

APPENDIX G:

DATA USABILITY SUMMARIES FOR GROUNDWATER AND SURFACE WATER LABORATORY RESULTS

JUNE 2011

GROUNDWATER

(Includes June 2011 L-G Wells)

DATA USABILITY SUMMARY

File Name:	FPL_GW_June 2011 L-G & Quarterly DUS
Current Version:	02/10/2012
Results Table:	FPL_GW_June 2011 Quarterly_Results
	FPL_GW_June 2011 L-G_Results

On behalf of Florida Power & Light Company (FPL), Ecology and Environment, Inc. (E & E) reviewed one data package from Test America Laboratories, Inc. (Test America) and subcontract labs for the analysis of **groundwater** samples collected during the **June 2011 Quarterly sampling event (including the L-G Wells)** at the Turkey Point facility in Florida City, Florida. Data were reviewed for conformance to the requirements of the guidance document, *Florida Power & Light Company, Inc. Turkey Point Monitoring Plan Quality Assurance Project Plan (QAPP), April and August, 2010* (FPL Turkey Point Monitoring Plan QAPP) and modifications provided by FPL to the South Florida Water Management District during the November 2010 Quarterly meeting.

Intended Use of Data: To provide current data on the environmental conditions of the groundwater in the monitoring area and to assess chemicals of concern levels in groundwater and to guide future monitoring actions, if necessary.

Analyses requested included:

- EPA Method 200.7 – Metals, Total, by Inductively Coupled Plasma / Atomic Emission Spectroscopy (ICP/AES) - Ba and Fe only
- SW-846-6010 - Metals, Total, by ICP/AES - Ca, Mg, K, Na, B, and Sr
- EPA Method 300 – Anions by Ion Chromatography - bromide, chloride, fluoride, sulfate
- SM 4500-S2 F – Sulfides
- SM 2320B - Alkalinity
- SM 2540C – Total Dissolved Solids (TDS)
- SW-846-9060 – Dissolved Inorganic Carbon
- Non-standard method - $^{18}\text{O}/^{16}\text{O}$

- Non-standard method - $^2\text{H}/^1\text{H}$
- Non-standard method - $^{13}\text{C}/^{12}\text{C}$
- Non-standard method - $^{87}\text{Sr}/^{86}\text{Sr}$
- Non-standard method - ^3H

Carbon isotope analysis was performed by to the University of Miami, Stable Isotope Laboratory, Rosenstiel School of Marine Atmospheric Science. Hydrogen and Oxygen isotope analyses were performed by the University of Miami, Laboratory of Stable Isotope Ecology. The samples for these analyses were shipped to Test America who forwarded them to the respective labs for analysis. The tritium and strontium isotope samples were shipped directly to United States Geologic Survey (USGS), Menlo Park, California for analysis.

Data were reviewed and validated as described in the *FPL Turkey Point Monitoring Plan QAPP* and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data and the results of supporting quality control (QC) analyses;
- the case narratives;
- the chain of custody (COC) and sample receipt checklist; and
- sampling logs and field logbooks.

Table 1 lists sample and laboratory identifications, methods requested, quality control (QC) performed, and identification corrections. Table 2 lists method and laboratory quality control acceptance criteria. Tables 3a and 3b summarize field duplicate results. Table 4 summarizes the data qualified as a result of this validation. Table 5 lists the qualifier codes and definitions used to qualify data in this validation.

Introduction

A total of sixty samples were reviewed in this DUS. During the June 2011 quarterly event, fifty-two groundwater samples (the 14 well clusters plus an L and G wells collection), one groundwater duplicate sample, one equipment blank, and six field blanks were analyzed

for the analyses listed above. Table 1 below lists the sample identifications (IDs) cross-referenced to laboratory identifications and the analyses selected.

“Level 4 Mini Final Reports” along with the subcontract isotope data were submitted to FPL between July 25, 2011 and January 4, 2012 (tritium).

Data Review / Validation Results

Analytical Results

All results were evaluated against the method detection limit (MDL), defined as the minimum concentration of an analyte reported with 99% confidence that the analyte concentration is greater than zero. The reporting limit (RL) or practical quantitation limit (PQL), is defined as the lowest non-zero standard concentration in the calibration curve. Results are reported with an “I” flag if less than the RL but greater than the MDL. Non-detected results are reported as less than the value of the MDL.

Table 1: Sample Listing

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
41697	AQ	060611-TPGW-EB1	660-41697-1	06/06/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	200.7-MS/MSD, PDS, SD, LD	
41697	GW	060611-TPGW-9D	660-41697-2	06/06/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	300 MS/MSD	None
41697	GW	060611-TPGW-9M	660-41697-3	06/06/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41697	GW	060611-TPGW-9S	660-41697-4	06/06/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41697	GW	060611-TPGW-8D	660-41697-5	06/06/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41697	GW	060611-TPGW-8M	660-41697-6	06/06/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		
41697	GW	060611-TPGW-8S	660-41697-7	06/06/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41697	GW	060611-TPGW-6D	660-41697-8	06/06/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41697	GW	060611-TPGW-6M	660-41697-9	06/06/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41697	GW	060611-TPGW-6S	660-41697-10	06/06/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	2320 LD	None
41697	AQ	060711-TPGW-FB1	660-41697-11	06/07/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41697	GW	060711-TPGW-4D	660-41697-12	06/07/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41697	GW	060711-TPGW-4M	660-41697-13	06/07/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41697	GW	060711-TPGW-4S	660-41697-14	06/07/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41697	GW	060711-TPGW-L3-18	660-41697-15	06/07/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41697	GW	060711-TPGW-L3-58	660-41697-16	06/07/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41697	GW	060711-TPGW-L5-18	660-41697-17	06/07/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
41697	GW	060711-TPGW-L5-58	660-41697-18	06/07/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41764	GW	061011-TPGW-1D	660-41764-9	06/10/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41764	GW	061011-TPGW-1M	660-41764-10	06/10/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41764	GW	061011-TPGW-1S	660-41764-11	06/10/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41766	GW	060811-TPGW-FB1	660-41766-1	06/10/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41766	GW	060811-TPGW-G21-18	660-41766-2	06/08/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41766	GW	060811-TPGW-G21-58	660-41766-3	06/08/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	2320 LD	None
41766	GW	060811-TPGW-G28-18	660-41766-4	06/08/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41766	GW	060811-TPGW-G28-58	660-41766-5	06/08/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41766	GW	060811-TPGW-G35-18	660-41766-6	06/08/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	2540 LD	None
41766	GW	060811-TPGW-G35-58	660-41766-7	06/08/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41766	AQ	060911-TPGW-FB1	660-41766-8	06/09/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41766	GW	060911-TPGW-13D	660-41766-9	06/09/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41766	GW	060911-TPGW-13M	660-41766-10	06/09/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41766	GW	060911-TPGW-13S	660-41766-11	06/09/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	2320 LD	None
41766	GW	060911-TPGW-12D	660-41766-13	06/09/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41766	GW	060911-TPGW-12M	660-41766-14	06/09/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41766	GW	060911-TPGW-12S	660-41766-15	06/09/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	300 MS/MSD	None
41855	AQ	061311-TPGW-FB1	660-41855-1	06/13/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41855	GW	061311-TPGW-14D	660-41855-2	06/13/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	200.7 MS/MSD, PDS, SD, LD;	None

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
						2320 LD; 2540 LD	
41855	GW	061311-TPGW-14M	660-41855-3	06/13/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41855	GW	061311-TPGW-14S	660-41855-4	06/13/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41855	GW	061311-TPGW-11D	660-41855-5	06/13/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41855	GW	061311-TPGW-11M	660-41855-6	06/13/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41855	GW	061311-TPGW-11S	660-41855-7	06/13/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41855	GW	061411-TPGW-10D	660-41855-9	06/14/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41855	GW	061411-TPGW-10M	660-41855-10	06/14/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	300 MS/MSD	None
41855	GW	061411-TPGW-10S	660-41855-11	06/14/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	2320 LD	None
41855	GW	061411-TPGW-DUP1	660-41855-12	06/14/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41905	AQ	061511-TPGW-FB1	660-41905-1	06/15/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41905	GW	061511-TPGW-2D	660-41905-2	06/15/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	200.7 MS/MSD, PDS, SD, LD; 300 MS/MSD	None
41905	GW	061511-TPGW-2M	660-41905-3	06/15/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41905	GW	061511-TPGW-2S	660-41905-4	06/15/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41905	GW	061511-TPGW-3D	660-41905-5	06/15/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	2320 LD	None
41905	GW	061511-TPGW-3M	660-41905-6	06/15/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41905	GW	061511-TPGW-3S	660-41905-7	06/15/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41905	AQ	061611-TPGW-FB1	660-41905-8	06/16/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41905	GW	061611-TPGW-7D	660-41905-9	06/16/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41905	GW	061611-TPGW-7M	660-41905-10	06/16/2011	200.7,6010,300,2320,2540,4500S, 9060,		None

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
					d13C, d18O, d2H, d3H, Sr 87/86		
41905	GW	061611-TPGW-7S	660-41905-11	06/16/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41905	GW	061611-TPGW-5D	660-41905-12	06/16/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	300 MS/MSD	None
41905	GW	061611-TPGW-5M	660-41905-13	06/16/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
41905	GW	061611-TPGW-5S	660-41905-14	06/16/2011	200.7,6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	2540 LD	None

Quality Control (QC) Acceptance Criteria

Table 2 summarizes the analytical method and laboratory QC requirements and criteria for each method performed during this event. Criteria reviewed include initial and continuing calibration verifications (ICV/CCV), interference check standards (ICS), contract required quantitation limit (CRQL) standards, laboratory control samples (LCS), matrix spikes (MS), lab duplicates for samples, control, and matrix spikes (Dup), post digestion spikes (PDS), and serial dilutions (SD). Not all criteria are required for each method.

Table 2: Method and Laboratory QC Acceptance Criteria

Method	Source	IC/CCV	ICS	CRQL	LCS	MS	Dup	PDS	SD
200.7	Method	$\pm 5/\pm 10$	$\pm 20\%$	NA	$\pm 15\%$	$\pm 30\%$	NA	$\pm 15\%$	$\pm 10\%$
	Lab	$\pm 5/\pm 10$	$\pm 20\%$	$\pm 50\%$	$\pm 15\%$	$\pm 30\%$	20%	$\pm 15\%$	$\pm 10\%$
300	Method	$\pm 10/\pm 10$	NA	NA	$\pm 10\%$	$\pm 20\%$	NA	NA	NA
	Lab	$\pm 10/\pm 10$	NA	NA	$\pm 10\%$	$\pm 10\%$	30%	NA	NA
6010	Method	$\pm 10\%$ mid $\pm 30\%$ low	NA	NA	$\pm 20\%$	$\pm 25\%$	20%	$\pm 20\%$	$\pm 10\%$
	Lab	$\pm 10/\pm 10$	$\pm 20\%$	$\pm 50\%$	$\pm 25\%$	$\pm 25\%$	20%	$\pm 25\%$	$\pm 10\%$
9060	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	$\pm 10/\pm 10$	NA	NA	Not listed	NA	NA	NA	NA
4500 S2F	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	NA	NA	NA	$\pm 25\%$	NA	25%	NA	NA
2320B	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	NA	NA	NA	$\pm 20\%$	NA	30%	NA	NA
2540C	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	NA	NA	NA	$\pm 20\%$	NA	20%	NA	NA

NA = Not applicable.

Laboratory acceptance limits are used for this validation with the exception of the duplicate precision criteria (20% for aqueous samples, 40% for other matrices).

Documentation

Samples were evaluated for agreement with the COC. All samples were received in the appropriate containers and in good condition with the paperwork filled out properly

Preservation and Holding Times

Samples were shipped and received in good condition. Samples were preserved in the field as specified in FPL Turkey Point Monitoring Plan QAPP. Samples were prepared and analyzed within holding times.

Calibrations

Calibration applies to methods 200.7, 6010, 300, 2320, and 2540C and the field instruments used to collect samples. According to the data sheets, initial calibration and continuing calibration data met method requirements with the following exceptions.

The field instrument (10D1017879) CCV for dissolved oxygen (DO) performed at the end of the day was below project limits on June 6, 2011. According to the field sampling logs for the well clusters collected on that date, samples TPGW-6S, 6M, 8M, and 9M were measured with the instrument noted. DO was qualified as estimated, J, in these samples.

The field instrument (10D1017277) CCV for dissolved oxygen (DO) performed at the end of the day was below project limits on June 9, 2011. According to the field sampling logs for the well clusters collected on that date, samples TPGW-12M, 13S, and 13M were measured with the instrument noted. DO was qualified as estimated, J, in these samples.

MDL/RL/CRQL/Std Dev

All MDLs are below the Florida Department of Environmental Protection (FDEP) Class 2 Groundwater criteria. The sulfide detection limit of 1.0 mg/L is above the DERM criteria of 0.2 mg/L. Groundwater sulfide results ranged from not detected to 14 mg/L (060911-TPGW-13S). MDL's for sodium and strontium were above the QAPP required MDL but below the applicable criteria. Some sample specific MDL's may be elevated due to sample dilution.

The CRQL, or Contract Required Quantitation Limit, is the low level calibration standard analyzed as a sample. This standard is required for methods 200.7 and 6010. The standard must be analyzed during each run and must have a percent recovery within 50-150% of the true value. No samples were qualified based on CRQL results.

All tritium MDL's were below 10 pCi/L. Tritium results less than the uncertainty (1 sigma) associated with the result are qualified as estimated not detected, UJ. Qualified data are listed in Table 4.

MDL's do not apply to strontium, hydrogen, oxygen, or carbon isotope results. Standard deviations reported for the hydrogen (<5‰), oxygen (<0.5‰), and carbon (<1.0‰) isotope data were all within project limits.

Interference Check Standards

Interference Check Standards (ICS) are required in Methods 6010 and 6020. The ICS consists of two solutions: A and AB. Solution A contains the possible interferents and solution AB contains the analytes and interferents. ICS results must fall within the acceptance recovery criteria of 80-120%. No samples were qualified based on ICS results.

Blanks

The laboratory performs calibration and preparation (method) blanks if required by the analytical method. Sample results for analytes detected in an associated method or preparation blank at concentrations less than ten times the equivalent blank concentration will be qualified as "V" at the reported concentration. Sample results for analytes detected in all other blanks (i.e., field, equipment, calibration) at concentrations less than ten times the equivalent blank concentration shall be qualified as "J" at the reported concentration. All laboratory blanks were performed at the required frequency.

For the June 2011 Quarterly Event, one equipment blank and six field blanks (associated with the groundwater sampling) were collected and submitted for analysis. In each event, the appropriate number of blanks was collected. It should be noted that blank contamination can only be applied to samples collected the same day and with the same equipment.

Boron was detected in each equipment/field blank (060611-EB1, 060711-FB1, 060811-FB1, 060911-FB1, 061311-FB1, 061511-FB1, and 061611-FB1). Detected sample concentrations less than 10 times the associated blank concentration for boron have been qualified as estimated, J. Qualified data is summarized in Table 4.

TDS was detected in four of the equipment/field blanks (060711-FB1, 060811-FB1, 060911-FB1, 061311-FB1, and 061611-FB1). Iron, chloride, sulfate, potassium, magnesium, alkalinity, and bicarbonate were detected in one or more blanks. Associated sample results for TDS, iron, chloride, sulfate, potassium, magnesium, alkalinity, and bicarbonate were either greater than 10 times the blank concentration or reported as not detected have not been qualified.

Tritium was detected in all field blanks at levels below the uncertainty, with the exception of 060611-EB1, 060711-FB1, and 060911-FB1. Tritium results less than the uncertainty have been qualified as estimated not detected, UJ, in the field blanks. Tritium results less than 10 times the blank concentration in 060611-EB1, 060711-FB1, and 060911-FB1 have been qualified as estimated, J. Qualified data is summarized in Table 4.

Iron was detected in three method blanks, 81957, 81960, and 82043. Detected Iron results less than 10 times the associated blank concentration have been qualified as detected in the method blank, V, in 18 samples. All other associated results were either not detected or detected at concentrations greater than 10 times the associated blank concentration. The laboratory adds the V qualifier to all detected results; the 10 times rule is applied during validation. As a result, the V qualifier has been removed from iron results for G28-58, G35-58, 13M, and 14D. Qualified results are summarized in Table 4.

Chloride was detected in four method blanks, 112213, 112232, 112350, and 112398. All chloride results were either not detected or detected at concentrations greater than 10 times the associated blank concentration. The V qualifier has been removed from chloride results for 5S, 10S, 10M, 10D, and DUP1. Qualified results are summarized in Table 4.

Laboratory Control Samples

Laboratory Control Samples (LCS) recoveries for all applicable analyses were within laboratory acceptance criteria and were performed at the required frequency.

Matrix Spike/Matrix Spike Duplicates

MS/MSD samples were performed at the required frequency for applicable methods. Recovery calculations are not required if the concentration added is less than 30% of the sample background concentration. MS/MSD recoveries of less than 10% are qualified as unusable due to apparent significant matrix effects. MS/MSD precision and accuracy results for all applicable analyses were within project objectives with the following exceptions.

The Method 300 MS/MSD recoveries of sulfate were below laboratory established limits in samples 060611-TPGW-9D and 061611-TPGW-5D. Chloride MS recovery was below limits in sample 060611-TPGW-9D. Fluoride recoveries were below limits in samples 061611-TPGW-5D, 061411-TPGW-10M, and 061511-TPGW-2D. Bromide MSD recovery was below limits in sample 061511-TPGW-2D. These sulfate, bromide, chloride, and fluoride results have been qualified as estimated with a low bias, J-. Qualified data are summarized in Table 4.

The bromide MSD recovery was above laboratory limits in sample 060611-TPGW-9D. Chloride MS/MSD recoveries were above limits in sample 060911-TPGW-12S. These bromide and chloride results have been qualified as estimated with a high bias, J+.

All RPD's were within laboratory established limits.

Post Digestion Spike

Matrix spike samples are prepared by adding known amounts of analytes to the sample prior to digestion. Spiking solution added to a sample after digestion is termed a post digestion spike. A PDS is applicable to Methods 6010 and 200.7 No samples were qualified based upon PDS results.

Serial Dilution

When analyte concentrations are sufficiently high (the concentration in the original sample is minimally a factor of 50 above the detection limit, the results obtained for a five-fold dilution of the original sample are compared to the original results by means of a percent difference (%D). The %D is compared to a precision acceptance limit of $\pm 10\%$. If the SD does not meet the criteria, all results for that analyte in the associated sample

delivery group (SDG) are qualified as estimated (flagged "J/UJ"). No samples were qualified based on SD results.

Laboratory Duplicates

Laboratories randomly select samples to perform internal duplicate analyses. The criteria for laboratory duplicate precision, as relative percent difference (RPD), is less than or equal to 20% for aqueous samples. All duplicate precision was within project objectives with the following exceptions.

The 2320B laboratory duplicate had a high RPD for alkalinity and bicarbonate in samples 060811-TPGW-G21-58 and 060911-TPGW-13S. Alkalinity and bicarbonate have been qualified as estimated, J, in these samples. Qualified data is summarized in Table 4.

Field Precision

The criteria for field duplicate precision, as RPD, is less than or equal to 20% for aqueous samples, the same as for laboratory duplicate precision. The results for analytes where both values are greater than the reporting limit are given as relative percent difference. Results of analytes where one or both values are less than the reporting limit are not considered appropriate for assessing precision.

One groundwater field duplicate pair was collected during the June 2011 sampling event: 061411-TPGW-10M / 061411-DUP1. With 52 groundwater samples collected in the June event, a minimum of 3 field duplicates should have been collected. Table 3 below summarizes field duplicate precision results.

Table 3a - Field Precision

Method	Analyte	Unit	MQL	061411-TPGW-10M	061411-DUP1	RPD	Rating	Samp Qual
6010	Calcium	mg/L	5.0	450	470	4.3%	Acceptable	None
6010	Magnesium	mg/L	0.8	1400	1400	0.0%	Acceptable	None
6010	Potassium	mg/L	10	460	470	2.2%	Acceptable	None
6010	Sodium	mg/L	50	11000	11000	0.0%	Acceptable	None
6010	Boron	mg/L	0.5	4.5	4.6	2.2%	Acceptable	None
6010	Strontium	mg/L	0.05	8.6	8.8	2.3%	Acceptable	None
300	Bromide	mg/L	5.0	79	82	3.7%	Acceptable	None
300	Chloride	mg/L	500	24000	21000	13.3%	Acceptable	None
300	Sulfate	mg/L	50	2700	2700	0.0%	Acceptable	None
2320	Alkalinity	mg/L	1.0	100	85	16.2%	Acceptable	None
2320	Bicarbonate	mg/L	1.0	100	85	16.2%	Acceptable	None
2540	TDS	mg/L	250	37000	36000	2.7%	Acceptable	None
4500 S2F	Sulfide	mg/L	1.0	1.3	1.6	20.7%	High	J
Non-standard	d18O	‰	NA	2.1	1.9	10.0%	Acceptable	None
Non-standard	d2H	‰	NA	16.0	20.0	22.2%	High	J
Non-standard	d13C	‰	NA	-3.94	-4.16	-5.4%	Acceptable	None
Non-standard	dSr87/86	‰	NA	0.70915	0.70913	0.1%	Acceptable	None
Non-standard	d3H	pCi/L	<5	14.5	12.4	15.6%	Acceptable	None

mg/L – Milligrams per liter.
MQL – minimum quantitation limit
NA – Not applicable.
pCi/L – PicoCuries per liter.
RPD – relative percent difference

Automated Data Processing Tool (ADaPT)

The laboratory submitted electronic data deliverables (EDDs) for the SDG in the ADaPT format. The EDD was run through the ADaPT EDD Error Check by the laboratory against the FDEP generated library “DWM_Library_20100722” before submission. Any critical errors noted in the EDD Error Check are corrected by the laboratory before submission. Comments are provided by the laboratory for the remaining errors noted.

