00

c) would the applicant be willing to accept only partial funding?

No, It will not be possible to execute the project with only partial funding. The Blue/Sink Curiosity Creek Coalition will aggressively and assertively pursue other funding sources from for example, the City of Tampa, Hillsborough County, Sierra Club, Audubon Society, the Southwest Florida Water management District and Tampa Bay Water.

13. Are other funding sources committed to the project? Yes

How much and for what? \$5,000 - FY 2007 – Blue Sink/Curiosity Creek Coalition

14. What other funding sources may be available and how much?

SWFWMD, Hillsborough Basin Board, Tampa Bay Water, Tampa – Friends of the River, Sierra Club, Audubon Society

15. Why do you believe that this Project is of sufficient importance to justify the expenditure of Pollution Recovery Funds?

Not only will the project provide a very important public feature by the creation of an urban wildlife habitat and wetland system in the heart of the City of Tampa, this system will provide much needed treatment of contaminated surface water which drains through Curiosity Creek from 4000 acres of a highly urbanized area directly into the lower Hillsborough River. It will also prevent this highly polluted surface water from flowing directly into the Floridan Aquifer through the Ewanowski Spring. Finally this system can be easily built and operated to transform the present 40 acres of the F100C detention area into a possible mitigation wetland bank.

16. Will the project enhance the value of private property, and if so, whose?

Yes, Forest Hills, Tampa, Florida

B. ATTACHMENTS

All applicants must submit responses to the following as attachments corresponding to the indicated numbers:

1. Please provide a detailed map of the project site.
2. Principal Investigator and Key Personnel - Present a biographical sketch of the principal Investigator incorporating the following information: Name, Address, Phone Number, Education, Background and other qualifying experience for the project.

The principal project investigator will be Peter J. Schreuder, MS, CPG, P.G. Hydrogeologist, who has been involved with the Blue Sink/Curiosity Creek project since the beginning of 1996. He will assist Jay Allen, a Senior Ecologist whose firm has the knowledge, size and expertise to create the treatment wetland with vegetation from his native Florida plants nurseries. John Dumeyer, MS, P.E., P.G., who also conducted major portions of the Blue Sink investigation for the City of Tampa, with co-funding by SWFWMD, will be responsible for the engineering aspects of the project. Doug Crowson, P.G., a senior geologist, will be responsible for the geological issues related to the clay/limestone interface in F100C and the limestone foundation in Blue Sink for the placement of the pump footings. The project will be managed by Dana Gaydos, MS, who is an Environmental Scientist, who conducted a three-year study for the Florida Institute of Phosphate Research in the use of a wetland on mined phosphate land to treat surface water from an industrial waste water to meet drinking water standards. Resumes have been attached.

3. Project Narrative - Please provide a narrative statement describing the project that includes the following:
 - a) Objectives of this Project - Describe the principal and subordinate environmental objectives of the project. Pinpoint any relevant physical, economic, social, financial, institutional or other problems requiring solution.
 - b) Results and/or Benefits Expected - Identify specific environmental results and/or benefits to be derived from the project. Include all primary and secondary benefits accruing to the grantee, to the pollution served, and in general, to the public and environment.

- c) General Project Information - Discuss the criteria that will be used to evaluate the results and successes of the project as well its relationship to other work planned, anticipated or underway.
4. Scope of Work – Provide a detailed scope of work for the proposed project. List in chronological order a schedule of accomplishments, progress, or milestones that are anticipated over the length of the project.
5. Budget Information – Please itemize expenditures necessary to perform project using the following format:

BUDGET CATEGORIES

	PRF Funds	Applicant	OTHER *
a. Personnel	\$95,094	\$5,000	
1. Peter Schreuder	\$5,460	\$0	TBD
2. John Dumeyer	\$4,800	\$0	TBD
3. Jay Allen	\$55,000	\$0	TBD
4. Doug Crowson	\$8,066	\$0	TBD
5. Dana Gaydos	\$18,304	\$0	TBD
65. Nick Schrier	\$2,720	\$0	TBD
76. Anke Matthews	\$744	\$0	TBD
b. Administrative	TBD	TBD	TBD
c. Materials	TBD	TBD	TBD
d. Contractual	TBD	TBD	TBD
e. Construction	TBD	TBD	TBD
f. Other – Lab Cost, GIS and Illustrations, Mileage	\$10,197	\$0	TBD
g. Total Direct Charges (Sum of a. to f.)	\$105,291	\$0	TBD

* Matching Funds may be available, but cannot be guaranteed

C. SUBMITTAL OF APPLICATION

Please submit a total of five (5) applications (one original and four (4) copies / one of which must be in electronic format as a CD) to:

Environmental Protection Commission of Hillsborough County
Environmental Resources Management Division
Attn: Tom Ash / Pollution Recovery Fund
3629 Queen Palm Dr., Tampa, Florida 33619

***Completed applications must be received at the above address by
5:00pm (EDT), May 1, 2006.
Late applications and email applications will not be considered.***

www.epchc.org

E-Mail: epcinfo@epchc.org

AN AFFIRMATIVE ACTION – EQUAL OPPORTUNITY EMPLOYER

PRE APPLICATION PROCESS

Instructions

The Hillsborough County Environmental Protection Act (Chapter 84-446, Laws of Florida) has created a pollution recovery fund which is to be supervised and used by the commission to restore polluted areas of the county, as defined by the commission, to the condition they were in before pollution occurred, to mitigate the effects of pollution, or to otherwise enhance pollution control activities within the county.

Application Forms must be submitted on or before the May 1, 2006 deadline.

- There will be a newspaper advertisement, and possibly press releases, specifying the deadline for submitting applications.
- Application forms and instructions can be obtained from Tom Ash, phone 813-627-2600 x1011 or from our website at: www.epchc.org
- Except under special circumstances, applications submitted earlier than the deadline will be held until the next processing period, and then processed with the others.

Following the deadline, applications will be distributed to staff appropriate to the project for review and recommendation to the Executive Director.

- Staff may contact the applicant upon beginning review, and if a meeting to discuss details is requested or advisable, will schedule it.
- Staff will meet with the Executive Director to discuss all applications in the group and to prioritize and determine recommendations.

A summary of the Executive Director's recommendations will be forwarded to CEAC along with copies of all applications.

- Staff will send a copy of the Executive Director's recommendations to each applicant along with a notice of the meeting date at which CEAC will discuss the applications and its recommendations to the EPC Board.
- Applicants are invited to attend the CEAC meeting and make a brief presentation in support of their project.

Staff and CEAC recommendations will be presented to the Commission for decision.

- The EPC Board meeting will likely be the second meeting following the CEAC meeting so that the information can be properly placed on the agenda.
- The Applicant may attend the EPC meeting and request to speak.

If the project is approved, the applicant must sign a contract before monies will be available.

- EPC Legal will draft the contract with standard terms and conditions, and provide it to the applicant for review and execution.
- EPC Legal will arrange for execution of the contract by the EPC Chair after it is executed by the applicant, and will then forward final copies to the Applicant's Project Manager and the EPC Project Manager.
- The EPC Project Manager will be responsible for ensuring the applicant's compliance with the contract.

