HAZEN AND SAWYER
Environmental Engineers & Scientists

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(813) 630-4498
Fax: (813) 630-1967

M E M O R A N D U M DATE: July 15, 2009

FOR: Elke Ursin, Florida Department of Health

FROM: Damann L. Anderson, P.E.

SUBJECT: Evaluation of Test Facility Site

Hazen and Sawyer is conducting the Florida Onsite Sewage Nitrogen Reduction Strategies (FOSNRS) Study under contract CORCL with the Florida Department of Health. Under Task A of this project, we are in the process of identifying test facility sites where multiple assessments of onsite nitrogen reduction technologies and groundwater quality can be conducted in subsequent phases of the study. Two potential sites identified in the response to the ITN were the University of South Florida Lysimeter Facility property and the University of Florida's Gulf Coast Research and Education Center (GCREC) near Wimauma, FL. Salient issues include space availability, site access, wastewater source of sufficient quantity and quality, subsurface hydrology, power supply and security.

After a preliminary assessment of the USF Lysimeter Facility, we feel that the cost of rehabilitating this facility will be beyond the budget allocated for that effort. Also, since space is limited at the USF facility and it is not conducive for groundwater quality assessments, we have concluded that it would be more cost effective to have only one test facility, where the controlled testing portion of the project could be conducted. It is our recommendation that the GCREC be selected as the test facility site. This memorandum summarizes the evaluation of the USF facility.

The USF Lysimeter Facility is located on the east side of the USF campus, west of 50$^{th}$ street, north of Fowler Avenue and south of Fletcher Avenue, in Tampa, Florida. In 1988, a cooperative agreement was in place between DOH's predecessor agency, the Florida Department of Health and Rehabilitative Services (HRS), and USF allowing for a lysimeter station to be established on the USF campus. The Station was used to perform experiments through contracts between HRS and selected providers until 1998. The research facility was constructed to monitor the fate of septic tank effluent pollutants in the vadose zone of fine sand soils in Florida.

For the FOSNRS study it was anticipated that the Lysimeter station could be used for pilot tests of treatment technologies and unsaturated zone work. However, since the water table is extremely deep at the site (>25 ft.) and sufficient area for plume delineation and monitoring is not

available it would not be suitable for groundwater fate and transport studies. The facility has been out of service for approximately 10-years. The facility area is identified in Figure 1.

