October 17, 2014

BOARD OF COUNTY COMMISSIONERS
ORANGE COUNTY, FLORIDA
ADDENDUM NO. 1 / IFB NO. Y15-713-PH
SOUTH SERVICE AREA\EAST SERVICE AREA WATER MAIN PROJECT
(MEADOW WOODS WSF ALONG RHODE ISLAND WOODS CIRCLE)

REVISED BID OPENING DATE: OCTOBER ~~21~~ 28, 2014

This addendum is hereby incorporated into the bid documents of the project referenced above. The following items are clarifications, corrections, additions, deletions and/or revisions to and shall take precedence over the original documents. Additions are indicated by **underlining**, deletions are indicated by ~~strikethrough~~.

The Bid Opening Date is changed to October 28, 2014 at 2:00 P.M.

Note: Failure to use the attached Revised Bid Schedule will result in your bid being found non-responsive and ineligible for further consideration.

A. BIDDERS QUESTIONS

Question 1a: I'd like to find out if the replacement force mains will follow the path of the existing pipes.

Response: *This project is for the upsizing of the existing 12-inch and 16-inch water mains along Meadow Woods Boulevard. This is being done as part of the County's improvements to their water transmission and distribution system. The path of the new larger diameter water main generally follows the same alignment but not in all locations.*

Question 1b: Would pipe bursting be an acceptable replacement method?

Response: *All bids shall be based upon the current method of construction as shown. Changes to the design will not be entertained during the bidding process. Should the selected contractor wish to present alternate methods of construction after they have been awarded the contract, they may do so. Once the contractor is selected, they may present those alternatives as a part of the shop drawing review process or as a separate request for information to the County for consideration.*

Question 1c: Looking at the diameters (24" and 42") I'm wondering if the design engineers and the city would accept Swagelining to rehab the steel and ductile iron.

Response: *The water mains being replaced are 12-inch and 16-inch water mains. They are being replaced with a 24-inch, main. The existing pipe diameters need to be increased and not just lined; therefore, swagelining is not an option for this project.*

Question 2: Is there a Geotechnical Report or Soil Borings available for the above referenced project?

Response: *A geotechnical report is available and is being included with this addendum. It shall be incorporated as* ***Appendix A*** *of the specifications.*

Question 3: Are the light poles owned by the utility company, or are they private? Will the utility company allow a private contractor to remove and replace?

Response: *The light poles are not private, they are owned by the power company, which is Orlando Utilities Corporation. The Contractor will need to coordinate with the power company to have them either removed and replaced or held during construction activities.*

Question 4: At the pre-bid meeting it was discussed there may be other work in the area (along the route) is there any additional work going on that we may need to be aware of?

Response: *There is not any work occurring at this time that would affect the construction activities of this project.*

Question 5: The notes on the bid schedule regarding the mobilization indicates the sum of items 6-30 should be less than 5% of the total those items. The bid schedule includes through item 43, shouldn't the mobilization be less than 5% of the total (i.e. items 6-43)?

Response: *The correct reference for determination of mobilization is for Bid items 6 – 41. On the bid schedule, in the footnote, the 30 is to be deleted and replaced with 41. Please see new bid schedule included with this addendum.*

Question 6: Driveways and sidewalk restoration quantities have been included in the bid schedule by the square yard. Please advise if this is the intent?

Response: *The quantities for removal and replacement of the driveways and sidewalks shall be in square yards. The quantities of these two pay items have been corrected to match this method of payment. Please refer to the revised bid schedule attached for the corrected items.*

Question 7: Item 16 of the bid schedule (removal of the existing water main) appears the existing main is being installed either directly above, and/or within the same trench of the proposed main (e.g. sta 5+50 -7+20 +/-; 10+50-13+00; 27+00-29+00; 35+00-36+20; 44+40-44+60; 46+50-49+00; 52+00-59+20; 64+00-66+20). Is the intent to remove the existing pipe within each labeled segment (A-L) prior to the installation of the proposed main in each segment?

Response: *Yes. The water main is to be replaced in segments as indicated on the drawings. Each segment will be isolated and the existing main removed and the new*

main is to be installed and cleared for service by FDEP prior to proceeding with the next segment.

Question 8: The plans have a lettering system (A-L). Is the intent to install the proposed main in segments, starting at A, then completing before moving to segment B, etc.?

Response: *Yes, this is correct.*

Question 9: If the project is to be completed in phased segments, will the FDEP expedite the approval process so as to allow continuation without undue delay?

Response: *We will be working with the County and FDEP to get the clearances issued as quickly as possible. This is addressed by note 63 on page 3 of the plans.*

Question 10: Is the intent to complete the restoration in its' entirety before being allowed to continue to the next segment?

Response: *Yes, most all restoration is required to be completed with each segment of work. Please also refer to Question 11*

Question 11: Can electrical, asphalt milling & resurfacing, striping and sodding be allowed to be restored at one time or must this be relegated to the same segmental construction?

Response: *All general restoration shall be completed with each phase of work. This includes backfill, compaction, sodding, sidewalks, suitable temporary driving surfaces, temporary striping and electrical/lighting. The milling and resurfacing and permanent striping can be done at one time following construction of the water main.*

Question 12: Are restricted days and/or hours of work to occur within a certain radius around the school?

Response: *Depending upon the time that the construction is occurring, the contractor will need to coordinate the construction activities so that they do not adversely impact school traffic, both vehicular and pedestrian. This is to be accomplished as a part of the MOT plan that is to be provided by the contractor. The coordination activities in the area of the school need to include coordination with the school principal.*

Question 13: Is there a manufacturer, style or type of Light Pole to be installed after removal of existing?

Response: *Contractor is responsible to coordinate with the power company to remove and reinstall the existing light poles.*

Question 14: Please refer to Sheet 7 note, "Contractor to coordinate removal/replacement of gate operated key pad". Is the contractor responsible for cost to

replace hardware and materials associated with replacement since note just says to "coordinate"?

Response: *The contractor is responsible for coordination and cost to temporarily remove and reinstall the key pad to allow for the water main construction. Please refer to pay item 9 that notes the key pad removal and replacement.*

Question 15: Will the county permit the contractor to grout fill existing water main from station 16+70 to 22+00 instead of removal due to the current location in which it lays?

Response: *For the purposes of the bid, this will remain as pipe to be removed. The bid schedule has a pay item for grout as well, and if it is determined during construction that it is better to be grouted, then the change will be made at that time.*

Question 16: Temporary 12" Line stop is drawn at station 32+15 but not called out, will one be required?

Response: *The line stop at this location will not be required.*

Question 17: No 12" Line stop bid item provided, 2 EA found.

Response: *The Bid Schedule and Quantity sheet has been revised to add this item.*

Question 18: Please clarify if "temporary line stops" are to be included with the pipe or the bid item for "line stop". If we are to price with bid item corresponding to size of line stop, please revise Bid Item #37 (16" Line Stop) a total of 8 are called out on plans.

Response: *The Bid Schedule and Quantity sheet has been revised to add the temporary line stops.*

B. PLANS

Delete Sheet 5 of the plans in its entirety and replace with the attached Sheet 5
On Sheet 8 of the plans, the callout for a 16-inch line stop at Station 9+56 (35' RT) has been replaced by a 12-inch line stop.
On sheet 12, the line stop shown at Station 32+15 was removed from the plans.

C. SPECIFICATIONS

Remove Specification Section 1025 in its entirety and replace with the attached Section 1025.

D. ATTACHMENTS:

1. **Revised Bid Schedule**
2. **Revised 01025 Measurement and Payment Section**
3. **Revised Plan Sheet 5**

E. ACKNOWLEDGEMENT OF ADDENDA

a. The Proposer shall acknowledge receipt of this addendum by completing the applicable section in the solicitation or by completion of the acknowledgement information on the addendum. Either form of acknowledgement must be completed and returned not later than the date and time for receipt of proposal. All other terms, conditions and specifications remain the same.

Receipt acknowledged by:

_____ _____ _____

Authorized Signature Date Signed

_____

Title

_____

Name of Firm

SCHEDULE OF BID PRICES
SSA-ESA WATER MAIN REPLACEMENT
(Meadow Woods WSF to Rhode Island Woods Circle)

ITEM NO.	DESCRIPTION	UNIT	EST QTY	UNIT COST	TOTAL COST
1	Mobilization, Demobilization & Bonds and Permits *	LS	1		
2	Pre-construction Audio-Video Documentation	LS	1		
3	Indemnification	LS	1	100.00	100.00
4	Project Record Documents**	LS	1		
5	Maintenance of Traffic	LS	1		
6	Unsuitable Materials	CY	20		
7	Milling and Resurfacing	SY	1020		
8	Road Crossing Pavement Restoration	SY	288		
9	Concrete Pavement Replacement (driveway)	SY	90		
10	Concrete Pavement Replacement (5-ft sidewalk)	SY	3351		
11	Storm Structure Top and Throat Reconstruction	EA	1		
12	Concrete Curb and/or Gutter Replacement	LF	375		
13	Concrete Handicap Replacement	EA	9		
14	Remove/Replacement of Existing Street Lighting	EA	29		
15	Abandon-in-Place Pipe	LF	1279		
16	Remove Existing Water Main	LF	5260		
17	Water Main Installation (6”)	LF	60		
18	Water Main Installation (8”)	LF	141		
19	Water Main Installation (12” DI)	LF	14		
20	Water Main Installation (16” DI)	LF	14		

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21	Water Main Installation (24” DI)	LF	6876		
22	Steel Casing Installation (42” Steel Pipe)	LF	136		
23	Gate Valve with Box (6” GV)	EA	1		
24	Gate Valve with Box (8” GV)	EA	8		
25	Gate Valve with Box (12” GV)	EA	1		
26	Gate Valve with Box (24” GV)	EA	15		
27	Air Release Valve Assembly	EA	2		
28	Tapping Sleeve and Valve Assembly (6” water line)	EA	2		
29	Tapping Sleeve and Valve Assembly (8” water line)	EA	8		
30	Tapping Sleeve and Valve Assembly (12” water line)	EA	1		
31	Tapping Sleeve and Valve Assembly (16” water line)	EA	1		
32	Connection to Existing Water Main (16”)	EA	1		
33	Connection to Existing Water Main (24”)	EA	1		
34	Connection to Existing Water Main (36”)	EA	1		
35	Line Stop Assembly (6”)	EA	2		
36	Line Stop Assembly (8”)	EA	2		
37	Line Stop Assembly (12”)	EA	3		
38	Line Stop Assembly (16”)	EA	7		
39	Line Stop Assembly (24”)	EA	1		
40	Furnish and Install Fire Hydrant Assembly	EA	6		
41	Remove Fire Hydrant Assembly	EA	6		
			ESTIMATED TOTAL BID AMOUNT		

* Mobilization shall not exceed 5% of pay items 6 through 41. ** Record drawings shall be a minimum of 1% of pay items 6 through 41

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SECTION 01025
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. This Section specifies administrative and procedural requirements to define pay items and determine payable amounts, and includes but is not limited to:
   1. General Provisions
   2. Cash Allowances
   3. Work Not Paid for Separately
   4. Measurement for Payment
   5. Partial Payment for Stored Materials and Equipment

1.02 GENERAL PROVISIONS

A. This specification includes standard descriptions for all bid items. This Contract's specific bid items are listed in the Bid Schedule.

B. The total Contract Amount shall cover the Work required by the Contract Documents. All costs in connection with the successful completion of the Work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction, equipment, and tools; and performing all necessary labor and supervision to fully complete the Work, shall be included in the unit and lump sum prices bid. All Work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices bid.

C. If used, all estimated quantities stipulated in the Bid Schedule or other Contract Documents are approximate and are to be used only (a) for the purpose of comparing the bids submitted for the Work, and (b) as a basis for determining an initial Contract Amount. The actual amounts of Work completed and materials furnished under unit price items may differ from the estimated quantities. The County does not expressly or by implication represent that the actual quantities involved will correspond exactly to the quantities stated in the Bid Schedule; nor shall the Contractor plead misunderstanding or deception because of such estimate or quantities or of the character, location or other conditions pertaining to the Work. Payment to the Contractor will be made only for the actual quantities of work performed or material furnished in accordance with the Drawings and other Contract Documents, and it is understood that the quantities may be increased or decreased as provided in the General Conditions.

D. If used, the unit prices listed in the Bid Schedule shall include all services, obligations, responsibilities, labor, materials, devices, equipment, royalties and license fees, supervision, temporary facilities, construction equipment, bonds, insurance, taxes, clean up, traffic control, control surveys, field offices, close out, overhead and profit and all connections, appurtenances and any other incidental items of any kind or nature, as are necessary to complete the Work in accordance with the Contract Documents.

E. Except for mobilization/demobilization and project record documents, payment for Work will be based on the percent of completed work of each item in the Schedule of Values, including stored materials, as determined by the County. Progress of work in each item of the Schedule of Values will be determined separately by the County. However, the County will issue a single payment certificate for progress on the Contract.

F. The Contractor agrees that it will make no claim for damages, anticipated profits, or otherwise because of any difference between the amounts of work actually performed and materials actually furnished and the estimated amounts therefore.

G. Where payment by scale weight is specified under certain items, the Contractor shall provide suitable weighing equipment which shall be kept in accurate adjustment at all times and certified. The weighing of all material shall be performed by the Contractor in the presence and under the supervision of the County.

H. All schedules included in the Contract Documents are given for convenience and are not guaranteed to be complete. The Contractor shall assume all responsibility for the making of estimates of the size, kind, and quantity of materials and equipment included in work to be done under this Contract.

I. Where pipe fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve the Contractor from laying and jointing different or additional items where required.

1.03 CASH ALLOWANCES

A. The Contractor shall include in the Total Bid Amount, all cash allowances stated in the Contract Documents. Items covered by these allowances shall be supplied for such amounts and by such persons as the County may direct.

B. The Contractor will obtain the County's written acceptance before providing equipment, materials or other Work under a cash allowance. Payments under a cash allowance will be made based on actual costs, excluding costs of general conditions, handling, unloading, storage, installation, testing, etc., which will be considered to be included within the Contract Price. Payments within the limits of any Allowance will exclude overhead and profit and bond and insurance premiums, since those costs will be considered to be included within the Contract Amount. The Contractor shall submit appropriate documentation to validate the actual cost of the item.

C. The amount of the allowance shall be adjusted accordingly by Change Order to recognize the allowable cost incurred by the Contractor.

1.04 WORK NOT PAID FOR SEPARATELY

A. Delivery: Payment for equipment delivery, storage or freight shall be included in the pay items including their installation and no other separate payment will be made therefore.

B. Bonds: Payment for bonds required by the Contract shall be included in the pay items for the Work covered by the required bonds and no separate payment will be made.

C. Preparation of Site: Payment for preparation of site shall be included in pay items proposed for the various items of Work and no separate payment will be made therefore. Preparation of site includes setting up construction plant, offices, shops, storage areas, sanitary and other facilities required by the specifications or state law or regulations; providing access to the site; obtaining necessary permits and licenses; payments of fees; general protection, temporary heat and utilities including electrical power; providing shop and working drawings, certificates and schedules; providing required insurance; cleaning up; and all other work regardless of its nature which may not be specifically referred to in a Bid Item but is necessary for the complete construction of the project set forth by the Contract.

D. Permitting & Permit Fees.

E. The County reserves the right to delete any item included in the Schedule of Values and decrease the Contract Price by the scheduled amount for the item deleted.

1.05 MEASUREMENT FOR PAYMENT

A. Methods of Measurement - Generally:
   1. Units of measurement shall be defined in general terms as follows:
      a. Linear Feet (LF)
      b. Square Feet (SF)
      c. Square Yards (SY)
      d. Cubic Yards (CY)
      e. Each (EA)
      f. Sacks (SK)
      g. Lump Sum (LS)
   2. Unit Price Contracts/Items:
      a. Linear Feet (LF) shall be measured along the horizontal length of the centerline of the installed material, unless otherwise specified. Pipe shall be measured along the length of the completed pipeline, regardless of the type of joint required, without deduction for the length of valves or fittings. Pipe included within the limits of lump sum items will not be measured.

b. Square Feet (SF), Square Yards (SY), Cubic Yards (CY), Each (EA) and Sacks (SK) shall be measured as the amount of the unit of measure installed and compacted within the limits specified and shown in the Specifications and Drawings. Slope angles and elevations shall be measured using land-surveying equipment. Contractor shall provide supporting documentation (i.e. drawings, delivery tickets, invoices, survey calculations, etc.) to verify actual installed quantities.

B. Lump Sum Contracts/Items - Generally:
1. Quantities provided in the Schedule of Values are for the purpose of estimating the completion status for progress payments. Payment will be made for each individual item on a percentage of completion basis as estimated by the Contractor and approved by the County.
2. Adjustments to costs provided in the accepted Schedule of Values may be made only by Change Order.
3. The County reserves the right to delete any item included in the Schedule of Values and decrease the Contract Price by the scheduled amount for the item deleted.

1.06 MEASUREMENT AND PAYMENT ITEMS

A. ***Only those bid items included in the Bid Schedule are applicable for this Contract.*** The County has standardized the measurement and payment items. Currently, there are approximately 100 measurement and payment items describing approximately 300 bid items. The bid item numbering system comprises five sections that are divided into 23 subsections. The sections and subsections are listed below.

10. General Requirements
    - 10.1 General
11. Site Work
    - 11.1 Miscellaneous
    - 11.2 Road Work
    - 11.3 Install/Replace Street Lighting
    - 11.4 Bypass Pumping
    - 11.5 Abandon or Remove Pipe/Structure
12. Pressure Pipes
    - 12.1 Pressure Pipe and Fittings and Restrained Joints
    - 12.2 Valves
    - 12.3 Tapping Sleeve and Valve Assembly
    - 12.4 Connections to Existing Water Main
    - 12.5 Piping Appurtenances
    - 12.6 Directional Drill
    - 12.7 Pipe Bursting

13. Wastewater Collection System (Not Used)
    - 13.1 Cleaning Sanitary Sewers
    - 13.2 CCTV Sanitary Sewers
    - 13.3 Install/Replace Sanitary Sewer
    - 13.4 Install/Replace Sanitary Manholes
    - 13.5 Sanitary Manhole Rehabilitation
    - 13.6 Sanitary Service Laterals and Cleanouts
    - 13.7 Cured-in-Place Pipe (CIPP) Liner
    - 13.8 Sanitary Sewer Pipe Bursting
14. Pump Stations (Not Used)
    - 14.1 Wastewater Duplex Pump Station
    - 14.2 Wastewater Triplex Pump Station

All of the subsections have bid item measurement and payment descriptions. Several bid items in the Project Bid Schedule may be described with the same bid item measurement and payment description in Table A, "Measurement and Payment Items". The bid items in the Project Bid Schedule are related to the Section 01025 Measurement and Payment items as follows:

1. All of the bid items in the Project Bid Schedule have 8 numerical digits.
2. Table A, "Measurement and Payment Items" for each of the bid items there are five numerical digits followed by ".xxx".
3. The first 5 numerical digits of the bid item in the Project Bid Schedule designate the measurement and payment item found in Table A, "Measurement and Payment Items."

Table A

BID ITEM	Orange County Utilities MEASUREMENT AND PAYMENT ITEMS Pg 1
	10 GENERAL REQUIREMENTS
	10.1 - General
1	**Reference ID 10.110.xxx Mobilization, Demobilization, Bonds, and Permits (not to exceed 5% of the total of all bid items except bid items under section 10.1 General)**
	a. Measurement: Measurement of various items for Mobilization and Demobilization shall not be made for payment and all items shall be included in the lump sum price. This lump sum price shall not exceed 5% of the total of all bid items except bid items under section 10.1 General. b. Payment: Payment of 75 percent of the applicable lump sum price for the item shall be full compensation for the Work consisting of the preparatory Work and operations in mobilizing for beginning Work on the Contract, including, but not limited to, movement of those personnel, equipment, supplies and incidentals to the project site, preparation of submittals, and for the establishment of temporary offices and buildings, safety equipment and first aid supplies, project signs, field surveys, sanitary and other facilities required by these specifications, and State and local laws and regulations. The costs of General Requirements (Section 01001), bonds, permits, and any required insurance, project signs, and any other preconstruction expense necessary for the start of the work, excluding the cost of construction materials, shall also be included. This Work also consist of the general project management of the Work including, but not limited to, field supervision and office management, as well as other incidental cost for management of the Work during the duration of the Contract. This Work also includes maintenance of the field offices for the duration of the Contract. Payment of the remaining 25 percent of the applicable lump sum price for this item also consists of demobilization or the operations normally involved in ending Work on the project including, but not limited to, termination and removal of temporary utility service and field offices; demolition and removal of temporary structures and facilities; restoration of Contractor storage areas; disposal of trash and rubbish, and any other post-construction work necessary for the proper conclusion of the Work.
2	**Reference ID 10.120.xxx Preconstruction Audio-Video Documentation**
	a. Measurement: Measurement shall be based on the satisfactory submittal of a comprehensive pre-construction video in accordance with the County requirements and specifications (Section 01101). b. Payment: Payment of the applicable Contract lump sum price as stated in the proposal will be full compensation for furnishing all labor, materials, and equipment necessary to create a comprehensive pre-construction video in

	accordance with the County requirements and specification.
3	**Reference ID 10.130.xxx Indemnification**
	a. Payment: In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, the County specifically agrees to give the Contractor a maximum of $100.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement. b. Payment: In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, the County specifically agrees to give the Contractor a maximum of $100.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement.
4	**Reference ID 10.140.xxx Project Record Documents (a minimum of 1% of the total of all bid items except bid items under section 10.1 General)**
	a. Measurement: Measurement for this item shall be based on satisfactory progress of the Contractor to provide Project Record Documents in accordance with the County requirements and specifications (Section 01720). Various items for Project Record Documents shall not be made for individual payment and all items shall be included in the lump sum price. <u>This lump sum price shall be a minimum of 1% of the total of all bid items except bid items under section 10.1 General).</u> b. Payment: Payment of the applicable Contract lump sum price as stated in the proposal will be full compensation for furnishing all labor, materials, and equipment necessary to create the Project Record Drawings, including the certified as-built survey, in accordance with the County requirements and specifications. Payment will be made at the lump sum price divided into equal monthly payments based on the Contract Time and acceptance by County of the progressive as-builts drawings and tables.
5	**Reference ID 10.150.xxx Maintenance of Traffic**
	a. Measurement: Measurement shall be based on satisfactory Maintenance of Traffic (MOT) in accordance with County requirements and Florida Department of Transportation (FDOT) standards. b. Payment: Payment of the applicable Contract lump sum price as stated in the proposal will be full compensation for furnishing all labor, materials, and equipment necessary to maintain public roadway and pedestrian traffic including flag men, uniformed police officers, barricades, warning lights/flashers, and safety ropes. Also included is furnishing, installing and maintaining a Traffic Control Plan, control and safety devices, control of dust, temporary crossing structures over trenches, any necessary detour facilities, and other special requirements for the safe and expeditious movements of traffic.

