

**COLUMBIA COUNTY BOARD OF COUNTY COMMISSIONERS
PROJECT NUMBER 2015 - 05
DRAINAGE WELL CONSTRUCTION – LAKE HARRIS**

NOTICE TO CONTRACTORS

Notice is hereby given that sealed bids will be received in the Columbia County Manager's office until **11:00 A.M.** on **April 3, 2013**, for Columbia County Project No. **2015-05**. This office is located on the second floor of the Courthouse Annex at 135 Hernando Avenue, Room 203 Lake City FL 32055.

The project scope includes construction, testing, and development of one (1) sixteen-inch diameter **Class V** drainage well at The Country Club at Lake City (717 NW Fairway Drive, Lake City, Florida).

See attached maps showing project location and access route.

The Bid Forms and Construction specifications may be obtained from the County's web site at <http://www.columbiacountyfla.com/PurchasingBids.asp>. Deadline for questions regarding specifications and/or bid documents must be received before **11:00 A.M.** on **March 31, 2013**.

The successful bidder will be required to furnish a 5% bid bond with bid submittal, and if selected, furnish the County Manager with a performance bond, and proof liability insurance prior to commencing work.

The Columbia County Commission reserves the right to reject any or all bids and to add to the contract or delete from the contract to stay within their funding capabilities.

Columbia County Board of County Commissioners

Rusty DePratter, Chair

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**Lake Harris Drainage Well 2
Scope of Work**

The project scope includes construction, testing, and development of one (1) sixteen-inch diameter drainage well at The Country Club at Lake City (717 NW Fairway Drive, Lake City, Florida). Contractor shall provide all necessary and required equipment, materials, and the permit to construct the well in accordance with chapters 62-532 and 40B-3, Florida Administrative Code (FAC). The well construction method shall be at the discretion of the contractor as long as the well is constructed and completed according to these standards. Make up water from a 1-inch water main located approximately 200 feet from the drill site will be provided by Columbia County. Well construction shall include:

1. Setting 16-inch diameter primary (water bearing) casing to 336 feet below land surface (BLS). Casing set will require a 30-inch diameter steel pit casing to approximately 42 feet BLS and a 24-inch diameter secondary casing to approximately 127 feet BLS;
2. Drilling a nominal 16-inch diameter borehole from 336 feet to approximately 500 feet BLS;
3. Specific capacity testing; and
4. Air development.

The following tasks details are required for the scope of work:

1. Setting 16-inch diameter casing to a depth of 336 feet: Contractor shall drive or set 30-inch steel pit casing from land surface to approximately 42 feet BLS. Driven casing shall be sealed using a dry bentonite chip-like material labeled for use with driven wells. Set casing shall be placed in a nominal 36-inch diameter borehole and sealed from bottom to land surface with neat cement grout. Contractor will then drill a pilot hole to tag the first carbonate unit (approximately 127 feet BLS). A 24-inch diameter secondary casing shall be set into competent rock within the 30-inch diameter borehole and sealed from bottom to land surface with neat cement grout. Both the secondary casing and the primary water bearing casing shall be set using no less than two centralizing spacers so that the annular space between casings is evenly distributed. Casing material can be either steel or schedule 80 Certa-LokPVC, however, all driven casing must be steel. All casing material must meet Rule 62-532.500 requirements. Drill cuttings accumulated during mud rotary drilling will be collected and removed by Columbia County. County will provide a 20CY “Rolloff” container and shall construct pit to separate solids from water for use during reverse air drilling. County will also provide trucks and loaders to remove solid material from pit and/or “rolloff”.

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2. Drilling nominal 16-inch diameter borehole to 500 feet: Following a minimum 12-hour set time from the last annular grouting, contractor shall drill a nominal 16-inch diameter borehole to 500 feet BLS. Drilling methods should accommodate retrieval of drill cuttings at land surface, i.e. mud rotary with circulation and reverse air without circulation. Drill cuttings shall be collected and labeled by the Contractor for the project engineer. Contractor shall provide a reverse air discharge containment system. County will provide transportation of 'rock cuttings'.
3. Specific capacity testing: Upon reaching a total depth of 500 feet BLS, contractor shall supply a pump capable of withdrawing no less than 300 gallons per minute from a depth of 80 feet, set the pump to a depth of no less than 80 feet BLS, and operate the pump for one hour while water levels in the well are recorded by the project engineer. Contractor shall supply and direct discharge through hose or pipe to pit/"Rolloff". If specific capacity is insufficient for drainage, additional drilling and specific capacity testing may be requested.
4. Well development: When final well depth is reached, contractor shall air-develop the completed well until discharge is clear and particulate-free as determined by the project engineer. Contractor shall supply and direct discharge through hose or pipe to pit/"Rolloff".
5. Report of well completion: A completed Well Completion Report (Form 62-532.900(2)) submitted by the contractor and approved by Suwannee River Water Management District shall constitute completion of this well.
6. Suwannee River Water Management District Geologist, Warren Zwanka (phone 386-362-1001) and Columbia County Utilities Supervisor, Bud Moody (phone 386-623-6407) **SHALL** be notified no less than 24 hours prior to any grouting operations.
7. Any vehicles larger than a standard pickup truck entering the project site **SHALL** be accompanied by Columbia County Utilities Supervisor, Bud Moody (phone 386-623-6407). Bud Moody **SHALL** be given 24 hours prior notice before such activities occur.
8. All electrical power required for construction **SHALL** be supplied by the contractor.

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BID PROPOSAL

Proposers are required to complete and submit this form. One original and five (5) copies shall be delivered in one envelope. Proposals shall include a letter of transmittal detailing the contractor's ability to perform the scope of work and shall include a list of five projects similar in scope and level of complexity that the contractor has completed in the past five years. Letter of transmittal shall not exceed five pages in length.

PAY ITEMS	UNIT	QUANTITY	UNIT PRICE	TOTAL
CASINGS	Lump Sum	1	\$	\$
WELL DISCHARGE	Lump Sum	1	\$	\$
CAPACITY TESTING	Per Test	1	\$	\$
16" DIAMETER BOREHOLE	Per Foot	164	\$	\$
			TOTAL	

PAY ITEM NOTES

CASINGS - Cost for setting 30-inch diameter pit casing to 42 feet, 24-inch diameter secondary casing to 127 feet, and 16-inch diameter primary (water-bearing) casing to 336 feet. **Cost shall be inclusive of drilling, casing set, centralizers, annular grouting, and drill-out of any grout in the interior of the 16-inch casing.**

WELL DISCHARGE - Cost to develop well until discharge is clear and particulate-free. Cost shall be inclusive of tripping drill rods, setting airline, discharge hose set-up, and compressor operation.