LEGEND

● Approximate Location of Project Site

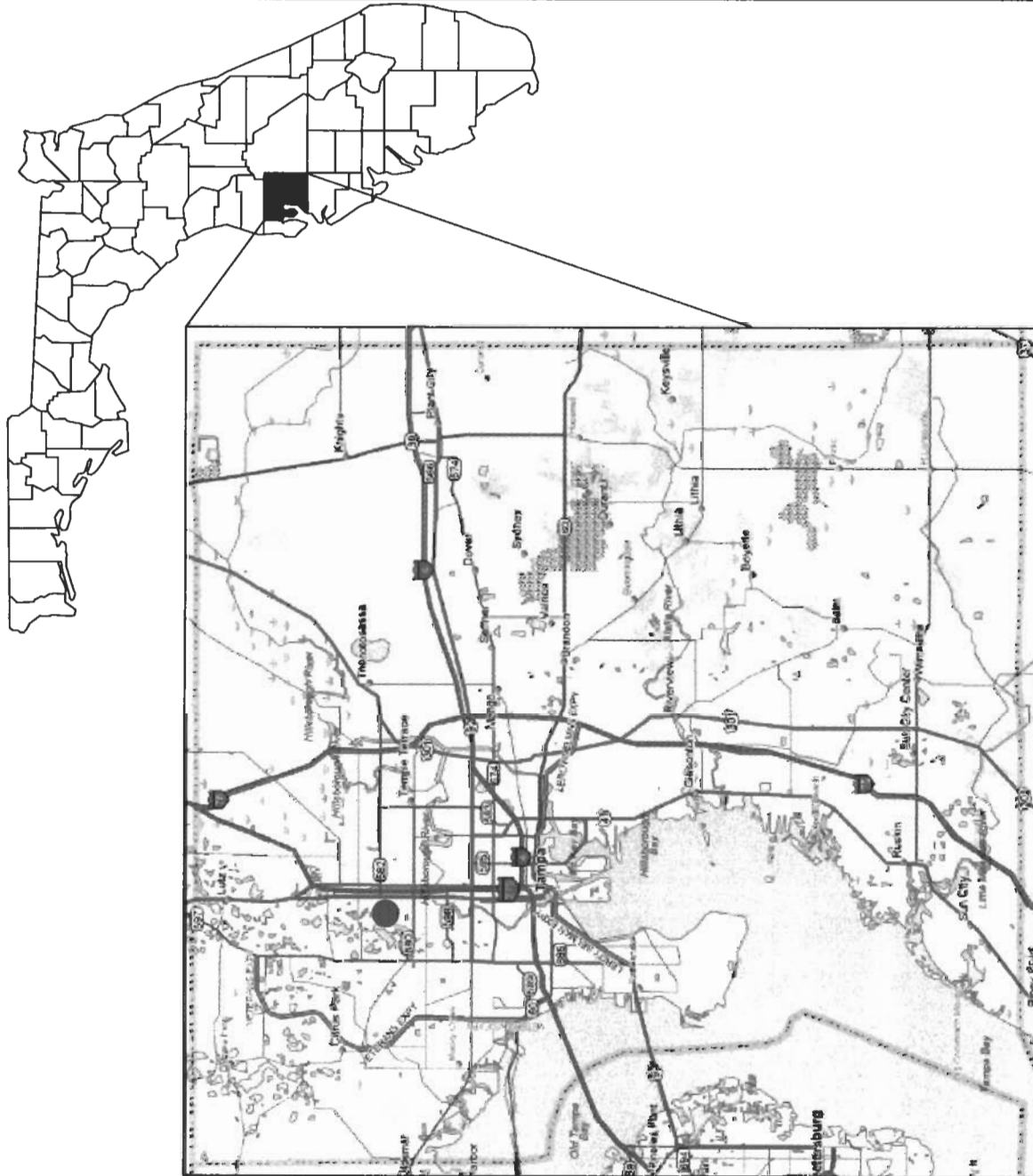


FIGURE 1.

**GENERAL LOCATION
MAP OF CURIOSITY
CREEK/F100C POND**

DATE:	5/1/2006	DRAWN BY:	NS
SCALE:	Not To Scale	APPROVED BY:	PS
SI FILE:	G:\DATA\PROPOSALS\Schreuder, Inc\ 06-Proposals\06-132\GRAPHICS\Site Location.dwg		

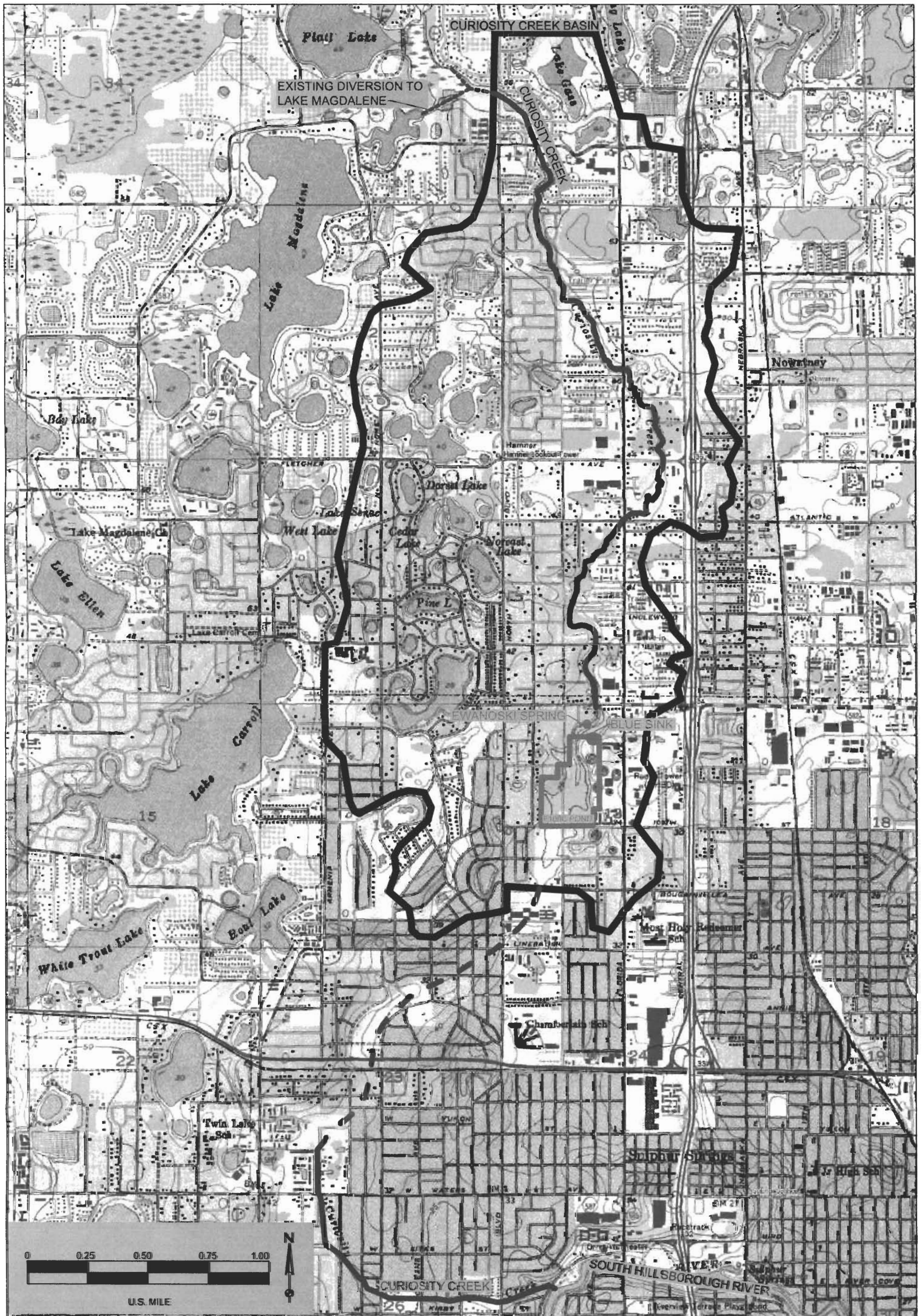


FIGURE 2. CURIOSITY CREEK DRAINAGE BASIN MAP

S.I. File:
 G:\DATA\PROPOSALS\Schreuder, Inc\06-Proposals\06-132\GRAPHICS\Aerial Site Map.dwg

SCHREUDER, INC.