	11 SITE WORK
	11.1 – Miscellaneous
6	**Reference ID 11.120.xxx Unsuitable Materials**
	a. Measurement: Unsuitable Material shall be measured in actual cubic yards removed and disposed of in accordance with the County requirements and specifications. Extra volume beyond the limits of construction will not be measured for payment. The Contractor shall provide survey calculations to verify actual removed quantities. b. Payment: Payment will be made at the contract unit price bid per cubic yard as stated in the proposal and shall include all labor, materials and equipment to remove and dispose of unsuitable material including the removal of overburden.
	11.2 - Road Work
7	**Reference ID 11.230.xxx Milling and Resurfacing**
	a. Measurement: Milling and Resurfacing shall be measured in actual square yards over which the milling and subsequent resurfacing is completed and accepted at the thickness as indicated in the Drawings. b. Payment: Payment will be made at the contract unit price bid per square yard as stated in the proposal for Milling and Resurfacing and shall include all labor, materials, and equipment to mill surface; dispose of milled materials; ~~and~~ apply Type S-3 asphalt surface overlay; and striping and signage in accordance with County requirements and specifications. The unit price bid shall also include traffic signalization repair, and permanent striping and markings.
8	**Reference ID 11.240.xxx Road Crossing Pavement Restoration**
	a. Measurement: Road Crossing Pavement Restoration shall be measured in actual square yards of existing asphalt paving and subgrade removal and replacement, furnished and installed, in accordance with the County requirements and specifications. The width measured for payment of asphalt surface repair, as measured perpendicular to the centerline of the pipe, shall be limited to the width shown on the Drawings (maximum pay width of 10-feet). The length shall be as measured along the centerline of the pipe. b. Payment: Payment will be made at the contract unit price bid per square yard as stated in the proposal for Road Crossing Pavement Restoration and shall include all labor, materials, and equipment necessary to provide a safe, smooth driving surface. The Work shall include saw cutting, pavement removal and proper disposal of exiting pavement, installing high early concrete and asphalt surface into a properly prepared subgrade, traffic signalization repair, and temporary and permanent striping and markings in accordance with the County requirements and specifications.
9, 10	**Reference ID 11.250.xxx Concrete Pavement Replacement (various thickness)**

	a. Measurement: Concrete Pavement Replacement shall be measured in actual square yards of concrete removed and replaced. Width of replaced sidewalk shall match that of existing sidewalk. Replaced portions of driveways shall conform to the lines and grades of removed portions of driveways. Scheduled in this bid item is replacement of any devices/structures within and along the work area, including gates, key pads, fences, mailboxes and others. Thickness of pavement shall be as indicated in the plans and specifications. b. Payment: Payment will be made at the contract unit price bid per square yard as stated in the proposal for Concrete Pavement Replacement and shall include all labor, materials, and equipment for saw-cutting, removal and proper disposal of existing concrete, compaction, form work, concrete replacement, restoration, and clean-up for a complete installation.
11	**Reference ID 11.260.112 Storm Structure Top and Throat Reconstruction**
	a. Measurement: Measurement for Construct Storm Structure Top and Throat shall be made per actual number of storm structure altered / modified necessary for the installation of the new utility. **b. Payment: Payment for Storm Structure Top and Throat Reconstruction shall be made based on the authorized quantity at the unit price indicted in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials, and equipment necessary for reconstruction of the existing storm structure to current FDOT Design Standards. This includes partial demolition and removal, forming, concreting and grate and/or ring cover and replacement, finishing, restoration and clean up.**
12	**Reference ID 11.280.xxx Concrete Curb and/or Curb and Gutter Replacement**
	a. Measurement: Concrete Curb and/or Curb and Gutter Replacement shall be measured in actual linear feet removed and replaced measured along the centerline of the curb within the excavation of the trench to a maximum width equal to the width of asphalt pavement cut. All additional curb and gutter damaged shall be replaced by the Contractor at his own expense. b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for Concrete Curb and Gutter Replacement and shall include all labor, materials, and equipment for saw-cutting, removal and proper disposal of existing concrete curb and gutter, compaction, form work, and concrete curb and gutter replacement for a complete installation.
13	**Reference ID 11.285.xxx Concrete Handicap Ramp**

	Replacement
	a. Measurement: Concrete Handicap Ramp Replacement shall be measured per actual number of handicap ramps constructed, meeting County and ADA requirements. b. Payment: Payment will be made at the contract unit price bid per each handicap ramp constructed as stated in the proposal for Handicap Ramp Replacement and shall include all labor, materials, and equipment for saw-cutting, removal and proper disposal of existing concrete sidewalk and compaction, form work, and concrete handicap ramp replacement for a complete installation.
	11.3 - Remove/Replace Street Lighting
14	**Reference ID 11.350.xxx Remove/Replacement of Existing Street Lighting**
	a. Measurement: Street Lighting Replacement shall be measured by the number of street light posts removed and replaced as part of the work. All additional piping, existing curbing or pavement damaged shall be replaced by the Contractor at his own expense. b. Payment: Payment will be made at the contract unit price bid per each light post removed and new post installed as stated in the proposal for Street Lighting Replacement and shall include all labor, materials, and equipment to sheet, shore, and brace; dewater; groundwater treatment and disposal; excavate; remove and properly dispose of existing light post and concrete base and proper installation of a new concrete light post and concrete base in the same location and height as the light post removed. Work includes disconnecting the existing electrical wiring from the existing light post, remove the existing light fixture, disposing of the old light post, purchase and installation of the new light post, reconnect wiring as required per electrical code, reuse of the existing light fixture for a complete installation.
	11.5 – Abandon or Remove Pipe/Structure
15	**Reference ID 11.510.xxx Abandon-in-Place Pipe**
	___a. Measurement: Abandon-in-Place Pipe, regardless of size and material, shall be measured in actual linear feet satisfactorily abandoned-in—place in accordance with the County requirements and specifications (Section 02080). Pipe abandonment shall be measured along the centerline without deduction for valves and fittings. **b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for Abandon-in-Place Pipe and shall include all**

	labor, materials, and equipment to excavate, backfill and compact; sheet, shore, and brace; dewter; completely drain and properly dispose of pipe contents; grout fill, and plug or cap existing pipes of all services and sizes designated "to be abandoned" on the Drawings. Also included in this item is the removal of existing valve boxes located on valves connected to piping designated to be retired. Valve boxes shall be removed, backfilled and compacted with suitable material.
16	**Reference ID 11.530.xxx Remove Existing Water Main**
	a. Measurement: Remove Existing Pipe, regardless of size and material, shall be measured in actual linear feet satisfactorily excavated, removed, and salvaged in accordance with the County requirements and specifications (Section 02080). Pipe removal shall be measured along the centerline without deduction for valves and fittings. Also included in this item is the removal and salvage of items including air release valves and vaults, and fire hydrant assemblies. b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for Remove Existing Pipe and shall include all labor, materials, and equipment to sheet, shore, and brace; dewater; groundwater treatment and disposal; excavate; completely drain and properly dispose of pipe contents; plug or cap; restoration, sod, clean-up; remove and salvage pipe of all services and sizes designated "to be removed" on the Drawings, backfill and compact. Also included in this item is the removal and salvage of items (as listed in Specification Section 02080) attached to the piping to be removed.

	12 PRESSURE PIPES
	12.1 - Pressure Pipes with Fittings and Restrained Joints
17, 18, 19, 20, 21	**Reference ID 12.110 Water Main Installation (various sizes)**
	a. Measurement: Water Main installation regardless of type and size shall be measured in actual linear feet satisfactorily furnished and laid, as measured along the length of the centerline of the completed pipeline, regardless of the type of joint required, without deduction for the length of valves and fittings. Pipe included within the limits of lump sum pay items will not be measured for payment under this item. b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for Water Main w/Fittings and restrained joints and shall include all labor, materials, and equipment to construct the respective pipeline including coordination with existing utilities, protection of existing utilities

	including service connections, tree protection, excavation, sheeting, shoring and bracing, dewatering, groundwater treatment and disposal, backfill, compaction, and grading, concrete cap, all testing, potable water system protection, disinfection, restoration, sod and clean-up. This item also includes all necessary fittings, reducers, bends, tees, wyes, plugs, restraining devices, polyethylene encasement where required, metallic tracer wire, line locator, identification markers, and removal and replacement of fences and gates, mailboxes, trees, shrubs, irrigation sprinklers and other obstructions.
22	**Reference ID 12.120 Steel Casing Installation (various sizes)**
	a. Measurement: Steel Casing installation shall be measured in actual linear feet satisfactorily furnished and laid, as measured along the length of the centerline of the completed pipeline, regardless of the type of joint required. Casing included within the limits of lump sum pay items will not be measured for payment under this item. b. Payment: Payment will be made at the contract unit price bid per linear feet as stated in the proposal for Steel Casing and shall include all labor, materials, and equipment to construct the respective work including coordination with existing utilities, protection of existing utilities including service connections, tree protection, excavation, sheeting, shoring and bracing, dewatering, groundwater treatment and disposal, backfill, compaction, and grading, all testing, potable water system protection. Restoration, sod and clean-up shall be included in the cost for Water Main installation. This item also includes all necessary fittings, restraining devices, polyethylene encasement where required, line locator, identification markers, and removal and replacement of fences and gates, mailboxes, trees, shrubs, irrigation sprinklers and other obstructions.
	12.2 – Valves
23, 24, 25, 26, 26, ~~27~~	**Reference ID 12.210.xxx Gate Valve with Box (various sizes)**
	a. Measurement: Measurement for Gate Valve with Box shall be made per actual number of gate valves with valve boxes satisfactorily furnished and installed complete with covers and concrete collars. Gate valves included within tapping sleeve and valve, air release valve assembly, and fire hydrant pay items will not be measured for payment under this item. b. Payment: Payment for the Gate Valve with Box shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment to install the valve, valve box, valve box extensions, operating nut extensions, test station box and cap, valve wrenches, restraining devices, covers, concrete collars, excavation, sheeting, shoring, bracing, dewatering, groundwater treatment and disposal, backfill,

	compaction, restoration, and all other items required for a complete, acceptable and operable installation.
	12.3 – Air Release Valve Assembly
27	**Reference ID 12.520.xxx Air Release Valve Assembly**
	a. Measurement: Measurement for Air Release Valve Assembly shall be made per actual number of air release valves with enclosures satisfactorily furnished and installed to provide a complete and functional unit. b. Payment: Payment for the Air Release Valve Assembly shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the valve including saddle, fittings, pipe, concrete pad, pre-cast vault or enclosure, excavation, sheeting, shoring, bracing, dewatering, backfill, compaction, grading, restoration and all other items required for a complete, acceptable and operable installation.
	12.4 - Tapping Sleeve and Valve Assembly
28, 29, 30, 31	**Reference ID 12.310.xxx Tapping Sleeve and Valve Assembly (various sizes)**
	a. Measurement: Measurement for Tapping Sleeve and Valve Assembly shall be made per actual number of tapping sleeves and valves satisfactorily furnished and installed to provide a complete and functional unit. b. Payment: Payment for the Tapping Sleeve and Valve Assembly shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to perform a wet tap to an existing main including excavation, sheeting, shoring, bracing, dewatering, groundwater treatment and disposal, backfill, compaction, grading, tapping sleeve, tapping valve, valve box extensions, operating nut extensions, valve wrenches, restraining devices, protection of potable water system, disinfection, restoration and all other items required for a complete, acceptable and operable installation.
	12.5 – Connections to Existing Mains
32, 33, 34	**Reference ID 12.410.xxx Connection to Existing Water Main (various sizes)**
	a. Measurement: Measurement for cut-in connections or connection to existing stubs to the existing water main shall be made per number of cut-in connections or connections to existing stubs made complete and in place

	regardless of the size and type from the constructed water main to the existing water main as authorized in the Contract Documents regardless of the depth of the connection. b. Payment: Payment for the Cut-in Connection to the Existing Water Main or Connection to Existing Stub shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials, and equipment to make a connection from the constructed water main to the existing water main including coordination with existing utilities, protection of existing utilities and service connections, excavation, sheeting, shoring and bracing, dewatering, groundwater treatment and disposal, cutting pipe, removing existing cap and plug, completely drain and properly dispose of existing pipe contents, connection to existing main, restraint of existing main in accordance with the County requirements, backfill, compaction, grading, swabbing and disinfection, potable water protection, restoration and clean-up. This item also includes all necessary fittings, reducers, bends, tees, and wyes.
	12.6 - Piping Appurtenances
35, 36, 37, 38, 39	**Reference ID 12.510.xxx Line Stop Assembly (various sizes)**
	a. Measurement: Measurement for Line Stopping Assembly shall be made per actual number of line stops satisfactorily furnished and installed to permanently or temporarily stop the flow within the indicated main at the locations shown on the Drawings. b. Payment: Payment for the Line Stopping Assembly shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to perform a permanent or temporary line stop on an existing main including excavation, sheeting, shoring, bracing, dewatering, groundwater treatment and disposal, backfill, compaction, grading, tapping sleeve, plug, retraining devices, restraint of existing piping in accordance with the County requirements, swabbing, restoration and clean-up and all other items required for a complete, acceptable and operable installation.
40	**Reference ID 12.540.xxx Fire Hydrant Assembly**
	a. Measurement: Measurement for Fire Hydrant Assemblies shall be made per actual number of fire hydrant assemblies satisfactorily furnished and installed to provide a complete and functional unit. The pipe and necessary restraint system connecting the fire hydrant assembly to the water main shall be included in the unit price, regardless of the length necessary to locate the hydrant at the direction of the County

	b. Payment: Payment for the Fire Hydrant Assembly shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the fire hydrant complete with hydrant tee, hydrant extension, pipe, fittings, isolation valve and box, thrust anchorage, and shear pad. Also included is excavation, sheeting, shoring and bracing, dewatering, groundwater treatment and disposal, backfill, compaction, grading, connection to pipes, restoration, and all other items required for a complete, acceptable and operable installation.
41	**Reference ID 12.550.xxx Remove Fire Hydrant Assembly**
	a. Measurement: Measurement for removal of existing Fire Hydrant Assemblies shall be made per actual number of fire hydrant assemblies removed. The pipe and necessary restraint system connecting the existing fire hydrant assembly to the water main shall be included in the unit price. b. Payment: Payment for each existing Fire Hydrant Assembly removed shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to remove the fire hydrant assembly, including the hydrant tee, hydrant extension, pipe, fittings, isolation valve and box, thrust anchorage, and shear pad. Also included are excavation, sheeting, shoring and bracing, dewatering, groundwater treatment and disposal, backfill, compaction, grading, restoration, and all other items required for a complete removal of the existing hydrant assembly.
~~42, 43,~~ 44	~~**Reference ID 12.560.xxx Water Service Connection (short and long)**~~
	~~a. Measurement: Measurement for Water Service Connection shall be made per actual number of service connections satisfactorily furnished and installed to provide a complete and functional unit.~~ ~~b. Payment: Payment for the Water Service Connection shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the water service connection including service saddle, corporation stop, water service piping, curb stops, and installing meter boxes. Payment also includes excavation sheeting, shoring and bracing, dewatering, groundwater treatment and disposal, backfill, compaction, grading, pressure testing, restoration, sod and all other items required for a complete, acceptable and operable installation.~~

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION.

ITEM No	DESCRIPTION	UNITS	QTY.	Sheet 6	Sheet 7	Sheet 8	Sheet 9	Sheet 10	Sheet 11	Sheet 12	Sheet 13	Sheet 14	Sheet 15	Sheet 16	Sheet 17	Sheet 18	Sheet 19
1	Mobilization, Demobilization & Bonds	LS	1														
2	Preconstruction Video	LS	1														
3	Indemnification	LS	1														
4	Record Drawings	LS	1														
5	Maintenance of Traffic	LS	1														
6	Remove and Replace Unsuitable Materials	CY	20														
7	Mill and Resurface Roadway	SY	1020			213	147		172				173	315			
8	Open Cut and Replace Roadway	SY	288			77	55		35				16	105			
9	Concrete Pavement Replacement (Driveway)	SY	90		38		34			18							
10	Concrete Pavement Replacement (Sidewalk)	SY	3351		128	250	245	310	300	312	315	310	285	281	295	215	105
11	Inlet Top and Throat Reconstruction	EA	1										1				
12	Remove and Replace Curb and Gutter	LF	375			32	100		45				18	180			
13	Reconstruct Handicap Ramp	EA	9			2	3		2					2			
14	Remove and Replace Existing Street Lamp	EA	29		1	2	2	3	2	3	3	2	2	3	3	2	1
15	Abandon Existing Water Main	LF	1279				159	555	520								45
16	Remove Existing Water Main	LF	5260		400	575	420		36	560	565	550	515	580	560	379	120
17	Furnish and Install Water Main (6")	LF	60				13										47
18	Furnish and Install Water Main (8")	LF	141		14	40			30	11			33		13		
19	Furnish and Install Water Main (12")	LF	14													14	
20	Furnish and Install Water Main (16")	LF	14		14												
21	Furnish and Install Water Main (24")	LF	6876	350	400	564	590	553	559	565	571	551	518	584	563	379	129
22	Furnish and Install 42" Steel Casing	LF	136													136	
23	Furnish and Install Gate Valve (6")	EA	1				1										
24	Furnish and Install Gate Valve (8")	EA	8		1	2			1	1			2		1		
25	Furnish and Install Gate Valve (12")	EA	1													1	
26	Furnish and Install Gate Valve (24")	EA	15		2	2	1		1	2		1	2		1	1	2
27	Furnish and Install Air Release Valve Assembly	EA	2			1							1				
28	Furnish and Install Tapping Sleeve and Valve (6")	EA	2				1										1
29	Furnish and Install Tapping Sleeve and Valve (8")	EA	8		1	2			1	1			2		1		
30	Furnish and Install Tapping Sleeve and Valve (12")	EA	1													1	
31	Furnish and Install Tapping Sleeve and Valve (16")	EA	1		1												
32	Connect to Existing 16" WM	EA	1														1
33	Connect to Existing 24" WM	EA	1														1
34	Connect to Existing 36" WM	EA	1	1													
35	Furnish and Install Line Stop (6")	EA	2				1										1
36	Furnish and Install Line Stop (8")	EA	2			1							1				
37	Furnish and Install Line Stop (12")	EA	3			2	1										
38	Furnish and Install Line Stop (16")	EA	7		1								2	1	1	1	1
39	Furnish and Install Line Stop (24")	EA	1														1
40	Furnish and Install Fire Hydrant Assembly	EA	6		1		1		1	1		1				1	
41	Remove Fire Hydrant Assembly	EA	6		1		1		1	1		1				1	

No.	Date	Revision	By
1	10/15/14	Revisions Per Addendum #1	DEM

No.	Date	Revision	By

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Designed by:	BCB	Date:	10/15/2014
Drawn by:	GNP	Scale:	1"=20' H. 1"=2' V.
Checked by:	WWW		
Approved by:	DEM		
Job No.	O28416		©2014

SSA-ESA WATER MAIN
(MEADOW WOODS WSF TO RHODE ISLAND WOODS CIRCLE)
Orange County, Florida

Plans Prepared By:
CPH, Inc.
1117 E. Robinson St. Orlando, FL 32801
Ph: 407.425.0452
Licenses:
Eng. C.O.A. No. 3215 Arch. Llc. No. AA2600926
Survey L.B. No. 7143 Landscp. Llc. No. LC0000298

DAVID E. MAHLER, P.E.
REG.# 50041

SUMMARY OF PAY ITEMS

Sheet No. 5

BID SET

Drawing name: J:\O28416\CIVIL\EDW\GBid Set\O28416 Cover - notes - const details Bid Set.dwg Oct 15, 2014 - 3:44pm pdaz

Groundwater Sampling / Testing

Rhode Island Woods Circle
Proposed 30-Inch Water Main
Orange County, Florida

June 20, 2013
Project No. H1127404

Prepared for:
CPH Engineers, Inc.
Orlando, Florida

Prepared by:
Terracon Consultants, Inc.
Winter Park, Florida

Offices Nationwide
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Terracon
Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

June 20, 2013

CPH Engineers, Inc.
1117 E. Robinson Street
Orlando, Florida 32801

Attn: Mr. Ben Buencamino, P.E.
P: [407] 425-0452
Email: bbuencamino@cphcorp.com

Re: Groundwater Sampling/Testing
Rhode Island Woods Circle
Proposed 30-Inch Water Main
Orange County, Florida
Terracon Project No. H1127404

Dear Mr. Buencamino:

Terracon Consultants, Inc. (Terracon) is providing this letter report to CPH Engineers, Inc. (client) documenting groundwater testing results at the above-referenced water main installation project site. The work was conducted in general accordance with our proposal PH1120786 dated September 24, 2012, incorporated into the Subconsultant Agreement dated December 26, 2012, authorized by CPH Engineers, Inc.

PROJECT INFORMATION

This project consists of the installation of a 30-inch ductile iron pipe water main along/near Rhode Island Woods Circle in Orange County, Florida. It is our understanding that the proposed water main alignment is approximately 6,600 lineal feet in length. Dewatering may be conducted to install the water main. A Topographic Vicinity Map showing the general location of the proposed water main is provided as Exhibit A-1 in Appendix A.

Terracon understands that dewatering is proposed that would require a NPDES Permit for off-site discharge. The intent of this groundwater sampling event was to test groundwater for parameters listed in the NPDES Generic Permit for Discharge of Produced Groundwater from Any Non-contaminated Site Activity [62-621.300(2)].

REGULATORY DATABASE SEARCH

A review of the Florida Department of Environmental Protection's (FDEP's) Map Direct website was conducted to identify regulated facilities and contaminated properties in proximity of the

proposed water main to help determine if groundwater contaminant plumes could be mobilized by proposed dewatering activities. Contaminated properties were not identified on the Map Direct website in proximity of the proposed sewer main improvements. Locations of regulated facilities on the FDEP's databases of solid waste facilities (SWF), Resource Conservation and Recovery Act - Small Quantity Generators (RCRA-SQG) and petroleum storage tanks are identified on a map obtained from the Map Direct website provided in Appendix B.