All qualifiers presented in Table 4, with the exception of the isotope results, have been added to the ADaPT files and saved. The EDD has been signed as “Reviewed” and uploaded to the FPL database.

Technical Consistency

Certain technical comparisons are performed on data to ensure validity. The comparisons to be made and the acceptance criteria for each are defined FDEP-QA-002/02, Requirements for Field and Analytical Work. The values for the charge balance determination and the cation and anion calculated conductivity are provided in the ADaPT files. The following is a list of the technical comparisons made and the results of those comparisons. Technical comparison calculations are provided in the results summary table provided with this DUS.

- *The total anion charge must be within 80% - 110% of the total cation charge.*, TPGW-1D, TPGW-1M, TPGW-12S, TPGW-12D, TPGW-13S, TPGW-13M, and TPGW-13D anion charge was greater than 110% of the cation charge based on values calculated in ADaPT; TPGW-12M and TPGW-G21-18 anion charge was less than 80% of the cation charge.
- *The measured specific conductivity (uS/cm) must be within 80% - 120% of the conductivity estimated from major cation concentrations. **This is only required when the initial charge balance calculation does not pass the criterion.*** The conductivity was lower than 80% of the cation concentration in TPGW-13S. Calcium, magnesium, potassium, and sodium have been qualified as estimated, J, in this sample.
- *The measured specific conductivity (uS/cm) must be within 80% - 120% of the conductivity estimated from major anion concentrations. **This is only required when the initial charge balance calculation does not pass the criterion.*** The conductivity was lower than 80% of the anion concentration in TPGW-1D, TPGW-1M, TPGW-12S, TPGW-12D, TPGW-13S, TPGW-13M, and TPGW-13D. The conductivity was greater than 120% of the anion concentration in TPGW-12M and TPGW-G21-18. Alkalinity, bromide, sulfate, chloride, and fluoride analyses have been qualified as estimated, J/UJ, in these.
- *The TDS concentration must be within 40% -120% of the measured conductivity.* All TDS concentrations were within limits of the field specific conductivity.

Summary

No results have been qualified as unusable. Groundwater analytical data are usable for the purpose of determining current conditions in groundwater at the affected property. Qualified data is summarized in Table 4 below. Qualifier codes and definitions are summarized in Table 5.

Sulfide MDL's are above the associated criteria.

Boron was detected in multiple field blanks.

Some tritium results have been qualified as estimated not detected, UJ, when the uncertainty of the result exceeded the result.

Analytical results have been qualified due to:

- Field and equipment blank detections;
- Method blank detections;
- Matrix spike and matrix spike duplicate recoveries;
- Laboratory duplicate precision; and
- Technical comparisons (i.e. charge balance, total vs dissolved)

Notations include:

- Samplers should review field duplicate frequency requirements. One field duplicate was collected for fifty two samples where three were required.

Data Quality Indicators

Precision and accuracy results are discussed throughout this DUS with a summary of exceptions noted in Table 4. Based on the number of usable or missed data points compared to the total submitted for analysis, the project met the completeness goal of 95% for the water quality quarterly sampling event. Comparability was met based on sampling procedures and analytical method selection, and the use of consistent reporting units.

Table 4 - Summary of Qualified Data

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
41967	6010	060711-TPGW-L3-18	Boron	0.075	J	GW	Detected in FB
41967	6010	060711-TPGW-L5-18	Boron	0.260	J	GW	Detected in FB
41967	6010	060811-TPGW-G21-18	Boron	0.047	I J	GW	Detected in FB
41697	6010	060811-TPGW-G21-18	Iron	0.19	IV	GW	Detected in MB
41697	2320	060811-TPGW-G21-18	Alkalinity	160	J	GW	S.C. >120% Anion
41697	2320	060811-TPGW-G21-18	Bicarbonate	160	J	GW	S.C. >120% Anion
41697	300	060811-TPGW-G21-18	Bromide	0.27	UJ	GW	S.C. >120% Anion
41697	300	060811-TPGW-G21-18	Chloride	43.00	J	GW	S.C. >120% Anion
41697	300	060811-TPGW-G21-18	Fluoride	0.20	UJ	GW	S.C. >120% Anion
41697	300	060811-TPGW-G21-18	Sulfate	14.00	J	GW	S.C. >120% Anion
41967	6010	060811-TPGW-G21-58	Boron	0.15	J	GW	Detected in FB
41697	6010	060811-TPGW-G21-58	Iron	0.34	IV	GW	Detected in MB
41967	2320	060811-TPGW-G21-58	Alkalinity	110	J	GW	High LD RPD
41967	2320	060811-TPGW-G21-58	Bicarbonate	110	J	GW	High LD RPD
41697	6010	060811-TPGW-G28-18	Iron	0.23	IV	GW	Detected in MB
41967	6010	060811-TPGW-G28-18	Boron	0.19	J	GW	Detected in FB
41967	6010	060811-TPGW-G35-18	Boron	0.076	J	GW	Detected in FB
41697	6010	060811-TPGW-G35-18	Iron	0.16	IV	GW	Detected in MB
41697	USGS	060811-TPGW-G35-18	Tritium	7.7	UJ	GW	Results<uncertainty
41697	6010	060611-TPGW-1S	Iron	1.2	IV	GW	Detected in MB
41697	2320	061011-TPGW-1M	Alkalinity	160	J	GW	S.C. <80% Anion
41697	2320	061011-TPGW-1M	Bicarbonate	160	J	GW	S.C. <80% Anion
41697	300	061011-TPGW-1M	Bromide	100	J	GW	S.C. <80% Anion
41697	300	061011-TPGW-1M	Chloride	30000	J	GW	S.C. <80% Anion
41697	300	061011-TPGW-1M	Fluoride	2	UJ	GW	S.C. <80% Anion
41697	300	061011-TPGW-1M	Sulfate	3400	J	GW	S.C. <80% Anion
41697	2320	061011-TPGW-	Alkalinity	160	J	GW	S.C. <80% Anion

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
		1D					
41697	2320	061011-TPGW-1D	Bicarbonate	160	J	GW	S.C. <80% Anion
41697	300	061011-TPGW-1D	Bromide	110	J	GW	S.C. <80% Anion
41697	300	061011-TPGW-1D	Chloride	30000	J	GW	S.C. <80% Anion
41697	300	061011-TPGW-1D	Fluoride	2	UJ	GW	S.C. <80% Anion
41697	300	061011-TPGW-1D	Sulfate	3400	J	GW	S.C. <80% Anion
41967	300	061511-TPGW-2D	Bromide	100	J-	GW	Low MSD %R
41967	6010	060711-TPGW-4S	Boron	0.088	I J	GW	Detected in FB
41697	USGS	060611-TPGW-4S	Tritium	10.2	J	GW	Detected in FB
41967	6010	061611-TPGW-5S	Boron	0.048	I J	GW	Detected in FB
41967	300	061611-TPGW-5D	Fluoride	0.32	I J-	GW	Low MS/MSD %R
41967	300	061611-TPGW-5D	Sulfate	1100	J-	GW	Low MS/MSD %R
41967	6010	060611-TPGW-6S	Boron	0.058	J	GW	Detected in FB
41697	USGS	060611-TPGW-6S	Tritium	19.7	J	GW	Detected in FB
41697	Field	060611-TPGW-6S	DO	1.29	J	GW	Poor CCV
41697	Field	060611-TPGW-6M	DO	0.29	J	GW	Poor CCV
41697	USGS	060611-TPGW-6M	Tritium	5.7	J	GW	Detected in FB
41697	USGS	060611-TPGW-6D	Tritium	32.7	J	GW	Detected in FB
41967	6010	061611-TPGW-7S	Boron	0.051	J	GW	Detected in FB
41697	USGS	061611-TPGW-7M	Tritium	-1.0	UJ	GW	Results<uncertainty
41967	6010	061611-TPGW-7M	Boron	0.05	J	GW	Detected in FB
41967	6010	061611-TPGW-7D	Boron	0.05	J	GW	Detected in FB
41967	6010	060611-TPGW-8S	Boron	0.030	I J	GW	Detected in FB
41697	FT1100	060611-TPGW-8S	pH	12.03	J	GW	Result > Cal Range
41697	USGS	060611-TPGW-8S	Tritium	16.6	J	GW	Detected in FB
41967	6010	060611-TPGW-8M	Boron	0.062	J	GW	Detected in FB
41697	Field	060611-TPGW-8M	DO	0.31	J	GW	Poor CCV
41697	USGS	060611-TPGW-8M	Tritium	24.4	J	GW	Detected in FB

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
41967	6010	060611-TPGW-8D	Boron	0.068	J	GW	Detected in FB
41697	USGS	060611-TPGW-8D	Tritium	28.8	J	GW	Detected in FB
41697	USGS	060611-TPGW-9S	Tritium	10.2	J	GW	Detected in FB
41967	6010	060611-TPGW-9S	Boron	0.049	I J	GW	Detected in FB
41697	Field	060611-TPGW-9M	DO	0.38	J	GW	Poor CCV
41697	USGS	060611-TPGW-9M	Tritium	15.6	J	GW	Detected in FB
41967	6010	060611-TPGW-9M	Boron	0.047	I J	GW	Detected in FB
41697	USGS	060611-TPGW-9D	Tritium	13.3	J	GW	Detected in FB
41967	6010	060611-TPGW-9D	Boron	0.047	I J	GW	Detected in FB
41967	300	060911-TPGW-9D	Chloride	27	J-	GW	Low MS %R
41967	300	060911-TPGW-9D	Sulfate	28	J-	GW	Low MS/MSD %R
41967	300	060911-TPGW-9D	Bromide	0.4	J+	GW	High MS/MSD %R
41697	6010	061411-TPGW-10S	Iron	0.63	IV	GW	Detected in MB
41697	4500	061411-TPGW-10M	Sulfide	1.3	J	GW	High FD RPD
41697	U of M	061411-TPGW-10M	d2H	16	J	GW	High FD RPD
41967	300	061411-TPGW-10M	Fluoride	0.49	I J-	GW	Low MS/MSD %R
41697	6010	061411-TPGW-10M	Iron	0.66	IV	GW	Detected in MB
41697	6010	061411-TPGW-10D	Iron	0.63	IV	GW	Detected in MB
41697	6010	061311-TPGW-11S	Iron	0.54	IV	GW	Detected in MB
41697	6010	061311-TPGW-11M	Iron	0.48	IV	GW	Detected in MB
41697	6010	061311-TPGW-11D	Iron	0.62	IV	GW	Detected in MB
41967	300	060911-TPGW-12S	Chloride	16000	J+	GW	High MS/MSD %R
41697	Field	060911-TPGW-12M	DO	0.17	J	GW	Poor CCV
41697	2320	060911-TPGW-12M	Alkalinity	48	J	GW	S.C. >120% Anion
41697	2320	060911-TPGW-12M	Bicarbonate	48	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-12M	Bromide	77	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-12M	Chloride	2100	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-12M	Fluoride	1.2	J	GW	S.C. >120% Anion

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
41697	300	060911-TPGW-12M	Sulfate	2700	J	GW	S.C. >120% Anion
41697	6010	060911-TPGW-12D	Iron	0.78	IV	GW	Detected in MB
41697	2320	060911-TPGW-12D	Alkalinity	120	J	GW	S.C. >120% Anion
41697	2320	060911-TPGW-12D	Bicarbonate	120	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-12D	Bromide	85	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-12D	Chloride	26000	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-12D	Fluoride	1.5	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-12D	Sulfate	3000	J	GW	S.C. >120% Anion
41697	Field	060911-TPGW-13S	DO	0.39	J	GW	Poor CCV
41697	6010	060911-TPGW-13S	Iron	0.72	IV	GW	Detected in MB
41697	2320	060911-TPGW-13S	Alkalinity	54	J	GW	High LD RPD, S.C. >120% Anion
41697	2320	060911-TPGW-13S	Bicarbonate	54	J	GW	High LD RPD, S.C. >120% Anion
41697	300	060911-TPGW-13S	Bromide	110	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-13S	Chloride	36000	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-13S	Fluoride	0.64	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-13S	Sulfate	3800	J	GW	S.C. >120% Anion
41697	6010	060911-TPGW-13S	Calcium	720	J	GW	S.C. >120% Anion
41697	6010	060911-TPGW-13S	Magnesium	2100	J	GW	S.C. >120% Anion
41697	6010	060911-TPGW-13S	Potassium	720	J	GW	S.C. >120% Anion
41697	6010	060911-TPGW-13S	Sodium	17000	J	GW	S.C. >120% Anion
41697	Field	060911-TPGW-13M	DO	0.15	J	GW	Poor CCV
41697	2320	060911-TPGW-13M	Alkalinity	150	J	GW	S.C. >120% Anion
41697	2320	060911-TPGW-13M	Bicarbonate	150	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-13M	Bromide	110	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-13M	Chloride	34000	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-13M	Fluoride	2.1	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-13M	Sulfate	3700	J	GW	S.C. >120% Anion
41697	6010	060911-TPGW-13D	Iron	1.5	IV	GW	Detected in MB

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
41697	2320	060911-TPGW-13D	Alkalinity	150	J	GW	S.C. >120% Anion
41697	2320	060911-TPGW-13D	Bicarbonate	150	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-13D	Bromide	110	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-13D	Chloride	35000	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-13D	Fluoride	3.6	J	GW	S.C. >120% Anion
41697	300	060911-TPGW-13D	Sulfate	3900	J	GW	S.C. >120% Anion
41697	6010	061311-TPGW-14S	Iron	0.63	IV	GW	Detected in MB
41697	6010	061311-TPGW-14M	Iron	0.65	IV	GW	Detected in MB
41697	4500	061411-TPGW-DUP1	Sulfide	1.6	J	GW	High FD RPD
41697	6010	061411-TPGW-DUP1	Iron	0.65	IV	GW	Detected in MB
41697	U of M	061411-TPGW-DUP1	d2H	20	J	GW	High FD RPD
41697	USGS	061311-TPGW-FB1	Tritium	1.6	UJ	GW	Results<uncertainty
41697	USGS	061511-TPGW-FB1	Tritium	1.4	UJ	GW	Results<uncertainty
41697	USGS	061611-TPGW-FB1	Tritium	-1.8	UJ	GW	Results<uncertainty

Table 5: Data Qualifier Codes

Code	Definition
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	Estimated value. A "J" value shall be accompanied by a detailed explanation to justify the reason(s) for designating the value as estimated. A bias is assigned if discernable.
Q	Holding Time exceeded.
V	Indicates that the analyte was detected at or above the method detection limit in both the sample and the associated method blank and the value of 10 times the blank value was equal to or greater than the associated sample value. Only for method blank and J qualifier for other blanks.
I	Value detected between the MDL and the reporting limit.
?	Data are rejected and should not be used. Some or all of the quality control data for the analyte were outside criteria, and the presence or absence of the analyte cannot be determined from the data.
Code	Bias
+	Bias is high.
-	Bias is low.

Prepared by: Steven Elliott, Chemist, E&E

Date: 02/10/2012

JUNE 2011 SURFACE WATER

DATA USABILITY SUMMARY

File Name:	FPL_SW_June 2011 Quarterly _DUS
Current Version:	02/10/12
Results Table:	FPL_SW_June 2011 Quarterly_Results

On behalf of Florida Power & Light Company (FPL), Ecology and Environment, Inc. (E & E) reviewed three data packages from Test America Laboratories, Inc. (Test America) and subcontract labs for the analysis of **surface water** samples collected during the **June 2011 Quarterly sampling** event at the Turkey Point facility in Homestead, Florida. Data were reviewed for conformance to the requirements of the guidance document, *Florida Power & Light Company, Inc. Turkey Point Monitoring Plan Quality Assurance Project Plan (QAPP), April and August, 2010* (FPL Turkey Point Monitoring Plan QAPP) and modifications provided by FPL to the South Florida Water Management District during the November 2010 Quarterly meeting.

Intended Use of Data: To provide current data on the environmental conditions of the surface waters in the monitoring area, to assess chemicals of concern levels in surface waters, and to guide future monitoring actions, if necessary.

Analyses requested included:

- EPA Method 200.7 – Metals, Total, by Inductively Coupled Plasma / Atomic Emission Spectroscopy (ICP/AES) - Ba and Fe
- SW-846-6010 - Metals, Total, by ICP/AES - Ca, Mg, K, Na, B, and Sr
- EPA Method 300 – Anions by Ion Chromatography (bromide, chloride, fluoride, sulfate)
- SM 4500-S2 F – Sulfides
- SM 2320B - Alkalinity
- SW-846-9060 – Dissolved Inorganic Carbon
- Non-standard method - $^{18}\text{O}/^{16}\text{O}$
- Non-standard method - $^2\text{H}/^1\text{H}$
- Non-standard method - $^{13}\text{C}/^{12}\text{C}$

- Non-standard method - $^{87}\text{Sr}/^{86}\text{Sr}$
- Non-standard method - ^3H

Carbon isotope analysis was performed by to the University of Miami, Stable Isotope Laboratory, Rosenstiel School of Marine Atmospheric Science. Hydrogen and Oxygen isotope analyses were performed by the University of Miami, Laboratory of Stable Isotope Ecology. The samples for these analyses were shipped to Test America who forwarded them to the respective labs for analysis. The tritium and strontium isotope samples were shipped directly to United States Geologic Survey (USGS), Menlo Park, California for analysis.

Data were reviewed and validated as described in the *FPL Turkey Point Monitoring Plan QAPP* and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data and the results of supporting quality control (QC) analyses;
- the case narratives;
- the chain of custody (COC) and sample receipt checklist; and
- sampling logs and field logbooks.

Table 1 lists sample and laboratory identifications, methods requested, quality control (QC) performed, and identification corrections. Table 2 lists method and laboratory quality control acceptance criteria. Tables 3a and 3b summarize field duplicate results. Table 4 summarizes the data qualified as a result of this validation. Table 5 lists the qualifier codes and definitions used to qualify data in this validation.

Introduction

A total of forty (40) samples were reviewed in this DUS. During the June 2011 event, 12 surface water canal (TPSWC) samples, 6 surface water interceptor ditch (TPSWID) samples, 10 cooling canal (TPSWCCS) samples, 5 Biscayne Bay (BBSW) samples, 3 surface water duplicates, and 4 field blanks were analyzed for the analyses listed above. Table 1 below lists the sample identifications (IDs) cross-referenced to laboratory identifications and the analyses selected. Any corrections for the sample ID are also noted.

“Level 4 Mini Final Reports” along with the subcontract isotope data were submitted to FPL between July 25, 2011 and January 4, 2012 (tritium).

Data Review / Validation Results

Analytical Results

All results were evaluated against the method detection limit (MDL), defined as the minimum concentration of an analyte reported with 99% confidence that the analyte concentration is greater than zero. The reporting limit (RL) or practical quantitation limit (PQL), is defined as the lowest non-zero standard concentration in the calibration curve. Results are reported with an “I” flag if less than the RL but greater than the MDL. Non-detected results are reported as less than the value of the MDL.