CAPACITY TESTING - Specific capacity testing. Cost shall be inclusive of tripping drill rods, setting pump, discharge hose set-up, and pump operation for one hour.

16" DIAMETER BOREHOLE - Cost to drill a nominal 16-inch diameter borehole from 336 feet. Total depth may exceed 500 feet if significant water receiving zones are not encountered.

Company Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone Number: _____

Email Address: _____

Signature

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Purchasing Department – General Instructions to Bidders

These instructions will bind bidders and conditions herein set forth, except as specifically qualified in special bid and contract terms issued with any individual bid.

1. The following criteria are used in determining low responsible bidder:
 - A. The ability, capacity and skill of bidder to perform required service.
 - B. Whether the bidder can perform service promptly or within specified time.
 - C. The character, integrity, reputation, judgment, experience and efficiency of bidder.
 - D. The performance of previous contracts with Columbia County.
 - E. The suitability of equipment or material or county use.
 - F. The ability of bidder to provide future maintenance
2. Payment Terms are net (30) unless otherwise specified. Favorable terms, discounts, may be offered and will be considered in determining low bids if they are deemed by Purchasing Department to be advantageous to the County.
3. All bids should be tabulated, totaled and checked for accuracy. All blanks on Bid Proposal sheet shall be filled in and unit price will prevail in case of errors.
4. All requested information shall be included in the envelope. All desired information must be included for your bid to receive full consideration.
5. If anything on the bid request is not clear, you should contact the Purchasing Director immediately.
6. A bidders list is available at the Purchasing Office.
7. Quote all prices F.O.B. our warehouse or as specified in bid documents.
8. Each proposal shall be clearly marked on the outside of the envelope including Fed Ex, UPS or other delivery service envelopes, as a sealed bid. The name of the item being bid shall be shown on the outside in full.
9. No responsibility shall attach to any County representative or employee for the premature opening of bids not properly addressed or identified.
10. If only one (1) bid is received, the bid may be rejected and re-advertised or excepted if determined to be in the counties best interest.
11. Bids received late will not be accepted, and the County will not be responsible for late mail delivery.

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12. Telephone and facsimile bids will not be acceptable in formal bid openings (sealed bids). Should a bid be misplaced by the County and found later, it will be considered. Any bidder may request and shall receive a receipt showing the day and time any bid is delivered to the appropriate office of the County from the personnel thereof.

13. Bids requiring bid bonds will not be accepted if bond is not enclosed. Cash or certified check will be accepted in lieu of bond except on construction projects where cost exceeds \$40,000.

14. All bidders must be recognized dealers in the materials or equipment specified and is qualified to advise in their application or use. A bidder at any time requested must satisfy the Purchasing Office and the County Manager that he has the requisite organization, capital, plant, stock ability and experience to satisfactorily execute the contract in accordance with the provisions of the contract in which he is interested.

15. Any alterations, erasures, additions, or admissions of required information or any changes to specifications or bidding schedule are done at the risk of the bidder. Any bid will be rejected that has a substantial variation, that is; a variation that affects price, quantity, and quality or delivery date (when delivery is required by a specific time).

16. When requested, samples will be furnished to the County free of expense, properly marked for identification and accompanied by a list where there is more than one (1) sample. The County reserves the right to mutilate or destroy any sample submitted whenever it may be to the best interest of the County to do so for the purpose of testing.

17. The County will reject any material, supplies or equipment that did not meet the specifications, even though the bidder lists the trade names or names of such material on the bid or price quotation form.

18. The unauthorized use of patented articles is done entirely at the risk of the successful bidder.

19. The ESTIMATED QUANTITY given in the specifications or advertisements is for the purpose of bidding only. The County may purchase more or less than the estimated quantity and the vendor must not assume that such estimated quantity is part of the contract.

20. Only the latest model equipment as evidenced by the manufacture's current published literature will be considered. Obsolete models of equipment not in production will not be acceptable. The equipment shall be composed of new parts and materials. Any unit containing used parts or having seen any service other than the necessary tests will be rejected. In addition to the equipment specifically called for in the specification, all equipment catalogued by the manufacturer as standard or required by

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the State of Florida shall be furnished with the equipment. Where required by the State of Florida Motor Vehicle Code, vehicles shall be inspected and bear the latest inspection sticker of the Florida Department of Revenue.

21. Prospective bidders are required to examine the location of the proposed work or delivery and determine, in their own way, the difficulties, which are likely to be encountered in the prosecution of the same.

22. All materials, equipment and supplies shall be subject to rigid inspection, under the immediate supervision of the Purchasing Department, its designee and /or the department to which they are delivered. If defective material, equipment, or supplies are discovered, the contractor, upon being instructed by the Purchasing Department or designee, shall remove, or make good such material, equipment, or supplies without extra compensation. It is expressly understood and agreed that the inspection of materials by the County will in no way lessen the responsibility of the Contractor release him from his obligation to perform and deliver to the County Sound and satisfactory materials, equipment, or supplies. The Contractor agrees to pay the costs of all tests upon defective material, equipment, or supplies or allow the costs to be deducted from any monies due him from the County.

23. Unless otherwise specified by the Purchasing Department all materials, supplies, or equipment quoted herein must be delivered within thirty (30) days from the day of notification or exceptions noted on bid sheets.

24. A contract will not be awarded to any corporation, firm, or individual who is, from any cause, in arrears to the County or who has failed in former contracts with the County to perform work satisfactorily, either to the character of the work, the fulfillment or guarantee, or the time consumed in completing the work.

25. Reasonable grounds for supposing that any bidder is interested in more than one proposal for the same item will be considered sufficient cause for rejection of all proposals in which he is interested.

26. Submitting a proposal when the bidder intends to sublet the contract may be a cause for rejection of bids or cancellation of the contract by the County Manager.

27. Unless otherwise specified the County reserves the right to award each items separately or on a lump sum basis whichever is in the best interest of the County.

28. The County reserves the right to reject any and/or all quotations, to waive any minor discrepancies in the bids for all bidders equally, quotations, or specifications, when deemed to be in the best interest of the County and also to purchase any part, all or none of the materials, supplies, or equipment specified.