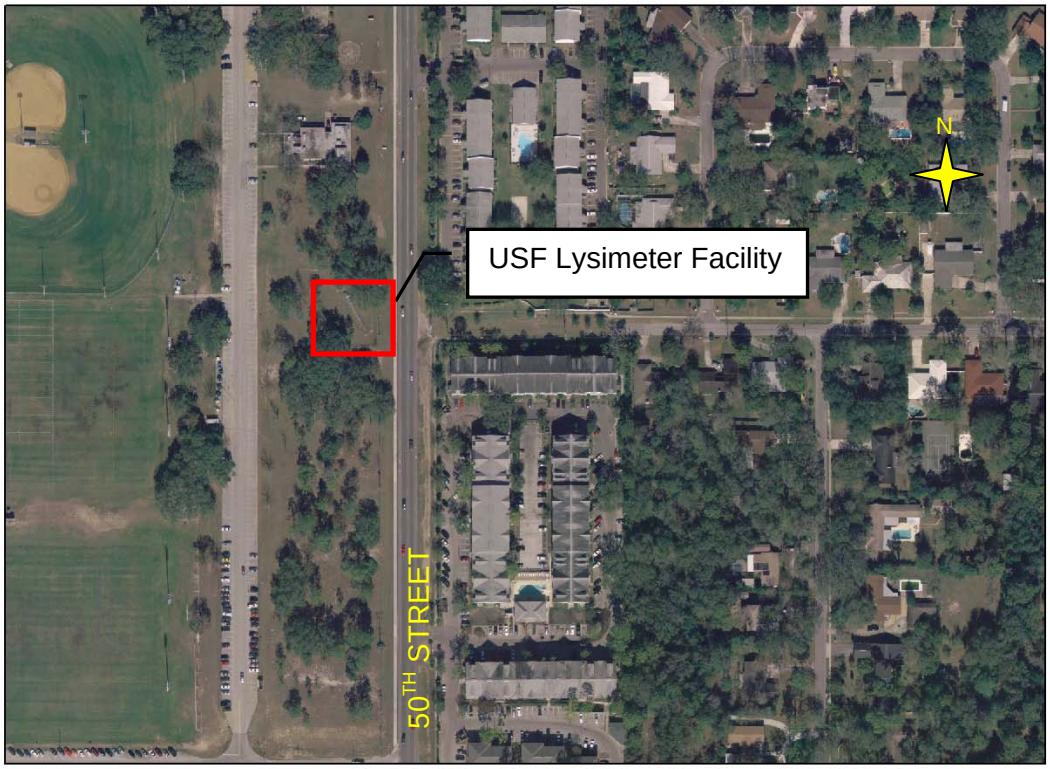


**Figure 1. USF Lysimeter Facility Location**

On February 9, 2009, a site evaluation was conducted to assess the required rehabilitation efforts to use the facility for the FOSNRS testing program. Two contractors were present to estimate the costs associated with the facility rehabilitation effort. The first area evaluated was the on-site groundwater well that provides water to the facility and is used to establish the artificial water tables at the site (Figure 2). The contractor that originally installed the well is Pope's Water Systems, Inc. Well Drilling. Paul Pope attended the site evaluation, and he determined that the pump and control panel for the well will need to be replaced. A budgetary cost estimate is provided in Table 1.

**Figure 2. Water Well Pump and Controls**

Next, the Lysimeter station was evaluated (Figure 3). The facility includes a series of drainfields and artificial water tables on each side of the facility. The contractor that originally installed the system was Bingham Onsite, Incorporated. Dewayne Bingham Sr. attended the site evaluation, and he provided cost estimates for replacement of the water table areas and drainfields. During the site visit, a representative from the campus informed the group that the original source of wastewater has been connected to the City of Tampa wastewater system. Therefore, a tap will need to be made into a pressurized force main with associated valves and controls to allow a wastewater feed to the facility. Additionally a new pipe line will need to be installed to a tank. Mr. Bingham provided a budgetary cost estimate for the replacement of the artificial water tables and the work associated with connecting to the main sewer line. Additionally the roof, instrumentation and controls, and electrical connections require replacement, and these costs were estimated by Hazen and Sawyer.

**Figure 3. USF Lysimeter Station**

Table 1 outlines a preliminary capital cost estimate for the rehabilitation of the USF Lysimeter station. This estimate does not include engineering design or permitting that may be required. The estimate includes a 25 percent contingency for unforeseen and unknown conditions that may be discovered during design and construction of the improvements.

| Table 1. Cost Estimate<br>USF Lysimeter Station Rehabilitation | |
|---|---|
| Tap main sewer line (FM) and install pipe to septic tank | $ 8-10 K |
| Install 1,500 gallon concrete septic tank | $ 2-3 K |
| Excavate old water table area and install new liners ($9,000+ per side) | $ 18-20 K |
| On-site well pump and control panel | $ 3.5-5K |
| Roof replacement (800 $ft^2$ @ $8 psf + raise roof and rebuild entryway) | $8-10 K |
| Electrical connections, valves, pump replacements | $8-10 K |
| Instrumentation and controls replacement and programming | $25-30 K |
| Debris removal | $ 1-2 K |
| | |
| Subtotal | $73.5-90 K |
| | |
| Contingency (25%) | $18.4-22.5 K |
| Estimated Total | $91.9-112.5 K |

**Summary**

Based on the cost and time associated with rehabilitating the USF facility, it has become apparent that proceeding with construction of two test facility sites will be costly and time consuming. The current budget ($50,000) in the FOSNRS contract for construction of a test facility at USF does not appear to be sufficient for both the rehabilitation work and the testing facility construction. In addition, the USF Lysimeter station can only be used for pilot tests of treatment technologies and unsaturated zone work, since the water table is extremely deep at the site (>25 ft.) and sufficient area for plume delineation and monitoring is not available. Management of two facilities once operational will also be more difficult and expensive in future phases of the project.