Table 1: Sample Listing

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
41764	SW	061011-TPSWC-FB1	660-41764-1	06/10/2011	200.7, 6010, 300,2320,4500S, 9060		None
41764	SW	061011-TPSWC-1T	660-41764-2	06/10/2011	200.7, 6010, 300,2320,4500S, 9060	200.7-MS/MSD, PDS, SD, LD	None
41764	SW	061011-TPSWC-1B	660-41764-3	06/10/2011	200.7, 6010, 300,2320,4500S, 9060		None
41764	SW	061011-TPSWC-DUP1	660-41764-4	06/10/2011	200.7, 6010, 300,2320,4500S, 9060		None
41764	SW	061011-TPSWC-2T	660-41764-5	06/10/2011	200.7, 6010, 300,2320,4500S, 9060		None
41764	SW	061011-TPSWC-2B	660-41764-6	06/10/2011	200.7, 6010, 300,2320,4500S, 9060		None
41764	SW	061011-TPSWC-3T	660-41764-7	06/10/2011	200.7, 6010, 300,2320,4500S, 9060		None
41764	SW	061011-TPSWC-3B	660-41764-8	06/10/2011	200.7, 6010, 300,2320,4500S, 9060		None
41766	SW	060911-TPSWCCS-2B	660-41766-12	06/09/2011	200.7, 6010, 300,2320,4500S, 9060		None
41855	SW	061411-TPBBSW-FB1	660-41855-8	06/14/2011	200.7, 6010, 300,2320,4500S, 9060		None
41855	SW	061411-TPBBSW-1B	660-41855-13	06/14/2011	200.7, 6010, 300,2320,4500S, 9060		None
41855	SW	061411-TPBBSW-2B	660-41855-14	06/14/2011	200.7, 6010, 300,2320,4500S, 9060		None
41855	SW	061411-TPBBSW-3B	660-41855-15	06/14/2011	200.7, 6010, 300,2320,4500S, 9060		None
41855	SW	061411-TPBBSW-5B	660-41855-16	06/14/2011	200.7, 6010, 300,2320,4500S, 9060		None
41855	SW	061411-TPBBSW-4B	660-41855-17	06/14/2011	200.7, 6010, 300,2320,4500S, 9060		None
41907	SW	061511-TPSWC-4T	660-41907-1	06/15/2011	200.7, 6010, 300,2320,4500S, 9060	2320 LD	None
41907	SW	061511-TPSWC-4B	660-41907-2	06/15/2011	200.7, 6010, 300,2320,4500S, 9060		None
41907	SW	061511-TPSWC-5T	660-41907-3	06/15/2011	200.7, 6010, 300,2320,4500S, 9060		None
41907	SW	061511-TPSWC-5B	660-41907-4	06/15/2011	200.7, 6010, 300,2320,4500S, 9060		None
41907	SW	061611-TPSWC-6T	660-41907-5	06/16/2011	200.7, 6010, 300,2320,4500S, 9060		None
41907	SW	061611-TPSWC-6B	660-41907-6	06/16/2011	200.7, 6010, 300,2320,4500S, 9060		None
41944	SW	062011-TPSWID-FB1	660-41944-1	06/20/2011	200.7, 6010, 300,2320,4500S, 9060		None

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
41944	SW	062011-TPSWID-3T	660-41944-2	06/20/2011	200.7, 6010, 300,2320,4500S, 9060	2320 LD	None
41944	SW	062011-TPSWID-3B	660-41944-3	06/20/2011	200.7, 6010, 300,2320,4500S, 9060		None
41944	SW	062011-TPSWCCS-3B	660-41944-4	06/20/2011	200.7, 6010, 300,2320,4500S, 9060		None
41944	SW	062011-TPSWCCS-7B	660-41944-5	06/20/2011	200.7, 6010, 300,2320,4500S, 9060		None
41944	SW	062011-TPSWID-2T	660-41944-6	06/20/2011	200.7, 6010, 300,2320,4500S, 9060		None
41944	SW	062011-TPSWID-2B	660-41944-7	06/20/2011	200.7, 6010, 300,2320,4500S, 9060		None
41944	SW	062011-TPSWID-1T	660-41944-8	06/20/2011	200.7, 6010, 300,2320,4500S, 9060		None
41944	SW	062011-TPSWID-1B	660-41944-9	06/20/2011	200.7, 6010, 300,2320,4500S, 9060	300 MS/MSD	None
41944	SW	062011-TPSWID-DUP1	660-41944-10	06/20/2011	200.7, 6010, 300,2320,4500S, 9060		None
42017	SW	062311-TPSWC-FB1	660-42017-1	06/23/2011	200.7, 6010, 300,2320,4500S, 9060		None
42017	SW	062311-TPSWCCS-1B	660-42017-2	06/23/2011	200.7, 6010, 300,2320,4500S, 9060	200.7 MS/MSD, PDS, SD, LD	None
42017	SW	062311-TPSWCCS-DUP1	660-42017-3	06/23/2011	200.7, 6010, 300,2320,4500S, 9060		None
42017	SW	062311-TPSWCCS-5T	660-42017-4	06/23/2011	200.7, 6010, 300,2320,4500S, 9060		None
42017	SW	062311-TPSWCCS-5B	660-42017-5	06/23/2011	200.7, 6010, 300,2320,4500S, 9060		None
42017	SW	062311-TPSWCCS-4T	660-42017-6	06/23/2011	200.7, 6010, 300,2320,4500S, 9060		None
42017	SW	062311-TPSWCCS-4B	660-42017-7	06/23/2011	200.7, 6010, 300,2320,4500S, 9060		None
42017	SW	062311-TPSWCCS-6T	660-42017-8	06/23/2011	200.7, 6010, 300,2320,4500S, 9060		None
42017	SW	062311-TPSWCCS-6B	660-42017-9	06/23/2011	200.7, 6010, 300,2320,4500S, 9060		None

Quality Control (QC) Acceptance Criteria

Table 2 summarizes the analytical method and laboratory QC requirements and criteria for each method performed during this event. Criteria reviewed include initial and continuing calibration verifications (ICV/CCV), interference check standards (ICS), contract required quantitation limit (CRQL) standards, laboratory control samples (LCS), matrix spikes (MS), lab duplicates for samples, control, and matrix spikes (Dup), post digestion spikes (PDS), and serial dilutions (SD). Not all criteria are required for each method.

Table 2: Method and Laboratory QC Acceptance Criteria

Method	Source	IC/CCV	ICS	CRQL	LCS	MS	Dup	PDS	SD
200.7	Method	±5/±10	±20%	NA	±15%	±30%	NA	±15%	±10%
	Lab	±5/±10	±20%	±50%	±15%	±30%	20%	±15%	±10%
300	Method	±10/±10	NA	NA	±10%	±20%	NA	NA	NA
	Lab	±10/±10	NA	NA	±10%	±10%	30%	NA	NA
6010	Method	±10%mid ±30%low	NA	NA	±20%	±25%	20%	±20%	±10%
	Lab	±10/±10	±20%	±50%	±25%	±25%	20%	±25%	±10%
9060	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	±10/±10	NA	NA	Not listed	NA	NA	NA	NA
4500 S2F	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	NA	NA	NA	±25%	NA	25%	NA	NA
2320B	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	NA	NA	NA	±20%	NA	30%	NA	NA
2540C	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	NA	NA	NA	±20%	NA	20%	NA	NA

NA = Not applicable.

The laboratory limits either met or exceeded method requirements in all cases with one exception. The Method 6010 Laboratory Control Sample (LCS) criteria are listed as 80-120% while the laboratories' criteria is 75-125% although the laboratory is allowed by the method to establish criteria based on historical results.

Laboratory acceptance limits are used for this validation with the exception of the duplicate precision criteria (20% for aqueous samples, 40% for other matrices).

Documentation

Samples were evaluated for agreement with the COC. All samples were received in the appropriate containers and in good condition with the paperwork filled out properly.

Preservation and Holding Times

Samples were shipped and received in good condition. Samples were preserved in the field as specified in FPL Turkey Point Monitoring Plan QAPP. Samples were prepared and analyzed within holding times.

Calibrations

Calibration applies to methods 200.7, 6010, 300, 245.1, 2320, and 2540C. According to the data sheets, initial calibration and continuing calibration data met method requirements. No samples were qualified based on calibration results.

The field instrument (10D1017277) CCV for dissolved oxygen (DO) performed at the end of the day was below project limits on June 9, 2011. According to the field sampling logs for the surface water samples collected on that date, TPSWCCS-2B was measured with the instrument noted. DO was qualified as estimated, J, in this sample.

MDL/RL/CRQL

All MDLs are below the applicable Florida Department of Environmental Protection (FDEP) Class III surface water criteria. The MDL for sodium and strontium were above QAPP requirements but below applicable criteria. Some sample specific MDL's may be elevated due to sample dilution.

The CRQL, or Contract Required Quantitation Limit, is the low level calibration standard analyzed as a sample. This standard is required for methods 200.7 and 6010. The standard must be analyzed during each run and must have a percent recovery within 50-150% of the true value. No samples were qualified based on CRQL results.

Interference Check Standards

Interference Check Standards (ICS) are required in Methods 6010 and 6020. The ICS consists of two solutions: A and AB. Solution A contains the possible interferents and solution AB contains the analytes and interferents. ICS results must fall within the

acceptance recovery criteria of 80-120%. No samples were qualified based on ICS results.

Blanks

The laboratory performs calibration and preparation (method) blanks if required by the analytical method. Sample results for analytes detected in an associated method or preparation blank at concentrations less than ten times the equivalent blank concentration will be qualified as "V" at the reported concentration. Sample results for analytes detected in all other blanks (i.e., field, equipment, calibration) at concentrations less than ten times the equivalent blank concentration shall be qualified as "J" at the reported concentration. All laboratory blanks were performed at the required frequency.

For the June sampling of the surface waters, four field blanks were collected and submitted for analysis. The equipment blank submitted with the groundwater samples applies to the surface water samples as well; the same equipment, materials, and techniques were used for both matrices. The appropriate number of blanks was collected. It should be noted that blank contamination can only be applied to samples collected the same day and with the same equipment. Data from different days cannot be qualified based on the blank contamination.

Chloride was detected in all four field blanks. Barium was detected in field blank 062011-FB1. Detected sample concentrations less than 10 times the associated blank concentration for chloride and barium have been qualified as estimated, J. Qualified data is summarized in Table 4.

Sulfate, magnesium, boron, alkalinity, and bicarbonate were detected in one or more blanks. Associated sample results were either greater than 10 times the blank concentration or reported as not detected and have not been qualified.

Iron was detected in two method blanks, 81957 and 82043. Detected Iron results less than 10 times the associated blank concentration have been qualified as detected in the method blank, V, in 4 samples. All other associated results were either not detected or detected at concentrations greater than 10 times the associated blank concentration. The laboratory adds the V qualifier to all detected results; the 10 times rule is applied

during validation. As a result, the V qualifier has been removed from iron results for TPSWCCS-2B. Qualified data are summarized in Table 4.

Chloride was detected in six method blanks, 112213, 112232, 112345, 112350, 112398, and 112511. All chloride results were either not detected or detected at concentrations greater than 10 times the associated blank concentration. The V qualifier has been removed from chloride results for TPBBSW-1B, TPBBSW-2B, TPBBSW-3B, TPBBSW-4B, TPBBSW-5B, TPSWC-4T, TPSWC-4B, TPSWC-5T, TPSWC-5B, TPSWC-6T, TPSWC-6B, TPSWCCS-1B, TPSWCCS-5T, TPSWCCS-5B, TPSWCCS-4T, TPSWCCS-4B, TPSWCCS-6T, TPSWCCS-6B, TPSWCCS-DUP1, and TPSWID-Dup1. Qualified results are summarized in Table 4.

Tritium results less than the uncertainty have been qualified as estimated not detected, UJ.

Tritium was detected in each field blank at a level above the uncertainty. Tritium results less than 10 times the blank concentration have been qualified as estimated (J) in samples TPBBSW-1B, TPBBSW-2B, TPBBSW-3B, TPBBSW-4B, TPBBSW-5B, TPSWC-1T, TPSWC-1B, TPSWC-2T, TPSWC-2B, TPSWC-3T, and TPSWC-3B.

Laboratory Control Samples

Laboratory Control Samples (LCS) recoveries for all applicable analyses were within laboratory acceptance criteria and were performed at the required frequency.

Matrix Spike/Matrix Spike Duplicates

MS/MSD samples were performed at the required frequency for applicable methods. Recovery calculations are not required if the concentration added is less than 30% of the sample background concentration. MS/MSD recoveries of less than 10% are qualified as unusable due to apparent significant matrix effects. MS/MSD precision and accuracy results for all applicable analyses were within project objectives with the following exceptions.

The Method 300 MS/MSD recoveries of chloride and fluoride were below laboratory established limits in sample TPSWID-1B. Fluoride was not detected in the original

sample and since the bias was low, no qualification was necessary. The chloride result has been qualified as estimated with a low bias, J-, in sample TPSWID-1B.

Post Digestion Spike

A PDS is applicable to Methods 6010 and 200.7 No samples were qualified based upon PDS results.

Serial Dilution

Inductively coupled plasma (ICP) serial dilutions are run to help evaluate whether significant physical or chemical interferences exist due to sample matrix. When analyte concentrations are sufficiently high (the concentration in the original sample is minimally a factor of 50 above the detection limit, the results obtained for a five-fold dilution of the original sample are compared to the original results by means of a percent difference (%D). The %D is compared to a precision acceptance limit of $\pm 10\%$. If the SD does not meet the criteria, all results for that analyte in the associated sample delivery group (SDG) are qualified as estimated (flagged "J/UJ"). No samples were qualified based on SD results.

Laboratory Duplicates

Laboratories randomly select samples to perform internal duplicate analyses. The criteria for laboratory duplicate precision, as relative percent difference (RPD), is less than or equal to 20% for aqueous samples. All laboratory duplicate precision was within project objectives with one exception. The alkalinity and bicarbonate laboratory duplicate RPD was greater than 20% for sample TPSWC-4T. Alkalinity and bicarbonate results in TPSWC-4T have been qualified as estimated, J.

Field Precision

The criteria for field duplicate precision, as RPD, is less than or equal to 20% for aqueous samples, the same as for laboratory duplicate precision. The results for analytes where both values are greater than the reporting limit are given as relative percent difference. Results of analytes where one or both values are less than the reporting limit are not considered appropriate for assessing precision. Three field duplicate pairs were collected during the June 2011 sampling event: 061011-TPSWC-3T / 061011-TPSWC-DUP1, 062011-TPSWID-1T / 062011-TPSWID-Dup1, and 062311-

TPSWCCS-1B / 062311-TPSWCCS-DUP1. Field duplicate frequency met project objectives. Tables 3a, 3b, and 3c summarize field duplicate precision results.

In the field duplicate pair 061011-TPSWC-3T / 061011-TPSWC-DUP1, the fluoride, tritium, and deuterium results had high RPD,s. Fluoride and deuterium results have been qualified as estimated (J) in both samples.

In the field duplicate pair 062011-TPSWID-1T / 062011-TPSWID-Dup1, the deuterium results had high RPD,s. Deuterium results have been qualified as estimated (J) in both samples.

Table 3a - Field Precision

Method	Analyte	Unit	MQL	061011-TPSWC-3T	061011-TPSWC-DUP 1	RPD / Abs. Diff.	Rating	Samp Qual
6010	Calcium	mg/L	0.5	140	140	0.0%	Acceptable	None
6010	Magnesium	mg/L	0.08	86	85	1.2%	Acceptable	None
6010	Potassium	mg/L	1.0	30	29	3.4%	Acceptable	None
6010	Sodium	mg/L	0.5	780	790	1.3%	Acceptable	None
6010	Boron	mg/L	0.05	0.29	0.29	0.0%	Acceptable	None
6010	Strontium	mg/L	0.005	1.7	1.7	0.0%	Acceptable	None
300	Bromide	mg/L	0.05	5.4	5.1	5.7%	Acceptable	None
300	Chloride	mg/L	0.5	1600	1600	0.0%	Acceptable	None
300	Fluoride	mg/L	0.05	0.88	0.68	25.6%	Unacceptable	J
300	Sulfate	mg/L	0.5	150	140	6.9%	Acceptable	None
2320	Alkalinity	mg/L	1.0	190	190	0.0%	Acceptable	None
2320	Bicarbonate	mg/L	1.0	190	190	0.0%	Acceptable	None
Non-standard	d18O	‰	NA	1.8	2.0	10.5%	Acceptable	None
Non-standard	d2H	‰	NA	10	6.0	50.0%	Unacceptable	J
Non-standard	d13C	‰	NA	-4.67	-4.61	1.3%	Acceptable	None
Non-standard	dSr87/86	‰	NA	0.70912	0.70914	0.0%	Acceptable	None
Non-standard	d3H	pCi/L	NA	55	74.5	30.1	Unacceptable	J

Key:

Abs. Diff -

DUP - Duplicate

mg/L - Milligrams per liter.

MQL -

NA - Not analyzed.

NC - Not calculated.

ND - Not detected.

pCi/L - PicoCuries per liter.

RPD -

TPSWC - Turkey Point Surface Water Canal

Table 3b - Field Precision

Method	Analyte	Unit	MQL	062311-TPSWCCS-1B	062311-TPSWCCS-DUP1	RPD / Abs. Diff.	Rating	Samp Qual
6010	Calcium	mg/L	5.0	810	800	1.2%	Acceptable	None
6010	Magnesium	mg/L	0.8	2400	2400	0.0%	Acceptable	None
6010	Potassium	mg/L	10	820	820	0.0%	Acceptable	None
6010	Sodium	mg/L	50	18000	18000	0.0%	Acceptable	None
6010	Boron	mg/L	0.5	7.7	7.7	0.0%	Acceptable	None
6010	Strontium	mg/L	0.05	15	15	0.0%	Acceptable	None
300	Bromide	mg/L	5.0	120	120	0.0%	Acceptable	None
300	Chloride	mg/L	500	36000	37000	2.7%	Acceptable	None
300	Fluoride	mg/L	0.5	4.7	4.6	2.2%	Acceptable	None
2320	Alkalinity	mg/L	1.0	130	140	7.4%	Acceptable	None
2320	Bicarbonate	mg/L	1.0	130	140	1.2%	Acceptable	None
Non-standard	d18O	‰	NA	5.6	5.9	5.2%	Acceptable	None
Non-standard	d2H	‰	NA	31	26	17.5%	Acceptable	None
Non-standard	d13C	‰	NA	-3.3	-3.28	0.6%	Acceptable	None
Non-standard	dSr87/86	‰	NA	0.70911	0.70909	0.0%	Acceptable	None
Non-standard	d3H	pCi/L	<5	2973	2842	4.5%	Acceptable	None

Table 3c - Field Precision

Method	Analyte	Unit	MQL	062011 - TPSWID-1T	062011- TPSWID- DUP1	RPD / Abs. Diff.	Rating	Samp Qual
6010	Calcium	mg/L	5.0	380	400	5.1%	Acceptable	None
6010	Magnesium	mg/L	0.8	800	860	7.2%	Acceptable	None
6010	Potassium	mg/L	10	270	290	7.1%	Acceptable	None
6010	Sodium	mg/L	50	6700	6800	1.5%	Acceptable	None
6010	Boron	mg/L	0.5	2.6	2.7	3.8%	Acceptable	None
6010	Strontium	mg/L	0.05	6.0	6.3	4.9%	Acceptable	None
300	Bromide	mg/L	5.0	41	48	15.7%	Acceptable	None
300	Chloride	mg/L	500	13000	13000	0.0%	Acceptable	None
300	Sulfate	mg/L	0.5	1400	1400	0.0%	Acceptable	None
2320	Alkalinity	mg/L	1.0	260	270	3.8%	Acceptable	None
2320	Bicarbonate	mg/L	1.0	260	270	3.8%	Acceptable	None
Non-standard	d18O	‰	NA	2.1	2.0	4.9%	Acceptable	None
Non-standard	d2H	‰	NA	15.4	12.0	24.8%	Unacceptable	J
Non-standard	d13C	‰	NA	-7.86	-8.82	11.5%	Acceptable	None
Non-standard	dSr87/86	‰	NA	0.70913	0.70910	0.0%	Acceptable	None
Non-standard	d3H	pCi/L	<5	1391	1510	7.6%	Acceptable	None

Automated Data Processing Tool (ADaPT)

The laboratory submitted electronic data deliverables (EDD's) for each SDG in the ADaPT format. These EDD's were run through the ADaPT EDD Error Check by the laboratory against the FDEP generated library "DWM_Library_20100722" before submission. Any critical errors noted in the EDD Error Check are corrected by the laboratory before submission. Comments are provided by the laboratory for the remaining errors noted.

All qualifiers presented in Table 4, with the exception of isotope qualifiers, have been added to the ADaPT files and saved. The EDD's have been signed as "Reviewed" and uploaded to the FPL database.

Technical Consistency

Certain technical comparisons are performed on data to ensure validity. The comparisons to be made and the acceptance criteria for each are defined FDEP-QA-002/02, Requirements for Field and Analytical Work. The values for the charge balance determination and the cation and anion calculated conductivity are provided in the ADaPT files. The following is a list of the technical comparisons made and the results of those comparisons. Technical comparison calculations are provided in the results summary table provided with this DUS.

- *The total anion charge must be within 80% - 110% of the total cation charge.* TPSWCCS-2B anion charge was greater than 110% of the cation charge based on values calculated in ADaPT.
- *The measured specific conductivity (uS/cm) must be within 80% - 120% of the conductivity estimated from major cation concentrations. **This is only required when the initial charge balance calculation does not pass the criterion.*** The conductivity was below 80% of the cation concentration in TPBBSW-1B, TPBBSW-2B, TPBBSW-3B, TPBBSW-4B, TPSWC-6T, TPSWCCS-2B, TPSWCCS-4T, TPSWCCS-4B, TPSWCCS-5T, TPSWCCS-5B, TPSWCCS-6T, and TPSWCCS-6B. Calcium, magnesium, sodium, and potassium data were qualified as estimated, J, in these samples.

- *The measured specific conductivity (uS/cm) must be within 80% - 120% of the conductivity estimated from major anion concentrations. **This is only required when the initial charge balance calculation does not pass the criterion.*** The conductivity was lower than 80% of the anion concentration in TPBBSW-1B, TPBBSW-2B, TPBBSW-3B, TPBBSW-4B, TPBBSW-5B, TPSWC-4T, TPSWC-4B, TPSWC-5B, TPSWC-6T, TPSWC-6B, TPSWCCS-2B, TPSWCCS-4T, TPSWCCS-4B, TPSWCCS-5T, TPSWCCS-5B, TPSWCCS-6T, and TPSWCCS-6B.. Alkalinity, bromide, sulfate, chloride, and fluoride analyses have been qualified as estimated, J/UJ, in these samples.

Summary

No results have been qualified as unusable. Surface water analytical data are usable for the purpose of determining current conditions in surface waters at the affected property. Qualified data is summarized in Table 4 below. Qualifier codes and definitions are summarized in Table 5.

Some tritium results have been qualified as estimated not detected, UJ, when the uncertainty of the result exceeded the result.