TEMPORARY MONITORING WELL INSTALLATION AND SAMPLING

Terracon installed seven 1-inch diameter shallow temporary monitoring wells (TMW-1 through TMW-7) on May 21, 2013, in the area of the proposed water main improvements along Rhode Island Woods Circle. Temporary monitoring well locations are indicated on Exhibit A-2 in Appendix A. The temporary monitor wells were installed using hollow-stem augers. Groundwater was encountered approximately 2 to 6 feet below ground surface (bgs). Sandy soils were observed at the borings. Well construction logs are included in Appendix C. The temporary monitoring wells were constructed as follows:

- Installation of 10 feet of 1-inch diameter, 0.006-inch machine slotted polyvinyl chloride (PVC) well screen with a threaded bottom cap. The screen was set to bracket the groundwater table.
- Installation of 1-inch diameter, threaded, flush-joint PVC riser pipe to stickup above the surface.
- Addition of pre-sieved 30/65 graded silica sand for annular sand pack around the well screen.
- The monitoring wells were developed by swabbing and over-pumping. Development and sampling purge water was spread on the surface adjacent to the well to evaporate or infiltrate.
- The monitoring wells were removed after sampling and the boreholes backfilled with native soils to surface.

Groundwater samples were collected from temporary monitor wells TMW-1 through TMW-7 on May 29 and 30, 2013. Sampling procedures were conducted in accordance with the Florida Department of Environmental Protection (FDEP) standard operating procedures DEP-SOP-001/01, FS2200. Physical parameters including temperature, pH, conductivity, dissolved oxygen, and turbidity were monitored while purging during groundwater sampling efforts. Turbidity above 20 nephelometric turbidity units persisted at temporary monitoring wells TMW-1, TMW-2 and TMW-3. Groundwater pH measurements at all seven monitoring wells were below the allowable 6.0 to 8.5 standard units referenced in the permit conditions. Groundwater samples were collected upon equilibration of field parameter measurements. Groundwater field equipment calibration logs and field sampling logs are included in Appendix D.

The groundwater samples were placed in laboratory prepared glassware and stored on ice in a cooler. The sample cooler and completed chain-of-custody record were delivered to Accutest Laboratories for analysis of parameters listed in the NPDES Generic Permit for the Discharge of Produced Ground Water from any Non-Contaminated Site Activity. Groundwater analysis included EPA Methods 8260 (benzene and naphthalene), 6010 (cadmium, cooper, lead, zinc), 1631E (low level mercury), 7196A (hexavalent chromium), SM5310B total organic carbon (TOC) and SM4500H (pH). Additionally, analysis of total recoverable petroleum hydrocarbons (TRPH) by the FL-PRO method was performed for samples with TOC concentrations exceeding the NPDES screening value for fresh water. The laboratory reports and chain-of-custody records are included in Appendix E.

GROUNDWATER ANALYTICAL RESULTS

The groundwater analytical results were compared to threshold screening concentrations listed in the NPDES Generic Permit for Discharge of Produced Groundwater from Any Non-contaminated Site Activity [Table 1, 62-621.300(2)]. A summary of the laboratory results is provided on the following table.

Laboratory Analytical Results Summary - March 27 & 29, 2013

Parameter	TMW-1	TMW-2	TMW-3	TMW-4	TMW-5	TMW-6	TMW-7	NPDES Screening Values for Fresh Water	GCTLs
Total Organic Carbon [TOC (mg/L)]	**48.5**	**25.6**	**25.9**	9.5	**16.9**	**14.0**	**10.4**	10	None
TRPH (mg/L)	0.170 I	0.15 U	0.200 I	NT	0.331	0.14 U	0.157 I	Compared to TOC values	5.0
pH, (standard units) Field/Laboratory levels	**4.14/5.19**	**5.75/5.56**	**4.99/5.49**	**4.87/5.51**	**4.74/5.32**	**4.70/5.42**	**4.69/5.42**	6.0-8.5	None
Total Recoverable Mercury (ug/L)	**0.149**	**0.167**	**0.368**	0.0061	0.0041	**0.0276**	**0.0205**	0.012	2
Total Recoverable Cadmium (ug/L)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	9.3	5
Total Recoverable Copper (ug/L)	**4.6 I**	2.4 I	**4.2 I**	1.0 U	1.0 U	1.0 U	1.0 U	2.9	1000
Total Recoverable Lead (mg/L)	0.0040 I	0.0026 I	0.0073	0.0011U	0.0011U	1.1U	0.0011U	0.03	0.015
Total Recoverable Zinc (ug/L)	20.3	8.2 I	14.9 I	15.0 I	21.8	8.2 I	7.01	86	5000
Total Recoverable Chromium (Hex.) (ug/L)	**80 U**	**16 U**	**40 U**	8.0 I	9.0 I	8.0 U	**16**	11.1	100
Benzene (ug/L)	0.21U	0.21U	0.21U	0.21U	0.21U	0.21U	0.21U	1	1
Naphthalene (ug/L)	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	100	14

Bold numbers exceed NPDES Generic Permit Discharge Criteria
U - Indicates the compound was analyzed for, but not detected at reported concentration.
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
GCTLs-Groundwater Cleanup Target Levels
NT – Not Tested

As indicated on the table, reported concentrations exceeded the NPDES Generic Permit screening values for discharges as follows:

- Reported TOC concentrations for temporary monitoring wells TMW-1, TMW-2, TMW-3, TMW-5, TMW-6 and TMW-7. Compared to TRPH results for the same wells, the TOC concentrations appear to be naturally occurring.
- The pH levels measured in the field while purging all seven of the monitoring wells and pH reported by the laboratory in all seven monitoring wells was below the NPDES screening value range for fresh water.
- Total mercury concentration reported for temporary monitoring wells TMW-1, TMW-2, TMW-3, TMW-6 and TMW-7.
- Total copper concentration reported for temporary monitoring wells TMW-1 and TMW-3.
- Hexavalent chromium concentration reported in temporary monitoring well TMW-7. Dilution was required due to color of the samples collected from temporary monitoring wells TMW-1, TMW-2 and TMW-3 in order to perform the colormetric analysis, which raised the method detection limit above the screening value for fresh water.
- Elevated turbidity persisted while purging at temporary monitoring wells TMW-1, TMW-2 and TMW-3.

CONCLUSIONS

Based on the groundwater analytical results:

- Thresholds for a NPDES Generic Permit were exceeded. All of the groundwater samples had at least one parameter that exceeded the NPDES discharge requirements. Terracon did not consult the FDEP on the placement of monitoring wells. The sampling results in this report may not satisfy the NPDES Notice of Intent (NOI) requirements. Additional sampling may be necessary prior to dewatering discharge.
- Regulatory authorization to conduct groundwater treatment may be required in conjunction with NPDES discharge. The pH measurements indicate buffering will likely be required for NPDES discharge, which combined with bag filtration may be sufficient to reduce turbidity but may or may not be sufficient to reduce metals concentrations. Other treatment equipment may be necessary for treatment of metals concentrations to meet discharge requirements.

Terracon

Terracon appreciates the opportunity to conduct these sampling activities requested by CPH Engineers, Inc. If you have questions concerning the work performed, please call the undersigned at 407-740-6110.

Sincerely,
Terracon Consultants, Inc.

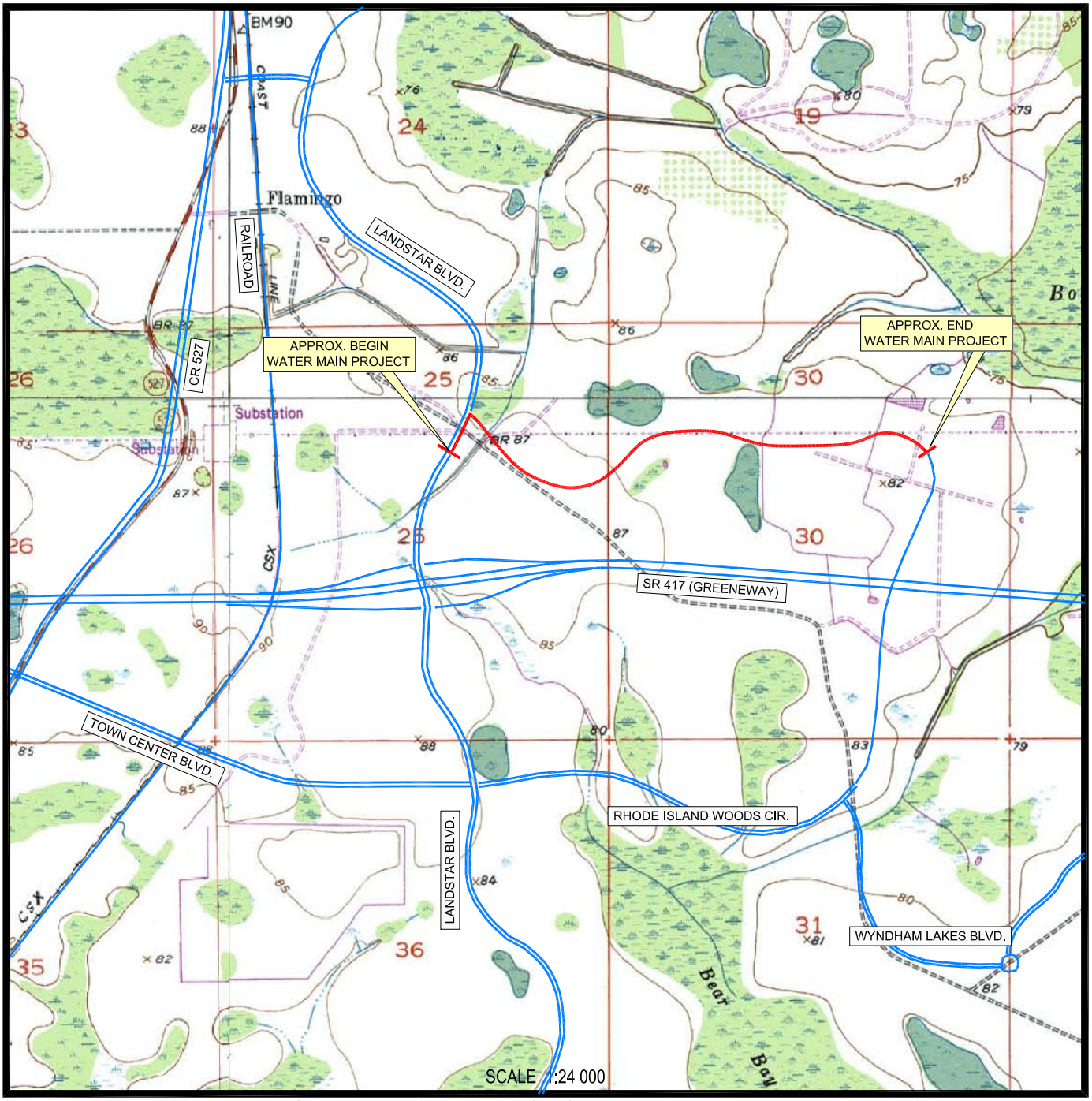
Laura Sebastian
Senior Environmental Scientist

Eric R. Krebill, P.G.
Florida Registration No. 1162

Appendix A Site Map Exhibits
Appendix B FDEP Map Direct Summary
Appendix C Temporary Monitoring Well Logs
Appendix D Groundwater Sampling and Equipment Calibration Logs
Appendix E Laboratory Results

APPENDIX A

UNITED STATES – DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY



1 .5 0 KILOMETERS 1 2

1000 0 1000 2000

MILES

1 .5 0 1

FEET

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

CONTOUR INTERVAL 5 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

N

SECTION: 25
RANGE: 29 EAST
SECTION: 30
RANGE: 30 EAST
TOWNSHIP: 24 SOUTH

PINE CASTLE, FLORIDA ISSUED: 1953 REVISED: 1980
ST. CLOUD NORTH, FLORIDA ISSUED: 1953 REVISED: 1987
7.5 MINUTE SERIES (QUADRANGLE)

N:\Projects\2012\H1127404\PROJECT DOCUMENTS (Reports–Letters–Drafts to Clients)\cad\7404–usgs.dwg
Jun20, 2013–8:40am

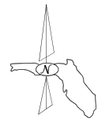
Project Mngr:	EK
Drawn By:	SW
Checked By:	EK
Approved By:	EK

Project No.	H1127404
Scale:	AS SHOWN
File No.	H1127404-1
Date:	6-20-13

Terracon
Consulting Engineers and Scientists
1675 LEE ROAD WINTER PARK, FLORIDA 32789
PH. (407) 740-6110 FAX. (407) 740-6112

TOPOGRAPHIC VICINITY MAP
GROUNDWATER SAMPLING / TESTING
RHODE ISLAND WOODS CIRCLE
PROPOSED 30-INCH DIP WATER MAIN
ORANGE COUNTY, FLORIDA

EXHIBIT
A-1



LOCATION PLAN
SCALE IN FEET

0 150 300

LEGEND

APPROXIMATE LOCATION OF TEMPORARY MONITORING WELL

NOTE: PLAN AS SHOWN IS PRELIMINARY FOR REPRESENTATION OF BORING LOCATION ONLY AND MAY NOT BE INDICATIVE OF FINAL CONTRACT PLANS.

Project Mngr:	EK
Drawn By:	SW
Checked By:	EK
Approved By:	EK

Project No.	H1127404
Scale:	AS SHOWN
File No.	H1127404-2
Date:	6-20-13

Terracon
Consulting Engineers and Scientists
1675 LEE ROAD WINTER PARK, FLORIDA 32789
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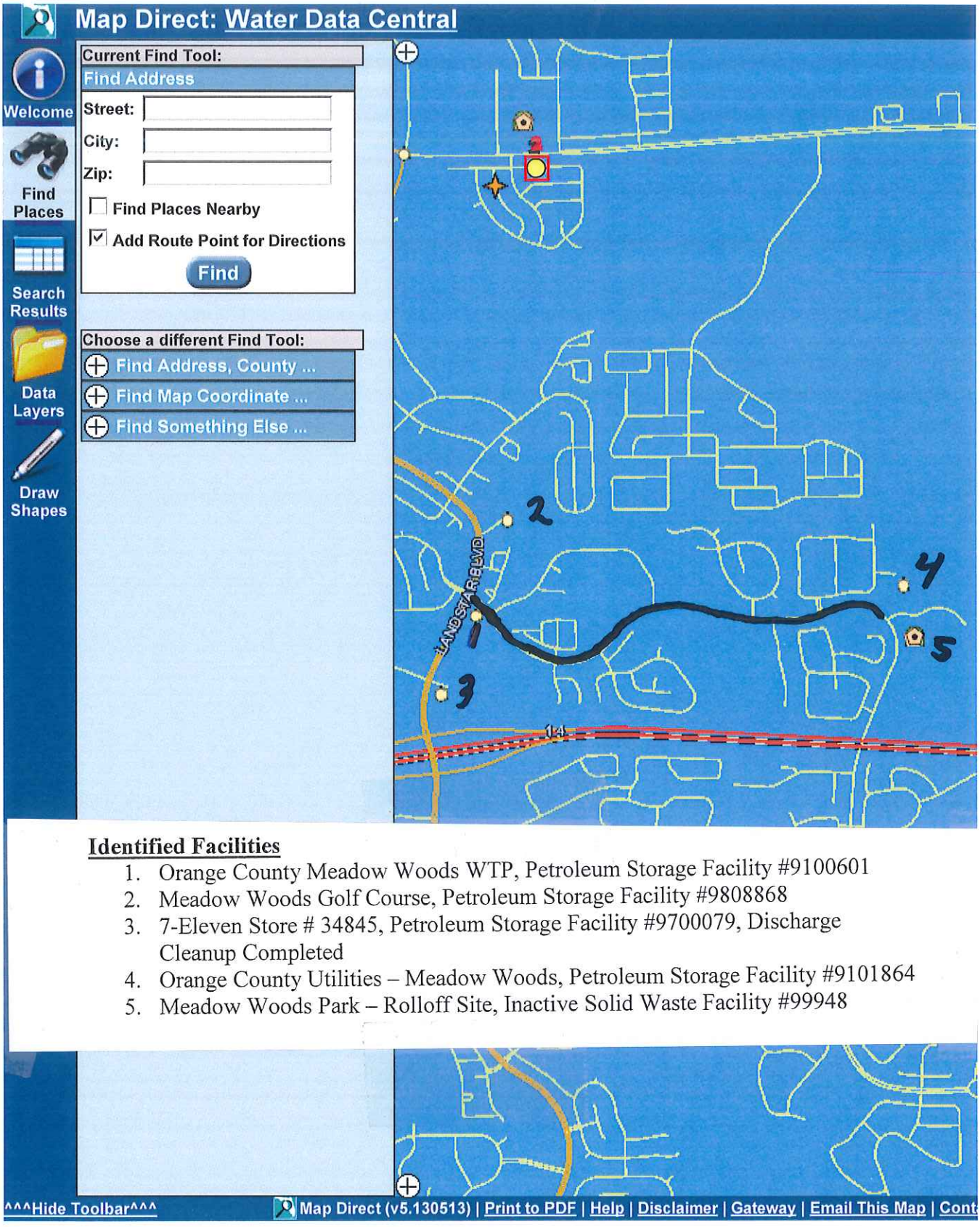
TEMPORARY MONITORING WELL LOCATOIN PLAN
GROUNDWATER SAMPLING / TESTING
RHODE ISLAND WOODS CIRCLE
PROPOSED 30-INCH DIP WATER MAIN
ORANGE COUNTY, FLORIDA

EXHIBIT
A-2

Jun20, 2013-8:53am N:\Projects\2012\H1127404\PROJECT DOCUMENTS (Reports-Letters-Drafts to Clients)\cad\7404-plan exh2.dwg

APPENDIX B



Identified Facilities

1. Orange County Meadow Woods WTP, Petroleum Storage Facility #9100601
2. Meadow Woods Golf Course, Petroleum Storage Facility #9808868
3. 7-Eleven Store # 34845, Petroleum Storage Facility #9700079, Discharge Cleanup Completed
4. Orange County Utilities – Meadow Woods, Petroleum Storage Facility #9101864
5. Meadow Woods Park – Rolloff Site, Inactive Solid Waste Facility #99948

APPENDIX C

DATE: 5/21/13

SITE: SSA-ESA Main Water

LOCATION: Orlando, FL.

WELL LOCATION STRATEGY: TMW-1

DRILLING COMPANY: Terracon

DRILLING METHOD / BORING DIAMETER: 3 1/4" Hollow Stem Auger

WELL DEPTH / SCREEN INTERVAL: 11.5' / 1.5-11.5'

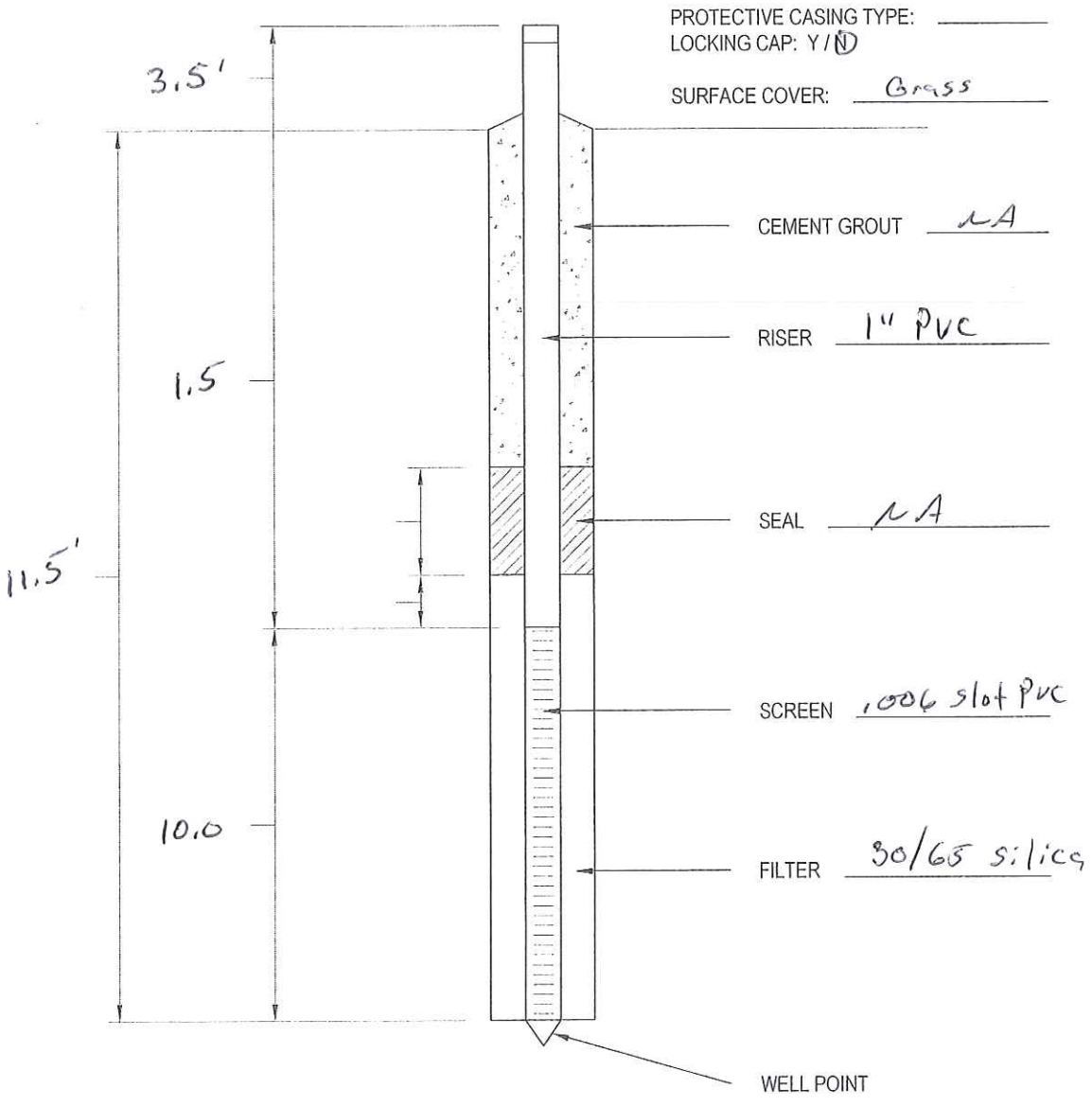
GROUNDWATER LEVEL: 9.13 BTOC / 5.6' bgs

TOP OF CASING ELEVATION:

DEVELOPMENT PROCEDURE: Surge block, Peristaltic Pump

DISPOSITION OF INVESTIGATIVE DERIVED WASTES: Spread

REMARKS:



Terracon

DATE: 5/21/13

SITE: SSA-ESA Main Water

LOCATION: Orlando, FL.