110 West Country Club Drive
 Tampa, FL 33612
 PH: 813-932-8844, FAX: 813-932-2991

Date:
5/1/2006

Scale:
See Scale Bar

Drawn By:
NS

Approved By:
PS

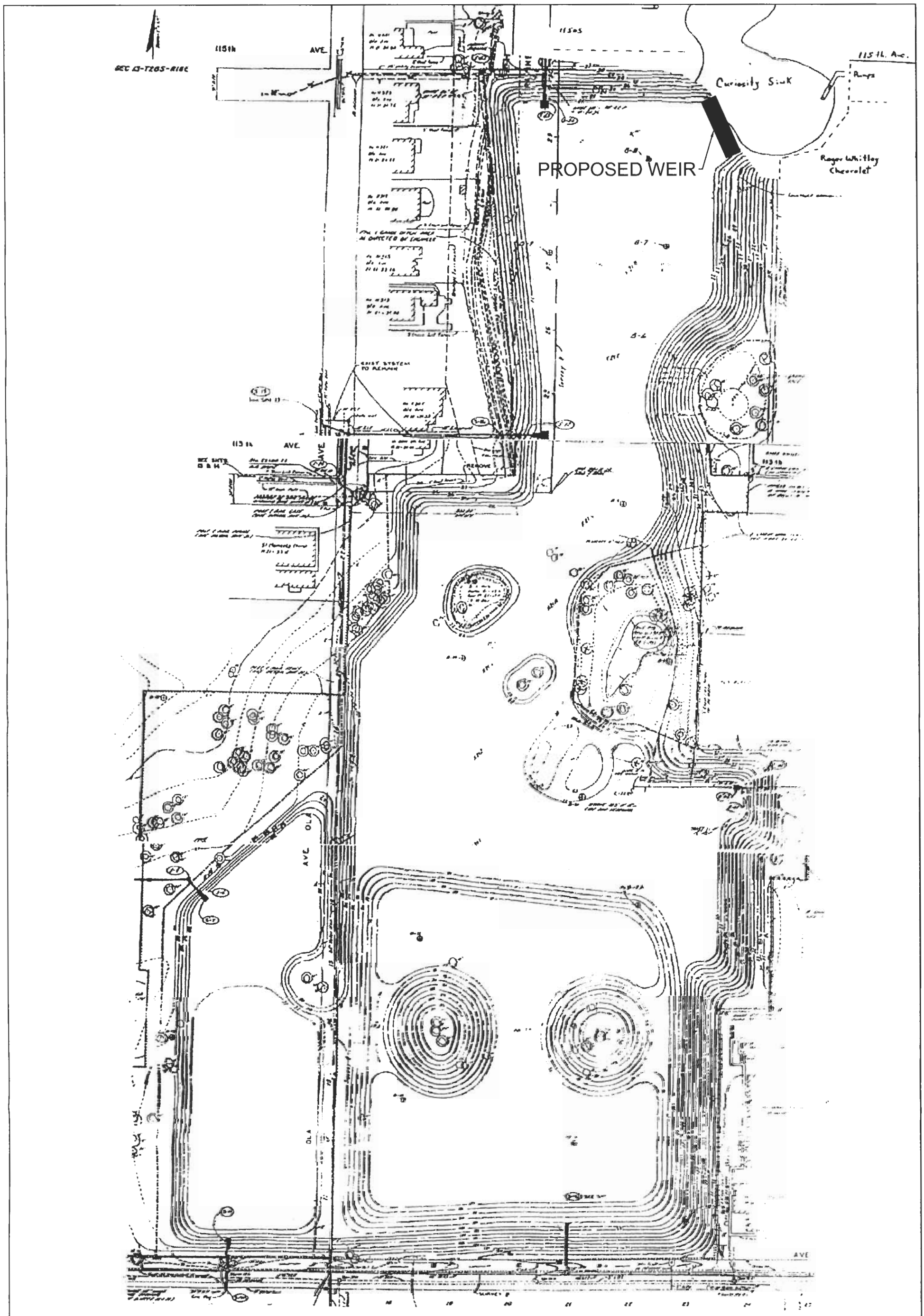


FIGURE 3. CURIOSITY CREEK
CONSTRUCTION DETAILS
F100C POND

S.I. File:
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SCHREUDER, INC.

