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Project Management

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1.1 Introduction

This Quality Assurance Project Plan (QAPP) sets forth minimum quality assurance/quality control monitoring, laboratory, data collection and retention, and documentation protocols and methodology requirements for the 2009 Groundwater, Surface Water, and Ecological Monitoring Plan for the Florida Power & Light Company (FPL) Turkey Point Nuclear Power Plant (2009 Plan or Monitoring Plan). The requirements contained herein are designed to assure that the data collected, reviewed and analyzed pursuant to the Monitoring Plan are done so in a consistent and standardized manner.

The QAPP has been prepared primarily by FPL, with assistance from the South Florida Water Management District (SFWMD), Miami-Dade County Department of Environmental Resources Management (DERM), and the Florida Department of Environmental Protection (FDEP) and shall be applied to the data collection effort, laboratory analysis, data documentation and chain of custody methods to implement the Monitoring Plan.

Notwithstanding the QAPP or Monitoring Plan requirements, all data collected will meet the most current applicable Florida Department of Environmental Protection (FDEP) Chapter 62-160 Florida Administrative Code (F.A.C.), unless noted otherwise.

The following QAPP procedures and guidelines were used:

- U.S. Environmental Protection Agency (EPA) Requirements for Quality Assurance Project Plans, Final, EPA QA/R-5 (EPA, latest version); and
- EPA Guidance for Quality Assurance Project Plans, Final, EPA QA/G-5 (EPA, latest version).

The QAPP incorporates specific QA/QC requirements of the guidance documents:

- EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (EPA, latest version);
- The 2003 National Environmental Laboratory Accreditation Conference (NELAC) Standard, EPA/600/R-04/003, June 2003;
- Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA SW-846, most recent update);
- American Society of Testing Materials (ASTM) Methods;
- SFWMD guidance including SFWMD Field Sampling Quality Manual (FSQM) standard operating procedures (SOPs) (SFWMD-FIELD-QM-001-05);
- Quality Assurance Systems Requirements (QASR) manual and Comprehensive Everglades Restoration Plan (CERP) Guidance Memos (CGMs); and
- FDEP regulatory guidance and SOPs.

This QAPP, the Monitoring Plan, and all pertinent project documents are required reading for all staff participating in the project. Appropriate portions of the QAPP will be in the possession of all project team members, contractors, and laboratories performing work for the project. All contractors and subcontractors will be required to comply with the procedures documented in this QAPP and the Monitoring Plan to ensure comparability and representativeness of the data produced is maintained. All laboratory process sample analysis by standard methods for water quality parameters must be NELAC certified.

All contractors and subcontractors operating under this QAPP have the responsibility of notifying FPL of potential inconsistencies between the above identified procedures and procedures to be conducted under this QAPP or procedures conducted in the laboratory or field.

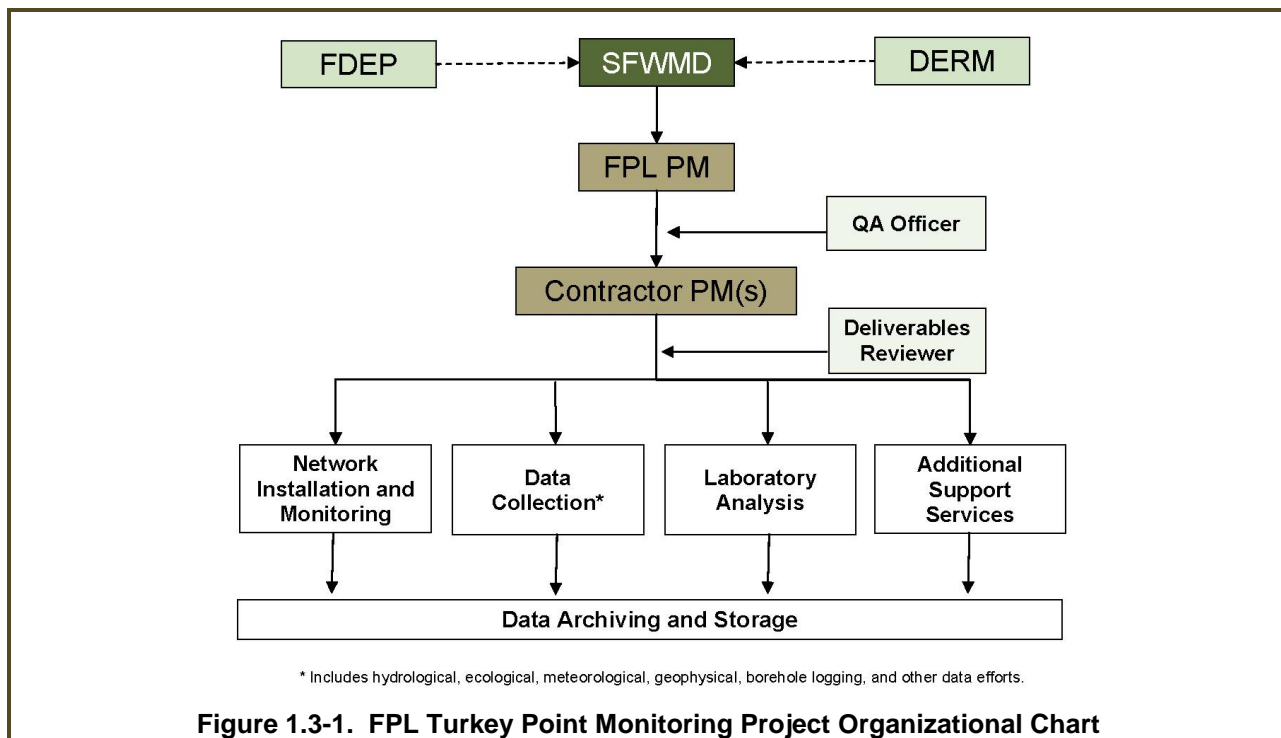
In the event that a conflict is identified between this approved QAPP and the Fifth Supplemental Agreement between the South Florida Water Management District and Florida Power and Light (including the FPL Turkey Point Power Plant Groundwater, Surface Water and Ecological Monitoring Plan) as modified to date, the terms of the Agreement shall be followed.