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29. Failure of the bidder to sign the bid or have the signature of an authorized representative or agent on the bid proposal in the space provided will be cause for rejection of the bid. Signature must be written in ink. Typewritten or printed signatures will not be acceptable.

30. Any bidder may withdraw his bid at any time before the time set for the opening of the bids. No bid may be withdrawn in the thirty- (30) day period after bids are opened.

31. It is mutually understood and agreed that if at any time the Purchasing Department or designee shall be of the opinion that the contract or any part thereof is unnecessarily delayed or that the rate of progress or delivery is unsatisfactory, or that the contractor is willfully violating any of the conditions or covenants of the agreement, or executing the same in bad faith, the Purchasing Department or his designee shall have the power to notify the aforesaid contractor of the nature of the complaint. Notification shall constitute delivery of notice, or letter to address given in the proposal. If after three (3) working days of notification the conditions are not corrected to the satisfaction of the Purchasing Director, he shall thereupon have the power to take whatever action he may deem necessary to complete the work or delivery herein described, or any part thereof, and the expense thereof, so charged, shall be deducted from any paid by the County out of such monies as may become due to the said contractor, under and by virtue of this agreement. In case such expense shall exceed the last said sum, then and in that event, the bondsman or the contractor, his executors, administrators, successors, or assigns, shall pay the amounts of such excess to the County on notice made by the Purchasing Department or his designee of the excess due.

32. If the bidder proposes to furnish any item of foreign make or product, he shall write "foreign" together with the name of the originating country opposite such item on a proposal.

33. Any complaint from bidders relative to the invitation to bid or attached specifications shall be made prior to the time of opening bids; otherwise, the bidder waives any such complaint.

34. Contracts may be cancelled by the County with or without cause on thirty- (30) days advance written notice.

35. All contractors submitting bids for road projects in excess of \$150,000 must be pre-qualified with the Florida Department of Transportation and shall provide proof of such qualification upon request.

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36. Any bidder affected adversely by an intended decision with respect to the award of any bid, shall file with the Purchasing Department for Columbia County, a written notice of intent to file a protest not later than seventy-two (72) hours (excluding Saturdays, Sundays and legal holidays), after the posting of the bid tabulation. Protest procedures may be obtained in the Purchasing Department.

37. A person or affiliate who has been placed on the convicted vendor's list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to Columbia County, may not submit a bid on a contract with Columbia County for the construction or repair of a public building or public work, may not submit bids on leases of real property to Columbia County, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with Columbia County, and may not transact business with Columbia County for a period of 36 months from the date of being placed on the convicted vendor list.

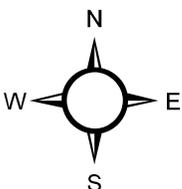
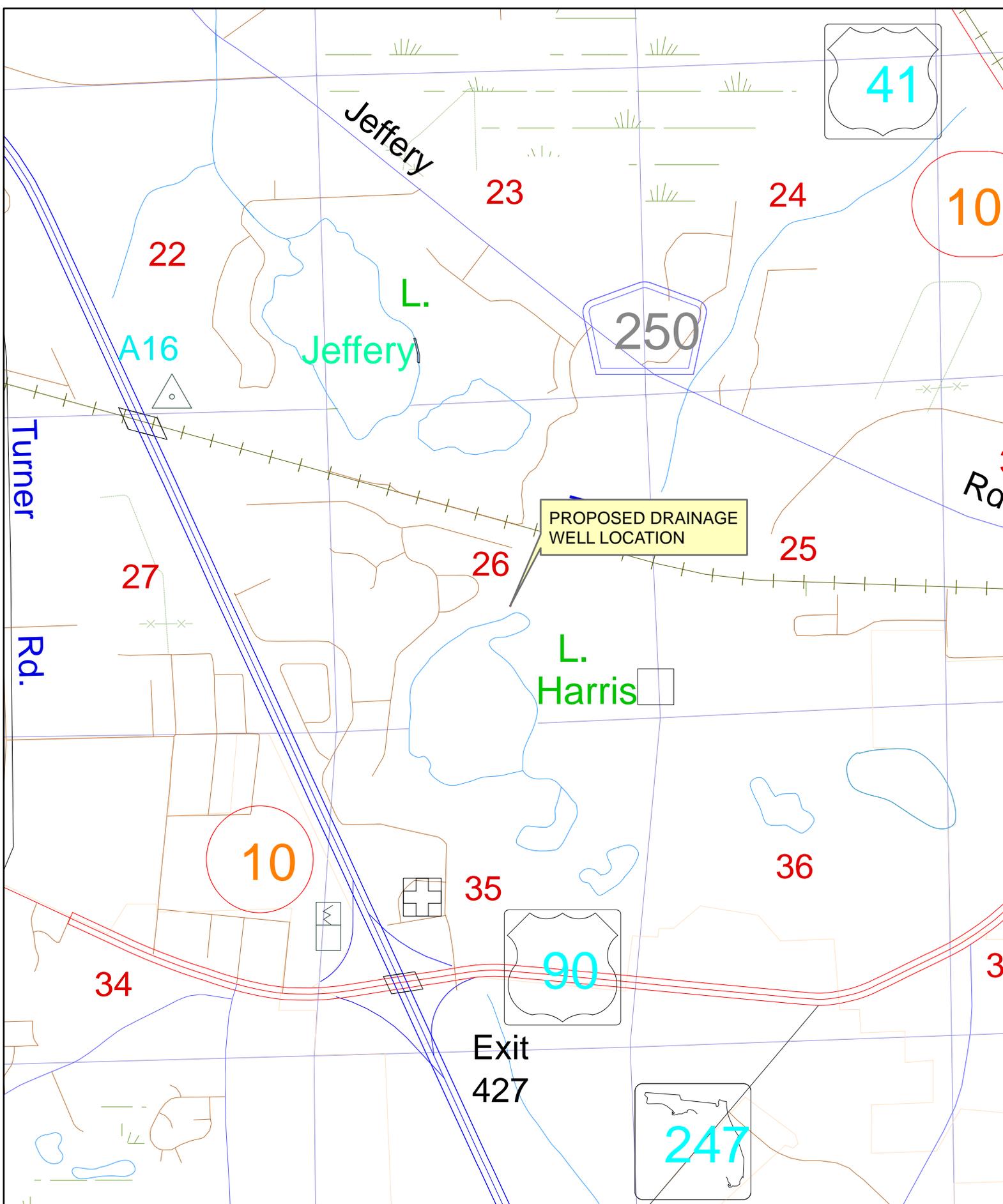
38. Vendor/Contractor shall utilize the U.S. Department of Homeland Security's E-Verify system, in accordance with the terms governing use of the system, to confirm the employment eligibility of;

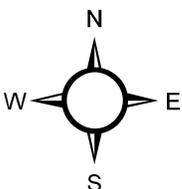
A. all persons employed by the Vendor/Contractor during the term of the Contract to perform employment duties within Florida; and

B. all persons, including subcontractors, assigned by the Vendor/Contractor to perform work is pursuant to the contract with the County.