WELL LOCATION STRATEGY: TMW-2

DRILLING COMPANY: Terracon

DRILLING METHOD / BORING DIAMETER: 3'/4" Hollow Stem Auger

WELL DEPTH / SCREEN INTERVAL: 12.85 / 2.85-12.85

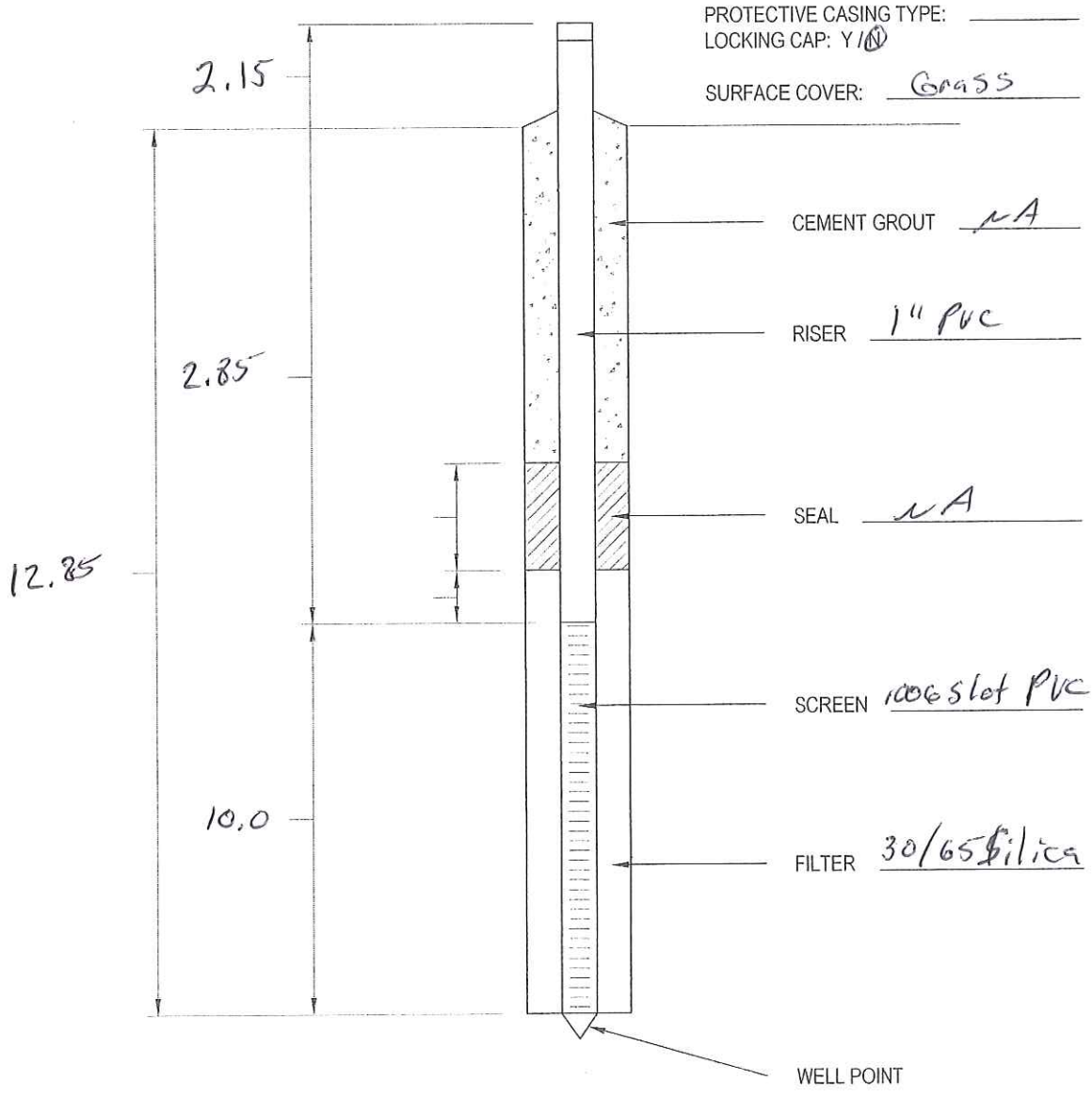
GROUNDWATER LEVEL: 7.11 BTOC / 5' bgs

TOP OF CASING ELEVATION:

DEVELOPMENT PROCEDURE: Surge block / Peristaltic Pump

DISPOSITION OF INVESTIGATIVE DERIVED WASTES: Spread

REMARKS:



Terracon

DATE: 5/21/13

SITE: SSA ESA Main Water

LOCATION: Orlando, FL

WELL LOCATION STRATEGY: TMW-3

DRILLING COMPANY: Terracon

DRILLING METHOD / BORING DIAMETER: 3 1/4" Hollow Stem Auger

WELL DEPTH / SCREEN INTERVAL: 11.7 / 1.7 - 11.7'

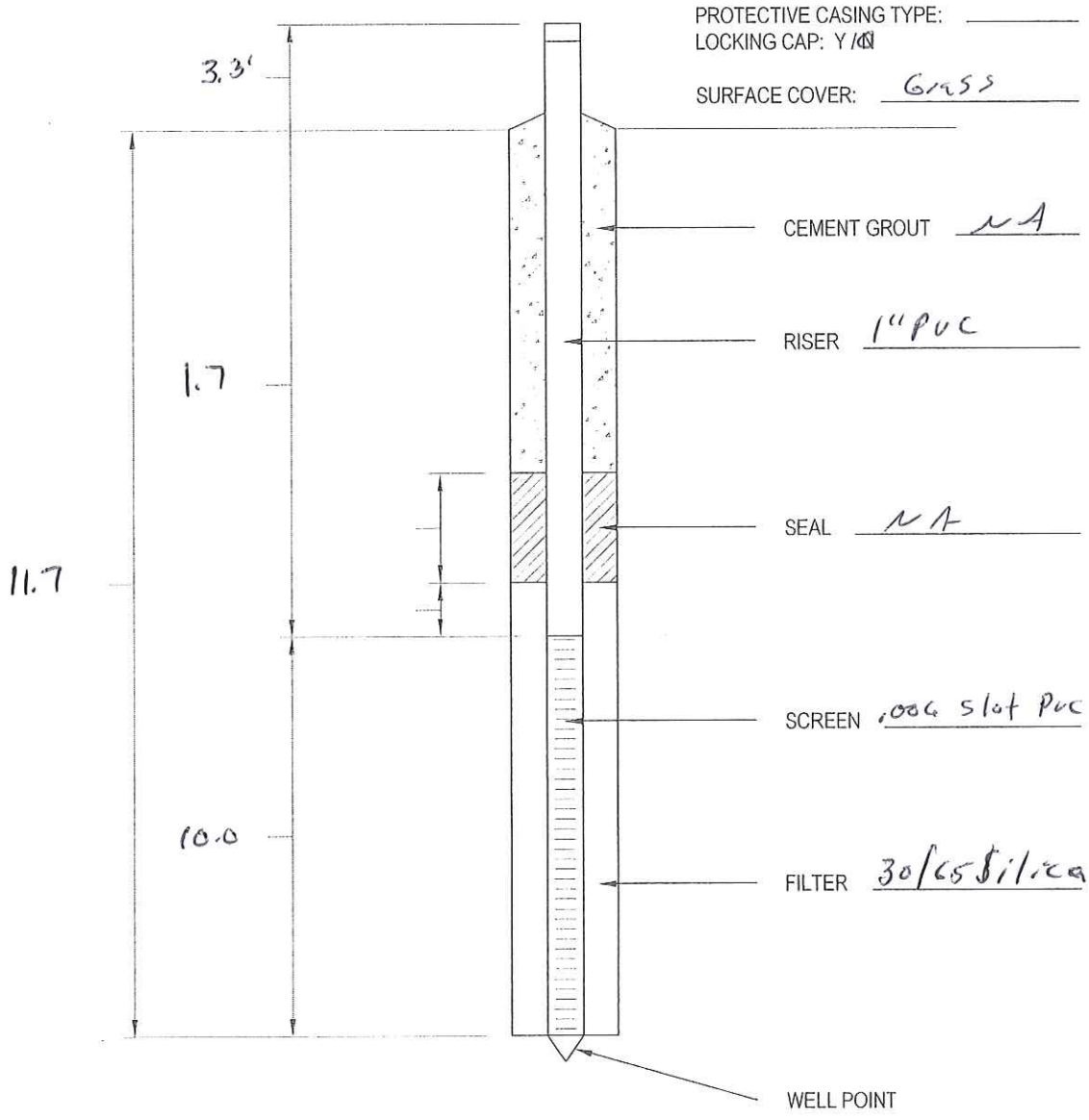
GROUNDWATER LEVEL: 9.19 BTOC / 5.91' bgs

TOP OF CASING ELEVATION:

DEVELOPMENT PROCEDURE: Surge block peristaltic Pump

DISPOSITION OF INVESTIGATIVE DERIVED WASTES: Spread

REMARKS:



Terracon

DATE: 5/21/13

SITE: SSA-ESA Main Water

LOCATION: Orlando, FL.

WELL LOCATION STRATEGY: Tmw-4

DRILLING COMPANY: Terracon

DRILLING METHOD / BORING DIAMETER: 3 1/4" Hollow Stem Auger

WELL DEPTH / SCREEN INTERVAL: 12.65 / 2.65 - 12.65

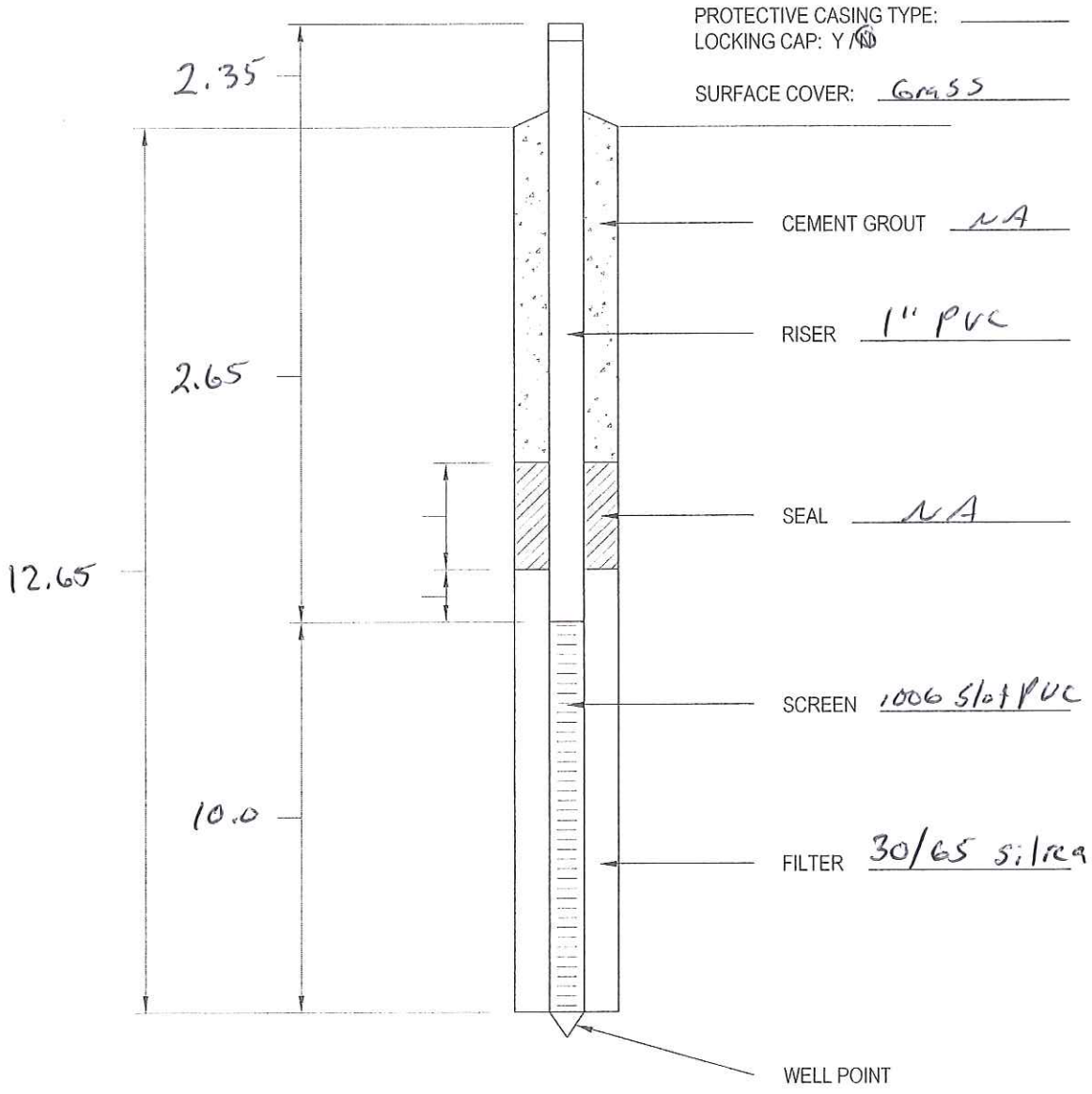
GROUNDWATER LEVEL: 4.67' BTOC / 2.3 bgs

TOP OF CASING ELEVATION:

DEVELOPMENT PROCEDURE: Surge block Peristaltic Pump

DISPOSITION OF INVESTIGATIVE DERIVED WASTES: Spread.

REMARKS:



Terracon

DATE: 5/21/13

SITE: SSA-ESA Main Water

LOCATION: Orlando, FL.

WELL LOCATION STRATEGY: TMW-5

DRILLING COMPANY: Terracon

DRILLING METHOD / BORING DIAMETER: 3 1/4" Hollow Stem Auger

WELL DEPTH / SCREEN INTERVAL: 12.4' / 2.4' - 12.4'

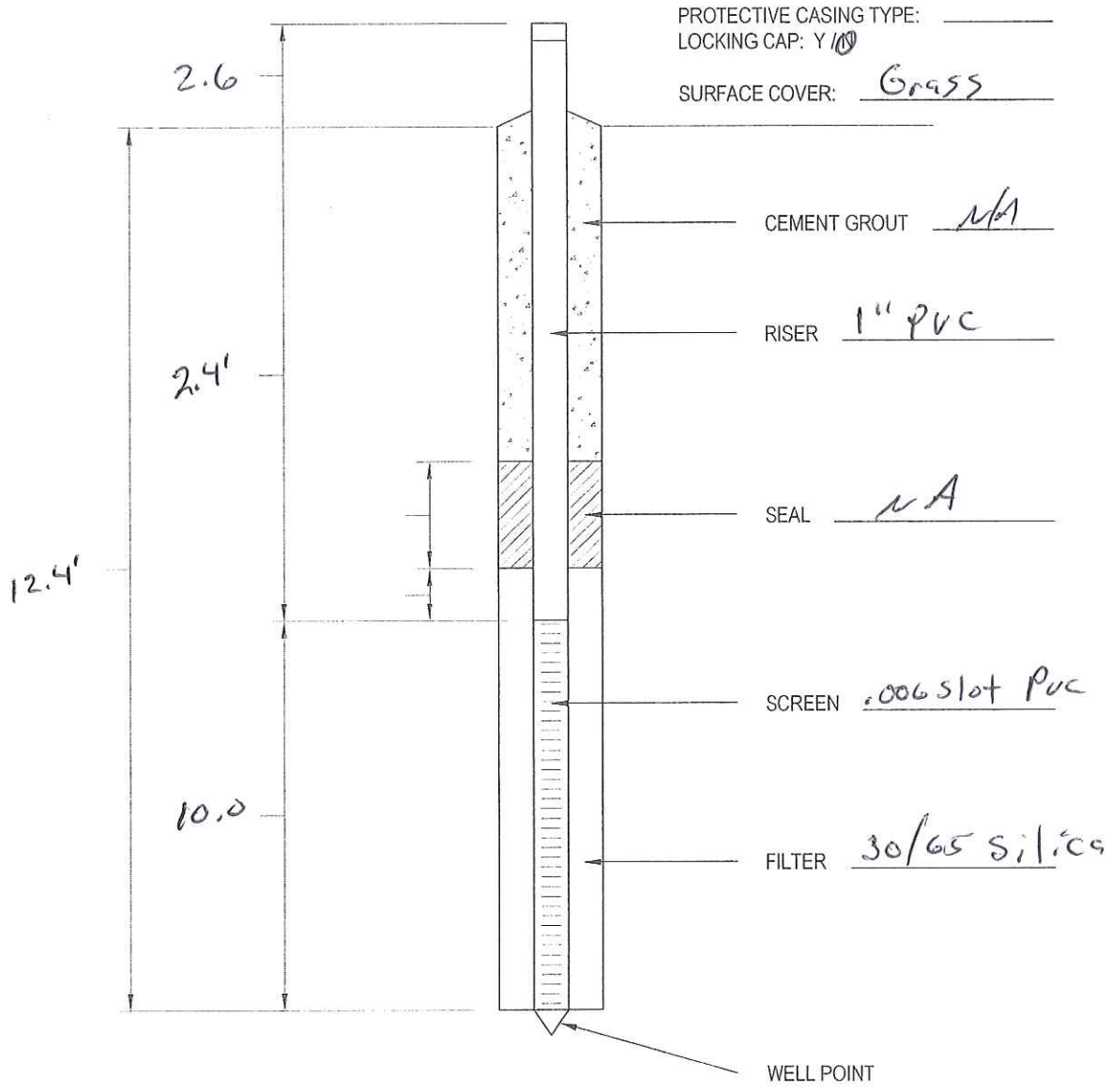
GROUNDWATER LEVEL: 5.64' BTOC / 3' bgs

TOP OF CASING ELEVATION:

DEVELOPMENT PROCEDURE: Peristaltic Pump

DISPOSITION OF INVESTIGATIVE DERIVED WASTES: Spread

REMARKS:



Terracon

DATE: 5/21/13

SITE: SSA-ESA Main Water

LOCATION: Orlando, FL.

WELL LOCATION STRATEGY: TMW-6

DRILLING COMPANY: Terracon

DRILLING METHOD / BORING DIAMETER: 3'/4" Hollow Stem Auger

WELL DEPTH / SCREEN INTERVAL: 12' / 2'-12'

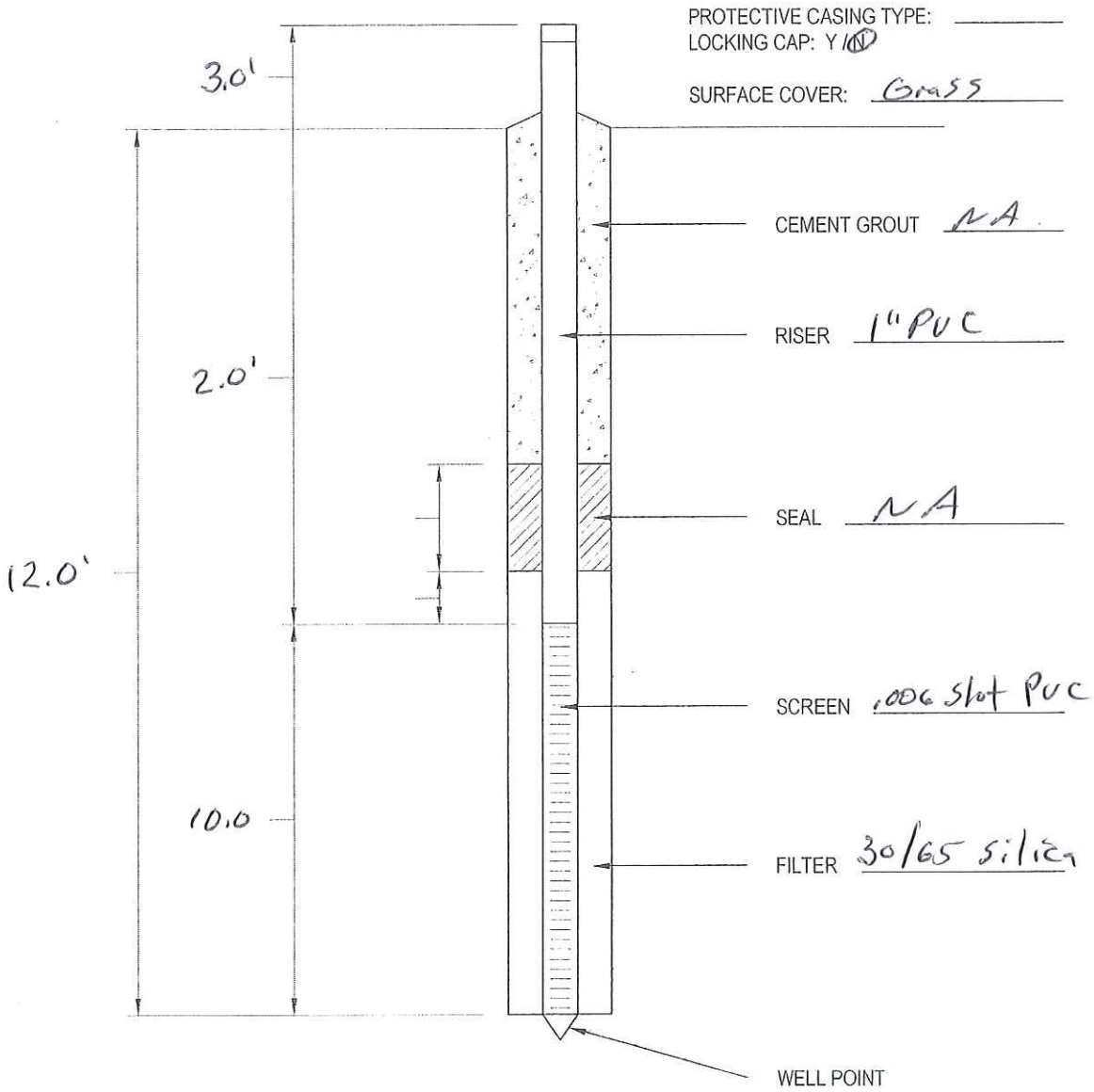
GROUNDWATER LEVEL: 7.44' BTOC / 4.4' bgs

TOP OF CASING ELEVATION:

DEVELOPMENT PROCEDURE: Peristaltic Pump

DISPOSITION OF INVESTIGATIVE DERIVED WASTES:

REMARKS:



Terracon

DATE: 5/21/17

SITE: SSA-ESA Main Water

LOCATION: Orlando, FC.