110 West Country Club Drive
Tampa, FL 33612
PH: 813-932-8844, FAX: 813-932-2991

Date:
5/1/2006

Scale:
See Scale Bar

Drawn By:
NS

Approved By:
PS

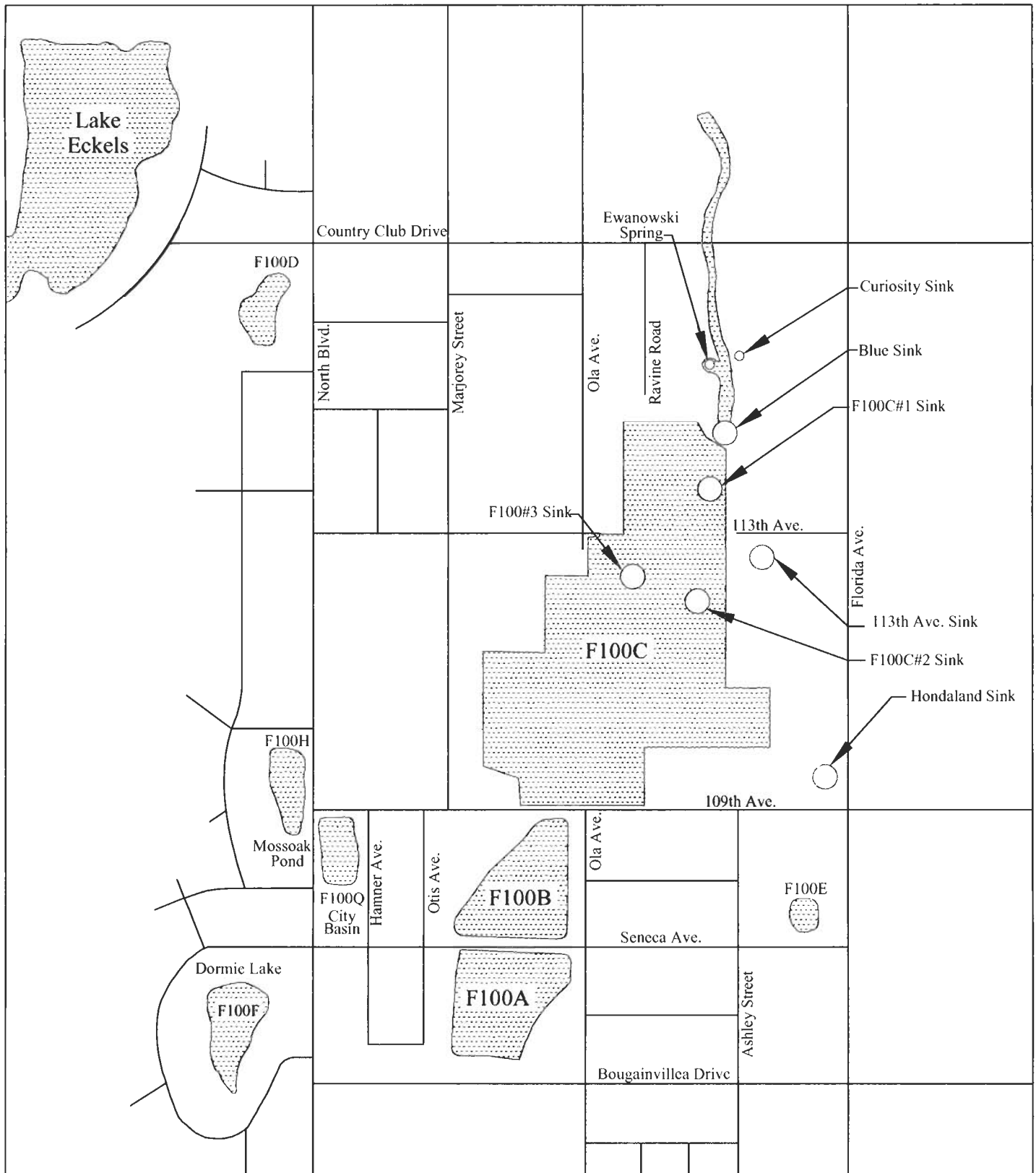


FIGURE 4.
LOCATION OF F100C
POND & SINKHOLES



110 West Country Club Drive
 Tampa, FL 33612
 PH: 813-932-8844, FAX: 813-932-2991

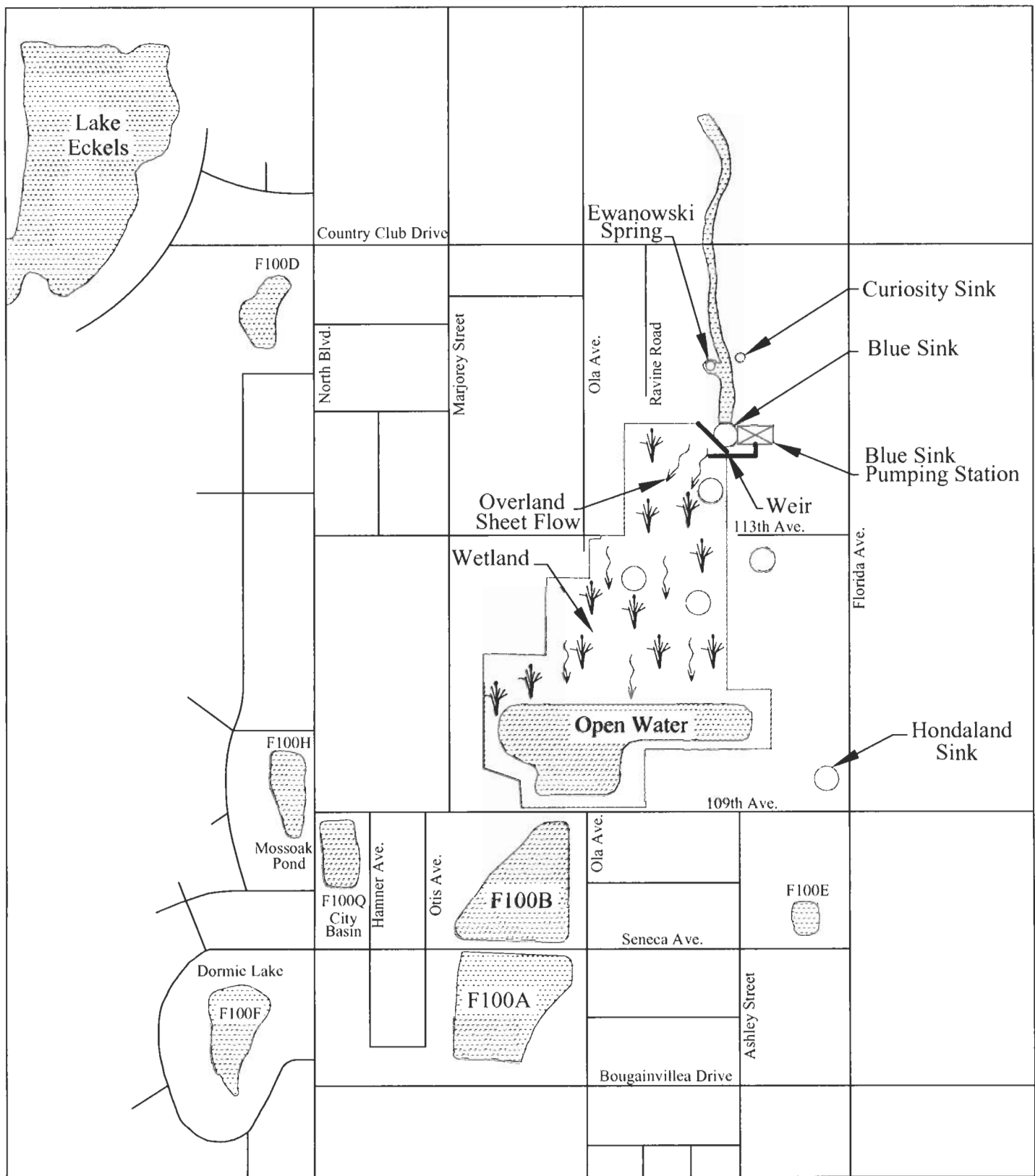
Date: 5/1/2006

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 Inc\06-Proposals\06-132\
 GRAPHICS\F100C_wetland.dwg

Drawn By: NS

Scale: N/A

Approved By: PS



**FIGURE 5.
PROPOSED PROJECT
LAYOUT**



110 West Country Club Drive
Tampa, FL 33612
PH: 813-932-8844, FAX: 813-932-2991

Date: 5/1/2006

File#
G:\DATA\PROPOSALS\Schreuder,
Inc\06-Proposals\06-132\
GRAPHICS\F100C_wetland.dwg

Drawn By: NS

Scale: N/A

Approved By: PS

PETER J. SCHREUDER, P.G., C.P.G.

President, Senior Hydrogeologist

EDUCATION

M.S. Groundwater Hydrology and Water-Resources Administration - University of Arizona, 1974

B.S. Mathematics with Minor in Chemistry - University of Arizona (with high distinction), 1971

Studies in Chemistry, Physics, Mathematics and Crystallography - University of Amsterdam, Netherlands, 1958

PROFESSIONAL REGISTRATION

Registered Professional Geologist, Arkansas, Florida,
Certified Professional Geologist, AIPG

PROFESSIONAL AFFILIATIONS

American Institute of Professional Geologists
American Water Resources Association
Association of Ground Water Scientists and Engineers
National Water Well Association
Water Pollution Control Federation
International Association of Hydrologists

FIELDS OF SPECIALIZATION

Water Resource Development and Management
Groundwater Contamination Investigations
Groundwater Flow and Contaminant Transport Modeling
Preparation of Water Use Permits, Environmental Impacts, Environmental Audits Development of
Regional Impacts Assessments
Expert Testimony and Litigation Support

EXPERIENCE SUMMARY

Mr. Schreuder has more than 35 years of experience in groundwater hydrology, with much of that experience in Florida. He has been project manager for numerous studies concerning the determination of water availability, water resource management, water quality investigations, aquifer test evaluations, and integrated water-resources systems analysis. Mr. Schreuder has worked since 1975 in west-central Florida and is very familiar with the hydrogeology of this area. He has been involved in the initial investigations of several studies in the area. At present he conducts a three year pilot study to determine the feasibility of using wetland created on clay settling areas in combination with tailing sand deposits left behind by the phosphate mining industry to treat domestic and industrial waste and storm water runoff to meet federally mandated drinking water standards prior to recharge to the Floridan Aquifer. He is conducting a study to prepare a water use permit application for 17,000 acres of previously mined and reclaimed land to meet the future public supply, irrigation and industrial supply needs of the community that will be created. He has been conducting extensive research for the Florida Institute of Phosphate Research since 1994, focusing on the radionuclides in tailing sand deposits and the capacity of tailing sand to remove microorganisms from water. In 1975, Mr. Schreuder served as Project Manager and principal investigator of the Water-resources Management Study (WRMS) to evaluate the ground water and surface water supply potential in the 16 county areas that comprise the Southwest Florida Water

Management District as part of a U.S. Army Corps of Engineers Study. As project manager of a hotly contested Water Use Permit Application by Phillips Petroleum, Inc. for a new phosphate mine in Manatee and DeSoto counties, he designed and installed a 24-inch diameter test production well to a depth of 1,550 feet that was pumped for 30 days at a rate of 10,500 gallons per minute. He analyzed data from 17 monitor wells to determine aquifer characteristics.

Mr. Schreuder rehabilitated seven water supply production wells operated by the City of Clearwater. These wells were not used because of sanding problems and rising concentrations of chlorides. Mr. Schreuder has continued to be actively involved in many investigations concerning the determination of groundwater availability, water quality investigations, aquifer test evaluations, and integrated water resource system analysis in northwest Hillsborough County, the Highlands Ridge area, the southern half of the Southwest Florida Water Management District, Citrus, Brevard, Orange, Osceola, Volusia and Collier Counties. In addition, Mr. Schreuder has worked on the preparation of hazardous-waste permit applications, assessment of groundwater contamination caused by industrial and municipal waste disposal practices, the design and implementation of monitor well networks, chemical sampling and analysis programs, and abatement procedures to clean-up contaminated groundwater resources. He has also provided expert testimony in permit application hearings regarding consumptive use permits, as well as other hydrogeological testimony relating to landfills and hazardous waste disposal sites.

From 1974 to 1975, Mr. Schreuder worked in the Office of Arid Land Studies at the University of Arizona, preparing a groundwater development master plan for the Irhazer Valley in Niger, Africa, on behalf of Esso Eastern Corporation, a uranium mining company. While pursuing his master's degree at the University, Mr. Schreuder worked as a consulting hydrogeologist where he evaluated and developed groundwater resources in semi-arid regions primarily for the copper mining industry and he assisted in the negotiations of the Colorado River Pact between Mexico and the United States.

The United States Geological Survey (USGS) trained Mr. Schreuder in 1968 to build a large 2-layer electric analog model of the groundwater system underlying the Lake Chad Basin in Africa. This model covered an area the size of France. He was appointed and served as Director of the Electric Analog Groundwater Model Laboratory at the United Nations Educational, Scientific and Cultural Organization in Paris until September 1969. He started his career as a field hydrogeologist in 1966 working for the United Nations Development Program in Africa conducting basin-wide hydrogeologic and groundwater quality investigations for a proposed large-scale development of irrigated agriculture. The collection of a large number of groundwater samples for Carbon 14 and tritium dating and oxygen isotope analyses was part of the project.