Alkalinity and bicarbonate not reported for TPSWCCS-2B. Carbon isotope not reported for TPSWCCS-4B.

Analytical results have been qualified due to:

- Field and equipment blank detections;
- Method blank detections;
- Matrix spike and matrix spike duplicate recoveries;
- Laboratory and field duplicate precision; and
- Technical comparisons (i.e. charge balance, total vs dissolved)

Data Quality Indicators

Precision and accuracy results are discussed throughout this DUS with a summary of exceptions noted in Table 4. Based on the number of usable or missed data points compared to the total submitted for analysis, the project met the completeness goal of 95% for the water quality quarterly sampling event. Comparability was met based on sampling procedures and analytical method selection, and the use of consistent reporting units.

Table 4 - Summary of Qualified Data

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
41764	6010	061411-TPBBSW-1B	Calcium	540	J	SW	S.C.<80%Cation
41764	6010	061411-TPBBSW-1B	Magnesium	1700	J	SW	S.C.<80%Cation
41764	6010	061411-TPBBSW-1B	Potassium	570	J	SW	S.C.<80%Cation
41764	6010	061411-TPBBSW-1B	Sodium	14000	J	SW	S.C.<80%Cation
41764	300	061411-TPBBSW-1B	Bromide	100	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-1B	Chloride	28000	J	SW	Detected in FB , S.C.<80%Anion
41764	300	061411-TPBBSW-1B	Fluoride	0.6	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-1B	Sulfate	3400	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-1B	Alkalinity	77	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-1B	Bicarbonate	76	J	SW	S.C.<80%Anion
42017	USGS	061411-TPBBSW-1B	Tritium	16.4	J	SW	Detected in FB
42017	USGS	061411-TPBBSW-2B	Tritium	12.1	J	SW	Detected in FB
41764	6010	061411-TPBBSW-2B	Calcium	500	J	SW	S.C.<80%Cation
41764	6010	061411-TPBBSW-2B	Magnesium	1700	J	SW	S.C.<80%Cation
41764	6010	061411-TPBBSW-2B	Potassium	550	J	SW	S.C.<80%Cation
41764	6010	061411-TPBBSW-2B	Sodium	14000	J	SW	S.C.<80%Cation
41764	300	061411-TPBBSW-2B	Bromide	96	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-2B	Chloride	28000	J	SW	Detected in FB, S.C.<80%Anion
41764	300	061411-TPBBSW-2B	Fluoride	0.67	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-2B	Sulfate	3200	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-2B	Alkalinity	92	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-2B	Bicarbonate	91	J	SW	S.C.<80%Anion
41764	200.7	061411-TPBBSW-2B	Iron	0.6	I V	SW	Detected in MB
41764	300	061411-TPBBSW-3B	Chloride	26000	J	SW	Detected in FB
41764	200.7	061411-TPBBSW-3B	Iron	0.68	I V	SW	Detected in MB
41764	6010	061411-TPBBSW-3B	Calcium	500	J	SW	S.C.<80%Cation
41764	6010	061411-	Magnesium	1700	J	SW	S.C.<80%Cation

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
		TPBBSW-3B					
41764	6010	061411-TPBBSW-3B	Potassium	560	J	SW	S.C.<80%Cation
41764	6010	061411-TPBBSW-3B	Sodium	14000	J	SW	S.C.<80%Cation
41764	300	061411-TPBBSW-3B	Bromide	92	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-3B	Chloride	26000	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-3B	Fluoride	0.7	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-3B	Sulfate	3100	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-3B	Alkalinity	82	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-3B	Bicarbonate	81	J	SW	S.C.<80%Anion
42017	USGS	061411-TPBBSW-3B	Tritium	19.1	J	SW	Detected in FB
42017	USGS	061411-TPBBSW-4B	Tritium	9.8	J	SW	Detected in FB
41764	6010	061411-TPBBSW-4B	Calcium	480	J	SW	S.C.<80%Cation
41764	6010	061411-TPBBSW-4B	Magnesium	1600	J	SW	S.C.<80%Cation
41764	6010	061411-TPBBSW-4B	Potassium	530	J	SW	S.C.<80%Cation
41764	6010	061411-TPBBSW-4B	Sodium	13000	J	SW	S.C.<80%Cation
41764	300	061411-TPBBSW-4B	Bromide	91	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-4B	Chloride	26000	J	SW	Detected in FB, S.C.<80%Anion
41764	300	061411-TPBBSW-4B	Fluoride	0.67	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-4B	Sulfate	3000	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-4B	Alkalinity	58	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-4B	Bicarbonate	57	J	SW	S.C.<80%Anion
41764	200.7	061411-TPBBSW-4B	Iron	0.71	I V	SW	Detected in MB
41764	300	061411-TPBBSW-5B	Bromide	95	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-5B	Chloride	26000	J	SW	Detected in FB, S.C.<80%Anion
41764	300	061411-TPBBSW-5B	Fluoride	0.66	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-5B	Sulfate	3100	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-5B	Alkalinity	82	J	SW	S.C.<80%Anion
41764	300	061411-TPBBSW-5B	Bicarbonate	82	J	SW	S.C.<80%Anion
41764	200.7	061411-	Iron	0.72	I V	SW	Detected in MB

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
		TPBBSW-5B					
42017	USGS	061411-TPBBSW-5B	Tritium	13.9	J	SW	Detected in FB
41764	USGS	062011-TPSWID-1T	Deuterium	15.4	J	SW	High FD RPD
41764	300	062011-TPSWID-1B	Chloride	14000	J-	SW	Low MS/MSD %R
41764	300	062011-TPSWID-2T	Barium	0.094	I J	SW	Detected in FB
42017	USGS	061011-TPSWC-1T	Tritium	93.3	J	SW	Detected in FB
42017	USGS	061011-TPSWC-1B	Tritium	84.5	J	SW	Detected in FB
42017	USGS	061011-TPSWC-2T	Tritium	75.4	J	SW	Detected in FB
42017	USGS	061011-TPSWC-2B	Tritium	74.3	J	SW	Detected in FB
42017	USGS	061011-TPSWC-3T	Tritium	55	J	SW	Detected in FB
41764	300	061011-TPSWC-3T	Fluoride	0.88	J	SW	High FD RPD
41764	USGS	061011-TPSWC-3T	Deuterium	10	J	SW	High FD RPD
42017	USGS	061011-TPSWC-3B	Tritium	35	J	SW	Detected in FB
41764	300	061511-TPSWC-4T	Bromide	96	J	SW	S.C.<80%Anion
41764	300	061511-TPSWC-4T	Chloride	28000	J	SW	S.C.<80%Anion
41764	300	061511-TPSWC-4T	Fluoride	ND	U J	SW	S.C.<80%Anion
41764	300	061511-TPSWC-4T	Sulfate	3200	J	SW	S.C.<80%Anion
41764	300	061511-TPSWC-4T	Alkalinity	42	J	SW	High LD RPD, S.C.<80%Anion
41764	300	061511-TPSWC-4T	Bicarbonate	42	J	SW	High LD RPD, S.C.<80%Anion
41764	300	061511-TPSWC-4B	Bromide	110	J	SW	S.C.<80%Anion
41764	300	061511-TPSWC-4B	Chloride	27000	J	SW	S.C.<80%Anion
41764	300	061511-TPSWC-4B	Fluoride	ND	U J	SW	S.C.<80%Anion
41764	300	061511-TPSWC-4B	Sulfate	3900	J	SW	S.C.<80%Anion
41764	300	061511-TPSWC-4B	Alkalinity	81	J	SW	S.C.<80%Anion
41764	300	061511-TPSWC-4B	Bicarbonate	81	J	SW	S.C.<80%Anion
42017	USGS	060611-TPSWC-5T	Tritium	3.7	U J	SW	Results<Uncertainty
41764	300	061511-TPSWC-5B	Bromide	93	J	SW	S.C.<80%Anion
41764	300	061511-TPSWC-5B	Chloride	27000	J	SW	S.C.<80%Anion
41764	300	061511-	Fluoride	ND	U J	SW	S.C.<80%Anion

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
		TPSWC-5B					
41764	300	061511-TPSWC-5B	Sulfate	3100	J	SW	S.C.<80%Anion
41764	300	061511-TPSWC-5B	Alkalinity	88	J	SW	S.C.<80%Anion
41764	300	061511-TPSWC-5B	Bicarbonate	88	J	SW	S.C.<80%Anion
41764	6010	061611-TPSWC-6T	Calcium	410	J	SW	S.C.<80%Cation
41764	6010	061611-TPSWC-6T	Magnesium	960	J	SW	S.C.<80%Cation
41764	6010	061611-TPSWC-6T	Potassium	320	J	SW	S.C.<80%Cation
41764	6010	061611-TPSWC-6T	Sodium	7700	J	SW	S.C.<80%Cation
41764	300	061611-TPSWC-6T	Bromide	55	J	SW	S.C.<80%Anion
41764	300	061611-TPSWC-6T	Chloride	15000	J	SW	S.C.<80%Anion
41764	300	061611-TPSWC-6T	Fluoride	0.61	J	SW	S.C.<80%Anion
41764	300	061611-TPSWC-6T	Sulfate	1800	J	SW	S.C.<80%Anion
41764	300	061611-TPSWC-6T	Alkalinity	130	J	SW	S.C.<80%Anion
41764	300	061611-TPSWC-6T	Bicarbonate	130	J	SW	S.C.<80%Anion
41764	300	061611-TPSWC-6B	Bromide	85	J	SW	S.C.<80%Anion
41764	300	061611-TPSWC-6B	Chloride	25000	J	SW	S.C.<80%Anion
41764	300	061611-TPSWC-6B	Fluoride	0.6	U J	SW	S.C.<80%Anion
41764	300	061611-TPSWC-6B	Sulfate	2800	J	SW	S.C.<80%Anion
41764	300	061611-TPSWC-6B	Alkalinity	110	J	SW	S.C.<80%Anion
41764	300	061611-TPSWC-6B	Bicarbonate	110	J	SW	S.C.<80%Anion
41764	6010	060911-TPSWCCS-2B	Calcium	810	J	SW	S.C.<80%Cation
41764	6010	060911-TPSWCCS-2B	Magnesium	2300	J	SW	S.C.<80%Cation
41764	6010	060911-TPSWCCS-2B	Potassium	770	J	SW	S.C.<80%Cation
41764	6010	060911-TPSWCCS-2B	Sodium	18000	J	SW	S.C.<80%Cation
41764	300	060911-TPSWCCS-2B	Bromide	120	J	SW	S.C.<80%Anion
41764	300	060911-TPSWCCS-2B	Chloride	37000	J	SW	S.C.<80%Anion
41764	300	060911-TPSWCCS-2B	Fluoride	21	J	SW	S.C.<80%Anion
41764	300	060911-TPSWCCS-2B	Sulfate	4100	J	SW	S.C.<80%Anion
42017	Field	060911-	DO	5.29	J	SW	Poor CCV

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
		TPSWCCS-2B					
42017	6010	062311-TPSWCCS-4T	Calcium	830	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-4T	Magnesium	2500	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-4T	Potassium	820	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-4T	Sodium	19000	J	SW	S.C.<80%Cation
42017	300	062311-TPSWCCS-4T	Bromide	130	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-4T	Chloride	38000	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-4T	Fluoride	5.2	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-4T	Sulfate	ND	U J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-4T	Alkalinity	140	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-4T	Bicarbonate	140	J	SW	S.C.<80%Anion
42017	6010	062311-TPSWCCS-4B	Calcium	810	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-4B	Magnesium	2400	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-4B	Potassium	800	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-4B	Sodium	19000	J	SW	S.C.<80%Cation
42017	300	062311-TPSWCCS-4B	Bromide	130	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-4B	Chloride	38000	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-4B	Fluoride	4.6	I J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-4B	Sulfate	ND	U J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-4B	Alkalinity	140	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-4B	Bicarbonate	140	J	SW	S.C.<80%Anion
42017	6010	062311-TPSWCCS-5T	Calcium	810	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-5T	Magnesium	2500	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-5T	Potassium	830	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-5T	Sodium	18000	J	SW	S.C.<80%Cation
42017	300	062311-TPSWCCS-5T	Bromide	120	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-5T	Chloride	37000	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-5T	Fluoride	4.7	I J	SW	S.C.<80%Anion
42017	300	062311-	Sulfate	ND	U J	SW	S.C.<80%Anion

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
		TPSWCCS-5T					
42017	300	062311-TPSWCCS-5T	Alkalinity	130	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-5T	Bicarbonate	130	J	SW	S.C.<80%Anion
42017	6010	062311-TPSWCCS-5B	Calcium	830	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-5B	Magnesium	2500	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-5B	Potassium	830	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-5B	Sodium	19000	J	SW	S.C.<80%Cation
42017	300	062311-TPSWCCS-5B	Bromide	120	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-5B	Chloride	38000	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-5B	Fluoride	4.9	I J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-5B	Sulfate	ND	U J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-5B	Alkalinity	140	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-5B	Bicarbonate	140	J	SW	S.C.<80%Anion
42017	6010	062311-TPSWCCS-6T	Calcium	820	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-6T	Magnesium	2500	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-6T	Potassium	810	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-6T	Sodium	18000	J	SW	S.C.<80%Cation
42017	300	062311-TPSWCCS-6T	Bromide	130	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-6T	Chloride	38000	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-6T	Fluoride	4.6	I J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-6T	Sulfate	260	U J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-6T	Alkalinity	140	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-6T	Bicarbonate	140	J	SW	S.C.<80%Anion
42017	6010	062311-TPSWCCS-6B	Calcium	820	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-6B	Magnesium	2500	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-6B	Potassium	820	J	SW	S.C.<80%Cation
42017	6010	062311-TPSWCCS-6B	Sodium	19000	J	SW	S.C.<80%Cation
42017	300	062311-TPSWCCS-6B	Bromide	130	J	SW	S.C.<80%Anion
42017	300	062311-	Chloride	37000	J	SW	S.C.<80%Anion

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
		TPSWCCS-6B					
42017	300	062311-TPSWCCS-6B	Fluoride	5.1	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-6B	Sulfate	ND	U J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-6B	Alkalinity	130	J	SW	S.C.<80%Anion
42017	300	062311-TPSWCCS-6B	Bicarbonate	120	J	SW	S.C.<80%Anion
41764	USGS	062011-TPSWID-Dup1	Deuterium	12.0	J	SW	High FD RPD
41764	300	061011-TPSWC-DUP1	Fluoride	0.68	J	SW	High FD RPD
41764	USGS	061011-TPSWC-DUP1	Deuterium	6.0	J	SW	High FD RPD

Table 5: Data Qualifier Codes

Code	Definition
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	Estimated value. A "J" value shall be accompanied by a detailed explanation to justify the reason(s) for designating the value as estimated. A bias is assigned if discernable.
Q	Holding Time exceeded.
V	Indicates that the analyte was detected at or above the method detection limit in both the sample and the associated method blank and the value of 10 times the blank value was equal to or greater than the associated sample value. Only for method blank and J qualifier for other blanks.
I	Value detected between the MDL and the reporting limit.
?	Data are rejected and should not be used. Some or all of the quality control data for the analyte were outside criteria, and the presence or absence of the analyte cannot be determined from the data.
Code	Bias
+	Bias is high.
-	Bias is low.

Prepared by: Steven Elliott, Chemist, E&E

Date: 2/10/12

SEPTEMBER 2011

GROUNDWATER

(Includes September 2011 L-G Wells)

DATA USABILITY SUMMARY

File Name:	FPL_GW_Sept 2011 L-G & Semiannual_DUS
Current Version:	02/12/12
Results File:	FPL_GW_Sept 2011_Semiannual Results and FPL_GW_Sept 2011_L-G Results

Notes: Tritium results not received at time of DUS submission. When received, the DUS and Results table will be revised to reflect the additional data.

On behalf of Florida Power & Light Company (FPL), Ecology and Environment, Inc. (E & E) reviewed two data packages from Test America Laboratories, Inc. (Test America) and subcontract labs for the analysis of **groundwater** samples collected during the **September 2011 L-G Wells and Semiannual sampling events** at the Turkey Point facility in Florida City, Florida. Data were reviewed for conformance to the requirements of the guidance document, *Florida Power & Light Company, Inc. Turkey Point Monitoring Plan Quality Assurance Project Plan (QAPP), April and August, 2010* (FPL Turkey Point Monitoring Plan QAPP) and modifications provided by FPL to the South Florida Water Management District during the November 2010 Quarterly meeting.

Intended Use of Data: To provide current data on the environmental conditions of the groundwater in the monitoring area and to assess chemicals of concern levels in groundwater and to guide future monitoring actions, if necessary.

Analyses requested included:

- EPA Method 200.7 – Metals, Total, by Inductively Coupled Plasma / Atomic Emission Spectroscopy (ICP/AES) - Ba and Fe only
- EPA Method 200.7 – Metals, Total, ICP/AES – As, Ba, Be, Cd, Cu, Fe, Pb, Mn, Mo, Ni, Se, Ti, V, Zn
- EPA Method 245.1 – Mercury by CVAA
- SW-846-6010 - Metals, Total, by ICP/AES - Ca, Mg, K, Na, B, and Sr
- EPA Method 300 – Anions by Ion Chromatography - bromide, chloride, fluoride, sulfate
- SM 4500-S2 F – Sulfides
- SM 2320B - Alkalinity

- SM 2540C – Total Dissolved Solids (TDS)
- SM 3500 Cr B – Chromium VI
- SW-846-9060 – Dissolved Inorganic Carbon
- SM 4500 NH3 G – Total Ammonia
- EPA Method 351.2 – Total Kjeldahl Nitrogen (TKN)
- EPA Method 353.2 – Nitrate/Nitrite as Nitrogen
- SM 4500 P E – Orthophosphate, dissolved
- EPA Method 365.1 – Total phosphorous
- Non-standard method - $^{18}\text{O}/^{16}\text{O}$
- Non-standard method - $^2\text{H}/^1\text{H}$
- Non-standard method - $^{13}\text{C}/^{12}\text{C}$
- Non-standard method - $^{87}\text{Sr}/^{86}\text{Sr}$
- Non-standard method - ^3H

The results for unionized ammonia, ammonium ion, and total nitrogen are calculated from results of related analyses.

Carbon isotope analysis was performed by to the University of Miami, Stable Isotope Laboratory, Rosenstiel School of Marine Atmospheric Science. Hydrogen and Oxygen isotope analyses were performed by the University of Miami, Laboratory of Stable Isotope Ecology. The samples for these analyses were shipped to Test America who forwarded them to the respective labs for analysis. The tritium and strontium isotope samples were shipped directly to United States Geologic Survey (USGS), Menlo Park, California for analysis.

Data were reviewed and validated as described in the *FPL Turkey Point Monitoring Plan QAPP* and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data and the results of supporting quality control (QC) analyses;
- the case narratives;
- the chain of custody (COC) and sample receipt checklist; and
- sampling logs and field logbooks.

Table 1 lists sample and laboratory identifications, methods requested, quality control (QC) performed, and identification corrections. Table 2 lists method and laboratory quality control acceptance criteria. Tables 3a and 3b summarize field duplicate results. Table 4 summarizes the data qualified as a result of this validation. Table 5 lists the qualifier codes and definitions used to qualify data in this validation.

Introduction

A total of seventy four samples were reviewed in this DUS. During the September 2011 event, ten groundwater samples from the L and G wells, fifty-two groundwater samples (the 14 well clusters plus a subsequent L and G wells collection), two groundwater duplicate samples, one equipment blank, and one field blank were analyzed for one or more of the analyses listed above. Table 1 below lists the sample identifications (IDs) cross-referenced to laboratory identifications and the analyses selected. Also any corrections for the sample ID are noted.

“Level 4 Mini Final Reports” were submitted to FPL October 28, 2011. Isotope data from the University of Miami was received between October 21, 2011 and February 13, 2012. Tritium and strontium isotope data have not been received to date for this event.

Data Review / Validation Results

Analytical Results

All results were evaluated against the method detection limit (MDL), defined as the minimum concentration of an analyte reported with 99% confidence that the analyte concentration is greater than zero. The reporting limit (RL) or practical quantitation limit (PQL), is defined as the lowest non-zero standard concentration in the calibration curve. Results are reported with an “I” flag if less than the RL but greater than the MDL. Non-detected results are reported as less than the value of the MDL.

The ortho-phosphate analysis by SM4500 PE was modified in an effort to obtain more accurate results. Ortho-phosphate results had been greater than the total phosphorous analysis result in many samples by the standard methods. The modification, implemented for the March 2011 event, includes running the samples initially with and then without color reagent, per Agency recommendation. The result without color reagent was subtracted from the result with the reagent to create the final result.