WELL LOCATION STRATEGY: TMW-7

DRILLING COMPANY: Terracon

DRILLING METHOD / BORING DIAMETER: 3 1/4" Hollow Stem Auger

WELL DEPTH / SCREEN INTERVAL: 12' / 2-12

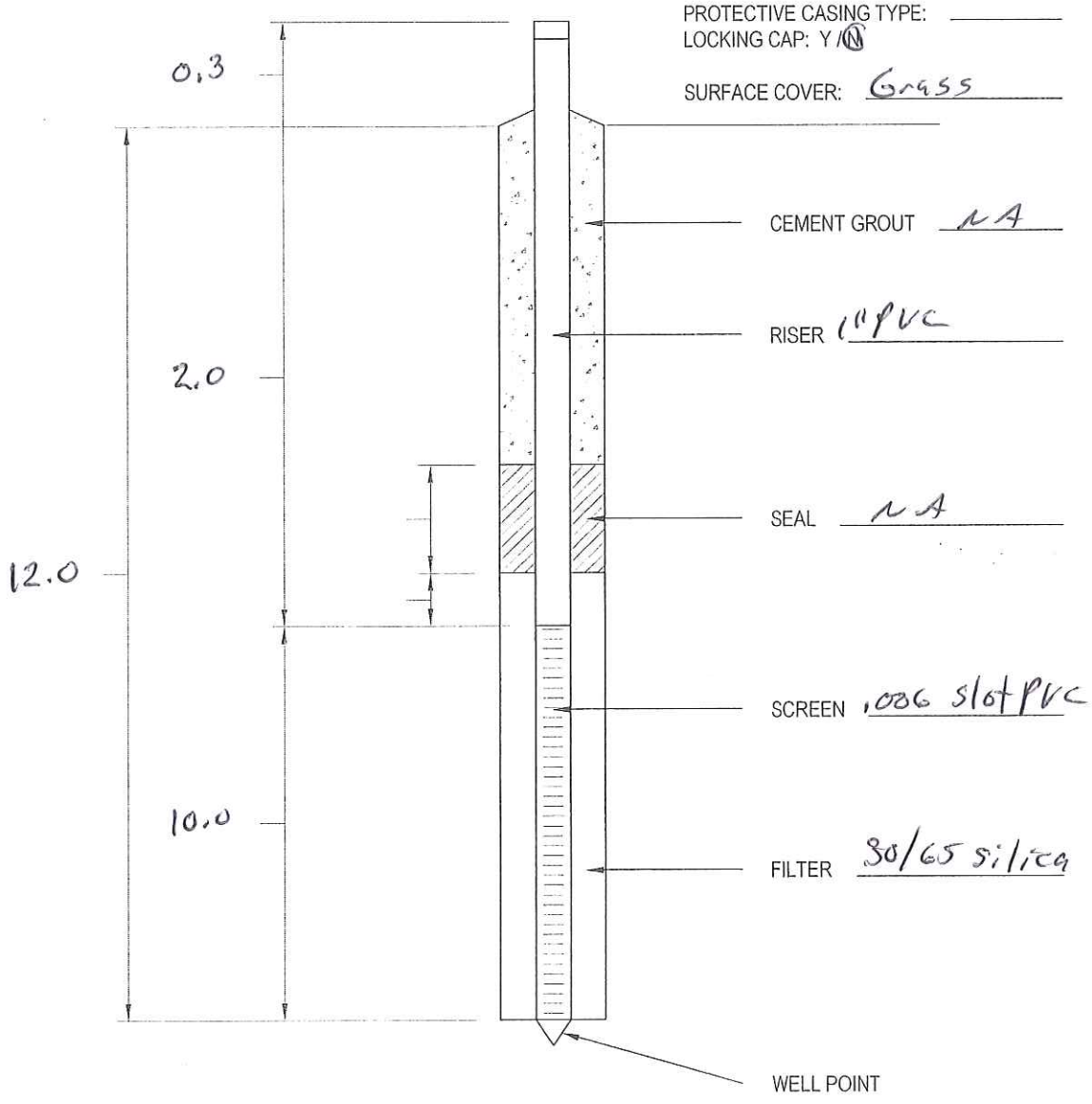
GROUNDWATER LEVEL: 5.04' BTOC / 4.7' bgs

TOP OF CASING ELEVATION:

DEVELOPMENT PROCEDURE: Peristaltic Pump

DISPOSITION OF INVESTIGATIVE DERIVED WASTES: Spread.

REMARKS:



Terracon

APPENDIX D

Form FD 9000-24

GROUNDWATER SAMPLING LOG

Riser Above Ground 3.5'

SITE NAME: SSA-ESA Main Water	SITE LOCATION: Orlando, FL.	
WELL NO: TMW-1	SAMPLE ID: TMW-1	DATE: 5/29/13

PURGING DATA

WELL DIAMETER (inches): 1"	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 1.5 feet to 11.5 feet	STATIC DEPTH TO WATER (feet): 9.13	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (15 feet – 9.13 feet) X .04 gallons/foot = 0.23 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 12'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 12'	PURGING INITIATED AT: 1025	PURGING ENDED AT: 1038	TOTAL VOLUME PURGED (gallons): 0.77

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) mhos/cm or S/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1029	0.23	0.23	0.06	9.97	4.17	25.04	113	2.9%/0.23	305	dk. brn. stained	organic
1032	0.18	0.41	|	9.97	4.15	25.08	121	2.7%/0.22	314	"	"
1035	0.18	0.59	|	9.97	4.15	25.08	124	2.6%/0.21	317	"	"
1038	0.18	0.77	|	9.97	4.14	25.05	125	2.7%/0.27	316	"	"

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Mike Burns / Terracon	SAMPLER(S) SIGNATURE(S): Mike Burns	SAMPLING INITIATED AT: 1039	SAMPLING ENDED AT: 1100
PUMP OR TUBING DEPTH IN WELL (feet): 12'	TUBING MATERIAL CODE: PE/S	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ m
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
TMW-1	3	CG	40ML	HCL	–	–	8260+NAP	RFPP	<100mL
	2	AG	40ML	HCL	–	–	TOC	PP	.06GPM
	2	AG	1Ltr.	N2SO4	–	–	FL-PRO	|	|
	1	AG	500ML	NONE	–	–	LL HG	|	|
	1	PE	500ML	NONE	–	–	XCK, PH	|	|
	1	PE	250ML	HNO3	–	–	Metals	|	|

REMARKS:
Purge/develop well for 75 minutes before starting sampling log, turbidity still high

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Form FD 9000-24

GROUNDWATER SAMPLING LOG

2.15 Stickup

SITE NAME: SSA - CSA Main Water	SITE LOCATION: Kissimmee FL	
WELL NO: TM-2	SAMPLE ID:	DATE: 5/29/13

PURGING DATA

WELL DIAMETER (inches): 1	TUBING DIAMETER (inches): 1/4	WELL SCREEN INTERVAL DEPTH: 2.85 feet to 12.85 feet	STATIC DEPTH TO WATER (feet): 7.11	PURGE PUMP TYPE OR BAILER: P.P

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH − STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (12.85 feet − 7.11 feet) X .04 gallons/foot = .2296 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 8	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 8	PURGING INITIATED AT: 1015	PURGING ENDED AT: 1040	TOTAL VOLUME PURGED (gallons): 3.25

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) mhos/cm or S/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1025	1.3	1.3	.13	7.90	5.82	24.65	112	.81/9.7	97.5	Clear	H_2S
1030	.65	1.95	.13	7.90	5.80	24.68	112	.77/9.2	98.8	"	"
1035	.65	2.6	.13	7.90	5.77	24.69	111	.72/8.7	98.0	"	"
1040	.65	3.25	.13	7.90	5.75	24.71	110	.68/8.2	98.8	"	"

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Rory Thomas/Terracon	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1041	SAMPLING ENDED AT: 1055
PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE: PE	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ m
FIELD DECONTAMINATION: PUMP (Y) N	TUBING (Y) N (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
TM2	2	AG	Liter	H_2SO_4	—	—	FL-Pro	APP	.13
|	1	PE	250ml	HNO_3	—	—	Cd, Cu, Pb, Zn	APP	.13
|	1	PE	500ml	—	—	—	XCR, Ph	APP	.13
|	1	AG	500ml	—	—	—	Hg LL 1631	APP	.13
|	2	AG	40ml	HCl	—	—	TOC	RFPP	.07
↓	3	CG	40ml	HCl	—	—	8260+NAP	RFPP	<100

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Form FD 9000-24

GROUNDWATER SAMPLING LOG

Riser above Ground 3.3'

SITE NAME: SSA-ESA Main Water	SITE LOCATION: Orlando, FL.	
WELL NO: TMW-3	SAMPLE ID: TMW-3	DATE: 5/29/13

PURGING DATA

WELL DIAMETER (inches): 1"	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 1.7 feet to 11.7 feet	STATIC DEPTH TO WATER (feet): 9.19	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (15 feet – 9.19 feet) X .04 gallons/foot = 0.23 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 12	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 12'	PURGING INITIATED AT: 1149	PURGING ENDED AT: 1158	TOTAL VOLUME PURGED (gallons): 1.13

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) mhos/cm or S/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1143	0.23	0.23	0.06	9.60	5.02	25.62	170	6.3%/0.51	204	Light Brn.	None
1146	0.18	0.41		9.60	4.91	25.63	168	5.8%/0.47	202	"	"
1149	0.18	0.59		9.60	5.02	25.61	169	5.8%/0.48	171	"	"
1152	0.18	0.77		9.60	5.02	25.61	166	5.5%/0.45	166	"	"
1155	0.18	0.95		9.60	5.01	25.63	167	6.5%/0.53	182	"	"
1158	0.18	1.13		9.60	4.99	25.63	165	5.3%/0.43	179	"	"

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Mike Burns / Terracon	SAMPLER(S) SIGNATURE(S): Mike Burns	SAMPLING INITIATED AT: 1200	SAMPLING ENDED AT: 1217
PUMP OR TUBING DEPTH IN WELL (feet): 12'	TUBING MATERIAL CODE: PE/S	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ m
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
TMW-3	3	CG	40mL	HCL	–	–	8260 + NAP	RFPP	200 mL
	2	AG	40mL	HCL	–	–	TOC	PP	0.06 GPM
	2	AG	1Ltr.	H2SO4	–	–	FL-PRO		
	1	AG	500mL	None	–	–	LL Hg		
	1	PE	500mL	None	–	–	XCR, PH		
	1	PE	250mL	HNO3	–	–	Metals		

REMARKS:
After 30 min development purge start taking water quality Purge readings

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Revision Date: February 12, 2009

NA-038

Form FD 9000-24

GROUNDWATER SAMPLING LOG

2.35' Riser above ground surface

SITE NAME: SSA-ESA - Main Water	SITE LOCATION: Orlando, FL.	
WELL NO: TMW-4	SAMPLE ID: TMW-4	DATE: 5/29/13

PURGING DATA

WELL DIAMETER (inches): 1"	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 2.65 feet to 12.65 feet	STATIC DEPTH TO WATER (feet): 4.67	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (15' feet – 4.67 feet) X .04 gallons/foot = 0.41 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10'	PURGING INITIATED AT: 1245	PURGING ENDED AT: 1259	TOTAL VOLUME PURGED (gallons): 1.13

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) (mhos/cm or S/cm)	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1250	0.41	0.41	0.08	5.13	4.99	22.90	203	4.7% / 0.40	9.33	clear	None
1253	0.24	0.65	|	5.13	4.89	22.84	205	3.9% / 0.33	6.08	"	"
1256	0.24	0.89	|	5.13	4.86	22.89	205	3.0% / 0.26	3.25	"	"
1259	0.24	1.13	|	5.13	4.87	22.91	206	2.8% / 0.23	2.56	"	"

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Mike Burns / Terracon	SAMPLER(S) SIGNATURE(S): Mike Burns	SAMPLING INITIATED AT: 1301	SAMPLING ENDED AT: 1313
PUMP OR TUBING DEPTH IN WELL (feet): 10'	TUBING MATERIAL CODE: PE/S	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ m
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
TMW-4	3	CG	40 mL	HCL	—	—	8260 + NAP	RFPP	100 mL
	2	AG	40 mL	HCL	—	—	TOC	PP	0.08 GPM
	2	AG	1 Ltr.	H2SO4	—	—	FL-PRO	|	|
	1	AG	500 mL	None	—	—	LL HG	|	|
	1	PE	500 mL	None	—	—	XCR, PH	|	|
	1	PE	250 mL	HNO3	—	—	Metals	|	|

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Form FD 9000-24

GROUNDWATER SAMPLING LOG

Riser Above Ground 2.6'

SITE NAME: SSA-ESA Main water	SITE LOCATION: Orlando, FL.	
WELL NO: TMW-5	SAMPLE ID: TMW-5	DATE: 5/29/13

PURGING DATA

WELL DIAMETER (inches): 1"	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 2.4 feet to 12.4 feet	STATIC DEPTH TO WATER (feet): 5.64	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (15 feet – 5.64 feet) X .04 gallons/foot = 0.37 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10'	PURGING INITIATED AT: 1337	PURGING ENDED AT: 1348	TOTAL VOLUME PURGED (gallons): 0.85

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) mhos/cm or S/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1342	0.37	0.37	0.08	6.01	4.72	22.45	527	3.6%/0.31	5.78	clear	None
1345	0.24	0.61	↓	6.01	4.75	22.46	522	3.2%/0.27	7.33	"	"
1348	0.24	0.85		6.01	4.74	22.46	520	2.9%/0.25	7.53	"	"

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Mike Burns/Terracon	SAMPLER(S) SIGNATURE(S): Mike Burns	SAMPLING INITIATED AT: 1350	SAMPLING ENDED AT: 1406
PUMP OR TUBING DEPTH IN WELL (feet): 10'	TUBING MATERIAL CODE: PE/S	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ m
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
TMW-5	3	CG	40mL	HCL	–	–	8260+NAP	RFPP	2100 mL
	2	AG	40mL	HCL	–	–	TOC	PP	0.082GPM
	2	AG	1Ltr.	H2SO4	–	–	FL-PRO	↓	↓
	1	AG	500mL	None	–	–	LL Hg		
	1	PE	500mL	None	–	–	XCR, PH		
	1	PE	250mL	HNO3	–	–	Metals		

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Revision Date: February 12, 2009

NA-038

Form FD 9000-24

GROUNDWATER SAMPLING LOG

Riser above ground 3'

SITE NAME: SSA-ESA Main Water	SITE LOCATION: Orlando, FL.	
WELL NO: TMW-6	SAMPLE ID: TMW-6	DATE: 5/30/13

PURGING DATA

WELL DIAMETER (inches): 1"	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 2 feet to 12 feet	STATIC DEPTH TO WATER (feet): 7.44	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (15 feet – 7.44 feet) X .04 gallons/foot = 0.30 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 11	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 11'	PURGING INITIATED AT: 0850	PURGING ENDED AT: 0906	TOTAL VOLUME PURGED (gallons): 1.14

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) ~~mhos/cm~~ or S/cm	DISSOLVED OXYGEN (circle units) mg/L or ~~% saturation~~	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
0854	0.30	0.30	0.08	9.20	4.81	24.03	136	11.5%/0.97	26.4	clear	none
0857	0.24	0.54	|	9.20	4.74	24.03	128	10.3%/0.86	18.2	cc	"
0900	0.24	0.78	|	9.20	4.68	24.18	121	9.4%/0.78	20.2	cc	"
0903	0.18	0.96	0.06	9.15	4.61	24.19	127	9.4%/0.79	19.7	cc	"
0906	0.18	1.14	|	9.14	4.70	24.21	128	9.3%/0.83	18.9	cc	"

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Mike Burns / Terracon	SAMPLER(S) SIGNATURE(S): Mike Burns	SAMPLING INITIATED AT: 0907	SAMPLING ENDED AT: 0920
PUMP OR TUBING DEPTH IN WELL (feet): 11'	TUBING MATERIAL CODE: PE/S	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ m
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
TMW-6	3	CG	40mL	HCL	—	—	8260+NAP	RFPP	2100 mL
	2	AG	40mL	HCL	—	—	TOC	PP	0.08GPM
	2	AG	1Ltr.	H2SO4	—	—	FL-PRO	|	|
	1	AG	500mL	None	—	—	LL Hg	|	|
	1	PE	500mL	None	—	—	XCR, PH	|	|
	1	PE	250mL	HNO3	—	—	Metals	|	|

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Revision Date: February 12, 2009

NA-038

Form FD 9000-24

GROUNDWATER SAMPLING LOG

Riser above ground, 3'

SITE NAME: SSA-ESA Main Water	SITE LOCATION: Orlando, FL.	
WELL NO: TMW-7	SAMPLE ID: TMW-7	DATE: 5/29/13

PURGING DATA

WELL DIAMETER (inches): 1"	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 2 feet to 12 feet	STATIC DEPTH TO WATER (feet): 5.04	PURGE PUMP TYPE OR BAILER: BP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (12' feet – 5.04 feet) X .04 gallons/foot = 0.27 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10.50'	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1424	PURGING ENDED AT: 1439	TOTAL VOLUME PURGED (gallons): 1.23

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) mhos/cm or S/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1427	0.27	0.27	0.08	6.35	4.76	23.87	135	7.1%/0.59	53.8	very lt. grey	None
1430	0.24	0.51	|	6.35	4.75	23.79	148	4.7%/0.40	20.0	Clear	"
1433	0.24	0.75	|	6.35	4.71	23.80	134	3.8%/0.32	10.3	CC	"
1436	0.24	0.99	|	6.35	4.72	23.78	152	3.6%/0.31	8.18	CC	"
1439	0.24	1.23	|	6.35	4.69	23.76	140	3.5%/0.30	7.05	CC	"

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Mike Burns / Terracon	SAMPLER(S) SIGNATURE(S): Mike Burns	SAMPLING INITIATED AT: 1440	SAMPLING ENDED AT: 1453
PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ m
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
TMW-7	3	CG	40mL	HCl	–	–	8260+NAP	RFPP	100 mL
	2	AG	40mL	HCl	–	–	TOC	PP	0.08GPM
	2	AG	1Ltr.	H2SO4	–	–	FL-PRO	|	|
	1	AG	500mL	NaOH	–	–	LL Hg	|	|
	1	PE	500mL	None	–	–	XCR, Pb	|	|
	1	PE	250mL	HNO3	–	–	Metals	|	|

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by Chapter 62-160, F.A.C.**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5% **Dissolved Oxygen:** all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) **Turbidity:** all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

Revision Date: February 12, 2009

NA-038

Form FD 9000-8: FIELD INSTRUMENT CALIBRATION RECORDS

INSTRUMENT (MAKE/MODEL#) HACH 2100P **INSTRUMENT #** 08080C017245

PARAMETER: *[check only one]*

☐ TEMPERATURE ☐ CONDUCTIVITY ☐ SALINITY ☐ pH ☐ ORP

☒ TURBIDITY ☐ RESIDUAL Cl ☐ DO ☐ OTHER _____

STANDARDS: *[Specify the type(s) of standards used for calibration, the origin of the standards, the standard values, and the date the standards were prepared or purchased]*

Standard A <0.1

Standard B 20.0

Standard C 100

DATE (yy/mm/dd)	TIME (hr:min)	STD (A, B, C)	STD VALUE	INSTRUMENT RESPONSE	% DEV	CALIBRATED (YES, NO)	TYPE (INIT, CONT)	SAMPLER INITIALS
13/5/29	0944	A	0.1	0.12	20%	Yes	Init	MB
↓	0950	B	20.0	20.1	<1	↓	↓	↓
↓	0953	C	100	99.8	<1	↓	↓	↓
13/5/30	0755	A	0.1	0.12	20%	Yes	Cont	MB
↓	0757	B	20.0	20.0	<1	↓	↓	↓
↓	0758	C	100	99.9	<1	↓	↓	↓
13/5/30	0924	A	0.1	0.11	10%	Yes	cont	MB
↓	0926	B	20.0	20.1	<1	↓	↓	↓
↓	0928	C	100	99.9	<1	↓	↓	↓

Form FD 9000-8: FIELD INSTRUMENT CALIBRATION RECORDS

INSTRUMENT (MAKE/MODEL#) YSI 556MPS **INSTRUMENT #** 06H2510AF

PARAMETER: *[check only one]*

☐ TEMPERATURE ☒ CONDUCTIVITY ☐ SALINITY ☒ pH ☐ ORP
☐ TURBIDITY ☐ RESIDUAL CI ☒ DO ☐ OTHER _____

STANDARDS: *[Specify the type(s) of standards used for calibration, the origin of the standards, the standard values, and the date the standards were prepared or purchased]*

Standard A DO 100%
Standard B PH 4, 7, 10
Standard C Conductivity 1413

DATE (yy/mm/dd)	TIME (hr:min)	STD (A, B, C)	STD VALUE	INSTRUMENT RESPONSE	% DEV	CALIBRATED (YES, NO)	TYPE (INIT, CONT)	SAMPLER INITIALS
13/5/29	0942	A	100%	102.6% / 100.1	2.6/<1	Yes	Init	MB
	0951	B	4.0	4.03	<1			
	0956	B	7.0	7.01	<1			
	1000	B	10.0	10.03	<1			
	1002	C	1413	1423	<1			
13/5/30	0800	A	100%	103.3 / 100.3	3.3/<1	Yes	Cont	MB
	0807	B	4.0	3.97	<1			
	0809	B	7.0	6.96	<1			
	0812	B	10.0	10.06	<1			
	0815	C	1413	1421	<1			
13/5/30	0930	A	100%	100.8	<1	Yes	cont	MB
	0934	B	4.0	4.01	<1			
	0938	B	7.0	7.0	<1			
	0941	B	10.0	10.03	<1			
	0945	C	1413	1414	<1			

DEP-SOP-001/01
FT 2100 Oxidation-Reduction Potential (ORP)

Form FD 9000-8: FIELD INSTRUMENT CALIBRATION FORM 06F2009AO

INSTRUMENT (MAKER/MODEL#) YSI 556 / HACH 2100P INSTRUMENT # 05040003873

PARAMETER: *[check only one]*

☐ TEMPERATURE ☒ CONDUCTIVITY ☐ SALINITY ☒ pH ☐ ORP

☒ TURBIDITY ☐ RESIDUAL Cl ☒ DO ☐ OTHER _____

STANDARDS: *[Specify the type(s) of standards used for calibration, the origin of the standards, the standard values, and the date the standards were prepared or purchased]*