Treatment technology pilot testing and both the saturated & unsaturated zone investigations could be performed at the GCREC. Therefore, the Project Team recommendation is to conduct all test facility work at the GCREC.

*enc: Cost Estimates*

*c: E. Roeder*
*P. Booher*

*File 44237-000*

Bingham On-Site Sewers & Portables ,Inc.

P.O. Box 749
Dover, Fl 33527
813-659-0003
813-659-0403 Fax

# Estimate

| Date | Estimate # |
|---|---|
| 2/19/2009 | 20548 |

| Name / Address | Job Location |
|---|---|
| Hazen And Sawyer<br>10002 Princess Palm Ave. Ste. 200<br>Tampa, Florida 33619 | Ground Water Research Center<br>USF Tampa, Fl. |

| P.O. No. | Terms | Estiamted By | Permit No. | Job Name | New Inst. / Repair |
|---|---|---|---|---|---|
| | Due on receipt | DB | | | |

| Description | Total |
|---|---|
| Will tap main sewer line and install 120' of 2" force main, and hook up to septic tank. | 7,875.00 |
| Install 1,500 gallon concrete septic tank. | 2,600.00 |
| Will excavate old water recovery area and install new 6 ft. x 70 ft., 5 ft. deep, new recovery area with 8" rock in bottom. | 8,900.00 |
| Remove all debris from site. | |
| Trac-hoe with operator and labor $140.00 per hour. | 140.00 |
| Permitting not included in price!!!! | 0.00 |
| | 0.00 |
| **Total** | $19,515.00 |

ESTIMATE ONLY PRICE SUBJECT TO CHANGE!

Signature _____

| Phone # | Fax # |
|---|---|
| 813-659-0003 | 813-659-0403 |

*Pope's Water Systems, Inc.*
*Well Drilling*
10 US Highway 41 North
Lutz, FL 33549-4572
Phone 813-949-7413
Fax 813-948-8731

# Proposal

| Date | Proposal # |
|---|---|
| 2/20/2009 | 4934 |

| | |
|---|---|
| Project Location | USF |
| Description | Pump Install |
| Owner/Builder | |
| Customer Phone | |
| Cell Phone | Damann Anderson |
| Work Phone | 630-4498/Fax630-1967 |
| Terms | $500 Dep./Net due on completion |

**Hazen and Sawyer**
**10002 Princess Palm Ave Ste 200**
**Tampa, Fl 33619**

| Item | Qty. | Description | Unit | Total |
|---|---|---|---|---|
| WIP-1508442PRV | | Irrigation Package; Install & Furnish;Pump panel 1HP 20 series submersible pump,Furnas Pump Panel with Disconnect 230v 3 Ph, CH4202 Champion bladder tank, 1-1/4" CSV2W Cycle Stop Valve, up to 63' 1-1/4" galvanized drop pipe & submersible wire, pressure switch and gauge, gate valve, well seal, pressure relief valve, pressure treated post, fittings, Misc. electrical. | 2,340.00 | 2,340.00T |
| SL-800 | | Field Service Labor To Install | 1,000.00 | 1,000.00 |

***PLEASE NOTE: Add $75.00 of off set is after initial pump & tank installation.**
**Tank installed inside - additional $125.00**
**If steel liner or steel casing required, additional $9.00 per ft.**

| | |
|---|---|
| Subtotal | $3,340.00 |
| Sales Tax (7.0%) | $163.80 |
| **Total** | **$3,503.80** |

**ACCEPTANCE OF PROPOSAL: The above prices, specifications and conditions and are hereby accepted. You are authorized to perform the work as specified. I understand that this proposal is an estimate for the work to be performed and due to the nature of the work, the well depth, quantity and type of casing, depth of drop pipe & wire, and the quantity of bags of cement may be greater or less than the estimate. I understand that Pope's Water Systems, Inc. is not responsible for damages to sidewalks, driveways, or lawns and landscapes. Warranty work will only be done during regular business hours. Balance is due upon completion.**
**PRICE QUOTED VALID FOR 30 DAYS.**

**NO GUARANTEE OF WATER QUALITY OR AGAINST MINERALS AND/OR CHLORIDES IN WATER.**

Paul E. Pope

Accepted Signature & Date _____