Table 1: Sample Listing

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
43321	GW	090211-TPGW-FB-1 43321	660-43321-1	09/02/2011	200.7(Ba,Fe), 6010, 300, 2320, 2540, 4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	FB	None
43321	GW	090211-TPGW-9D	660-43321-2	09/02/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	2320-LD	None
43321	GW	090211-TPGW-9M	660-43321-3	09/02/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	300-MS/MSD	None
43321	GW	090211-TPGW-9S	660-43321-4	09/02/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	090211-TPGW-8D	660-43321-5	09/02/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	090211-TPGW-8M	660-43321-6	09/02/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	2540-LD	None
43321	GW	090211-TPGW-8S	660-43321-7	09/02/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	2540-LD	None
43321	GW	090211-TPGW-6D	660-43321-8	09/02/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	090211-TPGW-6M	660-43321-9	09/02/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	090211-TPGW-6S	660-43321-10	09/02/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	090711-TPGW-FB1 43369	660-43369-1	09/07/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4	FB, 3500Cr-MS/MSD	None
43321	GW	090711-TPGW-13D	660-43369-2	09/07/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4	200.7 MS/MSD/PDS/SD/LD, 2320-LD, 4500P-MS/MSD	None
43321	GW	090711-TPGW-13M	660-43369-3	09/07/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr		None

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
					87/86, TN, NH4		
43321	GW	090711-TPGW-13S	660-43369-4	09/07/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4	353.2-MS, LD, 3500Cr-MS/MSD	None
43321	GW	090711-TPGW-12D	660-43369-5	09/07/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	090711-TPGW-12M	660-43369-6	09/07/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	090711-TPGW-12S	660-43369-7	09/07/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	090611-TPGW-FB1 43373	660-43373-1	09/06/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	FB	None
43321	GW	090611-TPGW-4D	660-43373-2	09/06/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	2320-LD	None
43321	GW	090611-TPGW-4M	660-43373-3	09/06/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	090611-TPGW-4S	660-43373-4	09/06/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	090611-TPGW-DUP1 43373	660-43373-5	09/06/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	FD	None
43321	GW	090611-TPGW-7D	660-43373-6	09/06/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	300-MS/MSD	None
43321	GW	090611-TPGW-7M	660-43373-7	09/06/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	090611-TPGW-7S	660-43373-8	09/06/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	090811-TPGW-10D	660-43406-1	09/08/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4	353.2-MS, LD, 365.1-MS, LD, 2320-LD, 3500Cr-MS/MSD	None
43321	GW	090811-TPGW-10M	660-43406-2	09/08/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4		None

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
43321	GW	090811-TPGW-10S	660-43406-3	09/08/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4	353.2-MS, LD	None
43321	GW	090911-TPGW-EB1 43433	660-43433-1	09/09/2011	200.7(Ba,Fe), 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4	EB, 245.1 MS/MSD	None
43321	GW	090911-TPGW-11D	660-43433-2	09/09/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	2320-LD	None
43321	GW	090911-TPGW-11M	660-43433-3	09/09/2011	200.7,6010,300,3500,245.1,4500NH3,353.2, 351.2,4500PE,365.1,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	090911-TPGW-11S	660-43433-4	09/09/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	090911-TPGW-14D	660-43433-5	09/09/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4		None
43321	GW	090911-TPGW-DUP1 43433	660-43433-6	09/09/2011	200.7(Ba,Fe), 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4	FD	None
43321	GW	090911-TPGW-14M	660-43433-7	09/09/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4		None
43321	GW	090911-TPGW-14S	660-43433-8	09/09/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4		None
43321	GW	091311-TPGW-2D	660-43496-1	09/13/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4	351.2-MS/MSD, 2320-LD	None

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
43321	GW	091311-TPGW-2M	660-43496-2	09/13/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4		None
43321	GW	091311-TPGW-2S	660-43496-3	09/13/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4	3500Cr-MS/MSD, 4500NH3-LD	None
43321	GW	091411-TPGW-FB1 43569	660-43569-11	09/14/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4	FB, 3500Cr-MS/MSD	None
43321	GW	091411-TPGW-3-D	660-43569-12	09/14/2011	200.7,6010,300,3500,245.1,4500NH3,353.2,351.2,4500PE,365.1,2320,2540,4500S,9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	091411-TPGW-3-M	660-43569-13	09/14/2011	200.7,6010,300,3500,245.1,4500NH3,353.2,351.2,4500PE,365.1,2320,2540,4500S,9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	091411-TPGW-3-S	660-43569-14	09/14/2011	200.7,6010,300,3500,245.1,4500NH3,353.2,351.2,4500PE,365.1,2320,2540,4500S,9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	092011-TPGW-FB1 43640	660-43640-1	09/20/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S,9060, d13C, d18O, d2H, d3H, Sr 87/86	FB	None
43321	GW	092011-TPGW-G21-18	660-43640-2	09/20/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S,9060, d13C, d18O, d2H, d3H, Sr 87/86	300-MS/MSD, 2320-LD	None
43321	GW	092011-TPGW-G21-58	660-43640-3	09/20/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S,9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	092011-TPGW-G28-18	660-43640-4	09/20/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S,9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	092011-TPGW-G35-18	660-43640-5	09/20/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S,9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	092011-TPGW-G35-58	660-43640-6	09/20/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S,9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	092011-TPGW-G28-58	660-43640-7	09/20/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S,9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	091911-TPGW-FB1	660-43643-1	09/19/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S,9060, d13C, d18O, d2H, d3H, Sr 87/86		None

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
43321	GW	091911-TPGW-L3-18	660-43643-2	09/19/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	300-MS/MSD	None
43321	GW	091911-TPGW-L3-58	660-43643-3	09/19/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	300-MS/MSD	None
43321	GW	091911-TPGW-L5-18	660-43643-4	09/19/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86	2320-LD, 2540-LD	None
43321	GW	091911-TPGW-L5-58	660-43643-5	09/19/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	092211-TPGW-5D	660-43705-1	09/22/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	092211-TPGW-5M	660-43705-2	09/22/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	092211-TPGW-5S	660-43705-3	09/22/2011	200.7(Ba,Fe),6010,300,2320,2540,4500S, 9060, d13C, d18O, d2H, d3H, Sr 87/86		None
43321	GW	092211-TPGW-1D	660-43705-4	09/22/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4	2320-LD, 3500Cr-MS/MSD, 4500P-MS/MSD, LD	None
43321	GW	092211-TPGW-1M	660-43705-5	09/22/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4		None
43321	GW	092211-TPGW-1S	660-43705-6	09/22/2011	200.7, 6010, 245.1, 300, 351.2, 353.2, 365.1, 2320, 2540, 3500Cr, 4500S, 4500NH3, 4500PE, 9060, d13C, d18O, d2H, d3H, Sr 87/86, TN, NH4	2320-LD	None

Quality Control (QC) Acceptance Criteria

Table 2 summarizes the analytical method and laboratory QC requirements and criteria for each method performed during this event. Criteria reviewed include initial and continuing calibration verifications (ICV/CCV), interference check standards (ICS), contract required quantitation limit (CRQL) standards, laboratory control samples (LCS), matrix spikes (MS), lab duplicates for samples, control, and matrix spikes (Dup), post digestion spikes (PDS), and serial dilutions (SD). Not all criteria are required for each method.

Table 2: Method and Laboratory QC Acceptance Criteria

Method	Source	IC/CCV	ICS	CRQL	LCS	MS	Dup	PDS	SD
200.7	Method	±5/±10	±20%	NA	±15%	±30%	NA	±15%	±10%
	Lab	±5/±10	±20%	±50%	±15%	±30%	20%	±15%	±10%
300	Method	±10/±10	NA	NA	±10%	±20%	NA	NA	NA
	Lab	±10/±10	NA	NA	±10%	±10%	30%	NA	NA
6010	Method	±10%mid ±30%low	NA	NA	±20%	±25%	20%	±20%	±10%
	Lab	±10/±10	±20%	±50%	±25%	±25%	20%	±25%	±10%
9060	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	±10/±10	NA	NA	Not listed	NA	NA	NA	NA
4500 S2F	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	NA	NA	NA	±25%	NA	25%	NA	NA
2320B	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	NA	NA	NA	±20%	NA	30%	NA	NA
2540C	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	NA	NA	NA	±20%	NA	20%	NA	NA

NA = Not applicable.

The laboratory limits either met or exceeded method requirements in all cases with one exception. The Method 6010 Laboratory Control Sample (LCS) criteria are listed as 80-120% while the laboratories' criteria is 75-125% although the laboratory is allowed by the method to establish criteria based on historical results.

Laboratory acceptance limits are used for this validation with the exception of the duplicate precision criteria (20% for aqueous samples, 40% for other matrices).

Documentation

Samples were evaluated for agreement with the COC. All samples were received in the appropriate containers and in good condition with the paperwork filled out properly

Preservation and Holding Times

Samples were shipped and received in good condition. Samples were preserved in the field as specified in FPL Turkey Point Monitoring Plan QAPP. Samples were prepared and analyzed within holding times with two exceptions. The analysis for chromium on samples 090711-TPGW-FB1, 091411-TPGW-FB1, and 090911-TPGW-EB1 were performed outside of holding time. These blanks were collected before 8:00AM and with a 24 hour holding time, were not received by the lab until after this time had expired. The samples were analyzed within 24 hours of receipt. Chromium was not detected in these or any other samples for this event. These results have been qualified with the flag, Q. Qualified data is summarized in Table 4.

Calibrations

Calibration applies to methods 200.7, 6010, 300, 245.1, 2320, and 2540C and the field instruments used to collect samples. According to the data sheets, initial calibration and continuing calibration data met method requirements with the following exceptions.

The field instrument (10A101789) CCV for dissolved oxygen (DO) was outside project limits on September 6, 2011. CCV's for both field instruments (10D101277 and 10A101789) was outside project limits on September 14 and 22. According to the field sampling logs for the well clusters collected on those dates, TPGW-1 and 3, for each well at the cluster, and TPGW-4D and 7D were measured with the instrument noted. DO was qualified as estimated, J, in the associated samples.

The field instrument (10A101789) CCV for pH was outside project limits on September 1 and 12, 2011. pH CCV's for both field instruments (10D101277 and 10A101789) was outside project limits on September 14. According to the field sampling logs for the well clusters collected on those dates, TPGW- 3, for each well at the cluster was measured with the instrument noted. pH was qualified as estimated, J, in the associated samples.

MDL/RL/CRQL/Std Dev

All MDLs are below the QAPP required MDL's with the exception of beryllium, lead, selenium, and sulfide. Some non-detect results for arsenic, beryllium, cadmium, lead, selenium, thallium, and sulfide have been reported above Florida Department of Environmental Protection (FDEP) Drinking Water Standards due to sample dilution.

The CRQL, or Contract Required Quantitation Limit, is the low level calibration standard analyzed as a sample. This standard is required for methods 200.7 and 6010. The standard must be analyzed during each run and must have a percent recovery within 50-150% of the true value. No samples were qualified based on CRQL results.

Interference Check Standards

Interference Check Standards (ICS) are required in Methods 6010 and 6020. The ICS consists of two solutions: A and AB. Solution A contains the possible interferents and solution AB contains the analytes and interferents. ICS results must fall within the acceptance recovery criteria of 80-120%. No samples were qualified based on ICS results with the following exceptions.

The ICS in analysis batch 115014 had low recoveries for boron, potassium, sodium, and strontium. These analytes have been qualified as estimated, J, in samples 090711-TPGW-13S, 090711-TPGW-13M, 090711-TPGW-13D, 090711-TPGW-12S, 090711-TPGW-12M, and 090711-TPGW-12D.

Blanks

The laboratory performs calibration and preparation (method) blanks if required by the analytical method. Sample results for analytes detected in an associated method or preparation blank at concentrations less than ten times the equivalent blank concentration will be qualified as "V" at the reported concentration. Sample results for analytes detected in all other blanks (i.e., field, equipment, calibration) at concentrations less than ten times the equivalent blank concentration shall be qualified as "J" at the reported concentration. All laboratory blanks were performed at the required frequency.

For the September 2011 Quarterly Event, a total of one equipment blank and six field blanks (associated with the groundwater sampling) were collected and submitted for

analysis. In each event, the appropriate number of blanks was collected. It should be noted that blank contamination can only be applied to samples collected the same day and with the same equipment. Data from different days cannot be qualified based on the blank contamination.

Iron was detected in the method blanks in preparation batches 84801, 84918, 85138, 85293, and 85926. Detected Iron results less than 10 times the associated blank concentration have been qualified as detected in the method blank, V, in 30 samples. All other associated results were either not detected or detected at concentrations greater than 10 times the associated blank concentration. The laboratory adds the V qualifier to all detected results; the 10 times rule is applied during validation. As a result, the V qualifier has been removed from iron results for TPGW-4M, TPGW-G21-18, and TPGW-G21-58. Qualified results are summarized in Table 4.

Thallium was detected in the method blanks in the preparation batch 85253. Detected thallium results less than 10 times the associated blank concentration have been qualified as detected in the method blank, V, in 3 samples. All other associated results were either not detected or detected at concentrations greater than 10 times the associated blank concentration.

Copper and selenium were detected in the method blank in the preparation batch 85138. Detected copper and selenium results less than 10 times the associated blank concentration have been qualified as detected in the method blank, V, in 3 samples. All other associated results were either not detected or detected at concentrations greater than 10 times the associated blank concentration.

Molybdenum was detected in the method blank in the preparation batch 85926. All associated results were either not detected or detected at concentrations greater than 10 times the associated blank concentration.

Magnesium was detected in the method blanks in the preparation batches 114753, 115783, 115056, 115150, and 116783. Detected magnesium results less than 10 times the associated blank concentration have been qualified as detected in the method blank, V, in 1 sample. All other associated results were either not detected or detected at

concentrations greater than 10 times the associated blank concentration. The V qualifier has been removed from magnesium results for TPGW-G21-18, TPGW-G21-58, TPGW-G28-18, TPGW-G35-18, TPGW-G35-58, TPGW-G21-58, TPGW-4M, TPGW-4D, TPGW-4S, TPGW-7D, TPGW-7M, TPGW-7S, TPGW-10D, TPGW-10M, and TPGW-10S.

Potassium was detected in the method blank in the preparation batch 115877. All associated results were either not detected or detected at concentrations greater than 10 times the associated blank concentration. The V qualifier has been removed from magnesium results for TPGW-5D, TPGW-5M, TPGW-5S, TPGW-1D, TPGW-1M, and TPGW-1S.

Chloride was detected in the method blanks in the preparation batches 115153, 115979, and 115981. All associated results were either not detected or detected at concentrations greater than 10 times the associated blank concentration. The V qualifier has been removed from chloride results for TPGW-6S.

TKN was detected in the method blanks in the preparation batch 115114. All associated results were either not detected or detected at concentrations greater than 10 times the associated blank concentration. The V qualifier has been removed from chloride results for TPGW-14D, TPGW-14M, and 090911-TPGW-DUP1.

Iron was detected in the equipment/field blanks 090211-TPGW-FB1, 090911-TPGW-EB1, 091411-TPGW-FB1, and 092011-TPGW-FB1. Nitrate/nitrite was detected in the blanks 090711-TPGW-FB1 and 090911-TPGW-EB1. Barium was detected in the blank 092011-TPGW-FB1. Boron was detected in the blank 091911-TPGW-FB1. Associated sample results less than 10 times the concentration detected in the corresponding blank have been qualified as estimated, J. Results greater than 10 times the blank concentration or reported as not detected have not been qualified. Qualified data is summarized in Table 4.

Thallium, chloride, magnesium, ammonia, TKN, orthophosphate, alkalinity, and bicarbonate were detected in one or more of the equipment/field blanks. All were detected in the blanks at levels below the reporting limit. All associated sample results

were either not detected or detected at a level greater than 10 times the blank concentration.

Laboratory Control Samples

Laboratory Control Samples (LCS) recoveries for all applicable analyses were within laboratory acceptance criteria and were performed at the required frequency.

Matrix Spike/Matrix Spike Duplicates

MS/MSD samples were performed at the required frequency for applicable methods. Recovery calculations are not required if the concentration added is less than 30% of the sample background concentration. MS/MSD recoveries of less than 10% are qualified as unusable due to apparent significant matrix effects. MS/MSD precision and accuracy results for all applicable analyses were within project objectives with the following exceptions.

The Method 300 MS/MSD recoveries of fluoride and sulfate in sample 090211-TPGW-9M, chloride, fluoride, and sulfate in 090611-TPGW-7D; and chloride and sulfate in 092011-TPGW-G21-18 and 091911-TPGW-L3-18 were below laboratory established limits. Results have been qualified as estimated with a low bias, J-, in these samples. The MSD recovery of bromide in sample 091911-TPGW-L3-58 was above laboratory limits. Bromide has been qualified as estimated with a high bias, J+, in this sample. Qualified data is summarized in Table 4.

The Method 351.2 MSD recovery of TKN in sample 091311-TPGW-2D was below laboratory limits. TKN has been qualified as estimated with a low bias, J-, in this sample.

The Method 353.2 MS recoveries of nitrate/nitrite in samples 090711-TPGW-13S, 090811-TPGW-10D, and 090811-TPGW-10S were above laboratory limits. Nitrate/nitrite has been qualified as estimated with a low bias, J-, in this sample.

The Method 365.1 MS/MSD recoveries of phosphorous in samples 090811-TPGW-10D, 092211-TPGW-1D were below laboratory limits. Total phosphorous has been qualified as estimated with a low bias, J-, in this sample.

Post Digestion Spike

A PDS is applicable to Methods 6010 and 200.7 No samples were qualified based upon PDS results.

Serial Dilution

Inductively coupled plasma (ICP) serial dilutions are run to help evaluate whether significant physical or chemical interferences exist due to sample matrix. When analyte concentrations are sufficiently high (the concentration in the original sample is minimally a factor of 50 above the detection limit, the results obtained for a five-fold dilution of the original sample are compared to the original results by means of a percent difference (%D). The %D is compared to a precision acceptance limit of $\pm 10\%$. If the SD does not meet the criteria, all results for that analyte in the associated sample delivery group (SDG) are qualified as estimated (flagged "J/UJ"). No samples were qualified based on SD results.

Laboratory Duplicates

Laboratories randomly select samples to perform internal duplicate analyses. The criteria for laboratory duplicate precision, as relative percent difference (RPD), is less than or equal to 20% for aqueous samples. All duplicate precision was within project objectives with the following exceptions.

Field Precision

The criteria for field duplicate precision, as RPD, is less than or equal to 20% for aqueous samples, the same as for laboratory duplicate precision. The results for analytes where both values are greater than the reporting limit are given as relative percent difference. Results of analytes where one or both values are less than the reporting limit are not considered appropriate for assessing precision.

Two groundwater field duplicate pairs were collected during the September 2011 sampling event: 090611-TPGW-4S / 090611-TPGW-DUP1 and 090911-TPGW-14D / 090911-TPGW-DUP1. With 52 groundwater samples collected in the September event, a minimum of 3 field duplicates should have been collected. Tables 3a and 3b summarize field duplicate precision results. Field duplicate precision met project objectives with one exception. They hydrogen isotope results for the duplicate pair

090911-TPGW-14D / 090911-TPGW-DUP1 exceeded project limits. Hydrogen isotope results in both samples have been qualified as estimated, J.

Table 3a - Field Precision

Method	Analyte	Unit	MQL	090611-TPGW-4S	090611-DUP1	RPD / Abs. Diff.	Rating	Samp Qual
6010	Calcium	mg/L	5.0	160.00	150.00	6.5%	Acceptable	None
6010	Magnesium	mg/L	0.8	26.00	26.00	0.0%	Acceptable	None
6010	Potassium	mg/L	10	5.20	5.20	0.0%	Acceptable	None
6010	Sodium	mg/L	50	240.00	240.00	0.0%	Acceptable	None
6010	Boron	mg/L	0.5	79.00	78.00	1.3%	Acceptable	None
6010	Strontium	mg/L	0.05	1500.00	1500.00	0.0%	Acceptable	None
300	Chloride	mg/L	500	480.00	470.00	2.1%	Acceptable	None
300	Fluoride	mg/L	0.5	0.40	0.40	0.0%	Acceptable	None
300	Sulfate	mg/L	50	24.00	23.00	4.3%	Acceptable	None
2320	Alkalinity	mg/L	1.0	290.00	300.00	3.4%	Acceptable	None
2320	Bicarbonate	mg/L	1.0	290.00	300.00	3.4%	Acceptable	None
2540	TDS	mg/L	250	960.00	1000.00	4.1%	Acceptable	None
4500 S2F	Sulfide	mg/L	1.0	1.30	ND	NC	Acceptable	None
9060	DIC	mg/L	1.0	94.00	94.00	0.0%	Acceptable	None
Non-standard	d18O	‰	NA	-1.1	-1.0	10%	Acceptable	None
Non-standard	d2H	‰	NA	-7.0	-7.0	0.0%	Acceptable	None
Non-standard	d13C	‰	NA	-7.52	NA	NC	Acceptable	None
Non-standard	dSr87/86	‰	NA				Acceptable	None
Non-standard	d3H	pCi/L	<5				Acceptable	None

mg/L – Milligrams per liter.
MQL – minimum quantitation limit
NA – Not applicable.
NC – Not calculated.
ND – Not detected.
pCi/L – PicoCuries per liter.
RPD – relative percent difference

Table 3b - Field Precision

Method	Analyte	Unit	MQL	090911 - TPGW- 14D	090911- DUP1	RPD / Abs. Diff.	Rating	Samp Qual
200.7	Iron	mg/L	1.0	5100	6000	16.2%	Acceptable	None
6010	Calcium	mg/L	5.0	670.00	670.00	0.0%	Acceptable	None
6010	Magnesium	mg/L	0.8	1900	1900	0.0%	Acceptable	None
6010	Potassium	mg/L	10	580.00	570.00	1.7%	Acceptable	None
6010	Sodium	mg/L	50	15000	15000	0.0%	Acceptable	None
6010	Boron	mg/L	0.5	6200.00	6200	0.0%	Acceptable	None
6010	Strontium	mg/L	0.05	12000	12000	0.0%	Acceptable	None
300	Bromide	mg/L	5.0	99.00	100.00	1.0%	Acceptable	None
300	Chloride	mg/L	500	29000	27000	7.1%	Acceptable	None
300	Sulfate	mg/L	50	3500	3500	0.0%	Acceptable	None
4500 NH3 G	Ammonia	mg/L	0.1	1.80	2.00	10.5%	Acceptable	None
363.2	Nitrate/nitrite	mg/L	0.01	0.03	0.03	0.0%	Acceptable	None
351.2	TKN	mg/L	0.2	2.30	2.30	0.0%	Acceptable	None
calc	TN	mg/L	0.25	2.30	2.30	0.0%	Acceptable	None
4500 P E	OP	mg/L	0.01	0.036	0.034	8.6%	Acceptable	None
365.1	TP	mg/L	0.01	0.04	0.04	0.0%	Acceptable	None
2320	Alkalinity	mg/L	1.0	190.00	190.00	0.0%	Acceptable	None
2320	Bicarbonate	mg/L	1.0	190.00	190.00	0.0%	Acceptable	None
2540	TDS	mg/L	250	50000	49000	2.0%	Acceptable	None
4500 S2F	Sulfide	mg/L	1.0	5.80	5.40	7.1%	Acceptable	None
9060	DIC	mg/L	1.0	66.00	66.00	0.0%	Acceptable	None
Non- standard	d18O	‰	NA	4.4	4.5	2.2%	Acceptable	None
Non- standard	d2H	‰	NA	22	31	34.0%	Acceptable	J
Non- standard	d13C	‰	NA	-8.25	-8.22	0.4%	Acceptable	None
Non- standard	dSr87/86	‰	NA				Acceptable	None
Non- standard	d3H	pCi/L	<5				Acceptable	None

Automated Data Processing Tool (ADaPT)

The laboratory submitted electronic data deliverables (EDDs) for each of the two SDGs in the ADaPT format. These EDDs were run through the ADaPT EDD Error Check by the laboratory against the FDEP generated library “DWM_Library_20100722” before submission. Any critical errors noted in the EDD Error Check are corrected by the laboratory before submission. Comments are provided by the laboratory for the remaining errors noted.