Standard A 7 ph D) .1 Twb G) 800 Twb

Standard B 4 ph E) 20 Twb H) 1413 Cond

Standard C 10 ph F) 100 Twb I) 100% DO%

DATE (yy/mm/dd)	TIME (hr:min)	STD (A, B, C)	STD VALUE	INSTRUMENT RESPONSE	% DEV	CALIBRATED (YES, NO).	TYPE (INIT, CONT)	SAMPLER INITIALS
5/29/13	945	A	7	7.0	<1.0	yes	Init.	RCS
		B	4	3.9	<1.0	yes		
		C	10	10.0	<1.0	yes		
		D	.1	.1	<1.0	yes		
		E	20	20	<1.0			
		F	100	100	<1.0			
		G	800	800	<1.0			
		H	1413	1413	<1.0	yes		
		I	100%	100%	<1.0	yes		

Form FD 9000-8: FIELD INSTRUMENT CALIBRATION FORM 06F2009AO

INSTRUMENT (MAKER/MODEL#) YSI 556 / HACH 2100P INSTRUMENT # 05 04000387/3

PARAMETER: *[check only one]*

☐ TEMPERATURE ☒ CONDUCTIVITY ☐ SALINITY ☒ pH ☐ ORP
☒ TURBIDITY ☐ RESIDUAL Cl ☒ DO ☐ OTHER ______

STANDARDS: *[Specify the type(s) of standards used for calibration, the origin of the standards, the standard values, and the date the standards were prepared or purchased]*

Standard A 7 D) .1 G) 800
Standard B 4 E) 20 H) 1413
Standard C 10 F) 100 I) 100%

DATE (yy/mm/dd)	TIME (hr:min)	STD (A, B, C)	STD VALUE	INSTRUMENT RESPONSE	% DEV	CALIBRATED (YES, NO).	TYPE (INIT, CONT)	SAMPLER INITIALS
5/29/13	1115	A	7	7.0	<1		Cont	RCT
↓	↓	B	4	4.0	<1		↓	↓
		C	10	10.0	<1			
		D	.1	.1	<1			
		E	20	20	<1			
		F.	100	100	<1			
		G	800	800	<1			
		H	1413	1413	<1			
↓	↓	I	100%	100%	<1		↓	↓

APPENDIX E

Southeast
ACCUTEST LABORATORIES

06/05/13

Technical Report for

Terracon Consulting

SSA-ESA Main Water; Orlando, FL

H1127404

Accutest Job Number: FA5039

Sampling Date: 05/29/13

Report to:

Terracon
1675 Lee Rd
Winter Park, FL 32789
erkrebill@terracon.com

ATTN: Eric Krebill

Total number of pages in report: **52**

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001) DoD ELAP (L-A-B L2229), CA (04226CA), TX (T104704404), AK, AR, GA, KY, MA, NV, OK, UT, VA, WA, WI

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Sample Summary

Terracon Consulting

Job No: FA5039

SSA-ESA Main Water; Orlando, FL
Project No: H1127404

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA5039-1	05/29/13	10:39	MBRT	05/29/13	AQ	Ground Water	TMW-1
FA5039-2	05/29/13	10:41	MBRT	05/29/13	AQ	Ground Water	TMW-2
FA5039-3	05/29/13	12:00	MBRT	05/29/13	AQ	Ground Water	TMW-3
FA5039-4	05/29/13	13:01	MBRT	05/29/13	AQ	Ground Water	TMW-4
FA5039-5	05/29/13	13:50	MBRT	05/29/13	AQ	Ground Water	TMW-5
FA5039-6	05/29/13	14:40	MBRT	05/29/13	AQ	Ground Water	TMW-7

Summary of Hits

Job Number: FA5039
Account: Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL
Collected: 05/29/13

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA5039-1	**TMW-1**					
Copper		4.6 I	25	1.0	ug/l	SW846 6010C
Lead		4.0 I	5.0	1.1	ug/l	SW846 6010C
Mercury [a]		149	10	5.6	ng/l	EPA 1631
Zinc		20.3	20	5.0	ug/l	SW846 6010C
Total Organic Carbon		48.5	1.0	0.23	mg/l	SM19 5310B/SW 9060A
pH [b]		5.19			su	SM 4500H B/SW 9040C
FA5039-2	**TMW-2**					
Copper		2.4 I	25	1.0	ug/l	SW846 6010C
Lead		2.6 I	5.0	1.1	ug/l	SW846 6010C
Mercury [a]		167	5.0	2.8	ng/l	EPA 1631
Zinc		8.2 I	20	5.0	ug/l	SW846 6010C
Total Organic Carbon		25.6	1.0	0.23	mg/l	SM19 5310B/SW 9060A
pH [b]		5.56			su	SM 4500H B/SW 9040C
FA5039-3	**TMW-3**					
Copper		4.2 I	25	1.0	ug/l	SW846 6010C
Lead		7.3	5.0	1.1	ug/l	SW846 6010C
Mercury [a]		368	10	5.6	ng/l	EPA 1631
Zinc		14.9 I	20	5.0	ug/l	SW846 6010C
Total Organic Carbon		25.9	1.0	0.23	mg/l	SM19 5310B/SW 9060A
pH [b]		5.49			su	SM 4500H B/SW 9040C
FA5039-4	**TMW-4**					
Mercury [a]		6.1	0.50	0.28	ng/l	EPA 1631
Zinc		15.0 I	20	5.0	ug/l	SW846 6010C
Chromium, Hexavalent		0.0080 I	0.010	0.0080	mg/l	SW846 7196A
Total Organic Carbon		9.5	1.0	0.23	mg/l	SM19 5310B/SW 9060A
pH [b]		5.51			su	SM 4500H B/SW 9040C
FA5039-5	**TMW-5**					
Mercury [a]		4.1	0.50	0.28	ng/l	EPA 1631
Zinc		21.8	20	5.0	ug/l	SW846 6010C
Chromium, Hexavalent		0.0090 I	0.010	0.0080	mg/l	SW846 7196A
Total Organic Carbon		16.9	1.0	0.23	mg/l	SM19 5310B/SW 9060A
pH [b]		5.32			su	SM 4500H B/SW 9040C

Summary of Hits

Job Number: FA5039
Account: Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL
Collected: 05/29/13

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA5039-6	**TMW-7**					
Mercury [a]		20.5	0.50	0.28	ng/l	EPA 1631
Zinc		7.0 I	20	5.0	ug/l	SW846 6010C
Chromium, Hexavalent		0.016	0.010	0.0080	mg/l	SW846 7196A
Total Organic Carbon		10.4	1.0	0.23	mg/l	SM19 5310B/SW 9060A
pH [b]		5.42			su	SM 4500H B/SW 9040C

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.
(b) Field analysis required. Received out of hold time and analyzed by request.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: TMW-1
Lab Sample ID: FA5039-1
Matrix: AQ - Ground Water
Method: SW846 8260B
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	J086760.D	1	05/30/13	MM	n/a	n/a	VJ4395
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
71-43-2	Benzene	0.21 U	1.0	0.21	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	106%		79-125%
2037-26-5	Toluene-D8	104%		85-112%
460-00-4	4-Bromofluorobenzene	106%		83-118%

(a) Sample was treated with an anti-foaming agent.

U = Not detected MDL - Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TMW-1
Lab Sample ID: FA5039-1
Matrix: AQ - Ground Water
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Cadmium	0.50 U	5.0	0.50	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Copper	4.6 I	25	1.0	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Lead	4.0 I	5.0	1.1	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Mercury [a]	149	10	5.6	ng/l	20	06/01/13	06/04/13	ANJ	EPA 1631 [2]	EPA 1631 [4]
Zinc	20.3	20	5.0	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA10789
(2) Instrument QC Batch: N:MA31370
(3) Prep QC Batch: MP25236
(4) Prep QC Batch: N:MP72391

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	TMW-1		
Lab Sample ID:	FA5039-1	**Date Sampled:**	05/29/13
Matrix:	AQ - Ground Water	**Date Received:**	05/29/13
		Percent Solids:	n/a
Project:	SSA-ESA Main Water; Orlando, FL		

General Chemistry

Analyte	Result	PQL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.080 U	0.10	0.080	mg/l	10	05/29/13 17:17	FN	SW846 7196A
Total Organic Carbon	48.5	1.0	0.23	mg/l	1	06/01/13 08:53	FN	SM19 5310B/SW 9060A
pH [a]	5.19			su	1	05/29/13 19:00	KC	SM 4500H B/SW 9040C

(a) Field analysis required. Received out of hold time and analyzed by request.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID: TMW-2
Lab Sample ID: FA5039-2
Matrix: AQ - Ground Water
Method: SW846 8260B
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	J086761.D	1	05/30/13	MM	n/a	n/a	VJ4395
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
71-43-2	Benzene	0.21 U	1.0	0.21	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		83-118%
17060-07-0	1,2-Dichloroethane-D4	105%		79-125%
2037-26-5	Toluene-D8	104%		85-112%
460-00-4	4-Bromofluorobenzene	103%		83-118%

(a) Sample was treated with an anti-foaming agent.

U = Not detected MDL - Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TMW-2
Lab Sample ID: FA5039-2
Matrix: AQ - Ground Water
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Cadmium	0.50 U	5.0	0.50	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Copper	2.4 I	25	1.0	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Lead	2.6 I	5.0	1.1	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Mercury [a]	167	5.0	2.8	ng/l	10	06/01/13	06/04/13	ANJ	EPA 1631 [2]	EPA 1631 [4]
Zinc	8.2 I	20	5.0	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA10789
(2) Instrument QC Batch: N:MA31370
(3) Prep QC Batch: MP25236
(4) Prep QC Batch: N:MP72391

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	TMW-2		
Lab Sample ID:	FA5039-2	**Date Sampled:**	05/29/13
Matrix:	AQ - Ground Water	**Date Received:**	05/29/13
		Percent Solids:	n/a
Project:	SSA-ESA Main Water; Orlando, FL		

General Chemistry

Analyte	Result	PQL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.016 U	0.020	0.016	mg/l	2	05/29/13 17:17	FN	SW846 7196A
Total Organic Carbon	25.6	1.0	0.23	mg/l	1	06/01/13 09:10	FN	SM19 5310B/SW 9060A
pH [a]	5.56			su	1	05/29/13 19:00	KC	SM 4500H B/SW 9040C

(a) Field analysis required. Received out of hold time and analyzed by request.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID: TMW-3
Lab Sample ID: FA5039-3
Matrix: AQ - Ground Water
Method: SW846 8260B
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J086762.D	1	05/30/13	MM	n/a	n/a	VJ4395
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
71-43-2	Benzene	0.21 U	1.0	0.21	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		83-118%
17060-07-0	1,2-Dichloroethane-D4	107%		79-125%
2037-26-5	Toluene-D8	105%		85-112%
460-00-4	4-Bromofluorobenzene	98%		83-118%

U = Not detected MDL - Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TMW-3
Lab Sample ID: FA5039-3
Matrix: AQ - Ground Water
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Cadmium	0.50 U	5.0	0.50	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Copper	4.2 I	25	1.0	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Lead	7.3	5.0	1.1	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Mercury [a]	368	10	5.6	ng/l	20	06/01/13	06/04/13	ANJ	EPA 1631 [2]	EPA 1631 [4]
Zinc	14.9 I	20	5.0	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA10789
(2) Instrument QC Batch: N:MA31370
(3) Prep QC Batch: MP25236
(4) Prep QC Batch: N:MP72391

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	TMW-3		
Lab Sample ID:	FA5039-3	**Date Sampled:**	05/29/13
Matrix:	AQ - Ground Water	**Date Received:**	05/29/13
		Percent Solids:	n/a
Project:	SSA-ESA Main Water; Orlando, FL		

General Chemistry

Analyte	Result	PQL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.040 U	0.050	0.040	mg/l	5	05/29/13 17:17	FN	SW846 7196A
Total Organic Carbon	25.9	1.0	0.23	mg/l	1	06/01/13 09:26	FN	SM19 5310B/SW 9060A
pH [a]	5.49			su	1	05/29/13 19:00	KC	SM 4500H B/SW 9040C

(a) Field analysis required. Received out of hold time and analyzed by request.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID: TMW-4
Lab Sample ID: FA5039-4
Matrix: AQ - Ground Water
Method: SW846 8260B
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J086763.D	1	05/30/13	MM	n/a	n/a	VJ4395
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
71-43-2	Benzene	0.21 U	1.0	0.21	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		83-118%
17060-07-0	1,2-Dichloroethane-D4	104%		79-125%
2037-26-5	Toluene-D8	103%		85-112%
460-00-4	4-Bromofluorobenzene	92%		83-118%

U = Not detected MDL - Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TMW-4
Lab Sample ID: FA5039-4
Matrix: AQ - Ground Water
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Cadmium	0.50 U	5.0	0.50	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Copper	1.0 U	25	1.0	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Lead	1.1 U	5.0	1.1	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Mercury [a]	6.1	0.50	0.28	ng/l	1	06/01/13	06/04/13	ANJ	EPA 1631 [2]	EPA 1631 [4]
Zinc	15.0 I	20	5.0	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA10789
(2) Instrument QC Batch: N:MA31370
(3) Prep QC Batch: MP25236
(4) Prep QC Batch: N:MP72391

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	TMW-4		
Lab Sample ID:	FA5039-4	**Date Sampled:**	05/29/13
Matrix:	AQ - Ground Water	**Date Received:**	05/29/13
		Percent Solids:	n/a
Project:	SSA-ESA Main Water; Orlando, FL		

General Chemistry

Analyte	Result	PQL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 I	0.010	0.0080	mg/l	1	05/29/13 17:17	FN	SW846 7196A
Total Organic Carbon	9.5	1.0	0.23	mg/l	1	06/01/13 09:43	FN	SM19 5310B/SW 9060A
pH [a]	5.51			su	1	05/29/13 19:00	KC	SM 4500H B/SW 9040C

(a) Field analysis required. Received out of hold time and analyzed by request.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID: TMW-5
Lab Sample ID: FA5039-5
Matrix: AQ - Ground Water
Method: SW846 8260B
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J086764.D	1	05/30/13	MM	n/a	n/a	VJ4395
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
71-43-2	Benzene	0.21 U	1.0	0.21	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	107%		79-125%
2037-26-5	Toluene-D8	103%		85-112%
460-00-4	4-Bromofluorobenzene	94%		83-118%

U = Not detected MDL - Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TMW-5
Lab Sample ID: FA5039-5
Matrix: AQ - Ground Water
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Cadmium	0.50 U	5.0	0.50	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Copper	1.0 U	25	1.0	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Lead	1.1 U	5.0	1.1	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Mercury [a]	4.1	0.50	0.28	ng/l	1	06/01/13	06/04/13	ANJ	EPA 1631 [2]	EPA 1631 [4]
Zinc	21.8	20	5.0	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA10789
(2) Instrument QC Batch: N:MA31370
(3) Prep QC Batch: MP25236
(4) Prep QC Batch: N:MP72391

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	TMW-5		
Lab Sample ID:	FA5039-5	**Date Sampled:**	05/29/13
Matrix:	AQ - Ground Water	**Date Received:**	05/29/13
		Percent Solids:	n/a
Project:	SSA-ESA Main Water; Orlando, FL		

General Chemistry

Analyte	Result	PQL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0090 I	0.010	0.0080	mg/l	1	05/29/13 17:17	FN	SW846 7196A
Total Organic Carbon	16.9	1.0	0.23	mg/l	1	06/01/13 10:29	FN	SM19 5310B/SW 9060A
pH [a]	5.32			su	1	05/29/13 19:00	KC	SM 4500H B/SW 9040C

(a) Field analysis required. Received out of hold time and analyzed by request.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID: TMW-7
Lab Sample ID: FA5039-6
Matrix: AQ - Ground Water
Method: SW846 8260B
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J086765.D	1	05/30/13	MM	n/a	n/a	VJ4395
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
71-43-2	Benzene	0.21 U	1.0	0.21	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		83-118%
17060-07-0	1,2-Dichloroethane-D4	105%		79-125%
2037-26-5	Toluene-D8	104%		85-112%
460-00-4	4-Bromofluorobenzene	94%		83-118%

U = Not detected MDL - Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TMW-7
Lab Sample ID: FA5039-6
Matrix: AQ - Ground Water
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Cadmium	0.50 U	5.0	0.50	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Copper	1.0 U	25	1.0	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Lead	1.1 U	5.0	1.1	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]
Mercury [a]	20.5	0.50	0.28	ng/l	1	06/01/13	06/04/13	ANJ	EPA 1631 [2]	EPA 1631 [4]
Zinc	7.0 I	20	5.0	ug/l	1	05/30/13	05/30/13	LM	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA10789
(2) Instrument QC Batch: N:MA31370
(3) Prep QC Batch: MP25236
(4) Prep QC Batch: N:MP72391

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	TMW-7		
Lab Sample ID:	FA5039-6	**Date Sampled:**	05/29/13
Matrix:	AQ - Ground Water	**Date Received:**	05/29/13
		Percent Solids:	n/a
Project:	SSA-ESA Main Water; Orlando, FL		

General Chemistry

Analyte	Result	PQL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.016	0.010	0.0080	mg/l	1	05/29/13 17:17	FN	SW846 7196A
Total Organic Carbon	10.4	1.0	0.23	mg/l	1	06/01/13 10:45	FN	SM19 5310B/SW 9060A
pH [a]	5.42			su	1	05/29/13 19:00	KC	SM 4500H B/SW 9040C

(a) Field analysis required. Received out of hold time and analyzed by request.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Southeast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Southeast
Chain of Custody

ACCUTEST LABORATORIES

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 • FAX: 407-425-0707
www.accutest.com

Accutest JOB # FA5039

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Accutest Quote # | SKIFF#

Client / Reporting Information

Company Name: Terracon
Address: 1675 Lee Rd.
City: Winter Park State: FL Zip: 32789
Project Contact: Eric Knebil E-mail: EKnebil@Terracon.com
Phone#: 407-628-8358
Sampler(s) Name(s) (Printed): Mike Burns, Rory Thomas

Project Information

Project Name: SSA-ESA Main Water
Street:
City: Orlando State: FL
Project #: H112404
Fax #: 407-740-6112
Client Purchase Order #:

Analytical Information

Accutest Sample #	Field ID / Point of Collection	Collection DATE	Collection TIME	Sampled By	Matrix	Total # of Bottles	Container Information: Other	None	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI Water	MeOH	8260 Benz + NAP	TOC	FL-PRO TRPH	XCR, Ph	LL Mercury	Metals Cd,Cu,Pb,Zn
1	Tmw-1	5/29/13	1039	MB	GW	10		X	X		X	X				X	X	X	X	X	X
2	Tmw-2		1041	RT		10		X	X		X	X				X	X	X	X	X	X
3	Tmw-3		1200	MB		10		X	X		X	X				X	X	X	X	X	X
4	Tmw-4		1301	MB		10		X	X		X	X				X	X	X	X	X	X
5	Tmw-5		1350	MB		10		X	X		X	X				X	X	X	X	X	X
6	Tmw-7	↓	1440	MB	↓	10		X	X		X	X				X	X	X	X	X	X

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe

LAB USE ONLY

TURNAROUND TIME (Business Days)

Approved By: / Rush Code

- [ ] 10 Days Standard
- [ ] 7 Day RUSH
- [ ] 5 Day RUSH — 6day
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

only analyze TRPH if TOC is above 10.0 mg/L on any sample

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished by :	Date Time:	Received By:
1 Mike Burns	5/29/13 1545	2 K White ACSE	3		4
Relinquished by:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
5		6	7		8

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: Cooler Temperature (s) Celsius: 3.0, 2.8

FA5039: Chain of Custody
Page 1 of 3

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: FA5039 CLIENT: Terracon PROJECT: SSA-ESA Main Water

DATE/TIME RECEIVED: 05-29-13 1545 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 2

METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER GREYHOUND (DELIVERY) OTHER

AIRBILL NUMBERS:

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE PRESENT

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [✓] TRIP BLANK NOT PROVIDED
- [✓] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

MISC. INFORMATION

NUMBER OF ENCORES ? 25-GRAM _____ 5-GRAM _____

NUMBER OF 5035 FIELD KITS ? _____

NUMBER OF LAB FILTERED METALS ? _____

TEMPERATURE INFORMATION

- [ ] IR THERM ID 3 CORR. FACTOR +0.4
- [ ] OBSERVED TEMPS: 2.6 2.4
- [ ] CORRECTED TEMPS: 3.0 2.8

SAMPLE INFORMATION

- [ ] SAMPLE LABELS PRESENT ON ALL BOTTLES
- [ ] INCORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- [ ] ID'S ON COC DO NOT MATCH LABEL
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

{APPICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE: R Willis 05-29-13 REVIEWER SIGNATURE/DATE: [signature] 05/29/13

NF 12/10

receipt confirmation 122910.xls

FA5039: Chain of Custody

Page 2 of 3

Job Change Order: FA5039_5/31/2013

Requested Date:	5/31/2013	**Received Date:**	5/29/2013
Account Name:	Terracon Consulting	**Due Date:**	6/5/2013
Project Description:	SSA-ESA Main Water; Orlando, FL	**Deliverable:**	COMMB
CSR:	AC	**TAT (Days):**	3

Sample #:
FA5039-all

Change: Please extract and hold FLPRO.

Above Changes Eric Krebill **Date:** 5/31/2013

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

Page 1 of 1

FA5039: Chain of Custody
Page 3 of 3

Southeast ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA5039
Account: TERCFLWP Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VJ4395-MB	J086759.D	1	05/30/13	MM	n/a	n/a	VJ4395

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.21	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	105%	83-118%
17060-07-0	1,2-Dichloroethane-D4	105%	79-125%
2037-26-5	Toluene-D8	104%	85-112%
460-00-4	4-Bromofluorobenzene	96%	83-118%

Blank Spike Summary

Job Number: FA5039
Account: TERCFLWP Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VJ4395-BS	J086758.D	1	05/30/13	MM	n/a	n/a	VJ4395

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	28.5	114	81-122
91-20-3	Naphthalene	25	23.7	95	63-132

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	100%	79-125%
2037-26-5	Toluene-D8	103%	85-112%
460-00-4	4-Bromofluorobenzene	91%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA5039
Account: TERCFLWP Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA5039-4MS	J086780.D	1	05/30/13	MM	n/a	n/a	VJ4395
FA5039-4MSD	J086781.D	1	05/30/13	MM	n/a	n/a	VJ4395
FA5039-4	J086763.D	1	05/30/13	MM	n/a	n/a	VJ4395

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6

CAS No.	Compound	FA5039-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U		25	30.1	120	29.8	119	1	81-122/14
91-20-3	Naphthalene	5.0 U		25	22.5	90	25.1	100	11	63-132/25

CAS No.	Surrogate Recoveries	MS	MSD	FA5039-4	Limits
1868-53-7	Dibromofluoromethane	97%	100%	105%	83-118%
17060-07-0	1,2-Dichloroethane-D4	103%	103%	104%	79-125%
2037-26-5	Toluene-D8	97%	99%	103%	85-112%
460-00-4	4-Bromofluorobenzene	88%	89%	92%	83-118%

* = Outside of Control Limits.