39. Contractor shall register online at <http://www.columbiacountyfla.com/PurchasingBids.asp> for this specific project. All addendums are delivered via email through this website, and it is the contractor's responsibility to ensure all addendums are used in the bid submittal.

40. Any existing materials demolished within county right of way may be retained by Columbia County.

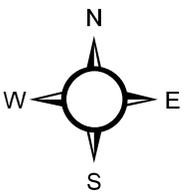




**Attachment C-2
Access Route
and Well Location**



PROPOSED DRAINAGE
WELL LOCATION



Attachment C-3
Well Location

MEMORANDUM

Date: April 18, 2014

To: John Davis, P.G., Florida Department of Environmental Protection

Through: Ann Shortelle, Ph.D., Executive Director
Tim Sagul, P.E., Resource Management Division Director

From: Warren Zwanka, P.G., Senior Hydrologist
R. Thomas Kiger, E.I., Hydrologist

Subject: Replacement Drainage Well Capacity Authorization - Lake Harris, Columbia County, Florida

The purpose of this memorandum is to obtain FDEP authorization to construct the necessary size and number of Class V drainage wells on Lake Harris pursuant to Chapter 62-528, F.A.C., and replace the original drainage well capacity.

BACKGROUND:

Lake Harris is an approximately 300-acre lake located west of Lake City, Florida (Sections 26 and 35, Township 3 south, Range 16 east, Lake City West quadrangle), as shown in Figure 1. Average lake level ranges between 94 and 97 feet above sea level. The lake receives surface drainage from an approximately 9mi² drainage basin but lacks adequate outflow to downstream water bodies or karst features that exist elsewhere in the vicinity. As a result, periods of heavy rainfall often result in flooding of the nearby golf course and homes. Prior to FDEP

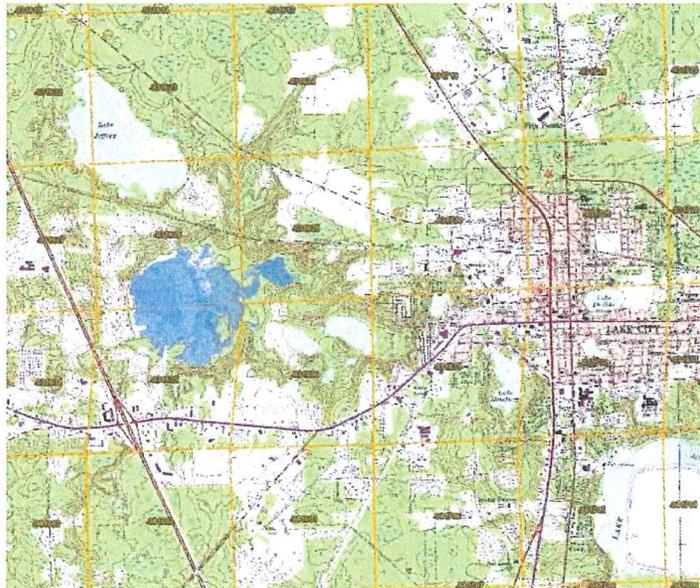
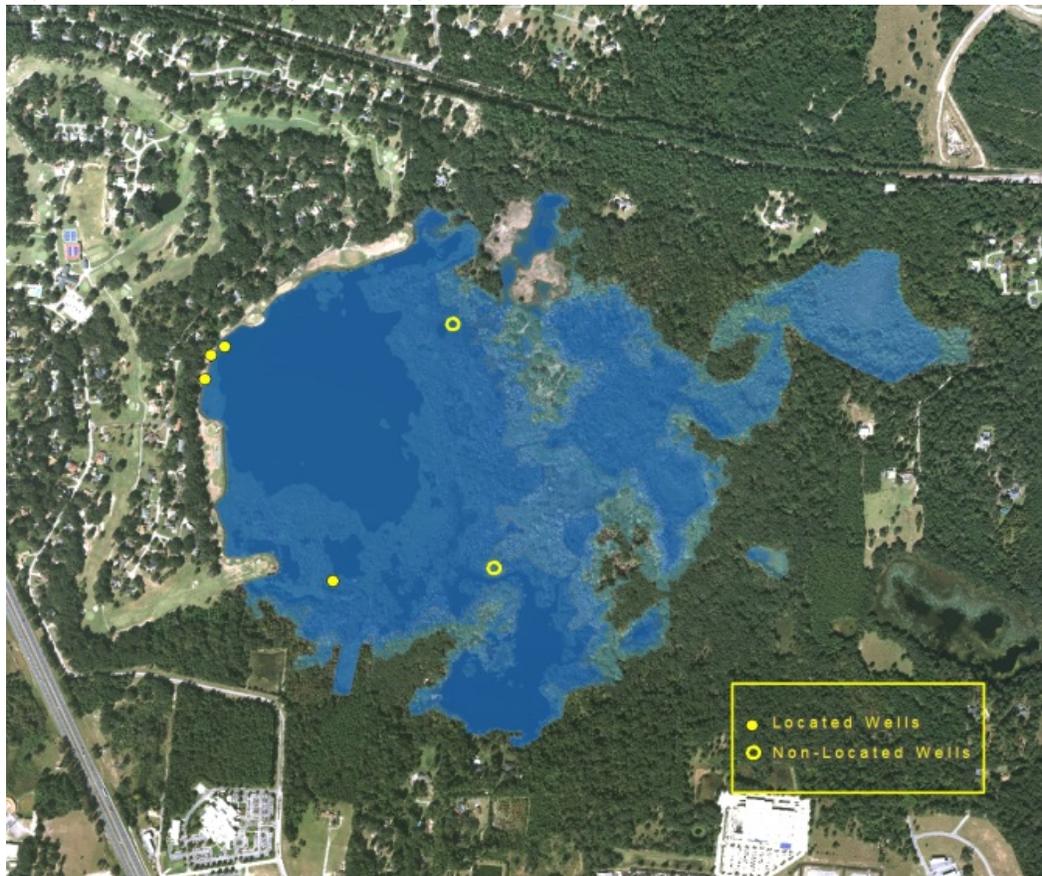


Figure 1. Lake Harris Location Map

permitting of underground injection control, six 8-inch diameter drainage wells were constructed around the lake to control flooding and the last known locations are shown in Figure 2. Over time these wells became non-functional due to deterioration of the steel casings and sediment infilling.