All qualifiers presented in Table 4, with the exception of the isotope results, have been added to the ADaPT files and saved. The EDDs have been signed as “Reviewed” and uploaded to the FPL database.

Technical Consistency

Certain technical comparisons are performed on data to ensure validity. The comparisons to be made and the acceptance criteria for each are defined FDEP-QA-002/02, Requirements for Field and Analytical Work. The values for the charge balance determination and the cation and anion calculated conductivity are provided in the ADaPT files. The following is a list of the technical comparisons made and the results of those comparisons. Technical comparison calculations are provided in the results summary table provided with this DUS.

- *The total anion charge must be within 80% - 110% of the total cation charge. All calculated anion charge values were within 80-110% of the cation charge.*
- *The measured specific conductivity (uS/cm) must be within 80% - 120% of the conductivity estimated from major cation concentrations. **This is only required when the initial charge balance calculation does not pass the criterion.** The conductivity versus cation concentration results were within criteria for each sample except TPGW-4M, TPGW-8S, and TPGW-10S. Calcium, magnesium, sodium, and potassium data were qualified as estimated, J, in these samples based on technical comparisons*

- *The measured specific conductivity (uS/cm) must be within 80% - 120% of the conductivity estimated from major anion concentrations. **This is only required when the initial charge balance calculation does not pass the criterion.*** The conductivity was lower than 80% of the anion concentration in TPGW-4M, TPGW-8S, TPGW-10M, TPGW-10D, and TPGW-G21-18. Alkalinity, bromide, sulfate, chloride, and fluoride analyses have been qualified as estimated, J/UJ, in these samples based on technical comparisons.
- *The TDS concentration must be within 40% -120% of the measured conductivity.* All TDS concentrations were within limits of the field specific conductivity with the exception of TPGW-1D. TDS concentration was less than 40% of the specific conductivity. TDS has been qualified as estimated, J, in this sample.
- *The total ammonia concentration must be less than 120% of the total Kjeldahl nitrogen (TKN) concentration.* All total ammonia concentrations were reported less than 120% of the TKN concentration.
- *The orthophosphate concentration must be less than 120% of the total phosphorus concentration.* In TPGW-1D, the ortho-phosphate was greater than 120% of the total phosphorus. Both ortho-phosphate and total phosphorous results have been qualified as estimated (J) in this sample. It should be noted that the analytical method for the ortho-phosphate (SM4500 PE) was modified per Agency recommendations, due to the sample matrix interferences. This resulted in most, with the one exception above, of the OP concentrations being less than the total phosphorous concentrations.

Summary

One result for total phosphorous has been qualified as unusable, R, due to low matrix spike recoveries. All other groundwater analytical data are usable for the purpose of determining current conditions in groundwater at the affected property. Qualified data is summarized in Table 4 below. Qualifier codes and definitions are summarized in Table 5. Analytical results have been qualified due to:

- Holding times
- Field and equipment blank detections;
- Method blank detections;

- Matrix spike and matrix spike duplicate recoveries;
- Field duplicate precision; and
- Technical comparisons (i.e. charge balance, total vs dissolved)

Data Quality Indicators

Precision and accuracy results are discussed throughout this DUS with a summary of exceptions noted in Table 4. Based on the number of usable or missed data points compared to the total submitted for analysis, the project met the completeness goal of 95% for the water quality quarterly sampling event. Comparability was met based on sampling procedures and analytical method selection, and the use of consistent reporting units.

Table 4 - Summary of Qualified Data

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
43321	3500	091411-TPGW-FB1	Chromium	0.005	U Q	GW	Holding time
43321	3500	090711-TPGW-FB1	Chromium	0.005	U Q	GW	Holding time
43321	3500	090911-TPGW-EB1	Chromium	0.005	U Q	GW	Holding time
43321	200.7	090211-FB1 43321	Iron	0.0062	IV	GW	Detected in MB
43321	200.7	091411-FB1	Thallium	0.0036	V	GW	Detected in MB
43321	200.7	092011-FB1	Iron	0.0063	V	GW	Detected in MB
43321	6010	092011-FB1	Magnesium	0.039	V	GW	Detected in MB
43321	200.7	092211-TPGW-1S	Iron	1.6	V	GW	Detected in MB
-	FT1500	092211-TPGW-1S	DO	1.11	J	GW	Field Instrument CCV
-	FT1500	092211-TPGW-1M	DO	0.08	J	GW	Field Instrument CCV
43321	365.1	092211-TPGW-1D	TP	0.038	J-	GW	Low MS/MSD %R
43321	300	092211-TPGW-1D	TDS	27000	J	GW	TDS <40% S.C.
43321	300	092211-TPGW-1D	OP	0.038	J	GW	OP>120%TP
43321	300	092211-TPGW-1D	TP	0.015	J	GW	OP>120%TP
-	FT1500	092211-TPGW-1D	DO	0.19	J	GW	Field Instrument CCV
43321	200.7	091311-TPGW-2S	Selenium	0.69	I V	GW	Detected in MB
43321	200.7	091311-TPGW-2S	Iron	1.1	V	GW	Detected in MB
43321	200.7	091311-TPGW-2S	Copper	0.23	V	GW	Detected in MB
43321	200.7	091311-TPGW-2M	Iron	0.92	IV	GW	Detected in MB
43321	200.7	091311-TPGW-2M	Selenium	0.44	I V	GW	Detected in MB
43321	200.7	091311-TPGW-2M	Copper	0.19	V	GW	Detected in MB
43321	200.7	091311-TPGW-2D	Selenium	0.38	I V	GW	Detected in MB
43321	200.7	091311-TPGW-2D	Copper	0.26	V	GW	Detected in MB
43321	200.7	091311-TPGW-2D	Iron	1.5	V	GW	Detected in MB
43321	351.2	091311-TPGW-2D	TKN	2.2	J-	GW	Low MS/MSD %R
43321	200.7	091411-TPGW-3S	Iron	0.73	IV	GW	Detected in MB
-	FT1500	091411-TPGW-3S	DO	0.25	J	GW	Field Instrument CCV
-	FT1500	092211-TPGW-3S	pH	6.59	J	GW	Field Instrument CCV

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
43321	200.7	091411-TPGW -3S	Iron	0.73	J	GW	Detected in FB
43321	200.7	091411-TPGW -3M	Iron	0.87	IV	GW	Detected in MB
-	FT1500	091411-TPGW -3M	DO	0.1	J	GW	Field Instrument CCV
-	FT1500	092211-TPGW -3M	pH	6.95	J	GW	Field Instrument CCV
43321	200.7	091411-TPGW -3M	Iron	0.87	J	GW	Detected in FB
-	FT1500	091411-TPGW-3D	DO	0.18	J	GW	Field Instrument CCV
-	FT1500	092211-TPGW-3D	pH	6.69	J	GW	Field Instrument CCV
43321	200.7	091411-TPGW-3D	Iron	0.8	J	GW	Detected in FB
43321	6010	090611-TPGW -4M	Calcium	600	J	GW	S.C. <80% Cation
43321	6010	090611-TPGW -4M	Magnesium	1000	J	GW	S.C. <80% Cation
43321	6010	090611-TPGW -4M	Potassium	250	J	GW	S.C. <80% Cation
43321	6010	090611-TPGW -4M	Sodium	8400	J	GW	S.C. <80% Cation
43321	300	090611-TPGW -4M	Bromide	53	J	GW	S.C. <80% Anion
43321	300	090611-TPGW -4M	Chloride	15000	J	GW	S.C. <80% Anion
43321	300	090611-TPGW -4M	Fluoride	0.4	U J	GW	S.C. <80% Anion
43321	300	090611-TPGW -4M	Sulfate	23.0	J	GW	S.C. <80% Anion
43321	2320	090611-TPGW -4M	Alkalinity	180	J	GW	S.C. <80% Anion
43321	2320	090611-TPGW -4M	Bicarbonate	180	J	GW	S.C. <80% Anion
43321	200.7	090611-TPGW-4D	Iron	4.8	V	GW	Detected in MB
-	FT1500	090611-TPGW-4D	DO	0.08	J	GW	Field Instrument CCV
43321	200.7	090211-TPGW -6M	Iron	1.2	J	GW	Detected in FB
43321	200.7	090211-TPGW -6M	Iron	1.2	IV	GW	Detected in MB
43321	200.7	090211-TPGW -6D	Iron	1.2	IV	GW	Detected in MB
43321	200.7	090211-TPGW -6D	Iron	1.2	J	GW	Detected in FB
43321	200.7	090611-TPGW-7S	Iron	0.31	IV	GW	Detected in MB
43321	200.7	090611-TPGW -7M	Iron	0.38	IV	GW	Detected in MB
43321	200.7	090611-TPGW-7D	Iron	0.28	IV	GW	Detected in MB
-	FT1500	090611-TPGW-7D	DO	0.11	J	GW	Field Instrument CCV
43321	300	090611-TPGW-7D	Chloride	39	J-	GW	Low MS/MSD %R
43321	300	090611-TPGW-7D	Fluoride	0.12	J-	GW	Low MS/MSD %R
43321	300	090611-TPGW-7D	Sulfate	24	J-	GW	Low MS/MSD %R
43321	6010	090611-TPGW-8S	Calcium	180.00	J	GW	S.C. <80% Cation
43321	6010	090611-TPGW-8S	Magnesium	0.08	I J	GW	S.C. <80% Cation

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
43321	6010	090611-TPGW-8S	Potassium	10.00	J	GW	S.C. <80% Cation
43321	6010	090611-TPGW-8S	Sodium	21.00	J	GW	S.C. <80% Cation
43321	300	090611-TPGW-8S	Bromide	0.23	J	GW	S.C. <80% Anion
43321	300	090611-TPGW-8S	Chloride	36.00	J	GW	S.C. <80% Anion
43321	300	090611-TPGW-8S	Fluoride	0.09	J	GW	S.C. <80% Anion
43321	300	090611-TPGW-8S	Sulfate	29.00	J	GW	S.C. <80% Anion
43321	2320	090611-TPGW-8S	Alkalinity	380	J	GW	S.C. <80% Anion
43321	2320	090611-TPGW-8S	Bicarbonate	1.0	U J	GW	S.C. <80% Anion
43321	200.7	090211-TPGW-8M	Iron	0.42	IV	GW	Detected in MB
43321	200.7	090211-TPGW-8M	Iron	0.42	J	GW	Detected in FB
43321	200.7	090211-TPGW-8D	Iron	5.3	V	GW	Detected in MB
43321	200.7	090211-TPGW-8D	Iron	5.3	J	GW	Detected in FB
43321	300	090211-TPGW-9M	Fluoride	0.071	J-	GW	Low MS/MSD %R
43321	300	090211-TPGW-9M	Sulfate	20	J-	GW	Low MS/MSD %R
43321	200.7	090211-TPGW-9D	Iron	0.72	IV	GW	Detected in MB
43321	200.7	090211-TPGW-9D	Iron	0.72	J	GW	Detected in FB
43321	353.2	090811-TPGW-10S	Nitrate/nitrite	ND	U J	GW	Low MS/MSD %R
43321	200.7	090811-TPGW-10M	Iron	0.31	IV	GW	Detected in MB
43321	300	090811-TPGW-10M	Bromide	72	J	GW	S.C. <80% Anion
43321	300	090811-TPGW-10M	Chloride	21000	J	GW	S.C. <80% Anion
43321	300	090811-TPGW-10M	Fluoride	0.4	J	GW	S.C. <80% Anion
43321	300	090811-TPGW-10M	Sulfate	2600	J	GW	S.C. <80% Anion
43321	2320	090811-TPGW-10M	Alkalinity	100	J	GW	S.C. <80% Anion
43321	2320	090811-TPGW-10M	Bicarbonate	100	J	GW	S.C. <80% Anion
43321	300	090811-TPGW-10D	Bromide	73	J	GW	S.C. <80% Anion
43321	300	090811-TPGW-10D	Chloride	21000	J	GW	S.C. <80% Anion
43321	300	090811-TPGW-10D	Fluoride	0.4	J	GW	S.C. <80% Anion
43321	300	090811-TPGW-10D	Sulfate	2600	J	GW	S.C. <80% Anion
43321	2320	090811-TPGW-10D	Alkalinity	110	J	GW	S.C. <80% Anion
43321	2320	090811-TPGW-10D	Bicarbonate	110	J	GW	S.C. <80% Anion
43321	353.2	090811-TPGW-10D	Nitrate/nitrite	0.020	J+	GW	High MS/MSD %R

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
43321	365.1	090811-TPGW-10D	TP	L MS	R	GW	MS/MSD %R <10%
43321	200.7	090811-TPGW-10D	Iron	0.43	IV	GW	Detected in MB
43321	200.7	090911-TPGW-11S	Iron	1.2	V	GW	Detected in MB
43321	200.7	090911-TPGW-11S	Iron	1.2	J	GW	Detected in FB
43321	200.7	090911-TPGW-11M	Iron	1.1	V	GW	Detected in MB
43321	200.7	090911-TPGW-11M	Iron	1.1	J	GW	Detected in FB
43321	200.7	090911-TPGW-11D	Iron	1.2	V	GW	Detected in MB
43321	200.7	090911-TPGW-11D	Iron	1.2	J	GW	Detected in FB
43321	6010	090711-TPGW-12S	Boron	3.3	J	GW	Low ICS %R
43321	6010	090711-TPGW-12S	Potassium	310	J	GW	Low ICS %R
43321	6010	090711-TPGW-12S	Sodium	8100	J	GW	Low ICS %R
43321	6010	090711-TPGW-12S	Strontium	6.9	J	GW	Low ICS %R
43321	200.7	090711-TPGW-12S	Iron	0.29	IV	GW	Detected in MB
43321	6010	090711-TPGW-12M	Boron	5.1	J	GW	Low ICS %R
43321	6010	090711-TPGW-12M	Potassium	490	J	GW	Low ICS %R
43321	6010	090711-TPGW-12M	Sodium	13000	J	GW	Low ICS %R
43321	6010	090711-TPGW-12M	Strontium	11	J	GW	Low ICS %R
43321	200.7	090711-TPGW-12M	Iron	0.5	IV	GW	Detected in MB
43321	200.7	090711-TPGW-12D	Iron	0.47	IV	GW	Detected in MB
43321	6010	090711-TPGW-12D	Boron	5.3	J	GW	Low ICS %R
43321	6010	090711-TPGW-12D	Potassium	510	J	GW	Low ICS %R
43321	6010	090711-TPGW-12D	Sodium	13000	J	GW	Low ICS %R
43321	6010	090711-TPGW-12D	Strontium	11	J	GW	Low ICS %R
43321	353.2	090711-TPGW-13S	Nitrate/nitrite	0.012	J+	GW	High MS/MSD %R
43321	6010	090711-TPGW-13S	Boron	7.9	J	GW	Low ICS %R
43321	6010	090711-TPGW-13S	Potassium	710	J	GW	Low ICS %R
43321	6010	090711-TPGW-13S	Sodium	18000	J	GW	Low ICS %R
43321	6010	090711-TPGW-13S	Strontium	15	J	GW	Low ICS %R
43321	200.7	090711-TPGW-13S	Iron	0.71	IV	GW	Detected in MB
43321	353.2	090711-TPGW-13S	Nitrate/nitrite	0.012	J	GW	Detected in FB

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
43321	6010	090711-TPGW-13M	Potassium	670	J	GW	Low ICS %R
43321	6010	090711-TPGW-13M	Boron	7.1	J	GW	Low ICS %R
43321	6010	090711-TPGW-13M	Sodium	17000	J	GW	Low ICS %R
43321	353.2	090711-TPGW-13M	Nitrate/nitrite	0.06	J	GW	Detected in FB
43321	6010	090711-TPGW-13M	Strontium	14	J	GW	Low ICS %R
43321	200.7	090711-TPGW-13M	Iron	2.8	IV	GW	Detected in MB
43321	200.7	090711-TPGW-13M	Thallium	0.18	V	GW	Detected in MB
43321	6010	090711-TPGW-13D	Boron	7.4	J	GW	Low ICS %R
43321	6010	090711-TPGW-13D	Potassium	680	J	GW	Low ICS %R
43321	6010	090711-TPGW-13D	Sodium	17000	J	GW	Low ICS %R
43321	6010	090711-TPGW-13D	Strontium	14	J	GW	Low ICS %R
43321	353.2	090711-TPGW-13D	Nitrate/nitrite	0.16	J	GW	Detected in FB
43321	200.7	090711-TPGW-13D	Thallium	1.4	V	GW	Detected in MB
43321	200.7	090911-TPGW-14S	Iron	5.2	J	GW	Detected in FB
43321	353.2	090911-TPGW-14S	Nitrate/nitrite	0.025	J	GW	Detected in FB
43321	200.7	090911-TPGW-14M	Iron	5.6	J	GW	Detected in FB
43321	353.2	090911-TPGW-14M	Nitrate/nitrite	0.037	J	GW	Detected in FB
43321	UofM	090911-TPGW-14D	d2H	22	J	GW	High FD RPD
43321	200.7	090911-TPGW-14D	Iron	5.1	J	GW	Detected in FB
43321	353.2	090911-TPGW-14D	Nitrate/nitrite	0.031	J	GW	Detected in FB
43321	300	091911-TPGW-L3-18	Chloride	950		GW	Low MS/MSD %R
43321	300	091911-TPGW-L3-18	Sulfate	140	J-	GW	Low MS/MSD %R
43321	300	091911-TPGW-L3-58	Bromide	97	J+	GW	High MS/MSD %R
43321	6010	091911-TPGW-L5-18	Boron	0.064	J	GW	Detected in FB
43321	200.7	092011-TPGW-G21-18	Barium	0.13	J	GW	Detected in FB
43321	300	092011-TPGW-G21-18	Bromide	0.25	J	GW	S.C. <80% Anion
43321	300	092011-TPGW-G21-18	Chloride	55	J	GW	S.C. <80% Anion
43321	300	092011-TPGW-G21-18	Fluoride	0.1	J	GW	S.C. <80% Anion
43321	300	092011-TPGW-G21-18	Sulfate	12	J	GW	S.C. <80% Anion
43321	2320	092011-TPGW-G21-18	Alkalinity	160	J	GW	S.C. <80% Anion
43321	2320	092011-TPGW-G21-18	Bicarbonate	160	J	GW	S.C. <80% Anion

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
43321	300	092011-TPGW-G21-18	Chloride	55	J-	GW	Low MS/MSD %R
43321	300	092011-TPGW-G21-18	Sulfate	11	J-	GW	Low MS/MSD %R
43321	200.7	092011-TPGW-G21-58	Iron	0.51	V	GW	Detected in MB
43321	200.7	092011-TPGW-G21-58	Barium	0.34	J	GW	Detected in FB
43321	200.7	092011-TPGW-G21-58	Iron	0.51	J	GW	Detected in FB
43321	200.7	092011-TPGW-G28-18	Iron	0.76	V	GW	Detected in MB
43321	200.7	092011-TPGW-G28-18	Iron	0.76	J	GW	Detected in FB
43321	200.7	092011-TPGW-G28-58	Iron	4.3	J	GW	Detected in FB
43321	200.7	092011-TPGW-G35-18	Iron	0.39	V	GW	Detected in MB
43321	200.7	092011-TPGW-G35-18	Iron	0.39	J	GW	Detected in FB
43321	200.7	092011-TPGW-G35-58	Iron	1.6	V	GW	Detected in MB
43321	200.7	092011-TPGW-G35-58	Iron	1.6	J	GW	Detected in FB
43321	200.7	092011-TPGW-G35-58	Barium	0.094	J	GW	Detected in FB
43321	UofM	090911-TPGW-DUP1	d2H	31	J	GW	High FD RPD
43321	353.2	090911-TPGW-DUP	Nitrate/nitrite	0.025	J	GW	Detected in FB
43321	200.7	090911-TPGW-DUP	Iron	6.0	J	GW	Detected in FB

Table 5: Data Qualifier Codes

Code	Definition
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	Estimated value. A "J" value shall be accompanied by a detailed explanation to justify the reason(s) for designating the value as estimated. A bias is assigned if discernable.
Q	Holding Time exceeded.
V	Indicates that the analyte was detected at or above the method detection limit in both the sample and the associated method blank and the value of 10 times the blank value was equal to or greater than the associated sample value. Only for method blank and J qualifier for other blanks.
I	Value detected between the MDL and the reporting limit.
?	Data are rejected and should not be used. Some or all of the quality control data for the analyte were outside criteria, and the presence or absence of the analyte cannot be determined from the data.
Code	Bias
+	Bias is high.
-	Bias is low.