Southeast ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA5039
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP25236
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:				05/30/13		05/30/13	
Metal	RL	IDL	MDL	MB raw	MB final	MB raw	MB final
Aluminum	200	15	15				
Antimony	6.0	1.3	1.3				
Arsenic	10	1.6	2.5				
Barium	200	1	1				
Beryllium	4.0	.5	.5				
Cadmium	5.0	.5	.5	0.0	<5.0	-0.10	<5.0
Calcium	1000	50	50				
Chromium	10	1.8	2				
Cobalt	50	.5	.5				
Copper	25	1	1	0.60	<25	0.20	<25
Iron	300	29	29				
Lead	5.0	1.1	1.1	-0.20	<5.0	-0.20	<5.0
Magnesium	5000	74	74				
Manganese	15	.7	.7				
Molybdenum	50	.6	1				
Nickel	40	.5	.5				
Potassium	10000	200	200				
Selenium	10	2	2				
Silver	10	.5	.5				
Sodium	10000	500	500				
Strontium	10	.5	.5				
Thallium	10	1.3	1.3				
Tin	50	.7	1.8				
Titanium	10	.9	1				
Vanadium	50	.5	1				
Zinc	20	3	5	0.0	<20	6.4	<20

Associated samples MP25236: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA5039
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP25236
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:			05/30/13					05/30/13	
Metal	FA5039-1 Original	DUP	RPD	QC Limits	FA5039-1 Original	MS	Spikelot MPFLICP1	% Rec	QC Limits
Aluminum	anr								
Antimony									
Arsenic	anr								
Barium	anr								
Beryllium									
Cadmium	0.0	0.0	NC	0-20	0.0	50.0	50	100.0	80-120
Calcium	anr								
Chromium	anr								
Cobalt									
Copper	4.6	4.9	6.3	0-20	4.6	278	250	109.4	80-120
Iron	anr								
Lead	4.0	4.8	18.2	0-20	4.0	500	500	99.2	80-120
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel									
Potassium									
Selenium	anr								
Silver	anr								
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc	20.3	22.8	11.6	0-20	20.3	531	500	102.1	80-120

Associated samples MP25236: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA5039
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP25236 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 05/30/13

Metal	FA5039-1 Original	MSD	Spikelot MPFLICP1	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony						
Arsenic	anr					
Barium	anr					
Beryllium						
Cadmium	0.0	49.6	50	99.2	0.8	20
Calcium	anr					
Chromium	anr					
Cobalt						
Copper	4.6	274	250	107.8	1.4	20
Iron	anr					
Lead	4.0	496	500	98.4	0.8	20
Magnesium	anr					
Manganese	anr					
Molybdenum						
Nickel						
Potassium						
Selenium	anr					
Silver	anr					
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc	20.3	522	500	100.3	1.7	20

Associated samples MP25236: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA5039
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP25236
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/30/13

Metal	BSP Result	Spikelot MPFLICP1	% Rec	QC Limits
Aluminum	anr			
Antimony				
Arsenic	anr			
Barium	anr			
Beryllium				
Cadmium	51.7	50	103.4	80-120
Calcium	anr			
Chromium	anr			
Cobalt				
Copper	292	250	116.8	80-120
Iron	anr			
Lead	506	500	101.2	80-120
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel				
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	521	500	104.2	80-120

Associated samples MP25236: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA5039
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP25236
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/30/13

Metal	FA5039-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony				
Arsenic	anr			
Barium	anr			
Beryllium				
Cadmium	0.00	0.00	NC	0-10
Calcium	anr			
Chromium	anr			
Cobalt				
Copper	4.60	10.0	117.4(a)	0-10
Iron	anr			
Lead	4.00	0.00	100.0(a)	0-10
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel				
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	20.3	34.2	68.5 (a)	0-10

Associated samples MP25236: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

POST DIGESTATE SPIKE SUMMARY

Login Number: FA5039
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP25236
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/30/13

Metal	Sample ml	Final ml	FA5039-1 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium	9.8	10	0	0	51	0.2	2.5	50	102.0	80-120
Calcium										
Chromium										
Cobalt										
Copper	9.8	10	4.6	4.508	111.5	0.2	5	100	107.0	80-120
Iron										
Lead	9.8	10	4	3.92	54.4	0.2	2.5	50	101.0	80-120
Magnesium										
Manganese										
Molybdenum										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Strontium										
Thallium										
Tin										
Titanium										
Vanadium										
Zinc	9.8	10	20.3	19.894	309.2	0.2	12.5	250	115.7	80-120

Associated samples MP25236: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested

Southeast ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA5039
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GN55975	0.010	0.0	mg/l	0.100	0.11	107.2	78-120%
Total Organic Carbon	GP21758/GN56031	1.0	0.0	mg/l	15	15.5	103.3	90-110%

Associated Samples:
Batch GN55975: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6
Batch GP21758: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA5039
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Total Organic Carbon	GP21758/GN56031	FA5039-1	mg/l	48.5	48.2	0.6	0-20%
pH	GN55981	FA5039-1	su	5.19	5.21	0.4	0-10%

Associated Samples:
Batch GN55981: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6
Batch GP21758: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA5039
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GN55975	FA5039-4	mg/l	0.0080	0.100	0.086	78.0	78-120%
Total Organic Carbon	GP21758/GN56031	FA5039-1	mg/l	48.5	15	63.6	100.7	90-110%

Associated Samples:
Batch GN55975: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6
Batch GP21758: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA5039
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GN55975	FA5039-4	mg/l	0.0080	0.100	0.0830	2.6(a)	34%

Associated Samples:
Batch GN55975: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike recovery indicates possible matrix interference.

Southeast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

(Accutest New Jersey)

Includes the following where applicable:

- Chain of Custody

ACCUTEST Laboratories

Accutest Laboratories Southeast
Subcontract Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.accutest.com

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Fedx # 7998 8399 3965

Client / Reporting Information

Company Name: Accutest Laboratories
Address: 4405 Vineland Rd.
City: Orlando State: FL Zip: 32811
Phone #: (407) 425-6700 Fax#: (407) 425-0707

Project Information

Project Name: FA5039
Please send report to dawnd@accutest.com
For any other issues contact munam@accutest.com

Analytical Information

Matrix Codes
DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe

Lab ID #	Sample ID	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	HGLL1631	LAB USE ONLY
	FA5039-1	05/29/13	10:39		GW	1		x								X	
	FA5039-2	05/29/13	10:41		GW	1		x								X	
	FA5039-3	05/29/13	12:00		GW	1		x								X	
	FA5039-4	05/29/13	13:01		GW	1		x								X	MC
	FA5039-5	05/29/13	13:50		GW	1		x								X	
	FA5039-6	05/29/13	14:40		GW	1		x								X	

Turnaround Time (Business days)

Std. 10 Business Days
7 Day *RUSH*
5 Day *RUSH*
3 Day *EMERGENCY*
2 Day *EMERGENCY*
1 Day *EMERGENCY*
Other

Approved By: / Date/Rush Code: 06-05-13

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [x] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Ship to Laboratory - ALNJ
Approved by - munam

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1 [signature] ACSE	05-30-13 1700	2 FX	3 FX	5/31/13 1030	4 [signature] ALNJ
Relinquished by/Affiliation 5	Date Time:	Received By/Affiliation 6	Relinquished By/Affiliation 7	Date Time:	Received By/Affiliation 8

Lab Use Only : Custody Seal in Place (Y) N Temp Blank Provided: Y N Preserved Where Applicable: Y N Total # of Coolers: 1 Cooler Temperature (s) Celsius: 2.0 B

H

8.1

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FA5039: Chain of Custody
Page 1 of 2
Accutest New Jersey

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: FA5039 **Client:** **Project:**

Date / Time Received: 5/31/2013 **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (2/2); 0

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:			
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control _Preservatio	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☑	☐
2. Trip Blank listed on COC:	☐		☑	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:732.329.0200
2235 US Highway 130
F: 732.329.3499
Dayton, New Jersey
www/accutest.com

8.1

8

FA5039: Chain of Custody
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Southeast ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

(Accutest New Jersey)

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA5039
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: TERCFLWP: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP72391 Methods: EPA 1631
Matrix Type: AQUEOUS Units: ng/l

Prep Date:				06/01/13		06/01/13	
Metal	RL	IDL	MDL	MB raw	final	MB raw	final
Mercury	0.50	.086	.28	-0.23	<0.50	0.37	<0.50

Associated samples MP72391: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA5039
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: TERCFLWP: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP72391
Matrix Type: AQUEOUS

Methods: EPA 1631
Units: ng/l

Prep Date: 06/03/13

Metal	FA5039-4 Original	MS	Spikelot HGLL1	% Rec	QC Limits
Mercury	6.1	10.9	5	96.0	71-125

Associated samples MP72391: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA5039
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: TERCFLWP: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP72391 Methods: EPA 1631
Matrix Type: AQUEOUS Units: ng/l

Prep Date: 06/03/13

Metal	FA5039-4 Original	MSD	Spikelot HGLL1	% Rec	MSD RPD	QC Limit
Mercury	6.1	11.1	5	100.0	1.8	24

Associated samples MP72391: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA5039
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: TERCFLWP: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP72391
Matrix Type: AQUEOUS

Methods: EPA 1631
Units: ng/l

Prep Date: 05/23/13

Metal	LCS Result	Spikelot HGLL1	% Rec	QC Limits
Mercury	4.8	5	96.0	77-123

Associated samples MP72391: FA5039-1, FA5039-2, FA5039-3, FA5039-4, FA5039-5, FA5039-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

Southeast
ACCUTEST LABORATORIES

06/10/13

Technical Report for

Terracon Consulting

SSA-ESA Main Water; Orlando, FL

H1127404

Accutest Job Number: FA5039R

Sampling Date: 05/29/13

Report to:

Terracon
1675 Lee Rd
Winter Park, FL 32789
erkrebill@terracon.com

ATTN: Eric Krebill

Total number of pages in report: **19**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001) DoD ELAP (L-A-B L2229), CA (04226CA), TX (T104704404), AK, AR, GA, KY, MA, NV, OK, UT, VA, WA, WI

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Accutest Laboratories

Sample Summary

Terracon Consulting

Job No: FA5039R

SSA-ESA Main Water; Orlando, FL
Project No: H1127404

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA5039-1R	05/29/13	10:39	MBRT	05/29/13	AQ	Ground Water	TMW-1
FA5039-2R	05/29/13	10:41	MBRT	05/29/13	AQ	Ground Water	TMW-2
FA5039-3R	05/29/13	12:00	MBRT	05/29/13	AQ	Ground Water	TMW-3
FA5039-5R	05/29/13	13:50	MBRT	05/29/13	AQ	Ground Water	TMW-5
FA5039-6R	05/29/13	14:40	MBRT	05/29/13	AQ	Ground Water	TMW-7

Summary of Hits

Job Number: FA5039R
Account: Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL
Collected: 05/29/13

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA5039-1R	**TMW-1**					
TPH (C8-C40) [a]		0.170 I	0.25	0.15	mg/l	FLORIDA-PRO
FA5039-2R	**TMW-2**					
No hits reported in this sample.						
FA5039-3R	**TMW-3**					
TPH (C8-C40) [a]		0.200 I	0.24	0.15	mg/l	FLORIDA-PRO
FA5039-5R	**TMW-5**					
TPH (C8-C40) [a]		0.331	0.25	0.15	mg/l	FLORIDA-PRO
FA5039-6R	**TMW-7**					
TPH (C8-C40) [a]		0.157 I	0.24	0.15	mg/l	FLORIDA-PRO

(a) Sample extracted beyond hold time.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: TMW-1
Lab Sample ID: FA5039-1R
Matrix: AQ - Ground Water
Method: FLORIDA-PRO SW846 3510C
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ZF059978.D	1	06/06/13	FEA	06/06/13	OP47208	GZF2129
Run #2							

	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
	TPH (C8-C40)	0.170	0.25	0.15	mg/l	I

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	60%		43-123%

(a) Sample extracted beyond hold time.

U = Not detected MDL - Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TMW-2
Lab Sample ID: FA5039-2R
Matrix: AQ - Ground Water
Method: FLORIDA-PRO SW846 3510C
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ZF059979.D	1	06/06/13	FEA	06/06/13	OP47208	GZF2129
Run #2							

	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
	TPH (C8-C40)	0.15 U	0.25	0.15	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		43-123%

(a) Sample extracted beyond hold time.

U = Not detected MDL - Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TMW-3
Lab Sample ID: FA5039-3R
Matrix: AQ - Ground Water
Method: FLORIDA-PRO SW846 3510C
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ZF059980.D	1	06/06/13	FEA	06/06/13	OP47208	GZF2129
Run #2							

	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
	TPH (C8-C40)	0.200	0.24	0.15	mg/l	I

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	78%		43-123%

(a) Sample extracted beyond hold time.

U = Not detected MDL - Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TMW-5
Lab Sample ID: FA5039-5R
Matrix: AQ - Ground Water
Method: FLORIDA-PRO SW846 3510C
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ZF059981.D	1	06/06/13	FEA	06/06/13	OP47208	GZF2129
Run #2							

	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
	TPH (C8-C40)	0.331	0.25	0.15	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	79%		43-123%

(a) Sample extracted beyond hold time.

U = Not detected MDL - Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TMW-7
Lab Sample ID: FA5039-6R
Matrix: AQ - Ground Water
Method: FLORIDA-PRO SW846 3510C
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/29/13
Date Received: 05/29/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ZF059982.D	1	06/06/13	FEA	06/06/13	OP47208	GZF2129
Run #2							

	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
	TPH (C8-C40)	0.157	0.24	0.15	mg/l	I

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	80%		43-123%

(a) Sample extracted beyond hold time.

U = Not detected MDL - Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Southeast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Southeast
Chain of Custody

ACCUTEST LABORATORIES

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 • FAX: 407-425-0707
www.accutest.com

Accutest JOB # FA5039

PAGE 1 OF 1

Accutest Quote # | SKIFF#

Client / Reporting Information

Company Name: Terracon
Address: 1675 Lee Rd.
City: Winter Park State: FL Zip: 32789
Project Contact: Eric Knebil E-mail: EKnebil@Terracon.com
Phone#: 407-628-8358
Sampler(s) Name(s) (Printed): Mike Burns, Rory Thomas

Project Information

Project Name: SSA-ESA Main Water
Street:
City: Orlando State: FL
Project #: H112404
Fax #: 407-740-6112
Client Purchase Order #:

Analytical Information

Accutest Sample #	Field ID / Point of Collection	Collection DATE	Collection TIME	Sampled By	Matrix	Total # of Bottles	Container Information	8260 Benz + NAP	TOC	FL-PRO TRPH	XCR, PH	LL Mercury	Metals Cd,Cu,Pb,Zn
1	Tmw-1	5/29/13	1039	MB	GW	10		X	X	X	X	X	X
2	Tmw-2		1041	RT		10		X	X	X	X	X	X
3	Tmw-3		1200	MB		10		X	X	X	X	X	X
4	Tmw-4		1301	MB		10		X	X	X	X	X	X
5	Tmw-5		1350	MB		10		X	X	X	X	X	X
6	Tmw-7		1440	MB		10		X	X	X	X	X	X

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe

LAB USE ONLY

TURNAROUND TIME (Business Days)

Approved By: / Rush Code

- [ ] 10 Days Standard
- [ ] 7 Day RUSH
- [ ] 5 Day RUSH — 6day
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

only analyze TRPH if TOC is above 10.0 mg/L on any sample

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished by :	Date Time:	Received By:
1 Mike Burns	5/29/13 1545	2 K White	3		4
Relinquished by:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
5		6	7		8

05-29-13 1545 ACSE

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: Cooler Temperature (s) Celsius: 3.0, 2.8

FA5039R: Chain of Custody
Page 1 of 4

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: FA5039 CLIENT: Terracon PROJECT: SSA-ESA Main Water

DATE/TIME RECEIVED: 05-29-13 1545 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 2

METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER GREYHOUND (DELIVERY) OTHER

AIRBILL NUMBERS:

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE PRESENT

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [x] TRIP BLANK NOT PROVIDED
- [x] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

MISC. INFORMATION

NUMBER OF ENCORES ? 25-GRAM_____ 5-GRAM_____

NUMBER OF 5035 FIELD KITS ? _____

NUMBER OF LAB FILTERED METALS ? _____

TEMPERATURE INFORMATION

- [ ] IR THERM ID 3 CORR. FACTOR +0.4
- [ ] OBSERVED TEMPS: 2.6 2.4
- [ ] CORRECTED TEMPS: 3.0 2.8

SAMPLE INFORMATION

- [ ] SAMPLE LABELS PRESENT ON ALL BOTTLES
- [ ] INCORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- [ ] ID'S ON COC DO NOT MATCH LABEL
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

{APPICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE: R Willis 05-29-13 REVIEWER SIGNATURE/DATE: [signature] 05/29/13

NF 12/10

receipt confirmation 122910.xls

4.1 4

FA5039R: Chain of Custody

Page 2 of 4

Job Change Order: FA5039_5/31/2013

Requested Date:	5/31/2013	**Received Date:**	5/29/2013
Account Name:	Terracon Consulting	**Due Date:**	6/5/2013
Project Description:	SSA-ESA Main Water; Orlando, FL	**Deliverable:**	COMMB
CSR:	AC	**TAT (Days):**	3

Sample #:
FA5039-all

Change: Please extract and hold FLPRO.

Above Changes Eric Krebill **Date:** 5/31/2013

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

Page 1 of 1

FA5039R: Chain of Custody
Page 3 of 4

Job Change Order: FA5039_6/5/2013

Requested Date:	6/5/2013	**Received Date:**	5/29/2013
Account Name:	Terracon Consulting	**Due Date:**	6/5/2013
Project Description:	SSA-ESA Main Water; Orlando, FL	**Deliverable:**	COMMB
CSR:	AC	**TAT (Days):**	7

Sample #:
FA5039-1,2,3,5,6

Change: Please analyze the samples for FLPRO. They have been extracted.

Above Changes Eric Krebill **Date:** 6/5/2013

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

Page 1 of 1

FA5039R: Chain of Custody
Page 4 of 4

Southeast ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA5039R
Account: TERCFLWP Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP47208-MB	ZF059974.D	1	06/06/13	FEA	06/06/13	OP47208	GZF2129

The QC reported here applies to the following samples: **Method:** FLORIDA-PRO

FA5039-1R, FA5039-2R, FA5039-3R, FA5039-5R, FA5039-6R

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	ND	0.25	0.15	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	81%	43-123%

Blank Spike Summary

Job Number: FA5039R
Account: TERCFLWP Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP47208-BS	ZF059973.D	1	06/06/13	FEA	06/06/13	OP47208	GZF2129

The QC reported here applies to the following samples: **Method:** FLORIDA-PRO

FA5039-1R, FA5039-2R, FA5039-3R, FA5039-5R, FA5039-6R

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH (C8-C40)	0.85	0.751	88	48-113

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	82%	43-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA5039R
Account: TERCFLWP Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP47208-MS	ZF059976.D	1	06/06/13	FEA	06/06/13	OP47208	GZF2129
OP47208-MSD	ZF059977.D	1	06/06/13	FEA	06/06/13	OP47208	GZF2129
FA5221-2	ZF059975.D	1	06/06/13	FEA	06/06/13	OP47208	GZF2129

The QC reported here applies to the following samples: **Method:** FLORIDA-PRO

FA5039-1R, FA5039-2R, FA5039-3R, FA5039-5R, FA5039-6R

CAS No.	Compound	FA5221-2 mg/l	Q	Spike mg/l	MS mg/l	MS %	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH (C8-C40)	0.24	U	1.67	1.50	90	1.55	93	3	48-113/27

CAS No.	Surrogate Recoveries	MS	MSD	FA5221-2	Limits
84-15-1	o-Terphenyl	81%	83%	76%	43-123%

* = Outside of Control Limits.

Southeast
ACCUTEST LABORATORIES

06/05/13

Technical Report for

Terracon Consulting

SSA-ESA Main Water; Orlando, FL

H1127404

Accutest Job Number: FA5060

Sampling Date: 05/30/13

Report to:

Terracon
1675 Lee Rd
Winter Park, FL 32789
erkrebill@terracon.com

ATTN: Eric Krebill

Total number of pages in report: **36**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001) DoD ELAP (L-A-B L2229), CA (04226CA), TX (T104704404), AK, AR, GA, KY, MA, NV, OK, UT, VA, WA, WI

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.