Figure 2. Locations of Original Drainage Wells



Severe flooding of homes along the lake in 2004 necessitated the replacement of the non-functional drainage wells. FDEP Emergency Order 04-1711 authorized the construction of a 16-inch diameter Class V drainage well on October 10, 2004, pursuant to Section 120.569(2)(n), Florida Statutes. The well was completed on December 15, 2005, with a casing depth of 336 feet and total depth of 500 feet (see Appendix A for well completion report). The drainage well casing depth exceeds the total depth of all wells on record at the District within a mile from Lake Harris by at least eleven feet. A sediment/ debris control intake structure was also constructed and a lake control elevation of 93.55 feet NAVD was established. Subsequently, four of the six existing drainage wells were properly abandoned by a licensed water well contractor. The remaining two existing drainage wells were unable to be located and are assumed to be fully plugged with sediment and debris. The completion reports for the four abandonments are provided in Appendix B.

More recent flooding following Tropical Storm Debby in June 2012 prompted the Suwannee River Water Management District to re-examine whether the original drainage volume was adequately matched by the 16-inch diameter well. Previous research by McBee, 1985, examined the maximum theoretical capacities of Upper Floridan aquifer (UFA) drainage wells in the Central Florida region. Applying McBee's methodology with an estimated aquifer transmissivity of 36,089 ft²/day for the Lake City region (Meyer, 1962 and Szell, 1993), six functional 8-inch diameter wells that fully penetrate the UFA should gravity drain a maximum of

5.22 cfs assuming optimal well and aquifer hydraulics. Utilizing the same methodology, the existing 16-inch diameter well would only replace 1.75 cfs of the original drainage, and an additional well with a diameter of approximately 32 inches would be required to replace the original drainage capacity. Although McBee demonstrated the futility of applying drainage well penetration depth theory to this calculation given the variability of UFA aquifer characteristics, local geophysical data (Davis, 2012) suggests, at least on a local level, that full penetration of the UFA requires well depths to approximately 600 feet and that application of well penetration factors may be appropriate. If aquifer penetration factors are considered, predicted drainage capacities of the previously functioning 8-inch diameter wells may have been less than 1/5 of their previously estimated capacity and the existing drainage well may be less than 2/5 of its previously estimated capacity, suggesting that the replacement drainage capacity could be less than half of the calculated amount.

RECOMMENDATION:

Given uncertainties in hydraulic properties and UFA penetration of the historically extant drainage wells, SRWMD recommends construction of at least one additional 16-inch diameter well with an identical casing depth and total depth between 500 to 600 feet to replace the remaining drainage capacity that existed with six functional 8-inch diameter wells. Construction of identical intake structure(s) at the current control elevation is also recommended since it appears to function as designed to minimize the entrance of sediment and debris into the existing drainage well. The proposed well location is approximately 3100 feet north-northeast of the existing drainage well (30°11'47"N/ 82°40'58"W) and is shown in Figure 3.

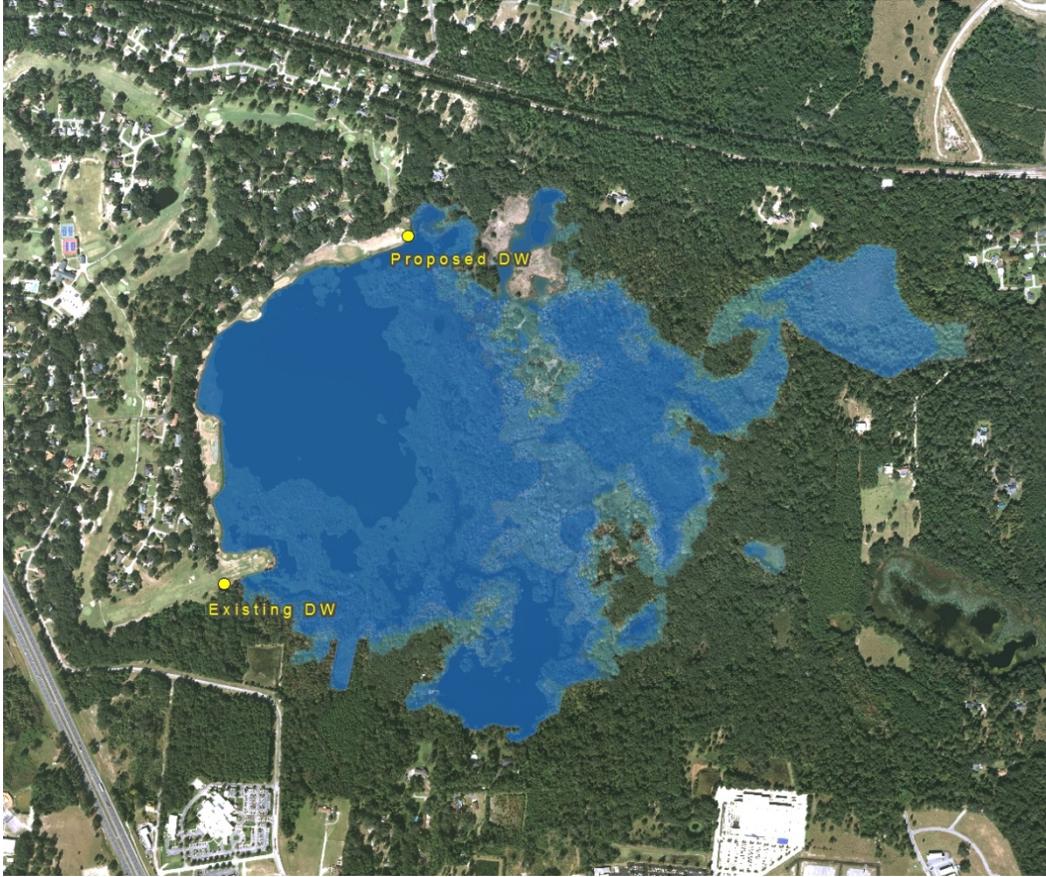


Figure 3. Existing and Proposed Drainage Well Locations

BIBLIOGRAPHY

Davis, J. B. Geophysical log for Well CO0132, St. Johns River Water Management District. August 21, 2012.