Mr. Schreuder is fluent in Dutch, French, German and English. He has worked in the Middle East, Africa, Europe, and North America. He has presented guest lectures at the Delft Technical University in the Netherlands in 1968 and at the Polytechnical University of Lausanne, Switzerland in 1967. He worked as a chemist at the Institute for Drinking Water Supplies in The Netherlands, and was head of a seismic field crew of the Compagnie General Geophysique in France.

PUBLICATIONS

Schreuder, P. J. and S.G. Richardson, 2000. "*The Use of Mined Phosphate Lands to Expand Regional Water-Resources Availability on the West-Coast of Florida,*" Proceedings Seventeenth Annual Meeting American Society for Surface Mining and Reclamation

Schreuder, P. J. and J. D. Dumeyer, 2000. "*Feasibility of Natural Treatment, Aquifer Recharge, Storage, and Conveyance of Waste-, Storm - and Surface Waters Using Mined Phosphate Lands, A concept to Expand Regional Water Resource Availability,*" prepared for the Florida Institute of Phosphate Research (in press).

Schreuder, P. J., Dumeyer, J. D., Harrison, C. H., Andrews, S. A. and H. L. Barnette, 2000. "*Water Quality Investigation of In-Situ Tailing Sand Deposits under Natural Environmental Conditions,*" prepared

for the Florida Institute of Phosphate Research (in press).

Schreuder, P. J., Dumeyer, J. D., Kruppa, R. G. and L. M. Stark, 1998. "*An Investigation of the Capacity of Tailing Sand to Remove Micro Organisms from Surficial Waters*," prepared for the Florida Institute of Phosphate Research.

Schreuder, P. J. and J. D. Dumeyer, 1998. "*Potential Use of Phosphate Mining Tailing Sand for Water Filtration: Leaching Tests*," prepared for the Florida Institute of Phosphate Research.

Schreuder, P.J. and R.E. Bussell, 1991. "*Design, Installation and Operation of an Experimental Environmentally Safe Deep Anode Bed System*," NACE Publication, Corrosion.

Dove, F.H. and P.J. Schreuder, 1978. "*Location of Municipal Well Fields in an Environmentally Sensitive Region*." Bulletin of the American Water Resources Association.

Schreuder, P.J. and J.J. Geraghty, 1977. Proceedings of Seminar: "*Environmental Land Use Planning, An Integrating Theme for Area Wide Impact Assessment of the Central Florida Phosphate Industry*," Bartow, Florida.

Schreuder, P.J., 1974. "*The Determination of Aquifer Anisotropy by Transmissivity Tensor Analysis*," University of Arizona, Tucson, Master's Degree Thesis.

PROJECT REPORTS

The following is a list of reports authored by Mr. Schreuder or where the results of investigations that were performed under his direction as the principal investigator, or project manager.

WATER RESOURCES

Assessment of Ground-Water Conditions at the Independence Steam Electric Station Newark, Arkansas: Arkansas Power and Light Company

Assessment of Ground-Water Conditions at the White Bluff Steam Electric Station, Redfield, Arkansas: Arkansas Power and Light Company

Availability of Water for the Development of a Coal Liquefaction Industry: Hudson Institute

Characterization of Hydrologic, Biologic, and Human Resource Systems at Proposed Mine Site, Hardee County, Florida: Freeport Phosphate Mining Company

Compilation of Agricultural Water Use Permits within IMC-Agrico Property Boundaries; IMC-Agrico Company

Evaluation of Feasibility for Production and Sale of Potable Water in West Central Florida; Client Confidential

Evaluation of the Ground Water Resources of the Pelican Bay Development Project, Naples, Collier County, Florida: Gee & Jenson, Inc.

Evaluation of the Surface-Water and Shallow Ground-water Systems on Proposed Mining Site in Manatee and DeSoto Counties, Florida: AMAX Phosphate Mining Company

Evaluation of the Ground Water Resources at Florida Power Corporation's Power Plant in Citrus County, Florida: Florida Power Corporation

Evaluation of the Pumping Test Conducted in June 1978 at the FPC Site Near Route 19 Crystal River, Citrus County, Florida: Florida Power Corporation

Ground-water Flow Model, A-M Area, Savannah River Plant; South Carolina; E.I. DuPont de Nemours & Company, Inc.

Groundwater Remediation Project South Parking Garage Remedial Action Plan, Tampa International Airport; Florida: Hillsborough County Aviation Authority and Walker Parking Consultants

Highlands Ridge Hydrologic Investigation, Florida: Southwest Florida Water Management District

Highlands Ridge Hydrologic Investigation: Phase I: Final Report; Part It: Aquifer Testing Program, Peace River Basin Board

Hydrologic Effects of Developing 15 MGD of Water From the Floridan Aquifer in the Pine Level Area, DeSoto- Manatee Counties, Florida: Phillips Petroleum Corporation

Inventory of Ground-Water Withdrawals During 1975 in the Four River Basins, Florida: U.S. Army Corps of Engineers and Southwest Florida Water Management District

Management of the Water Resources of the Pinellas-Anclote and Northwest Hillsborough Basins West-Central Florida Vol I & II: Southwest Florida Water Management District and the Pinellas-Anclote and Northwest Hillsborough Basin Boards

"McArthur Tract Hydrologic and Water Supply Investigations: Phase I," Southwest Florida Water Management District.

Plan of Study for the Preparation of an Environmental Impact Assessment for Phosphate Mining at W.R. Grace's Hookers Prairie Tract Polk County, Florida; Vol. I & II; U.S. Army Corps of Engineers

Preliminary Assessment of the Availability of Potable Ground Water at the Romp-18 site Near S.R. 72 and Myakkahatchee Creek in Sarasota County, Florida: Southwest Florida Water Management District

Preliminary Evaluation of Potential Raw Water-Supply Sources in Southeastern Sarasota County: Southwest Florida Water Management District and Sarasota County

Preliminary Evaluation of the Hydrologic, Biologic and Geographic Elements of Freeport's Proposed Mining Operation in Hardee County, Florida: Freeport Mining Company

Preliminary Evaluation of Potential New Water Supply Sources in Southeastern Sarasota County," Southwest Florida Water Management District

Preliminary Assessment of the Availability of Potable Ground Water at the ROMP-18 Site near S.R. 72 and Myakkahatchee Creek in Sarasota County, Florida,: Southwest Florida Water Management District

Preparation of Section 6 of "Comprehensive Study of the Regional Water Supply Needs and Sources, Phase 1 (1980-1985), Ross, Saarinen, Bolton and Wilder

Preparation of Consolidated Water use Permit Application for 12 Phosphate Mines and 3 Chemical Plants in Polk, Hillsborough, Hardee and Manatee Counties; Florida: IMC-Agrico Company

Response to Request For Additional Information Number 1 Consolidated Water Use Permit Application 203049.07. Florida: IMC-Agrico Company

Shell, Inc. Mining Seminar; Houston: Shell Oil Company

Simulated Changes in Groundwater Levels Resulting from Proposed Phosphate Mining, West Central Florida, U.S. Geological Survey in a groundwater modeling study

Summary Report of a Water-Budget Model Prepared for the AMAX Mine Site Manatee County, Florida; AMAX Phosphate Mining Company;

The Evaluation of the Water Supply Potential of the Tampa Bypass Canal, Florida: West Coast Regional Water Supply Authority.

Water-Management Alternatives for the Anclote River Water Storage Area Jay B. Starkey Wilderness Park; Florida: Southwest Florida Water Management District

Water-Management Plan Brooker Creek Watershed, Florida: Briley, Wild & Associates, Inc.

Water-Resources Management Study Hydrologic and Engineering Evaluation of the Four River Basins Area, Florida: Vol. I & II: U.S. Army Corps of Engineers and Southwest Florida Water Management District

"*Water Resources Evaluation Section of the Central Florida Phosphate Industry Area-wide Impact Assessment Program*," prepared for the U.S. EPA by Texas Instruments, Inc.