Sections: 1 2 3 4 5 6 7 8 9

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Sample Summary

Terracon Consulting

Job No: FA5060

SSA-ESA Main Water; Orlando, FL
Project No: H1127404

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA5060-1	05/30/13	09:07	MB	05/30/13	AQ	Ground Water	TMW-6

Summary of Hits

Job Number: FA5060
Account: Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL
Collected: 05/30/13

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA5060-1	**TMW-6**					
Mercury [a]		27.6	0.50	0.28	ng/l	EPA 1631
Zinc		8.2 I	20	5.0	ug/l	SW846 6010C
Total Organic Carbon		14.0	1.0	0.23	mg/l	SM19 5310B/SW 9060A
pH [b]		5.42			su	SM 4500H B/SW 9040C

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.
(b) Field analysis required. Received out of hold time and analyzed by request.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: TMW-6
Lab Sample ID: FA5060-1
Matrix: AQ - Ground Water
Method: SW846 8260B
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/30/13
Date Received: 05/30/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P16435.D	1	06/04/13	EG	n/a	n/a	VP631
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	PQL	MDL	Units	Q
71-43-2	Benzene	0.21 U	1.0	0.21	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		83-118%
17060-07-0	1,2-Dichloroethane-D4	107%		79-125%
2037-26-5	Toluene-D8	98%		85-112%
460-00-4	4-Bromofluorobenzene	101%		83-118%

U = Not detected MDL - Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TMW-6
Lab Sample ID: FA5060-1
Matrix: AQ - Ground Water
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/30/13
Date Received: 05/30/13
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Cadmium	0.50 U	5.0	0.50	ug/l	1	05/31/13	05/31/13	LM	SW846 6010C [1]	SW846 3010A [3]
Copper	1.0 U	25	1.0	ug/l	1	05/31/13	05/31/13	LM	SW846 6010C [1]	SW846 3010A [3]
Lead	1.1 U	5.0	1.1	ug/l	1	05/31/13	05/31/13	LM	SW846 6010C [1]	SW846 3010A [3]
Mercury [a]	27.6	0.50	0.28	ng/l	1	06/01/13	06/04/13	ANJ	EPA 1631 [2]	EPA 1631 [4]
Zinc	8.2 I	20	5.0	ug/l	1	05/31/13	05/31/13	LM	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA10792
(2) Instrument QC Batch: N:MA31370
(3) Prep QC Batch: MP25242
(4) Prep QC Batch: N:MP72391

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	TMW-6		
Lab Sample ID:	FA5060-1	**Date Sampled:**	05/30/13
Matrix:	AQ - Ground Water	**Date Received:**	05/30/13
		Percent Solids:	n/a
Project:	SSA-ESA Main Water; Orlando, FL		

General Chemistry

Analyte	Result	PQL	MDL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.0080 U	0.010	0.0080	mg/l	1	05/30/13 12:40	JA	SW846 7196A
Total Organic Carbon	14.0	1.0	0.23	mg/l	1	06/01/13 17:50	FN	SM19 5310B/SW 9060A
pH [a]	5.42			su	1	05/30/13 11:05	LE	SM 4500H B/SW 9040C

(a) Field analysis required. Received out of hold time and analyzed by request.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Southeast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Southeast
Chain of Custody

ACCUTEST LABORATORIES

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 • FAX: 407-425-0707
www.accutest.com

Accutest JOB # FA5060 PAGE 1 OF 1

Accutest Quote # | SKIFF#

Client / Reporting Information

Company Name: Terracon
Address: 1675 Lee Rd.
City: Winter Park State: FL. Zip: 32789
Project Contact: Eric Krebill E-mail: EKrebiH@Terracon.com
Phone#: 407-740-6110 / 407-618-8358
Sampler(s) Name(s) (Printed): Mike Burns

Project Information

Project Name: SSA-ESA Main Water
Street:
City: Orlando State: FC
Project #: H1127404
Fax #: 407-740-6112
Client Purchase Order #:

Analytical Information

Accutest Sample #	Field ID / Point of Collection	Collection: Date	Time	Sampled By:	Matrix	Total # of Bottles	Container Information	8260 Benz + MAP	TOC	FL-PRO	LL mercury	XCK, Ph	metals Cd, Cu, Pb, Zn
1	TMW-6	5/30/13	0907	MB	GW	10	X None, X HCl, X HNO3, X H2SO4	X	X	X	X	X	X

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe

LAB USE ONLY

TURNAROUND TIME (Business Days)

Approved By: / Rush Code

- [ ] 10 Days Standard
- [ ] 7 Day RUSH
- [ ] 5 Day RUSH — 6day
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Only analyze TRPH if Toc is above 10.0 mg/L

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
1	Mike Burns	5/30/13 1018	2	3		4
5			6	7		8

Received By (2): 05/30/13 10:18

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: Cooler Temperature (s) Celsius: 3.0

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FA5060: Chain of Custody
Page 1 of 3

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: FA 5060 CLIENT: TERRACON PROJECT: SSA - ESA MAIN WATER

DATE/TIME RECEIVED: 5-30-13 10:18 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 1

METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER GREYHOUND (DELIVERY) OTHER

AIRBILL NUMBERS:

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE PRESENT

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

MISC. INFORMATION

NUMBER OF ENCORES ? 25-GRAM _____ 5-GRAM _____

NUMBER OF 5035 FIELD KITS ? _____

NUMBER OF LAB FILTERED METALS ? _____

TEMPERATURE INFORMATION

- [ ] IR THERM ID 3 CORR. FACTOR +0.4
- [ ] OBSERVED TEMPS: 2.6
- [ ] CORRECTED TEMPS: 3.0

SAMPLE INFORMATION

- [ ] SAMPLE LABELS PRESENT ON ALL BOTTLES
- [ ] INCORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- [ ] ID'S ON COC DO NOT MATCH LABEL
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

{APPICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE 5-30-13 REVIEWER SIGNATURE/DATE 05/30/13

NF 12/10 receipt confirmation 122910.xls

FA5060: Chain of Custody

Page 2 of 3

Job Change Order: FA5060_5/31/2013

Requested Date:	5/31/2013	**Received Date:**	5/30/2013
Account Name:	Terracon Consulting	**Due Date:**	6/6/2013
Project Description:	SSA-ESA Main Water; Orlando, FL	**Deliverable:**	COMMB
CSR:	AC	**TAT (Days):**	6

Sample #:
FA5060-all

Change: Please extract and hold FLPRO.

Above Changes Eric Krebill **Date:** 5/31/2013

FA5060: Chain of Custody
Page 3 of 3

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

Page 1 of 1

Southeast ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA5060
Account: TERCFLWP Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VP631-MB	P16423.D	1	06/04/13	EG	n/a	n/a	VP631

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA5060-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.21	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	103%	83-118%
17060-07-0	1,2-Dichloroethane-D4	104%	79-125%
2037-26-5	Toluene-D8	96%	85-112%
460-00-4	4-Bromofluorobenzene	98%	83-118%

Blank Spike Summary

Job Number: FA5060
Account: TERCFLWP Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VP631-BS	P16421.D	1	06/04/13	EG	n/a	n/a	VP631

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA5060-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.5	98	81-122
91-20-3	Naphthalene	25	22.0	88	63-132

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	83-118%
17060-07-0	1,2-Dichloroethane-D4	103%	79-125%
2037-26-5	Toluene-D8	98%	85-112%
460-00-4	4-Bromofluorobenzene	101%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA5060
Account: TERCFLWP Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA5073-3MS	P16431.D	25	06/04/13	EG	n/a	n/a	VP631
FA5073-3MSD	P16432.D	25	06/04/13	EG	n/a	n/a	VP631
FA5073-3	P16430.D	25	06/04/13	EG	n/a	n/a	VP631

The QC reported here applies to the following samples: **Method:** SW846 8260B

FA5060-1

CAS No.	Compound	FA5073-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	363		625	999	102	1020	105	2	81-122/14
91-20-3	Naphthalene	129	J	625	722	95	791	106	9	63-132/25

CAS No.	Surrogate Recoveries	MS	MSD	FA5073-3	Limits
1868-53-7	Dibromofluoromethane	104%	104%	101%	83-118%
17060-07-0	1,2-Dichloroethane-D4	107%	110%	109%	79-125%
2037-26-5	Toluene-D8	96%	96%	97%	85-112%
460-00-4	4-Bromofluorobenzene	99%	98%	100%	83-118%

* = Outside of Control Limits.

Southeast ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA5060
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP25242
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/31/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	15	15		
Antimony	6.0	1.3	1.3		
Arsenic	10	1.6	2.5		
Barium	200	1	1		
Beryllium	4.0	.5	.5		
Cadmium	5.0	.5	.5	0.0	<5.0
Calcium	1000	50	50		
Chromium	10	1.8	2		
Cobalt	50	.5	.5		
Copper	25	1	1	0.20	<25
Iron	300	29	29		
Lead	5.0	1.1	1.1	-0.60	<5.0
Magnesium	5000	74	74		
Manganese	15	.7	.7		
Molybdenum	50	.6	1		
Nickel	40	.5	.5		
Potassium	10000	200	200		
Selenium	10	2	2		
Silver	10	.5	.5		
Sodium	10000	500	500		
Strontium	10	.5	.5		
Thallium	10	1.3	1.3		
Tin	50	.7	1.8		
Titanium	10	.9	1		
Vanadium	50	.5	1		
Zinc	20	3	5	-0.10	<20

Associated samples MP25242: FA5060-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA5060
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP25242
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/31/13 05/31/13

Metal	FA5041-1 Original	DUP	RPD	QC Limits	FA5041-1 Original	MS	Spikelot MPFLICP1	% Rec	QC Limits
Aluminum									
Antimony									
Arsenic	anr								
Barium	anr								
Beryllium									
Cadmium	0.0	0.0	NC	0-20	0.0	50.1	50	100.2	80-120
Calcium									
Chromium	anr								
Cobalt									
Copper	0.0	0.0	NC	0-20	0.0	254	250	101.6	80-120
Iron									
Lead	0.0	0.0	NC	0-20	0.0	453	500	90.6	80-120
Magnesium									
Manganese									
Molybdenum									
Nickel	anr								
Potassium									
Selenium	anr								
Silver	anr								
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc	3.0	3.0	0.0	0-20	3.0	481	500	95.6	80-120

Associated samples MP25242: FA5060-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA5060
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP25242 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 05/31/13

Metal	FA5041-1 Original	MSD	Spikelot MPFLICP1	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	anr					
Beryllium						
Cadmium	0.0	51.0	50	102.0	1.8	20
Calcium						
Chromium	anr					
Cobalt						
Copper	0.0	257	250	102.8	1.2	20
Iron						
Lead	0.0	460	500	92.0	1.5	20
Magnesium						
Manganese						
Molybdenum						
Nickel	anr					
Potassium						
Selenium	anr					
Silver	anr					
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc	3.0	490	500	97.4	1.9	20

Associated samples MP25242: FA5060-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA5060
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP25242
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/31/13

Metal	BSP Result	Spikelot MPFLICP1	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	anr			
Beryllium				
Cadmium	52.6	50	105.2	80-120
Calcium				
Chromium	anr			
Cobalt				
Copper	265	250	106.0	80-120
Iron				
Lead	474	500	94.8	80-120
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	507	500	101.4	80-120

Associated samples MP25242: FA5060-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA5060
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP25242
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/31/13

Metal	FA5041-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	anr			
Beryllium				
Cadmium	0.00	0.00	NC	0-10
Calcium				
Chromium	anr			
Cobalt				
Copper	0.00	0.00	NC	0-10
Iron				
Lead	0.00	0.00	NC	0-10
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	3.00	0.00	100.0(a)	0-10

Associated samples MP25242: FA5060-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

POST DIGESTATE SPIKE SUMMARY

Login Number: FA5060
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP25242
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/31/13

Metal	Sample ml	Final ml	FA5041-1 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium	9.8	10	0	0	51.9	0.2	2.5	50	103.8	80-120
Calcium										
Chromium										
Cobalt										
Copper	9.8	10	0	0	104.7	0.2	5	100	104.7	80-120
Iron										
Lead	9.8	10	0	0	44.3	0.2	2.5	50	88.6	80-120
Magnesium										
Manganese										
Molybdenum										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Strontium										
Thallium										
Tin										
Titanium										
Vanadium										
Zinc	9.8	10	3	2.94	285.7	0.2	12.5	250	113.1	80-120

Associated samples MP25242: FA5060-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested

Southeast ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA5060
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GN55988	0.010	0.0	mg/l	0.100	0.11	105.0	78-120%
Total Organic Carbon	GP21759/GN56031	1.0	0.0	mg/l	15	14.4	96.0	90-110%

Associated Samples:
Batch GN55988: FA5060-1
Batch GP21759: FA5060-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA5060
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Total Organic Carbon	GP21759/GN56031	FA4911-1	mg/l	6.4	6.3	1.6	0-20%
pH	GN55986	FA5043-1	su	6.95	6.89	0.9	0-10%

Associated Samples:
Batch GN55986: FA5060-1
Batch GP21759: FA5060-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA5060
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GN55988	FA5060-1	mg/l	0.0080 U	0.100	0.075	72.6*(a)	78-120%
Total Organic Carbon	GP21759/GN56031	FA4911-1	mg/l	6.4	15	22.3	106.0	90-110%

Associated Samples:
Batch GN55988: FA5060-1
Batch GP21759: FA5060-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike recovery indicates possible matrix interference.

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA5060
Account: TERCFLWP - Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GN55988	FA5060-1	mg/l	0.0080 U	0.100	0.0750	0.0(a)	34%

Associated Samples:
Batch GN55988: FA5060-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike recovery indicates possible matrix interference.

Southeast ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

(Accutest New Jersey)

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Southeast
Subcontract Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL 407-425-6700 FAX: 407-425-0707
www.accutest.com

PAGE 1 OF 1

Fedex # 7998 9577 3652

Client / Reporting Information

Company Name: Accutest Laboratories
Address: 4405 Vineland Rd.
City: Orlando State: FL Zip: 32811
Phone #: (407) 425-6700 Fax#: (407) 425-0707

Project Information

Project Name: FA5060
Please send report to dawnd@accutest.com
For any other issues contact munam@accutest.com

Analytical Information

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe

Lab ID #	Sample ID	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH	HGLL1631	LAB USE ONLY
-	FA5060-1	05/30/13	9:07		GW	1		X								X	N.C.

Turnaround Time (Business days)

Std. 10 Business Days
7 Day *RUSH*
5 Day *RUSH*
3 Day *EMERGENCY*
2 Day *EMERGENCY*
1 Day *EMERGENCY*
Other

Approved By: / Date/Rush Code:
06-06-13

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [x] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

Ship to Laboratory - ALNJ
Approved by - Muna M

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1	HSO	053113 1700	2 FX	3 FX	6/1/13 10:00	4 (ALNJ
5	Relinquished by/Affiliation	Date Time:	6 Received By/Affiliation	7 Relinquished By/Affiliation	Date Time:	8 Received By/Affiliation

Lab Use Only : Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved Where Applicable: Y N Total # of Coolers: 1 Cooler Temperature (s) Celsius: 2.3°C

H

RG

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FA5060: Chain of Custody
Page 1 of 2
Accutest New Jersey

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: FA5060 **Client:** **Project:**

Date / Time Received: 6/1/2013 **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (2.3/2.3); 0

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control _Preservatio	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☑	☐
2. Trip Blank listed on COC:	☐		☑	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:732.329.0200
2235 US Highway 130
F: 732.329.3499
Dayton, New Jersey
www/accutest.com

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FA5060: Chain of Custody
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Southeast ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

(Accutest New Jersey)

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA5060
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: TERCFLWP: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP72391
Matrix Type: AQUEOUS

Methods: EPA 1631
Units: ng/l

Prep Date:				06/01/13		06/01/13	
Metal	RL	IDL	MDL	MB raw	final	MB raw	final
Mercury	0.50	.086	.28	-0.23	<0.50	0.37	<0.50

Associated samples MP72391: FA5060-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA5060
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: TERCFLWP: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP72391
Matrix Type: AQUEOUS

Methods: EPA 1631
Units: ng/l

Prep Date: 06/03/13

Metal	FA5060-1 Original	MS	Spikelot HGLL1	% Rec	QC Limits
Mercury	27.6	33.3	5	114.0	71-125

Associated samples MP72391: FA5060-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA5060
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: TERCFLWP: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP72391 Methods: EPA 1631
Matrix Type: AQUEOUS Units: ng/l

Prep Date: 06/03/13

Metal	FA5060-1 Original	MSD	Spikelot HGLL1	% Rec	MSD RPD	QC Limit
Mercury	27.6	33.8	5	124.0	1.5	24

Associated samples MP72391: FA5060-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA5060
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: TERCFLWP: SSA-ESA Main Water; Orlando, FL

QC Batch ID: MP72391
Matrix Type: AQUEOUS

Methods: EPA 1631
Units: ng/l

Prep Date: 05/23/13

Metal	LCS Result	Spikelot HGLL1	% Rec	QC Limits
Mercury	4.8	5	96.0	77-123

Associated samples MP72391: FA5060-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

Southeast
ACCUTEST LABORATORIES

06/10/13

Technical Report for

Terracon Consulting

SSA-ESA Main Water; Orlando, FL

H1127404

Accutest Job Number: FA5060R

Sampling Date: 05/30/13

Report to:

Terracon
1675 Lee Rd
Winter Park, FL 32789
erkrebill@terracon.com

ATTN: Eric Krebill

Total number of pages in report: **15**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001) DoD ELAP (L-A-B L2229), CA (04226CA), TX (T104704404), AK, AR, GA, KY, MA, NV, OK, UT, VA, WA, WI

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Sections: 1 2 3 4 5

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Sample Summary

Terracon Consulting

Job No: FA5060R

SSA-ESA Main Water; Orlando, FL
Project No: H1127404

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA5060-1R	05/30/13	09:07	MB	05/30/13	AQ	Ground Water	TMW-6

Summary of Hits

Job Number: FA5060R
Account: Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL
Collected: 05/30/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA5060-1R	**TMW-6**					

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: TMW-6
Lab Sample ID: FA5060-1R
Matrix: AQ - Ground Water
Method: FLORIDA-PRO SW846 3510C
Project: SSA-ESA Main Water; Orlando, FL

Date Sampled: 05/30/13
Date Received: 05/30/13
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ZF059904.D	1	06/03/13	FEA	06/03/13	OP47143	GZF2126
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
	TPH (C8-C40)	0.14 U	0.24	0.14	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	92%		43-123%

U = Not detected MDL - Method Detection Limit
PQL = Practical Quantitation Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < PQL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Southeast
Chain of Custody

ACCUTEST LABORATORIES

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 • FAX: 407-425-0707
www.accutest.com

Accutest JOB # FA5060 PAGE 1 OF 1

Accutest Quote # | SKIFF#

Client / Reporting Information

Company Name: Terracon
Address: 1675 Lee Rd.
City: Winter Park State: FL Zip: 32789
Project Contact: Eric Krebill E-mail: erkrebill@Terracon.com
Phone#: 407-740-6110 / 407-618-8358
Sampler(s) Name(s) (Printed): Mike Burns

Project Information

Project Name: SSA-ESA Main Water
Street:
City: Orlando State: FL
Project #: H1127404
Fax #: 407-740-6112
Client Purchase Order #:

Analytical Information: V8260 Benz + NAP; TOC; FL-PRO; LL mercury; XCR, Ph; metals Cd, Cu, Pb, Zn

Matrix Codes: DW - Drinking Water, GW - Ground Water, WW - Water, SW - Surface Water, SO - Soil, SL - Sludge, OI - Oil, LIQ - Other Liquid, AIR - Air, SOL - Other Solid, WP - Wipe

Accutest Sample #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	Total # of Bottles	Other	None	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI Water	MEOH	V8260 Benz + NAP	TOC	FL-PRO	LL mercury	XCR, Ph	metals Cd, Cu, Pb, Zn						LAB USE ONLY
1	TMW-6	5/30/13	0907	MB	GW	10		X	X		X	X				X	X	X	X	X	X						

TURNAROUND TIME (Business Days) — Approved By: / Rush Code

- ☐ 10 Days Standard
- ☐ 7 Day RUSH
- ☐ 5 Day RUSH — 6 day
- ☐ 3 Day EMERGENCY
- ☐ 2 Day EMERGENCY
- ☐ 1 Day EMERGENCY
- ☐ OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULT1 (EPA LEVEL 4)
- ☐ EDD'S

Comments / Remarks

Only analyze TRPH if TOC is above 10.0 mg/L

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
1 Mike Burns	5/30/13 1018	2 [signature] 05/30/13 10:18	3		4
Relinquished by: 5	Date Time:	Received By: 6	Relinquished by: 7	Date Time:	Received By: 8

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: Cooler Temperature (s) Celsius: 3.0

FA5060R: Chain of Custody
Page 1 of 4

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: FA 5060 CLIENT: TERRACON PROJECT: SSA - ESA MAIN WATER

DATE/TIME RECEIVED: 5-30-13 10:18 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 1

METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER GREYHOUND (DELIVERY) OTHER

AIRBILL NUMBERS:

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE PRESENT

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

MISC. INFORMATION

NUMBER OF ENCORES ? 25-GRAM _____ 5-GRAM _____

NUMBER OF 5035 FIELD KITS ? _____

NUMBER OF LAB FILTERED METALS ? _____

TEMPERATURE INFORMATION

- [ ] IR THERM ID 3 CORR. FACTOR +0.4
- [ ] OBSERVED TEMPS: 2.6
- [ ] CORRECTED TEMPS: 3.0

SAMPLE INFORMATION

- [ ] SAMPLE LABELS PRESENT ON ALL BOTTLES
- [ ] INCORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- [ ] ID'S ON COC DO NOT MATCH LABEL
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

{APPICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE 5-30-13 REVIEWER SIGNATURE/DATE 05/30/13

NF 12/10 receipt confirmation 122910.xls

Job Change Order: FA5060_5/31/2013

Requested Date:	5/31/2013	**Received Date:**	5/30/2013
Account Name:	Terracon Consulting	**Due Date:**	6/6/2013
Project Description:	SSA-ESA Main Water; Orlando, FL	**Deliverable:**	COMMB
CSR:	AC	**TAT (Days):**	6

Sample #:
FA5060-all

Change: Please extract and hold FLPRO.

Above Changes Eric Krebill **Date:** 5/31/2013

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

Page 1 of 1

FA5060R: Chain of Custody
Page 3 of 4

Job Change Order: FA5060_6/5/2013

Requested Date:	6/5/2013	**Received Date:**	5/30/2013
Account Name:	Terracon Consulting	**Due Date:**	6/6/2013
Project Description:	SSA-ESA Main Water; Orlando, FL	**Deliverable:**	COMMB
CSR:	AC	**TAT (Days):**	7

Sample #:
FA5060-1

Change: Please analyze the sample for FLPRO. It has already been extracted.

TMW-6

Above Changes Eric Krebill **Date:** 6/5/2013

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

Page 1 of 1

FA5060R: Chain of Custody
Page 4 of 4

Southeast ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA5060R
Account: TERCFLWP Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP47143-MB	ZF059892.D	1	06/03/13	FEA	06/03/13	OP47143	GZF2126

The QC reported here applies to the following samples: **Method:** FLORIDA-PRO

FA5060-1R

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	ND	0.25	0.15	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	81%	43-123%

Blank Spike Summary

Job Number: FA5060R
Account: TERCFLWP Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP47143-BS	ZF059891.D	1	06/03/13	FEA	06/03/13	OP47143	GZF2126

The QC reported here applies to the following samples: **Method:** FLORIDA-PRO

FA5060-1R

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH (C8-C40)	0.85	0.667	78	48-113

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	84%	43-123%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA5060R
Account: TERCFLWP Terracon Consulting
Project: SSA-ESA Main Water; Orlando, FL

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP47143-MS	ZF059894.D	1	06/03/13	FEA	06/03/13	OP47143	GZF2126
OP47143-MSD	ZF059895.D	1	06/03/13	FEA	06/03/13	OP47143	GZF2126
FA5090-5	ZF059897.D	1	06/03/13	FEA	06/03/13	OP47143	GZF2126

The QC reported here applies to the following samples: **Method:** FLORIDA-PRO

FA5060-1R

CAS No.	Compound	FA5090-5 mg/l	Q	Spike mg/l	MS mg/l	MS %	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH (C8-C40)	1.43		1.67	2.60	70	2.63	72	1	48-113/27

CAS No.	Surrogate Recoveries	MS	MSD	FA5090-5	Limits
84-15-1	o-Terphenyl	82%	91%	81%	43-123%

* = Outside of Control Limits.