McBee, J. M. *The Quantity of Stormwater Entering the Drainage Wells of Orlando, Florida*, Univ. Central Fla. Thesis. Orlando, Fla., 1985.

Meyer, F.W. *Reconnaissance of the Geology and Ground-Water Resources of Columbia County, Florida*. Florida Geological Survey Report of Investigation No. 30. Tallahassee, Fla. 1962.

Szell, G. P. *Aquifer Characteristics in the St. Johns River Water Management District, Florida*. Tech. Pub. SJ93-1. St. Johns River Water Management District. Palatka, Fla., 1993.

APPENDIX A

Existing Drainage Well Completion Report

WELL COMPLETION REPORT (Please complete in black ink or type.)

PERMIT # 87328 CWP # _____ DID # _____

If permit is for multiple wells indicate the number of wells drilled _____
 Indicate remaining wells to be cancelled _____

WATER WELL CONTRACTOR'S
 SIGNATURE Donald W. Hall License # 1503
 I certify that the information provided in this report is accurate and true.

Grout	No. of Bags	From (Ft.)	To (Ft.)
Neat Cement:			
Bentonite:			

WELL LOCATION: County COLUMBIA
N/2 1/4 of NW 1/4 of Section 35 Twp. 35 Rge. 16E

Latitude _____ Longitude _____

DATE STAMP

2005

Official Use Only

CHEMICAL ANALYSIS WHEN REQUIRED

Iron: _____ ppm Sulfate: _____ ppm

Chloride: _____ ppm

Lab Test Field Test Kit

Pump Type

Centrifugal Jet Submersible Turbine

Horsepower _____ Capacity _____ G.P.M. _____

Pump Depth _____ Ft. Intake Depth _____ Ft.

Sketch of well location on property

Give distances from septic tank and house or other reference points

US 90

OWNER'S NAME COLUMBIA COUNTY BOARD
 COMPLETION DATE 12-15-05 Florida Unique I.D. _____
 WELL USE: DEP/Public _____ Irrigation _____ Domestic _____ Monitor _____
 HRS Limited _____ 62-524 _____ Other RECHARGE
 DRILL METHOD Rotary Cable Tool Combination
 Jet Auger Other _____

Measured Static Water Level <u>410'</u>		Measured Pumping Water Level _____	
After _____ Hours at _____ G.P.M. Measuring Pt. (Describe): _____			
Which is <u>6</u> Ft. <input checked="" type="checkbox"/> Above <input type="checkbox"/> Below Land Surface			
Casing: <input checked="" type="checkbox"/> Black Steel <input type="checkbox"/> Galv. <input type="checkbox"/> PVC Other _____			
Casing Diameter & Depth (Ft.)	Depth (Ft.)		DRILL CUTTINGS LOG Examine cuttings every 20 ft. or at formation changes. Note cavities, depth to producing zones. Color Grain Size Type of Material
	From	To	
Diameter <u>24"</u>	<u>0</u>	<u>42</u>	<u>SAND</u>
From <u>0</u>	<u>42</u>	<u>60</u>	<u>CLAY, GRAY</u>
To <u>42</u>	<u>60</u>	<u>336</u>	<u>ROCK VERY HARD</u>
			<u>WITH TWO OR THREE</u>
Diameter <u>20"</u>			<u>VOIDS AND SAND</u>
From <u>0</u>			<u>SOFT LIMESTONE</u>
To <u>127</u>			
	<u>300</u>	<u>336</u>	<u>VERY HARD</u>
Liner <input type="checkbox"/> or Casing <input type="checkbox"/>			<u>300-336</u>
Diameter <u>16"</u>	<u>336</u>	<u>500</u>	<u>WHITE LIMESTONE</u>
From <u>0</u>			<u>WITH SEVERAL</u>
To <u>336</u>			<u>VOIDS</u>

Driller's Name: Donald W. Hall
 (print or type)

APPENDIX B

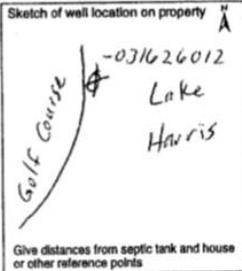
Drainage Well Abandonment Completion Reports

WELL COMPLETION REPORT (Please complete in black ink or type.)

PERMIT # 97444 CUP# DID #
 If permit is for multiple wells indicate the number of wells drilled .
 Indicate remaining wells to be cancelled 0 .
 WATER WELL CONTRACTOR'S SIGNATURE Caylon Warner License # 2674
 I certify that the information provided in this report is accurate and true.

Grout	No. of Bags	From (Ft.)	To (Ft.)
Neat Cement:	43	45	<input checked="" type="checkbox"/>
Bentonite:			

WELL LOCATION: County Columbia
 1/4 of 1/4 of Section 26 Twp: 03 S Rge: 16 E
 Latitude 30° 11' 39" Longitude 82° 41' 15"



CHEMICAL ANALYSIS WHEN REQUIRED
 Iron: ppm Sulfate: ppm
 Chloride: ppm
 Lab Test Field Test Kit
 Pump Type
 Centrifugal Jet Submersible Turbine
 Horsepower Capacity G.P.M.
 Pump Depth Ft. Intake Depth Ft.

Form 408-3-3 Rev. 12/95

OWNER'S NAME Southern Oaks Golf Club
 COMPLETION DATE 5/29/08 Florida Unique I.D.
 WELL USE: DEP/Public Irrigation Domestic Monitor
 HRS Limited 62-524 Other Drainage
 DRILL METHOD Rotary Cable Tool Combination
 Jet Auger Other Tremie Grout

Measured Static Water Level		Measured Pumping Water Level	
After <u> </u> Hours at <u> </u> G.P.M. Measuring Pt. (Describe): <u> </u>			
Which is <u> </u> Ft. <input type="checkbox"/> Above <input type="checkbox"/> Below Land Surface			
Casing: <input checked="" type="checkbox"/> Black Steel <input type="checkbox"/> Galv. <input type="checkbox"/> PVC Other <u> </u>			
Casing Diameter & Depth (Ft.)	Depth (Ft.)		DRILL CUTTINGS LOG Examine cuttings every 20 ft. or at formation changes. Note cavities, depth to producing zones. Color Grain Size Type of Material
	From	To	
Diameter <u>8"</u>	<u>0</u>	<u>45'</u>	<u>Neat cement grout</u>
From <u> </u>	<u>45</u>	<u>49</u>	<u>Bentonite hole plug</u>
To <u> </u>	<u>49</u>	<u>68'</u>	<u>Rock</u>
Diameter <u> </u>			
From <u> </u>			
To <u> </u>			
Liner <input type="checkbox"/> or Casing <input type="checkbox"/>			
Diameter <u> </u>			
From <u> </u>			
To <u> </u>			

Driller's Name: Caylon Warner
 (print or type)

WELL COMPLETION REPORT (Please complete in black ink or type.)