"*A Chemical and Hydrogeological Investigation of the Ground water Resources in the Irhazer Valley, Niger*," prepared for Esso Eastern, Inc. 1975

"*Mission Report Concerning the Installation of the Lake Chad Basin Electric Analog Model Computer in N'djamena, Chad*," prepared for the United Nations Educational Cultural and Scientific Organization in Paris, France, 1974

ENVIRONMENTAL

Assessment of Hydrogeologic Conditions at the Solid-Waste Landfill Area: Anniston, Alabama: Monsanto Chemical Company

Assessment of the Occurrence of Metals and Cyanides in the Ground Water and Borrow Pit Water and Sediments; Waters Avenue Plant, Tampa, Florida: Honeywell, Inc.

Environmental Impact Statement for Rollins Environmental Services Waste Disposal Site in Baton Rouge, Louisiana: Rollins Environmental Services, Inc.

Environmental Impact Statement for the Hooker's Prairie Mine Project; Florida: U.S. Army Corps of Engineers

Environmental Impact Assessment for Phosphate Mining at W.R. Grace's Hookers Prairie Tract Polk County, Florida. Vol 1 Technical Report & Vol II Appendices, Florida: W. R. Grace & Company

Final Submission Contamination of Soil and Ground Water From the Disposal of Oil and Volatile Products into Pits at the NAS Jacksonville, Florida; Department of the Navy, Southern Division, Naval Facilities Engineering Command;

Findings of the 1984-85 Preliminary Investigation of Contamination at the S-3 Ponds; Oak Ridge, Tennessee: Martin-Marietta Energy Systems, Inc.

Ground-Water Quality Assessment at and in the Vicinity of the Taylor Road Landfill Seffner, Florida; Hillsborough County, FL: Division of Public Utilities & Safety

Ground-Water Monitoring of Surface Impoundments and Chemical Dump Sites; Houston, Texas: Gulf Coast Environmental Affairs Group

Preliminary Assessment of Ground Water Contamination Potential, Hookers Prairie, Polk County; Florida: W. R. Grace & Company

Preliminary Assessment of the Occurrence of Salty Water in Wells at the Monsanto Plant Pensacola, Florida: Monsanto Textiles Company

Preparation of Part II Hazardous Waste Permit Application to State of Louisiana; Baton Rouge, Louisiana: Formosa Plastics Corporation

Regional Hydrogeological and Environmental Assessment in Support of Hazardous Waste Facilities Permit Application; Geismar, Louisiana: Members of the Geismar Industries Technical Group

Semi-Annual Groundwater Monitoring Reports; Bay Minette Plant; Alabama: Uniroyal Chemical Company

Use of Remote Sensing Techniques to Locate Groundwater: Office of Arid Lands Studies

ENGINEERING

Installation of Cathodic Protection Wells Lake Charles Chemical Plant; Westlake, Louisiana: Vista Chemical Company;

Installation of Cathodic Protection Wells Along Pipeline Near Eustice, Louisiana: Enron Pipeline Company

JOHN N. ALLEN, JR.

RSS FIELD SERVICES, INC.

P. O. BOX 549 PLANT CITY, FLORIDA 33564

FORT MEADE - 633 NORTH PALMETTO AVENUE, FT. MEADE, FLORIDA 33841

PLANT CITY - 2605 TURKEY CREEK ROAD, PLANT CITY, FLORIDA 33566

HAWTHORNE - 23810 SE 41ST LANE, HAWTHORNE, FLORIDA 32640

EDUCATION:

B.S. BIOLOGY/CHEMISTRY – 1970
FLORIDA SOUTHERN COLLEGE

M. A. MICROBIOLOGY – 1975
UNIVERSITY OF SOUTH FLORIDA

CURRICULUM AND ARBOR VITAE

1976 – 1994 – EMPLOYED BY IMC PHOSPHATES IN POSITIONS OF INCREASING RESPONSIBILITY. MANAGER OF ENVIRONMENTAL AND PERMITTING SERVICES (FLORIDA OPERATIONS) FROM 1986 – 1994. RESPONSIBLE FOR ALL LONG TERM AND CURRENT USE PERMITTING AND MONITORING PROGRAMS INCLUDING DRI'S, SURFACE, GROUNDWATER AND DREDGE AND FILL RELATED ACTIVITIES AS WELL AS ALL OTHER ENVIRONMENTAL MANAGEMENT PROGRAMS.

1994 – 1998 – OWNER AND PRESIDENT OF REGULATORY SUPPORT SERVICES, INC. A PLANT CITY BASED FULL RANGE ENVIRONMENTAL SERVICES CONSULTING COMPANY WITH A BROAD BASE OF PUBLIC AND PRIVATE SECTOR CLIENTS.

1996 – PRESENT – OWNER AND PRESIDENT OF RSS FIELD SERVICES, INC. A PLANT CITY BASED NATIVE PLANT SUPPLY AND MITIGATION SERVICES COMPANY WITH NURSERY/FACILITIES IN HILLSBOROUGH, POLK AND ALACHUA COUNTIES. EMPHASIS IS ON NATURAL SYSTEMS RESTORATION AND MITIGATION MAINTENANCE WORK FOR A WIDE RANGE OF CLIENTS INCLUDING FDEP, SJWMD, SWFWMD, FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION, CITY OF LAKE LAND, PROGRESS ENERGY, TECO, MOSAIC, AND MULTIPLE LAND DEVELOPMENT INTERESTS AMONG OTHERS.

OTHER:

- PRESIDENT ASSOCIATION OF FLORIDA NATIVE NURSERIES
- PAST PRESIDENT FLORIDA ASSOCIATION FOR WATER QUALITY CONTROL
- PAST PRESIDENT FLORIDA CHAPTER OF THE HEALTH PHYSICS SOCIETY
- MEMBER (1978) USF/FLORIDA INSTITUTE OF PHOSPHATE RESEARCH ENVIRONMENTAL PROJECTS TECHNICAL ADVISORY COMMITTEE

Douglas L. Crowson, P.G.

Senior Geologist

EDUCATION

B.S. Geology, University of South Florida, 1983
A.A. General Studies, Florida Technological University, Orlando, Florida, 1978

PROFESSIONAL REGISTRATION

Registered Professional Geologist, State of Florida
Registered Water Plant Operator, State of Florida

AFFILIATIONS

Florida Association of Professional Geologists

FIELDS OF SPECIALIZATION

Water Resource Development
Aquifer Recharge and Conveyance
Well and Wellfield Permitting, Design, Construction and Testing
Design, Implementation and Interpretation of Aquifer Tests
Domestic & Public Well Mitigation Activities
Project & Contract Management
Database Design & Data Management
Water Treatment Systems & Operation

EXPERIENCE SUMMARY

Throughout his 24 years of experience, Mr. Crowson has primarily focused on the identification and safe development of groundwater resources in Florida. Working in the west central area of Florida has given Mr. Crowson an understanding of the special issues involved in successfully developing reliable water sources from these unique aquifers. Representative projects include production wells and well fields for agriculture, public and private utilities, and power generation clients.

Mr. Crowson has directed his attention to the planning, permitting, and development of dependable water supplies. His work has also included the design and rehabilitation and repair of water supply wells for utilities, the design and permitting of Floridan Aquifer wells for the electric power industry, and the implementation of regional water monitoring plans associated with the development of water supplies. In addition, Mr. Crowson has participated in the development of monitoring plans to detect saltwater intrusion used as an early warning system to protect public water supplies.

Mr. Crowson also has extensive experience in creating and using complex databases. The first database system he created was in 1985. These databases were specifically focused on water quality, water levels (rain, ground & surface water). These databases enhanced efficiency by saving over 1,500 man-hours per year in data entry, data analysis, and quality assurance and quality control. Later, in 1990 he created the first well complaint database, and completely redesigned the complaint database in an Access format in 1997. These databases also incorporated multiple information types such as GIS numbers, chemical records, hydrogeological facts, engineering figures, and relevant personal information. The well complaint databases are believed to be the first of their kind in the state of Florida.

In 1984 and 1985 Mr. Crowson designed and produced procedures for the uniform installation

and maintenance of monitoring equipment for complete environmental monitoring programs. This type of work ranged from equipment selection based on data needs, cost, future data processing needs, regulatory requirements, to site installation. This work also necessitated the creation of standard maintenance procedures and training protocols.

In 1986 Mr. Crowson created and published a monthly data analysis and status report of water resources for a dozen well fields in the west central Florida area (3 counties), which enabled management to incorporate environmental conditions (rainfall, water levels, water quality) into operational decisions.