1.2 Project Organization

All work on this project will be completed with the SFWMD as the lead agency. FPL's project manager (PM) will communicate directly with the SFWMD designated representative. An organizational chart showing the general structure and QA/QC responsibilities of the monitoring program is presented as Figure 1.3-1.

The FPL PM (or their designee) will serve as the primary point of contact for all project decisions and will ensure that the project and personnel have the necessary resources to successfully complete all work assigned under this project. The FPL PM (or their designee) will hold meetings with the contractors to review and verify that contract goals and data quality objectives are being met by the project team. The FPL PM (or their designee) will be

responsible for communicating/ delegating communications with the SFWMD’s designated point of contact (POC).



1.3 Quality Assurance Objectives and Criteria

Acceptance criteria are specifications intended to evaluate the adequacy of one or more existing sources of information or data as being acceptable to support the project’s intended use. Acceptance criteria are established in this QAPP based on data quality objectives (DQOs) of major importance as described by EPA Guidance for Quality Assurance Project Plans, Final, EPA QA/G-5, FSQM and SFWMD Quality Assurance Task Force – Quality Guidelines for SHDM Deliverables:

- Precision;
- Accuracy;
- Analytical Sensitivity;
- Completeness;
- Representativeness;
- Comparability;
- Availability;

- Reliability;
- Maintainability; and
- Timeliness.

Each of these will be defined below and detailed, where applicable, throughout this QAPP and the Monitoring Plan. A summary of performance in meeting these DQOs shall be included in the semi-annual and annual reports along with the specific methods, assumptions, documentation, justification and calculations used to validate the assessment.

1.3.1 Precision

Precision is a measure of mutual agreement between duplicate or co-located sample measurements of the same analyte. The closer the numerical values of the measurements are to each other, the more precise the measurement. Precision for a single analyte will be expressed as a relative percent difference (RPD) between results of co-located field samples or laboratory duplicate samples or matrix spike duplicates. The RPD calculation is defined as follows:

$$RPD (\%) = 100 \times \frac{|S - D|}{(S + D)/2}$$

where:

D = Concentration of an analyte in a duplicate sample

S = Concentration of an analyte in a sample

The exception to the above formula is for isotopes which are in per mille units. Precision and the associated calculations for stable isotopes are included in Appendix B.

A field duplicate will be collected for every 20 actual samples. Precision will be determined for field duplicates, laboratory duplicates, and laboratory matrix spike duplicates. Specific precision objectives for laboratory analysis are presented in Section 3.2 for standard analyses and in Tables 4.2-3, and 4.2-4 for non standard analyses and biota samples, respectively. Precision objectives for other parameters (i.e., meteorological, bathymetric, etc.) are discussed in the respective sections. In addition, precision will be maintained by conducting routine instrument checks to demonstrate that operating characteristics are within predetermined limits.