PERMIT # 97445 CUP# DID #
 If permit is for multiple wells indicate the number of wells drilled 1 .
 Indicate remaining wells to be cancelled 0 .
 WATER WELL CONTRACTOR'S SIGNATURE Caylon Warner License # 2674
 I certify that the information provided in this report is accurate and true.

Grout	No. of Bags	From (Ft.)	To (Ft.)
Neat Cement:	16	50	<input checked="" type="checkbox"/>
Bentonite:			

WELL LOCATION: County Columbia
 1/4 of 1/4 of Section 26 Twp: 03 S Rge: 16 E
 Latitude 30° 11' 39" Longitude 82° 41' 16"



CHEMICAL ANALYSIS WHEN REQUIRED
 Iron: ppm Sulfate: ppm
 Chloride: ppm
 Lab Test Field Test Kit
 Pump Type
 Centrifugal Jet Submersible Turbine
 Horsepower Capacity G.P.M.
 Pump Depth Ft. Intake Depth Ft.

Form 408-3-3 Rev. 12/95

OWNER'S NAME Southern Oaks G.C.
 COMPLETION DATE 5/22/08 Florida Unique I.D.
 WELL USE: DEP/Public Irrigation Domestic Monitor
 HRS Limited 62-524 Other Drainage
 DRILL METHOD Rotary Cable Tool Combination
 Jet Auger Other Tremie Grout

Measured Static Water Level		Measured Pumping Water Level	
After <u> </u> Hours at <u> </u> G.P.M. Measuring Pt. (Describe): <u> </u>			
Which is <u> </u> Ft. <input type="checkbox"/> Above <input type="checkbox"/> Below Land Surface			
Casing: <input checked="" type="checkbox"/> Black Steel <input type="checkbox"/> Galv. <input type="checkbox"/> PVC Other <u> </u>			
Casing Diameter & Depth (Ft.)	Depth (Ft.)		DRILL CUTTINGS LOG Examine cuttings every 20 ft. or at formation changes. Note cavities, depth to producing zones. Color Grain Size Type of Material
	From	To	
Diameter <u>8"</u>	<u>0</u>	<u>50</u>	<u>Neat cement grout</u>
From <u> </u>	<u>50</u>	<u>94'</u>	<u>Bentonite hole plug</u>
To <u> </u>			
Diameter <u> </u>			
From <u> </u>			
To <u> </u>			
Liner <input type="checkbox"/> or Casing <input type="checkbox"/>			
Diameter <u> </u>			
From <u> </u>			
To <u> </u>			

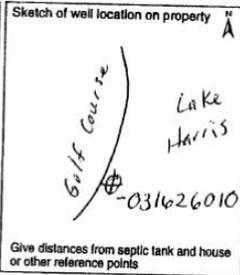
Driller's Name: Caylon Warner
 (print or type)

WELL COMPLETION REPORT (Please complete in black ink or type.)

PERMIT # 97446 CUP/WUP # _____ DID # _____
 If permit is for multiple wells indicate the number of wells drilled _____
 Indicate remaining wells to be cancelled _____
 WATER WELL CONTRACTOR'S
 SIGNATURE Caplan Warner License # 2874
Certify that the information provided in this report is accurate and true.

Grout	No. of Bags	From (Ft.)	To (Ft.)
Neat Cement:	16	50	0
Bentonite:			

WELL LOCATION: County Columbia
 1/4 of 1/4 of Section 26 Twp: 03S Rge: 16E
 Latitude 30° 11' 37" Longitude 82° 41' 17"



CHEMICAL ANALYSIS WHEN REQUIRED
 Iron: _____ ppm Sulfate: _____ ppm
 Chloride: _____ ppm
 Lab Test Field Test Kit
 Pump Type
 Centrifugal Jet Submersible Turbine
 Horsepower _____ Capacity _____ G.P.M. _____
 Pump Depth _____ Ft. Intake Depth _____ Ft.

Form 40B-3-3 Rev. 12/95

OWNER'S NAME Southern Oaks Golf Club
 COMPLETION DATE 5/22/08 Florida Unique I.D. _____
 WELL USE: DEP/Public _____ Irrigation _____ Domestic _____ Monitor _____
 HRS Limited _____ 62-524 _____ Other Drainage
 DRILL METHOD Rotary Cable Tool Combination
 Jet Auger Other Trémie Grout

Measured Static Water Level		Measured Pumping Water Level	
After _____ Hours at _____ G.P.M. Measuring Pt. (Describe): _____			
Which is _____ Ft. <input type="checkbox"/> Above <input type="checkbox"/> Below Land Surface			
Casing: <input checked="" type="checkbox"/> Black Steel <input type="checkbox"/> Galv. <input type="checkbox"/> PVC Other _____			
<input checked="" type="checkbox"/> Open Hole <input type="checkbox"/> Screen	Depth (Ft.)	DRILL CUTTINGS LOG Examine cuttings every 20 ft. or at formation changes. Note cavities, depth to producing zones. Color Grain Size Type of Material	
Casing Diameter & Depth (Ft.)	From To		
Diameter <u>8"</u>	From <u>0</u> To <u>50</u>	<u>Neat Cement Grout</u>	
	From <u>50</u> To <u>73</u>	<u>Bentonite hole plug</u>	
Diameter From To			
Liner <input type="checkbox"/> or Casing <input type="checkbox"/> Diameter From To			

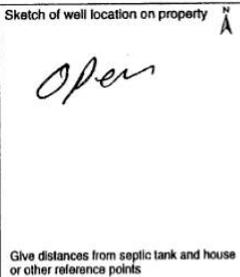
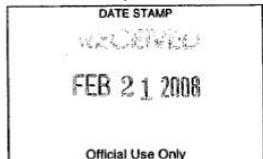
Driller's Name: Caplan Warner
 (print or type)

WELL COMPLETION REPORT (Please complete in black ink or type.)