Prepared by: Steven Elliott, Chemist, E&E

Date: 02/12/2012

SEPTEMBER 2011 SURFACE WATER

DATA USABILITY SUMMARY

File Name:	FPL_SW_Sept 2011 Semiannual_DUS
Current Version:	02/13/12
Results File:	FPL_SW_Sept 2011 Semiannual_Results

Note: Tritium and Strontium isotope results not received to date.

On behalf of Florida Power & Light Company (FPL), Ecology and Environment, Inc. (E & E) reviewed one data package from Test America Laboratories, Inc. (Test America) and subcontract labs for the analysis of **surface water** samples collected during the **September 2011 Semiannual sampling event** at the Turkey Point facility in Florida City, Florida. Data were reviewed for conformance to the requirements of the guidance document, *Florida Power & Light Company, Inc. Turkey Point Monitoring Plan Quality Assurance Project Plan (QAPP), April and August, 2010* (FPL Turkey Point Monitoring Plan QAPP) and modifications provided by FPL to the South Florida Water Management District during the November 2010 Quarterly meeting.

Intended Use of Data: To provide current data on the environmental conditions of the surface water in the monitoring area and to assess chemicals of concern levels in surface water and to guide future monitoring actions, if necessary.

Analyses requested included:

- EPA Method 200.7 – Metals, Total, by Inductively Coupled Plasma / Atomic Emission Spectroscopy (ICP/AES) – Ba, Fe, silica
- SW-846-6010 - Metals, Total, by ICP/AES - Ca, Mg, K, Na, B, and Sr
- EPA Method 300 – Anions by Ion Chromatography - bromide, chloride, fluoride, sulfate
- SM 4500-S2 F – Sulfides
- SM 2320B - Alkalinity
- SW-846-9060 – Dissolved Inorganic Carbon
- SM 4500 NH3 G – Total Ammonia
- EPA Method 351.2 – Total Kjeldahl Nitrogen (TKN)
- EPA Method 353.2 – Nitrate/Nitrite as Nitrogen

- SM 4500 P E – Orthophosphate, dissolved
- EPA Method 365.1 – Total phosphorous
- EPA 900 – Gross Alpha
- Non-standard method - $^{18}\text{O}/^{16}\text{O}$
- Non-standard method - $^2\text{H}/^1\text{H}$
- Non-standard method - $^{13}\text{C}/^{12}\text{C}$
- Non-standard method - $^{87}\text{Sr}/^{86}\text{Sr}$
- Non-standard method - ^3H

The results for unionized ammonia, ammonium ion, and total nitrogen are calculated from results of related analyses.

Gross Alpha analysis was performed by KNL Labs in Tampa, Florida. Carbon isotope analysis was performed by to the University of Miami, Stable Isotope Laboratory, Rosenstiel School of Marine Atmospheric Science. Hydrogen and Oxygen isotope analyses were performed by the University of Miami, Laboratory of Stable Isotope Ecology. The samples for these analyses were shipped to Test America who forwarded them to the respective labs for analysis. The tritium and strontium isotope samples were shipped directly to United States Geologic Survey (USGS), Menlo Park, California for analysis.

Data were reviewed and validated as described in the *FPL Turkey Point Monitoring Plan QAPP* and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data and the results of supporting quality control (QC) analyses;
- the case narratives;
- the chain of custody (COC) and sample receipt checklist; and
- sampling logs and field logbooks.

Table 1 lists sample and laboratory identifications, methods requested, quality control (QC) performed, and identification corrections. Table 2 lists method and laboratory quality control acceptance criteria. Tables 3a and 3b summarize field duplicate results.

Table 4 summarizes the data qualified as a result of this validation. Table 5 lists the qualifier codes and definitions used to qualify data in this validation.

Introduction

A total of forty (40) samples were reviewed in this DUS. During the September 2011 event, 12 surface water canal (TPSWC) samples, 6 surface water interceptor ditch (TPSWID) samples, 10 cooling canal (TPSWCCS) samples, 5 Biscayne Bay (TPBBSW) samples, 2 surface water duplicates, and 1 equipment blank and 4 field blanks were analyzed for the analyses listed above. Table 1 below lists the sample identifications (IDs) cross-referenced to laboratory identifications and the analyses selected. Also any corrections for the sample ID are noted.

Test America "Level 4 Mini Final Reports" were submitted to FPL October 28, 2011. Hydrogen, oxygen, and carbon isotope results were submitted to FPL between October 21, 2011 and February 13, 2012. Tritium and strontium isotope results have not been received to date.

Data Review / Validation Results

Analytical Results

All results were evaluated against the method detection limit (MDL), defined as the minimum concentration of an analyte reported with 99% confidence that the analyte concentration is greater than zero. The reporting limit (RL) or practical quantitation limit (PQL), is defined as the lowest non-zero standard concentration in the calibration curve. Results are reported with an "I" flag if less than the RL but greater than the MDL. Non-detected results are reported as less than the value of the MDL.

Table 1: Sample Listing

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
43290	SW	090111-TPSWCCS-EB1	660-43290-1	09/01/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium	200.7-MS/MSD, PDS, SD, 4500NH3-MS/MSD, 4500PE-MS/MSD, LD	None
43290	SW	090811-TPSWC-FB1	660-43411-1	09/08/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	091211-TPSWC-FB1	660-43475-1	09/12/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	091311-TPSWCCS-FB1	660-43497-1	09/13/2011	200.7(Ba,Fe,silica), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, 900, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	092211-TPSWC-FB1	660-43706-1	09/22/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium	365.1-MS/MSD	None
43290	SW	090811-TPBBSW-1B	660-43411-5	09/08/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	090811-TPBBSW-2B	660-43411-4	09/08/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	090911-TPBBSW-3B	660-43434-1	09/09/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	090811-TPBBSW-4B	660-43411-3	09/08/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium	4500PE-MS/MSD, LD	None
43290	SW	090811-TPBBSW-5B	660-43411-2	09/08/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium	365.1-MS, LD	None
43290	SW	091411-TPSWC-1T	660-43569-6	09/14/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	091411-TPSWC-1B	660-43569-8	09/14/2011	200.7(Ba,Fe,silica), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, 900, d2H, d18O, d13C, 87/86Sr,	300-MS/MSD	None

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
					Tritium		
43290	SW	091411-TPSWC-2T	660-43569-4	09/14/2011	200.7(Ba,Fe,silica), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, 900, d2H, d18O, d13C, 87/86Sr, Tritium	353.2-MS, LD	None
43290	SW	091411-TPSWC-2B	660-43569-5	09/14/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium	351.2-MS/MSD	None
43290	SW	091411-TPSWC-3T	660-43569-2	09/14/2011	200.7(Ba,Fe,silica), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, 900, d2H, d18O, d13C, 87/86Sr, Tritium	4500NH3-LD	None
43290	SW	091411-TPSWC-3B	660-43569-3	09/14/2011	200.7(Ba,Fe,silica), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, 900, d2H, d18O, d13C, 87/86Sr, Tritium	4500PE-MS/MSD, LD	None
43290	SW	091311-TPSWC-4T	660-43497-2	09/13/2011	200.7(Ba,Fe,silica), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, 900, d2H, d18O, d13C, 87/86Sr, Tritium	4500PE-MS/MSD, LD	None
43290	SW	091311-TPSWC-4B	660-43497-3	09/13/2011	200.7(Ba,Fe,silica), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, 900, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	091411-TPSWC-5T	660-43569-9	09/14/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	091411-TPSWC-5B	660-43569-10	09/14/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium	4500-PE-MS/MSD, LD	None
43290	SW	090111-TPSWC-6T	660-43290-8	09/01/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium	351.2-MS/MSD	None
43290	SW	090111-TPSWC-6B	660-43290-9	09/01/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	091211-TPSWCCS-1B	660-43475-4	09/12/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
43290	SW	090711-TPSWCCS-2B	660-43369-8	09/07/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	091411-TPWCCS-3B	660-43569-1	09/14/2011	200.7(Ba,Fe,silica), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, 900, d2H, d18O, d13C, 87/86Sr, Tritium	200.7-MS/MSD, PDS, SD, LD, 4500NH3-MS/MSD	None
43290	SW	090111-TPSWCCS-4T	660-43290-6	09/01/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	090111-TPSWCCS-4B	660-43290-7	09/01/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	090111-TPSWCCS-5T	660-43290-4	09/01/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	090111-TPSWCCS-5B	660-43290-5	09/01/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium	2320-LD	None
43290	SW	090111-TPSWCCS-6T	660-43290-2	09/01/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium	365.1-MS, LD	None
43290	SW	090111-TPSWCCS-6B	660-43290-3	09/01/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium	353.2-MS/MSD, LD	None
43290	SW	091211-TPSWCCS-7B	660-43475-6	09/12/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium	365.1-MS, LD	None
43290	SW	091211-TPSWID-1T	660-43475-2	09/12/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium	200.7-MS/MSD, PDS, SD, LD, 2320-LD, 4500PE-MS/MSD, LD	None
43290	SW	091211-TPSWID-1B	660-43475-3	09/12/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	091211-TPSWID-2T	660-43475-7	09/12/2011	200.7(Ba,Fe), 6010, 300,4500NH3,353.2,351.2, 365.1, 4500PE,2320,4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium		None
43290	SW	091211-TPSWID-2B	660-43475-8	09/12/2011	200.7(Ba,Fe,silica), 6010, 300, 4500NH3,		None

SDG	Matrix	Sample ID	Lab ID	Sample Date	Analyses	QC	ID Corr.
					353.2, 351.2, 365.1, 4500PE, 2320, 4500S, 9060, 900, d2H, d18O, d13C, 87/86Sr, Tritium		
43290	SW	091211-TPSWID-3T	660-43475-9	09/12/2011	200.7(Ba,Fe,silica), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE, 2320, 4500S, 9060, 900, d2H, d18O, d13C, 87/86Sr, Tritium	353.2-MS, LD	None
43290	SW	091211-TPSWID-3B	660-43475-10	09/12/2011	200.7(Ba,Fe,silica), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE, 2320, 4500S, 9060, 900, d2H, d18O, d13C, 87/86Sr, Tritium	300-MS/MSD	None
43290	SW	091411-TPSWC-DUP1 43569	660-43569-7	09/14/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE, 2320, 4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium	300-MS/MSD	None
43290	SW	91211-TPSWCCS-DUP1	660-43475-5	09/12/2011	200.7(Ba,Fe), 6010, 300, 4500NH3, 353.2, 351.2, 365.1, 4500PE, 2320, 4500S, 9060, d2H, d18O, d13C, 87/86Sr, Tritium	4500PE-MS/MSD	None

Quality Control (QC) Acceptance Criteria

Table 2 summarizes the analytical method and laboratory QC requirements and criteria for each method performed during this event. Criteria reviewed include initial and continuing calibration verifications (ICV/CCV), interference check standards (ICS), contract required quantitation limit (CRQL) standards, laboratory control samples (LCS), matrix spikes (MS), lab duplicates for samples, control, and matrix spikes (Dup), post digestion spikes (PDS), and serial dilutions (SD). Not all criteria are required for each method.

Table 2: Method and Laboratory QC Acceptance Criteria

Method	Source	IC/CCV	ICS	CRQL	LCS	MS	Dup	PDS	SD
200.7	Method	±5/±10	±20%	NA	±15%	±30%	NA	±15%	±10%
	Lab	±5/±10	±20%	±50%	±15%	±30%	20%	±15%	±10%
300	Method	±10/±10	NA	NA	±10%	±20%	NA	NA	NA
	Lab	±10/±10	NA	NA	±10%	±10%	30%	NA	NA
6010	Method	±10%mid ±30%low	NA	NA	±20%	±25%	20%	±20%	±10%
	Lab	±10/±10	±20%	±50%	±25%	±25%	20%	±25%	±10%
9060	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	±10/±10	NA	NA	Not listed	NA	NA	NA	NA
4500 S2F	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	NA	NA	NA	±25%	NA	25%	NA	NA
2320B	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	NA	NA	NA	±20%	NA	30%	NA	NA
2540C	Method	NA	NA	NA	NA	NA	NA	NA	NA
	Lab	NA	NA	NA	±20%	NA	20%	NA	NA

NA = Not applicable.

The laboratory limits either met or exceeded method requirements in all cases with one exception. The Method 6010 Laboratory Control Sample (LCS) criteria are listed as 80-120% while the laboratories' criteria is 75-125% although the laboratory is allowed by the method to establish criteria based on historical results.

Laboratory acceptance limits are used for this validation with the exception of the duplicate precision criteria (20% for aqueous samples, 40% for other matrices).

Documentation

Samples were evaluated for agreement with the COC. All samples were received in the appropriate containers and in good condition with the paperwork filled out properly

Preservation and Holding Times

Samples were shipped and received in good condition. Samples were preserved in the field as specified in FPL Turkey Point Monitoring Plan QAPP. Samples were prepared and analyzed within holding times.

Calibrations

Calibration applies to methods 200.7, 6010, 300, 245.1, 2320, and 2540C and the field instruments used to collect samples. According to the data sheets, initial calibration and continuing calibration data met method requirements.

MDL/RL/CRQL/Std Dev

All MDLs are below the QAPP required MDL's with the exception of sodium and strontium. Sodium and strontium results were all reported as detected above the MDL. Some MDL's may be elevated due to sample dilution.

The CRQL, or Contract Required Quantitation Limit, is the low level calibration standard analyzed as a sample. This standard is required for methods 200.7 and 6010. The standard must be analyzed during each run and must have a percent recovery within 50-150% of the true value. No samples were qualified based on CRQL results.

Interference Check Standards

Interference Check Standards (ICS) are required in Methods 6010 and 6020. The ICS consists of two solutions: A and AB. Solution A contains the possible interferents and solution AB contains the analytes and interferents. ICS results must fall within the acceptance recovery criteria of 80-120%. No samples were qualified based on ICS results.

Blanks

The laboratory performs calibration and preparation (method) blanks if required by the analytical method. Sample results for analytes detected in an associated method or

preparation blank at concentrations less than ten times the equivalent blank concentration will be qualified as “V” at the reported concentration. Sample results for analytes detected in all other blanks (i.e., field, equipment, calibration) at concentrations less than ten times the equivalent blank concentration shall be qualified as “J” at the reported concentration. All laboratory blanks were performed at the required frequency.

For the September 2011 Quarterly Event, a total of one equipment blank and four field blanks (associated with the surface water sampling) were collected and submitted for analysis. The appropriate number of blanks was collected.

Iron was detected in method blanks 84918, 85138, and 85926. Iron has been qualified as detected in the method blank, V, in associated samples where iron was detected at a concentration less than 10 times the blank concentration. Qualified data is summarized in Table 4.

Magnesium was detected in a method blank 115150. Magnesium has been qualified as detected in the method blank, V, in associated samples where iron was detected at a concentration less than 10 times the blank concentration. The V qualifier has been removed from results detected at concentrations greater than 10 times the blank concentration. These include TPBBSW-1B, 2B, 4B, and 5B

Boron was detected in a method blank 115150. All boron results were either not detected or detected at a concentration greater than 10 times the blank concentration. The V qualifier has been removed from TPSWCCS-7B and TPSWID-2T, 2B, 3T, and 3B.

Chloride was detected in a method blank 115150. All chloride results were detected at a concentration greater than 10 times the blank concentration. The V qualifier has been removed from TPSWCCS-3B, TPSWID-1T, 2T, and 3B, and TPSWC-1T, 1B, 2T, 2B, 3T, 3B, 5T and 5B.

TKN was detected in a method blank 115150. All TKN results were either not detected or detected at a concentration greater than 10 times the blank concentration. The V qualifier has been removed from TPSWCCS-1B and TPSWID-1T and 1B.

Boron, silica, total ammonia, nitrate/nitrite, and TKN were detected in the field blank 090111-EB1. TKN results were either not detected or detected at concentrations greater than 10 times the blank concentration. Total ammonia, nitrate/nitrite, silica, and boron results less than 10 times the blank concentration have been qualified as estimated, J, in associated samples.. Qualified data is summarized in Table 4.

Boron, magnesium, TKN, total ammonia, and DIC were detected in the field blank 090811-TPSWC-FB1. Magnesium and boron results were either not detected or detected at concentrations greater than 10 times the blank concentration. TKN, total ammonia, and DIC results less than 10 times the blank concentration have been qualified as estimated, J, in associated samples.

Calcium, magnesium, boron, TKN, and total ammonia were detected in the field blank 091211-TPSWC-FB1. Calcium and magnesium were detected at concentrations greater than 10 times the blank concentration. Boron, TKN, and total ammonia results less than 10 times the blank concentration have been qualified as estimated, J, in associated samples.

Silica, boron, TKN, and alkalinity were detected in the field blank 091311-TPSWCCS-FB1. Barium, magnesium, boron, TKN, nitrate/nitrite, and alkalinity were detected in field blank 092211-TPSWC-FB1. All these results were either not detected or detected at concentrations greater than 10 times the blank concentration and no data qualification was necessary.

Laboratory Control Samples

Laboratory Control Samples (LCS) recoveries for all applicable analyses were within laboratory acceptance criteria and were performed at the required frequency.

Matrix Spike/Matrix Spike Duplicates

MS/MSD samples were performed at the required frequency for applicable methods. Recovery calculations are not required if the concentration added is less than 30% of the sample background concentration. MS/MSD recoveries of less than 10% are qualified as unusable due to apparent significant matrix effects. MS/MSD precision and accuracy

results for all applicable analyses were within project objectives with the following exceptions.

Sulfate and chloride MS/MSD recoveries were below laboratory limits in sample 091211-TPSWID-3B and have been qualified with a low bias, J-.

Chloride MS/MSD recoveries were below laboratory limits in sample 091411-TPSWC-1B and has been qualified with a low bias, J-.

Sulfate and fluoride MS/MSD recoveries were below laboratory limits in sample 091411-TPSWC-DUP1 and have been qualified with a low bias, J-.

TKN MS recovery was below laboratory limits in sample 091411-TPSWC-2B and has been qualified with a low bias, J-.

Nitrate/nitrite MS recovery exceeded laboratory limits in samples 090111-TPSWCCS-6B, 091211-TPSWID-3T, and 091411-TPSWC-2T and have been qualified with a high bias, J+.

Total phosphorous MS recoveries were below limits in samples 090111-TPSWCCS-6T, 090811-TPBBSW-5B, and 091211-TPSWCCS-7B and have been qualified with a low bias, J-.

Ortho-phosphate MS/MSD recoveries were below laboratory limits in samples 090811-TPBBSW-4B, 091311-TPSWC-4T, 091411-TPSWC-3B, and 091411-TPSWC-5B and have been qualified with a low bias, J-. Ortho-phosphate had a high MS/MSD recoveries in 090111-TPSWCCS-EB1. Ortho-phosphate was not detected in 090111-TPSWCCS-EB1 and since the bias was high, no qualification was necessary.

Ammonia MS recovery exceeded laboratory limits in sample 091411-TPSWCCS-3B and have been qualified with a high bias, J+.

Post Digestion Spike

A PDS is applicable to Methods 6010 and 200.7 No samples were qualified based upon PDS results.

Serial Dilution

Inductively coupled plasma (ICP) serial dilutions are run to help evaluate whether significant physical or chemical interferences exist due to sample matrix. When analyte concentrations are sufficiently high (the concentration in the original sample is minimally a factor of 50 above the detection limit, the results obtained for a five-fold dilution of the original sample are compared to the original results by means of a percent difference (%D). The %D is compared to a precision acceptance limit of $\pm 10\%$. If the SD does not meet the criteria, all results for that analyte in the associated sample delivery group (SDG) are qualified as estimated (flagged "J/UJ"). No samples were qualified based on SD results.

Laboratory Duplicates

Laboratories randomly select samples to perform internal duplicate analyses. The criteria for laboratory duplicate precision, as relative percent difference (RPD), is less than or equal to 20% for aqueous samples. All duplicate precision was within project objectives with one exception. The iron RPD exceeded project limits in the laboratory duplicate of 091411-TPWCCS-3B and has been qualified as estimated, J.