Mr. Crowson has utilized his experience by teaching others. In the late 1980's (1988-1989) he was an instructor at a Florida Water Pollution Control Operators Association short school and a course instructor for the Environmental Technology Center in Brandon, Florida. This was a vocational school specializing in training people in field methods such as water sampling, surveying, well installations, ground water, surface water, and rainfall monitoring, along with a basic knowledge of geologic systems. In addition, Mr. Crowson has attended numerous seminars involving ground water modeling, safety, management, water plant operations, water plant certification programs, and borehole geophysics.

Overseeing the well mitigation program for 3 counties resulted in the need to manage multiple contracts simultaneously (6-12 drilling, 2-3 consultants, 2 water treatment vendors, 2 bottled water vendors). This type of contract management led Mr. Crowson to develop and implement a unit price contract, which was based on a comprehensive activity package (1998). This was a new approach to contracting services and eventually led to the development and implementation of a uniform pricing structure for contract services (2003).

Mr. Crowson is also experienced in the public arena. In 2001 he developed the modification and implemented the well mitigation policy as listed in the Florida Administrative Code (49B-3.005).

In 2004 Mr. Crowson participated in post 911 security activities, by staging a no-notice security test of emergency operation procedures for a mock terrorist attack on a public water supply facility. This activity along with security surveys and recommendations for security upgrades enables him to provide a unique level of insight into security issues.

While working for Tampa Bay Water Mr. Crowson also saw the need for a comprehensive production well maintenance program. In late 2004 and early 2005 he initiated a program to examine each production well on a regular basis to determine well efficiency, well conditions, borehole conditions, and water quality. In addition, he put into place an as-needed contract that provided the capability to make repairs (minor or extensive) as well as be able to replace monitor wells.

Selected Publications

Crowson, D. L., 1990. *Construction and Testing of Production Wells 13 & 14 at the Starkey Well Field*. Prepared for the West Coast Regional Water Supply Authority.

Crowson, D. L., 1990. *Summary Report of the Construction Details of Production Wells and Monitor Stations within the West Coast Regional Water Supply Authority*. Prepared for the West Coast Regional Water Supply Authority.

Crowson, D. L., 1994, 2001. *Well Complaint Investigation & Mitigation Procedures Manual*. Prepared for Tampa Bay Water.

JOHN M. DUMEYER, P.E., P.G.

Senior Water-Resource Engineer

(In association with Schreuder, Inc.)

EDUCATION

M.S. Hydrology - University of Arizona - 1971

B.S. Geology - University of Arizona - 1966

PROFESSIONAL AFFILIATIONS

Registered Professional Engineer in Florida, Georgia, Alabama, Colorado, Kansas, Oregon and Washington.

Registered Professional Geologist in Florida and Oregon.

FIELDS OF SPECIALIZATION

Water Resource Engineering

Groundwater/Surface Water Investigations

Groundwater Development

Groundwater Flow Models

Preparation of Water Use Permits

Remedial Action Planning and Design

Environmental Construction Management

Interaction with Regulatory Agencies

Management of Multi-Site Projects and Programs

EXPERIENCE SUMMARY

Mr. Dumeyer is a consulting engineer for Schreuder, Inc. in Tampa, Florida. He is a registered professional engineer and professional geologist with more than 33 years of experience in hydrology and environmental engineering. Mr. Dumeyer served as a Hydrologist and Water Resource Engineer for the U.S. Geological Survey and the State of Colorado. These assignments included the development of new water supplies for national parks in Wyoming, hydrologic system monitoring and data acquisition, development of a multi-aquifer groundwater model for the Rio Grande valley in Colorado and administration of water rights and irrigation water supplies in Colorado. Additional studies included evaluation of existing large-capacity wells and calculating well depletion effects on surface water flows. He previously served as a Chinese linguist with the U.S. Air Force in Taiwan and is fluent in Mandarin Chinese. Representative experience includes:

- Development and testing of irrigation and public supply wells from 100 to 4000 gpm
- Preparation of water use permit applications from 0.5 to 63.5 million gallons per day
- Development of groundwater flow models for areas up to 5000 square miles
- Project manager for design and construction of 3,200-foot Class I injection well in Margate, Florida.
- Project manager for remediation investigation/feasibility study of wood treatment waste Superfund site in Arkansas.

- Program manager for State of Florida clean-up contract for petroleum contamination sites throughout Florida.
- Project manager for development of contamination assessment reports and remedial action plans at numerous petroleum combination sites in Florida.
- Designed and supervised cleanup of lead and arsenic dust contamination in a steel fabrication warehouse.
- Developed groundwater recovery and treatment systems for chromium contaminated groundwater at a metal plating plant and solvent contamination groundwater at a metal parts manufacturing site.
- Project manager for installation of groundwater remediation equipment at petroleum contaminated sites.

SELECTED PROJECT EXPERIENCE

Mr. Dumeyer was project manager for design and construction of repairs to a 5,000-acre irrigation system in Penrose, Colorado. His responsibilities included a feasibility study, funding application, design, plans and specifications, contract processing and contractor submittals. The project cost was \$500,000. He was project manager for development of new well fields for Huntsville, Alabama. This project included geophysical exploration, test well drilling and test pumping. He was the project hydrogeologist for the construction and testing of four additional water supply wells for the City of Fort Pierce, Florida, and for construction and testing of three new wells for the Forest Hills Water Supply District. His responsibilities included supervision of test well drilling, well logging, production well drilling, selection of screened intervals, well pump tests, and well completion reports.

Mr. Dumeyer was also an expert witness on irrigation pumping depletions and stream flow reductions to the Rio Grande and Conejos River in Colorado water court. This hearing involved state regulation of irrigation wells to prevent effects on existing surface water hydrology. He was project manager for the preparation of several large agricultural and industrial water use permits in the Southwest Florida Water Management District. These projects included extensive water demand modeling with the AGMOD irrigation demand model. These projects also required the development and use of MODFLOW groundwater flow models that had four aquifer layers and pumping demands of 63.5MGD.

Mr. Dumeyer served as an expert witness on the areas of hydrogeology and water resources engineering on behalf of DeSoto and Hardee Counties. This project involved review and evaluation of the technical basis for the water use regulation for SWFWMD's Southern Water Use Caution Area. This project required the review of more than 30 technical reports upon which the water resource evaluation was based.

He was also the project manager for design and construction of three percolation pond systems in Florida, responsible for design of the systems, permitting, bidding and contract processing, construction management, payment processing and progress reports. The project costs were \$150,000 to \$400,000.

As project manager for design and construction of a 3,200-foot injection well at Margate, Florida his responsibilities included budget, work schedule, design report and permit, plans and specifications, contract processing and contractor submittals, as well as working with the FDER Technical Advisory Committee. The project cost was \$2,500,000.

Mr. Dumeyer was program manager for a five-year \$6 million contract with the State of Florida to assess and clean up soil and groundwater contamination from underground fuel tanks. His responsibilities included obtaining the contract, preparation of budgets and work schedules, coordination

of drilling and clean-up subcontractors, and preparation of status reports and contamination assessment reports.

He was project manager for a Superfund hazardous waste site RI/FS in Arkansas. His responsibilities included budget, work schedule, coordination of work with engineering subcontractors, preparation of monthly status reports and presentations to EPA plus three major summary reports of the investigation. The project fee was \$600,000.

Mr. Dumeyer was project technical director for CERCLA preliminary assessments and site investigations of 29 potential hazardous waste sites throughout Florida. He was responsible for coordinating field investigations, preparation of summary reports, and hazard ranking evaluations. The project cost was \$400,000.

He was project manager for 18 contamination assessments of leaking underground fuel storage tanks for several major oil companies throughout Florida, including emergency recovery of free product and design of remedial actions to pump and treat contaminated groundwater.

JULIE EARLS, M.S.P.H.