PERMIT # 97447 CUP/WUP # _____ DID # _____
 If permit is for multiple wells indicate the number of wells drilled _____
 Indicate remaining wells to be cancelled _____
 WATER WELL CONTRACTOR'S
 SIGNATURE Caplan Warner License # 2824
I certify that the information provided in this report is accurate and true.

Grout	No. of Bags	From (Ft.)	To (Ft.)
Neat Cement:	32	50	0
Bentonite:	94	250	5

WELL LOCATION: County Columbia
 NW 1/4 of NE 1/4 of Section 35 Twp: 3S Rge: 16
 Latitude 30° 11' 21" Longitude 082° 41' 03"



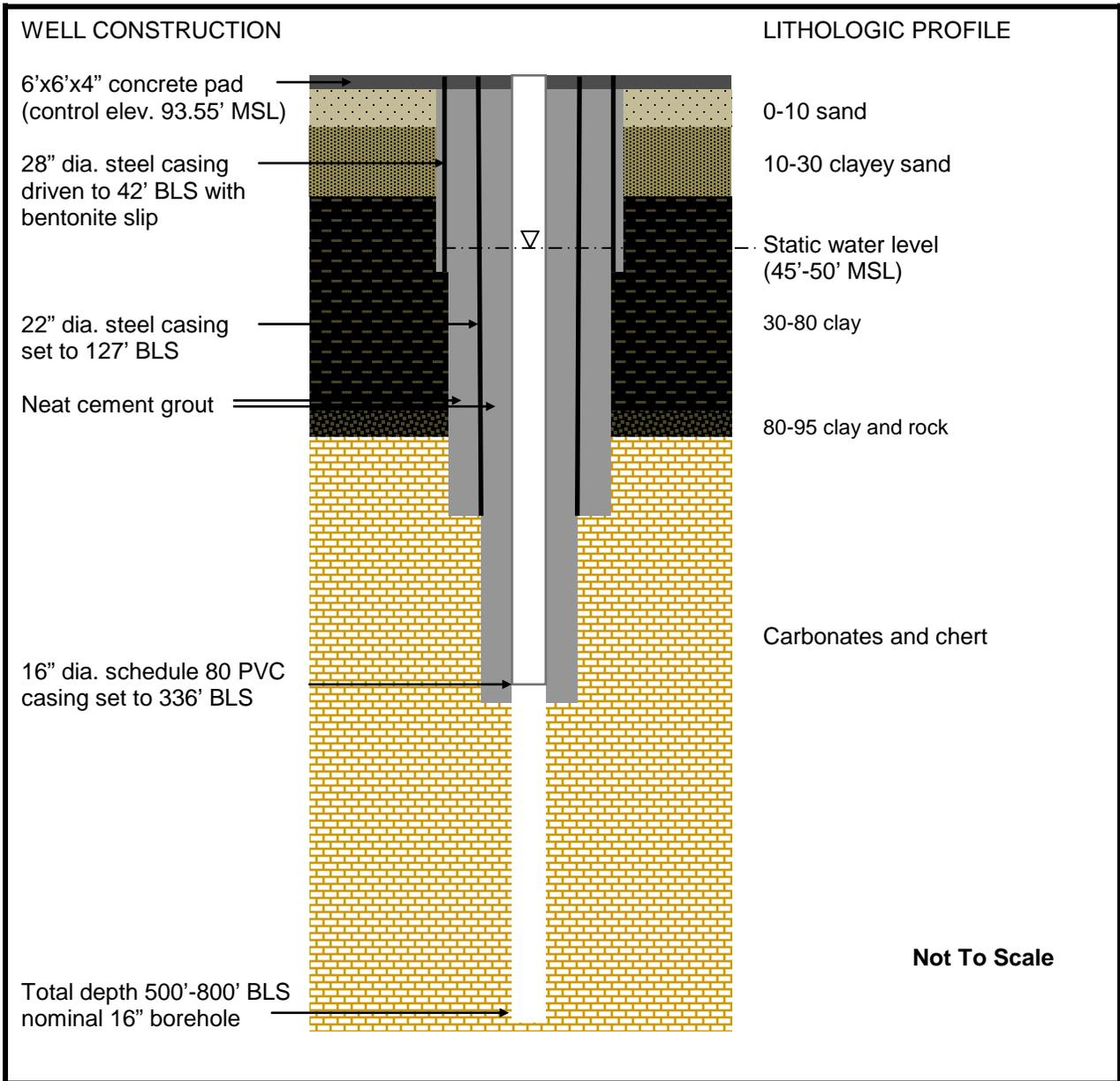
CHEMICAL ANALYSIS WHEN REQUIRED
 Iron: _____ ppm Sulfate: _____ ppm
 Chloride: _____ ppm
 Lab Test Field Test Kit
 Pump Type
 Centrifugal Jet Submersible Turbine
 Horsepower _____ Capacity _____ G.P.M. _____
 Pump Depth _____ Ft. Intake Depth _____ Ft.

Form 40B-3-3 Rev. 12/95

OWNER'S NAME William D. Giles III
 COMPLETION DATE 1-25-08 Florida Unique I.D. _____
 WELL USE: DEP/Public _____ Irrigation _____ Domestic _____ Monitor _____
 HRS Limited _____ 62-524 _____ Other Retenement
 DRILL METHOD Rotary Cable Tool Combination
 Jet Auger Other _____

Measured Static Water Level		Measured Pumping Water Level	
After _____ Hours at _____ G.P.M. Measuring Pt. (Describe): _____			
Which is _____ Ft. <input type="checkbox"/> Above <input type="checkbox"/> Below Land Surface			
Casing: <input type="checkbox"/> Black Steel <input type="checkbox"/> Galv. <input type="checkbox"/> PVC Other _____			
<input type="checkbox"/> Open Hole <input type="checkbox"/> Screen	Depth (Ft.)	DRILL CUTTINGS LOG Examine cuttings every 20 ft. or at formation changes. Note cavities, depth to producing zones. Color Grain Size Type of Material	
Casing Diameter & Depth (Ft.)	From To		
Diameter <u>8"</u>	From <u>0</u> To <u>50</u>	<u>Neat Cement</u>	
	From <u>50</u> To <u>250</u>	<u>Hole Plug</u>	
Diameter From To			
Liner <input type="checkbox"/> or Casing <input type="checkbox"/> Diameter From To			

Driller's Name: Caplan Warner
 (print or type)



Site: Lake Harris DW2	<h1>SRWMD</h1> Attachment B Lake Harris DW2 Schematic
Driller: TBD	
Well Completed:	