Field Precision

The criteria for field duplicate precision, as RPD, is less than or equal to 20% for aqueous samples, the same as for laboratory duplicate precision. The results for analytes where both values are greater than the reporting limit are given as relative percent difference. Results of analytes where one or both values are less than the reporting limit are not considered appropriate for assessing precision.

Two surface water field duplicate pairs were collected during the September 2011 sampling event: 091411-TPSWC-DUP / TPSWC-1T and 091211-TPSWCCS-DUP / TPSWCCS-1B. With 35 surface water samples collected in the September event, a minimum of 2 field duplicates were required. Tables 3a and 3b summarize field duplicate precision results.

Nitrate/nitrite and dissolved inorganic carbon field duplicate RPD's in samples 091411-TPSWC-DUP and 091411-TPSWC-1T exceeded project limits and have been qualified as estimated, J.

Ammonia and hydrogen isotope field duplicate RPD's in samples 091211-TPSWCCS-DUP and 091211-TPSWCCS-1B exceeded project limits and have been qualified as estimated, J.

Table 3a - Field Precision

Method	Analyte	Unit	RL	091411-TPSWC-1T	091411-TPSWC-DUP	RPD / Abs. Diff.	Rating	Samp Qual
6010	Calcium	mg/L	5.0	67.00	68.00	1.5%	Acceptable	None
6010	Magnesium	mg/L	0.8	12.00	12.00	0.0%	Acceptable	None
6010	Potassium	mg/L	1.0	4.60	4.60	0.0%	Acceptable	None
6010	Sodium	mg/L	0.5	100.00	110.00	9.5%	Acceptable	None
6010	Boron	mg/L	0.5	62.00	63.00	1.6%	Acceptable	None
6010	Strontium	mg/L	0.05	650.00	650.00	0.0%	Acceptable	None
300	Bromide	mg/L	5.0	0.35	0.41	15.8%	Acceptable	None
300	Chloride	mg/L	5.0	170.00	180.00	5.7%	Acceptable	None
300	Sulfate	mg/L	0.5	26.00	27.00	3.8%	Acceptable	None
4500NH3	Total Ammonia	mg/L	0.05	0.23	0.23	0.0%	Acceptable	None
353.2	Nitrate/nitrite	mg/L	0.01	0.02	0.03	40.0%	Unacceptable	J
351.2	TKN	mg/L	0.2	1.00	1.10	9.5%	Acceptable	None
calc	TN	mg/L	0.25	1.00	1.10	9.5%	Acceptable	None
2320	Alkalinity	mg/L	1.0	100.00	96.00	4.1%	Acceptable	None
2320	Bicarbonate	mg/L	1.0	100.00	96.00	4.1%	Acceptable	None
9060	DIC	mg/L	1.0	35.00	10.00	111.1%	Unacceptable	J
Non-standard	d18O	‰	NA	-0.50	-0.50	0.0%	Acceptable	None
Non-standard	d2H	‰	NA	0.00	2.00	NC	Acceptable	None
Non-standard	d13C	‰	NA	-9.90	-9.74	1.6%	Acceptable	None
Non-standard	dSr87/86	‰	NA				Acceptable	None
Non-standard	d3H	pCi/L	<5				Acceptable	None

mg/L – Milligrams per liter.
MQL – minimum quantitation limit
NA – Not applicable.
NC – Not calculated.
ND – Not detected.
pCi/L – PicoCuries per liter.
RPD – relative percent difference

Table 3b - Field Precision

Method	Analyte	Unit	RL	091211-TPSWCCS-1B	091211-TPSWCCS-DUP1	RPD / Abs. Diff.	Rating	Samp Qual
200.7	Iron	mg/L	1.0	880.00	860.00	2.3%	Acceptable	None
200.7	Silica	mg/L	0.5	1500.00	1500.00	0.0%	Acceptable	None
6010	Calcium	mg/L	5.0	750.00	760.00	1.3%	Acceptable	None
6010	Magnesium	mg/L	0.8	2300.00	2300.00	0.0%	Acceptable	None
6010	Potassium	mg/L	1.0	680.00	710.00	4.3%	Acceptable	None
6010	Sodium	mg/L	0.5	17000.00	18000.00	5.7%	Acceptable	None
6010	Boron	mg/L	0.5	7500.00	7800.00	3.9%	Acceptable	None
6010	Strontium	mg/L	0.05	14000.00	15000.00	6.9%	Acceptable	None
300	Bromide	mg/L	5.0	110.00	110.00	0.0%	Acceptable	None
300	Chloride	mg/L	5.0	33000.00	34000.00	3.0%	Acceptable	None
300	Sulfate	mg/L	0.5	830.00	850.00	2.4%	Acceptable	None
4500NH3	Total Ammonia	mg/L	0.05	0.12	0.09	28.6%	Unacceptable	J
351.2	TKN	mg/L	0.2	2.30	2.20	4.4%	Acceptable	None
calc	TN	mg/L	0.2	2.30	2.20	4.4%	Acceptable	None
4500PE	OP	mg/L	0.01	0.0014	0.0015	6.9%	Acceptable	None
365.1	TP	mg/L	0.01	0.07	0.07	0.0%	Acceptable	None
2320	Alkalinity	mg/L	1.0	130.00	130.00	0.0%	Acceptable	None
2320	Bicarbonate	mg/L	1.0	120.00	110.00	8.7%	Acceptable	None
9060	DIC	mg/L	1.0	36.00	34.00	5.7%	Acceptable	None
Non-standard	d18O	‰	NA	4.70	4.50	4.3%	Acceptable	None
Non-standard	d2H	‰	NA	19.00	24.00	23.3%	Unacceptable	J
Non-standard	d13C	‰	NA	-4.90	-5.15	5.0%	Acceptable	None
Non-standard	dSr87/86	‰	NA				Acceptable	None
Non-standard	d3H	pCi/L	<5				Acceptable	None

Automated Data Processing Tool (ADaPT)

The laboratory submitted electronic data deliverables (EDD) for the SDG in the ADaPT format. These EDD was run through the ADaPT EDD Error Check by the laboratory against the FDEP generated library "DWM_Library_20100722" before submission. Any critical errors noted in the EDD Error Check are corrected by the laboratory before submission. Comments are provided by the laboratory for the remaining errors noted.

All qualifiers presented in Table 4, with the exception of the isotope and gross alpha results, have been added to the ADaPT files and saved. The EDD have been signed as "Reviewed" and uploaded to the FPL database.

Technical Consistency

Certain technical comparisons are performed on data to ensure validity. The comparisons to be made and the acceptance criteria for each are defined FDEP-QA-002/02, Requirements for Field and Analytical Work. The values for the charge balance determination and the cation and anion calculated conductivity are provided in the ADaPT files. The following is a list of the technical comparisons made and the results of those comparisons. Technical comparison calculations are provided in the results summary table provided with this DUS.

- *The total anion charge must be within 80% - 110% of the total cation charge. All calculated anion charge values were within 80-110% of the cation charge.*
- *The measured specific conductivity (uS/cm) must be within 80% - 120% of the conductivity estimated from major cation concentrations. **This is only required when the initial charge balance calculation does not pass the criterion.** The conductivity versus cation concentration results were within criteria for each sample except TPBBSW-1B, TPBBSW-4B, TPSWCCS-3B, TPSWC-1T, TPSWC-2B, TPSWC-2T, TPSWC-3B, TPSWC-3T, and TPSWC-5B. Calcium, magnesium, sodium, and potassium data were qualified as estimated, J, in these samples based on technical comparisons*
- *The measured specific conductivity (uS/cm) must be within 80% - 120% of the conductivity estimated from major anion concentrations. **This is only required***

when the initial charge balance calculation does not pass the criterion. The conductivity was lower than 80% of the anion concentration in TPBBSW-4B, TPBBSW-5B, TPSWCCS-3B, and TPSWC-5B. Alkalinity, bromide, sulfate, chloride, and fluoride analyses have been qualified as estimated, J, in these samples based on technical comparisons.

- *The total ammonia concentration must be less than 120% of the total Kjeldahl nitrogen (TKN) concentration.* All total ammonia concentrations were reported less than 120% of the TKN concentration.
- *The orthophosphate concentration must be less than 120% of the total phosphorus concentration.* All ortho-phosphate concentrations were reported less than 120% of the total phosphorous concentration.

Summary

No results have been qualified as unusable. All groundwater analytical data are usable for the purpose of determining current conditions in groundwater at the affected property. Qualified data is summarized in Table 4 below. Qualifier codes and definitions are summarized in Table 5.

Analytical results have been qualified due to:

- Field blank detections;
- Method blank detections;
- Laboratory duplicate precision;
- Field duplicate precision;
- Matrix spike and matrix spike duplicate recoveries; and
- Technical comparisons (i.e. charge balance, total vs dissolved)

Data Quality Indicators

Precision and accuracy results are discussed throughout this DUS with a summary of exceptions noted in Table 4. Based on the number of usable or missed data points compared to the total submitted for analysis, the project met the completeness goal of 95% for the water quality quarterly sampling event. Comparability was met based on sampling procedures and analytical method selection, and the use of consistent reporting units.

Table 4 - Summary of Qualified Data

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
43290	6010	090811-TPSWC-FB1	Magnesium	0.043	IV	SW	Detected in MB
43290	351.2	090811-TPBBSW-1B	TKN	0.28	J	SW	Detected in FB
43290	4500NH3	090811-TPBBSW-1B	Ammonia	0.10	J	SW	Detected in FB
43290	9060	090811-TPBBSW-1B	DIC	39	J	SW	Detected in FB
43290	6010	090811-TPBBSW-1B	Calcium	440	J	SW	S.C. <80% Cation
43290	6010	090811-TPBBSW-1B	Magnesium	1300	J	SW	S.C. <80% Cation
43290	6010	090811-TPBBSW-1B	Potassium	420	J	SW	S.C. <80% Cation
43290	6010	090811-TPBBSW-1B	Sodium	11000	J	SW	S.C. <80% Cation
43290	351.2	090811-TPBBSW-2B	TKN	0.37	J	SW	Detected in FB
43290	4500NH3	090811-TPBBSW-2B	Ammonia	0.063	J	SW	Detected in FB
43290	9060	090811-TPBBSW-2B	DIC	44	J	SW	Detected in FB
43290	200.7	090911-TPBBSW-3B	Iron	1.9	I V	SW	Detected in MB
43290	351.2	090811-TPBBSW-4B	TKN	0.43	J	SW	Detected in FB
43290	4500NH3	090811-TPBBSW-4B	Ammonia	0.060	J	SW	Detected in FB
43290	9060	090811-TPBBSW-4B	DIC	44	J	SW	Detected in FB
43290	4500PE	090811-TPBBSW-4B	OP	0.0014	U J-	SW	Low MSD %R
43290	6010	090811-TPBBSW-4B	Calcium	480	J	SW	S.C. <80% Cation
43290	6010	090811-TPBBSW-4B	Magnesium	1500	J	SW	S.C. <80% Cation
43290	6010	090811-TPBBSW-4B	Potassium	450	J	SW	S.C. <80% Cation

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
43290	6010	090811-TPBBSW-4B	Sodium	12000	J	SW	S.C. <80% Cation
43290	300	090811-TPBBSW-4B	Bromide	75	J	SW	S.C. <80% Anion
43290	300	090811-TPBBSW-4B	Chloride	21000	J	SW	S.C. <80% Anion
43290	300	090811-TPBBSW-4B	Fluoride	0.46	J	SW	S.C. <80% Anion
43290	300	090811-TPBBSW-4B	Sulfate	2600	J	SW	S.C. <80% Anion
43290	2320	090811-TPBBSW-4B	Alkalinity	120	J	SW	S.C. <80% Anion
43290	2320	090811-TPBBSW-4B	Bicarbonate	120	J	SW	S.C. <80% Anion
43290	351.2	090811-TPBBSW-5B	TKN	0.63	J	SW	Detected in FB
43290	4500NH3	090811-TPBBSW-5B	Ammonia	0.076	J	SW	Detected in FB
43290	9060	090811-TPBBSW-5B	DIC	47	J	SW	Detected in FB
43290	365.1	090811-TPBBSW-5B	TP	0.049	J-	SW	Low MS %R
43290	300	090811-TPBBSW-5B	Bromide	69	J	SW	S.C. <80% Anion
43290	300	090811-TPBBSW-5B	Chloride	19000	J	SW	S.C. <80% Anion
43290	300	090811-TPBBSW-5B	Fluoride	0.42	J	SW	S.C. <80% Anion
43290	300	090811-TPBBSW-5B	Sulfate	2500	J	SW	S.C. <80% Anion
43290	2320	090811-TPBBSW-5B	Alkalinity	130	J	SW	S.C. <80% Anion
43290	2320	090811-TPBBSW-5B	Bicarbonate	130	J	SW	S.C. <80% Anion
43290	200.7	090711-TPSWCCS-2B	Iron	0.64	I V	SW	Detected in MB
43290	4500NH3	091411-TPWCCS-3B	Ammonia	0.15	J+	SW	High MS %R
43290	6010	091411-TPSWCCS-3B	Calcium	730	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWCCS-3B	Magnesium	2200	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWCCS-3B	Potassium	660	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWCCS-3B	Sodium	17000	J	SW	S.C. <80% Cation
43290	300	091411-TPSWCCS-3B	Bromide	120	J	SW	S.C. <80% Anion

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
43290	300	091411-TPSWCCS-3B	Chloride	32000	J	SW	S.C. <80% Anion
43290	300	091411-TPSWCCS-3B	Fluoride	0.4	J	SW	S.C. <80% Anion
43290	300	091411-TPSWCCS-3B	Sulfate	3900	J	SW	S.C. <80% Anion
43290	2320	091411-TPSWCCS-3B	Alkalinity	120	J	SW	S.C. <80% Anion
43290	2320	091411-TPSWCCS-3B	Bicarbonate	120	J	SW	S.C. <80% Anion
43290	200.7	090111-TPSWCCS-4T	Silica	0.14	IJ	SW	Detected in FB
43290	353.2	090111-TPSWCCS-4T	Nitrate/Nitrite	0.052	J	SW	Detected in FB
43290	4500NH3	090111-TPSWCCS-4T	Ammonia	0.067	J	SW	Detected in FB
43290	353.2	090111-TPSWCCS-4B	Nitrate/Nitrite	0.13	J	SW	Detected in FB
43290	200.7	090111-TPSWCCS-4B	Silica	0.14	IJ	SW	Detected in FB
43290	4500NH3	090111-TPSWCCS-4B	Ammonia	0.074	J	SW	Detected in FB
43290	200.7	090111-TPSWCCS-5T	Silica	0.17	I J	SW	Detected in FB
43290	353.2	090111-TPSWCCS-5T	Nitrate/Nitrite	0.061	J	SW	Detected in FB
43290	4500NH3	090111-TPSWCCS-5T	Ammonia	0.10	J	SW	Detected in FB
43290	353.2	090111-TPSWCCS-5B	Nitrate/Nitrite	0.054	J	SW	Detected in FB
43290	200.7	090111-TPSWCCS-5B	Silica	0.17	I J	SW	Detected in FB
43290	4500NH3	090111-TPSWCCS-5B	Ammonia	0.062	J	SW	Detected in FB
43290	200.7	090111-TPSWCCS-6T	Silica	0.26	I J	SW	Detected in FB
43290	353.2	090111-TPSWCCS-6T	Nitrate/Nitrite	0.056	J	SW	Detected in FB
43290	4500NH3	090111-TPSWCCS-6T	Ammonia	0.14	J	SW	Detected in FB
43290	365.1	090111-TPSWCCS-6T	TP	0.029	J-	SW	Low MS %R
43290	353.2	090111-TPSWCCS-6B	Nitrate/Nitrite	0.052	J	SW	Detected in FB
43290	200.7	090111-TPSWCCS-6B	Silica	0.19	I J	SW	Detected in FB

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
43290	4500NH3	090111-TPSWCCS-6B	Ammonia	0.11	J	SW	Detected in FB
43290	353.2	090111-TPSWCCS-6B	Nitrate/nitrite	0.052	J+	SW	High MS %R
43290	4500NH3	091211-TPSWCCS-7B	Ammonia	0.13	J	SW	Detected in FB
43290	365.1	091211-TPSWCCS-7B	TP	0.067	J-	SW	Low MS %R
43290	6010	091211-TPSWID-1T	Boron	0.54	J	SW	Detected in FB
43290	351.2	091211-TPSWID-1T	TKN	1.2	J	SW	Detected in FB
43290	6010	091211-TPSWID-2T	Boron	0.41	J	SW	Detected in FB
43290	351.2	091211-TPSWID-2T	TKN	0.94	J	SW	Detected in FB
43290	6010	091211-TPSWID-3T	Boron	0.2	J	SW	Detected in FB
43290	351.2	091211-TPSWID-3T	TKN	0.79	J	SW	Detected in FB
43290	351.2	091211-TPSWID-3B	TKN	1.0	J	SW	Detected in FB
43290	4500NH3	091211-TPSWID-3T	Ammonia	0.17	J	SW	Detected in FB
43290	353.2	091211-TPSWID-3T	Nitrate/nitrite	0.041	J+	SW	High MS %R
43290	300	091211-TPSWID-3B	sulfate	380	J-	SW	Low MS/MSD %R
43290	300	091211-TPSWID-3B	Chloride	3200	J-	SW	Low MSD %R
43290	6010	091411-TPSWC-1T	Calcium	67	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-1T	Magnesium	12	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-1T	Potassium	4.6	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-1T	Sodium	100	J	SW	S.C. <80% Cation
43290	300	091411-TPSWC-1B	chloride	190	J-	SW	Low MS/MSD %R
43290	6010	091411-TPSWC-2T	Calcium	54	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-2T	Magnesium	8.4	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-2T	Potassium	2.9	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-2T	Sodium	74	J	SW	S.C. <80% Cation
43290	353.2	091411-TPSWC-2T	Nitrate/nitrite	0.016	J+	SW	High MS %R
43290	6010	091411-TPSWC-2B	Calcium	60	J	SW	S.C. <80% Cation

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
43290	6010	091411-TPSWC-2B	Magnesium	8.8	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-2B	Potassium	3.4	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-2B	Sodium	76	J	SW	S.C. <80% Cation
43290	351.2	091411-TPSWC-2B	TKN	1.0	J-	SW	Low MS %R
43290	6010	091411-TPSWC-3T	Calcium	55	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-3T	Magnesium	6.9	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-3T	Potassium	3.4	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-3T	Sodium	60	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-3B	Calcium	59	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-3B	Magnesium	6.7	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-3B	Potassium	3.5	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-3B	Sodium	58	J	SW	S.C. <80% Cation
43290	4500PE	091411-TPSWC-3B	OP	0.0045	I J-	SW	Low MS/MSD %R
43290	4500PE	091311-TPSWC-4T	OP	0.0014	U J-	SW	Low MS/MSD %R
43290	200.7	091311-TPSWC-4B	Iron	0.52	I V	SW	Detected in MB
43290	6010	091411-TPSWC-5B	Calcium	560	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-5B	Magnesium	1600	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-5B	Potassium	510	J	SW	S.C. <80% Cation
43290	6010	091411-TPSWC-5B	Sodium	13000	J	SW	S.C. <80% Cation
43290	300	091411-TPSWC-5B	Bromide	78	J	SW	S.C. <80% Anion
43290	300	091411-TPSWC-5B	Chloride	22000	J	SW	S.C. <80% Anion
43290	300	091411-TPSWC-5B	Fluoride	0.79	J	SW	S.C. <80% Anion
43290	300	091411-TPSWC-5B	Sulfate	2900	J	SW	S.C. <80% Anion
43290	2320	091411-TPSWC-5B	Alkalinity	130	J	SW	S.C. <80% Anion
43290	2320	091411-TPSWC-5B	Bicarbonate	130	J	SW	S.C. <80% Anion
43290	4500PE	091411-TPSWC-5B	OP	0.0014	U J-	SW	Low MS/MSD %R
43290	6010	090111-TPSWC-6T	Boron	0.085	I J	SW	Detected in FB

SDG	Method	Sample ID	Analyte	Result (mg/L)	Val Qual	Matrix	Reason for Qualification
43290	6010	090111-TPSWC-6B	Boron	0.084	I J	SW	Detected in FB
43290	300	091411-TPSWC-DUP1	fluoride	0.12	J-	SW	Low MSD %R
43290	300	091411-TPSWC-DUP1	Sulfate	27	J-	SW	Low MS/MSD %R
43290	4500NH3	091211-TPSWCCS-DUP	Ammonia	0.087	J	SW	Detected in FB

Table 5: Data Qualifier Codes

Code	Definition
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	Estimated value. A "J" value shall be accompanied by a detailed explanation to justify the reason(s) for designating the value as estimated. A bias is assigned if discernable.
Q	Holding Time exceeded.
V	Indicates that the analyte was detected at or above the method detection limit in both the sample and the associated method blank and the value of 10 times the blank value was equal to or greater than the associated sample value. Only for method blank and J qualifier for other blanks.
I	Value detected between the MDL and the reporting limit.
?	Data are rejected and should not be used. Some or all of the quality control data for the analyte were outside criteria, and the presence or absence of the analyte cannot be determined from the data.
Code	Bias
+	Bias is high.
-	Bias is low.

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