Environmental Scientist, GIS Analyst, Remote Sensing Specialist

EDUCATION

Master's Certificate in Geographical Information Systems University of South Florida, 2002
M.S.P.H. Master's of Science in Public Health – Environmental Health - University of South Florida, 2001
B.S. Environmental Science & Policy - University of South Florida, 1999

SPECIALIZED TRAINING

Fundamentals of ERDAS Imagine, Atlanta, GA, Spring 2002. (ERDAS Imagine is specialized remote sensing software that is used in the analysis of satellite imagery).
Advancing with ERDAS Imagine, Atlanta, GA, Spring 2002.
Spectral Analysis with ERDAS Imagine, Atlanta, GA, Spring 2002.
Wetland Identification and Mitigation, Brooksville, FL, Summer, 2002. Taught by the Department of Forestry.

FIELDS OF SPECIALIZATION

GIS analysis, particularly Spatial Analysis
Remote Sensing Analysis, specializing in land cover changes and analysis of spectral signatures
Air quality research & analysis
Groundwater modeling
Highly Advanced Statistical Computerized Complex Hydrologic Data Analyses

EXPERIENCE SUMMARY

Ms. Earls joined **Schreuder, Inc.** in January 2002 to provide advanced GIS expertise needed in a research study for the Florida Institute of Phosphate Research entitled "Assessment of the Impacts of Phosphate Mining on Streamflow". To accomplish this, the research is focused on two drainage basins, one that is heavily impacted by mining (Payne Creek, FL), one that has no mining (Joshua Creek, FL). This research has included the collection, assimilation and investigation of multitudes of data for the time period of 1985-2000. The work begins with the analysis of satellite imagery from each year in the study, twice a year (winter and dry season). The spectral signatures for the appropriate land cover types are distinguished using a combination of image processing, field visits, aerial photography and Land Use GIS coverages from local and state agencies for comparison. This information is used to help track the Land Cover change over time as well as help with estimates of evaporation and evapotranspiration in the water budget spreadsheet. Pertinent well, stream-flow, rain and pumping data were gathered from companies and state agencies as ancillary data. Significant graphical and statistical analyses are also being performed on the data to determine any unusual relationships that might exist. The end goal is a water budget spreadsheet that incorporates all significant sources of importation and exportation of ground or surface-water to the drainage basins being studied.

Prior to joining Schreuder, Inc. she worked at the **College of Public Health** at the **University of South Florida** during her Master's degree, doing research funded by the Florida Department of Environmental Protection (FDEP) on air quality and its affects on water quality to the Tampa Bay Estuary. Some of her contributions to the research included: chemical mass balance work, Grain titration of Florida lake water to test for buffering capability, ion chromatography, denuder preparation and analysis, and spatial pattern recognition. Ms. Earl's thesis was entitled "Data Assimilation of Nitrogen Isotope

Deposition and Source Recognition in the Tampa Bay Estuary.” This work included rigorous statistical analysis of the data from both air and rain samples from an 18-month study in the Tampa Bay region.

ACTIVITIES AND AWARDS

- **A&WMA (Air & Waste Management Association) 1999 Annual Meeting and Exhibition**, Orlando, FL, September 19-21, 1999. Presented a poster and abstract entitled “Source Apportionment Study of PM_{2.5} Air Pollution in the Tampa Bay Area”
- **A&WMA (Air & Waste Management Association) 93rd Annual Conference and Exhibition**, Salt Lake City, UT, June 18-22, 2000. Presented a poster and abstract entitled “Source Apportionment Study of PM_{2.5} Air Pollution in the Tampa Bay Area” as well as volunteering as Audio/Visual and session monitoring for speakers at the conference.
- **SHARP Award** (Student Honorary Awards for Research and Practice) from the College of Public Health, University of South Florida in June 2000 to attend A&WMA (Air & Waste Management Association) 93rd Annual Conference and Exhibition, Salt Lake City, UT.
- **TAMPA BAY ATMOSPHERIC DEPOSITION SUBCOMMITTEE MEETING**, St. Petersburg, FL, October 24, 2000. Presentation on “Deposition Rates and Source Apportionment of Heavy Metals” and helped in preparing two posters, “TBEP Tampa Bay Atmospheric Deposition Study” and “A Comparison of Measured and CALMET/CALPUFF-Modeled SO₂ Concentrations Over Tampa Bay.”
- **HSC Research Day**, Tampa, FL, February 22, 2001. USF College of Public Health participant, awarded for Superior Presentation.
- **SHARP Award** (Student Honorary Awards for Research and Practice) from College of Public Health, University of South Florida in March 2001 to present a paper titled “Atmospheric Deposition and Source Apportionment of Toxic Metals to the Tampa Bay Estuary” at the A&WMA (Air & Waste Management Association) 94th Annual Conference and Exhibition, Orlando, FL.
- **TAMPA BAY ATMOSPHERIC DEPOSITION SUBCOMMITTEE MEETING**, Tampa, FL, June 21 - 22, 2001. Presentation on “Examination of Contributing Processes to the Nitrogen Isotope Deposition in the Tampa Bay Area” and poster on “Seasonal Distribution of Nitrogen Isotope Deposition in the Tampa Bay Area” and helped in preparing the poster, “Wind Vector Analysis of Nitrogen Deposition At the Gandy Site.”
- **A&WMA (Air & Waste Management Association) 94th Annual Conference and Exhibition**, Orlando, FL, June 25-28, 2001. Presentation of a paper entitled “Atmospheric Deposition and Source Apportionment of Toxic Metals to the Tampa Bay Estuary,” which is subsequently published on their conference CD-ROM.

Attachment 2

The principal project investigator will be Peter J. Schreuder, MS, CPG, P.G. A Hydrogeologist, who has been involved with the Blue Sink/Curiosity Creek project since the beginning of 1996. He will assist Jay Allen, a Senior Ecologist whose firm has the knowledge, size and expertise to create the treatment wetland with vegetation from his native Florida plants nurseries. John Dumeyer, MS, P.E., P.G., who also conducted major portions of the Blue Sink investigation for the City of Tampa, with co-funding by SWFWMD, will be responsible for the engineering aspects of the project. Doug Crowson, P.G., a senior geologist, will be responsible for the geological issues related to the clay/limestone interface in F100C and the limestone foundation in Blue Sink for the placement of the pump footings. The project will be managed by Dana Gaydos, MS, who is an Environmental Scientist, who conducted a three-year study for the Florida Institute of Phosphate Research in the use of a wetland on mined phosphate land to treat surface water from an industrial waste-water to meet drinking water standards. Resumes have been attached.

Attachment 3

Project Narrative

- a) Objectives: The project will create a functioning wildlife habitat in the heart of the City of Tampa. The project will also help the City of Tampa in meeting TMDL standards for the discharge of contaminated Curiosity Creek surface water flows directly into the Hillsborough River.

- b) Results and or/Benefits Expected The Forest Hills neighborhood is a well-established older neighborhood. One of the great environmental joys for the original people that settled in the area was the exploration of the local hills and sinkhole lakes that used to be where the F100C pond now is. These people, including Dick Greco (previous mayor of Tampa) and others greatly enjoyed swimming in the Blue Sink. This project aims to restore the environment to a quality that will bring the same level of environmental enjoyment to present and future generations. In addition, it will provide a solution to a latent long-term pollution problem that is in F100C. It will assist the City of Tampa in meeting TMDL standards for the contaminated discharges of the Curiosity Creek surface water flows through the Hamner outfall into the Hillsborough River. Furthermore, it will prevent a major and significant source of contamination to the Floridan Aquifer by reversing the flow gradient in the Ewanowski Spring.

- c) General Project Information: Because the project team documented the water quality conditions before the wetland was built, it will be quite easy to document the difference between the quality of the surface water flowing into and out of F100C after the urban wildlife habitat and treatment wetland has been created, planted, and operational.

Attachment 4

The following tasks are anticipated for the project.

1) Document Existing Information

Much information exist on the Blue Sink /Curiosity Creek system. This will all be compiled while focusing on the objectives of the proposed project

2) Document Existing Vegetation and Water Quality

The project senior ecologist will visit the site and prepare a detailed inventory of the nuisance species to be removed and identify areas for particular wetland designs. A hydrologist will collect water samples and ship these to a certified laboratory

3) Prepare Design and Establish Operating Criteria

The project team will prepare the treatment criteria that need to be met which most likely will involve the selection of water detention time in the wetland. This will be reflected in the operating system.

4) First Phase Modification

The project will use an environmental firm to remove the nuisance plant species. This will allow for a determination of future design needs.

5) Attends Meeting, Prepare Presentations and Reports.

A total of three meeting and presentations have been scheduled.