The determination of precision for gross alpha involves the calculation of RPD as well as the replicate error ratio (RER). While the RPD evaluates the duplicate results and the standard deviation of replicate measurements of those samples, it does not deal with the uncertainty of the complete analytical process, which is the reason for the RER calculation. The uncertainty associated with the radiological analysis must be accounted for during the evaluation. RER acceptance criteria are detailed in Section 4. The calculation of RER is described below:

$$** * RER = \frac{|original - duplicate|}{(TPU^2_{original} + TPU^2_{duplicate})^{1/2}}$$

where:

RER = Replicate Error Ratio

Original = Original sample result

Duplicate = Duplicate sample result

TPU_{original} = Total propagated uncertainty of the original sample

TPU_{duplicate} = Total propagated uncertainty of the duplicate sample

1.3.2 Accuracy

Accuracy is the measure of bias in a measurement system. The closer the value of the measurement agrees with the true value, the more accurate the measurement. This will be expressed as the percent recovery (%R) of a surrogate, laboratory control sample (LCS), or matrix spike analyte or, if applicable, of a standard reference sample, also known as a performance evaluation (PE) sample, or Standard Reference Material (SRM). For all methods except dissolved inorganic carbon (DIC), total dissolved solids (TDS), specific conductance, gross alpha, dissolved oxygen (DO), temperature, and pH, all target analytes will be included in the LCS. If the laboratory cannot perform this for each listed method, an exception on a case-by-case basis will need to be obtained in writing from FPL. FPL will notify the SFWMD in writing of any exceptions granted to the laboratory. Data from samples not meeting quality control requirements due to granted exceptions are to be qualified in accordance with rule 62-160 F.A.C. The samples having known constituent concentrations will be analyzed as unknowns in the analytical laboratory for comparison to true values. Percent recovery is defined as follows:

$$\%R = \frac{MC - KC}{KC} \times 100$$

where:

KC = Known concentration of an analyte

MC = Measured concentration of an analyte

Accuracy of spiked sample analyses will be determined for no less than one sample in 20. Specific accuracy objectives for laboratory analysis are presented in Section 3.2 for standard analyses and in Tables 4.2-3, and 4.2-4 for non standard analyses and biota samples, respectively. Given the high variation in salinity expected in project samples, the method accuracy criteria may not be representative. If spike recoveries for a particular analyte or method consistently fall outside accuracy objectives, alternative ranges may be proposed consistent with the provisions and timelines contained in section 3.3 of the Monitoring Plan. Accuracy of spiked samples analyses will be verified by demonstrating ranges of applicability for any and all methods used with potential changes in accuracy due to salinity variation or other possible related interferences (such as high sulfides). Additional preparation or alternate methods may need to be proposed if accuracy objectives are not met. Accuracy objectives for other parameters (i.e., meteorological, bathymetric, etc.) are discussed in the respective sections.

1.3.3 Analytical Sensitivity

For data validation, qualification and reporting purposes, analytical sensitivity is expressed by the method detection limit (MDL). MDLs are set such that the minimum concentration of an analyte is reported within 99 percent confidence that the analyte concentration is greater than zero. MDLs are determined using the method specified in the Code of Federal Regulations (CFR), 40CFR Part 136, Appendix B, and meet the requirements of NELAC 5.0, Appendix D.1.2.1, for the determination of the limit of detection (LOD). The project MDLs are specified in Section 3, Table 3.2-1 of this QAPP.

1.3.4 Completeness

Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. The closer the numbers are, the more complete the measurement process. Completeness will be expressed as the percentage of valid or usable measurements to planned measurements. This will be achieved by obtaining samples for all types of analyses required at each individual location, a sufficient volume of sample material to complete the analyses, samples that represent all possible situations and conditions, and samples at critical data locations, such as background and control samples. This quantity will be calculated as follows:

$$\text{Completeness (\%)} = \frac{V}{P} \times 100$$

where:

V = Number of valid measurements

P = Number of planned measurements

The completeness goal for water quality measurements is 95%, but for all other data gathering activities the completeness goal is 90%.

1.3.5 Representativeness

Representativeness is a qualitative parameter which expresses the degree to which data accurately and precisely represents the environmental condition. The design of and rationale for the sampling program (in terms of the purpose for sampling, selecting the sampling locations, the number of samples to be collected, the ambient conditions for sample collection, the frequencies and timing for sampling, and the sampling techniques) assures that the environmental condition has been sufficiently represented.

The characteristic of representativeness is not quantifiable. The following subjective factors must be taken into account:

- Degree of site homogeneity;
- Degree of homogeneity of a sample taken from one point on a site; and
- Available information on which the sampling plan was based.

To maximize representativeness of results, sampling techniques and locations are carefully chosen so that they provide laboratory samples that are representative of both the site and the specific area. The methods and approaches used to satisfy the representativeness criterion included in the Monitoring Plan.

Within the laboratory, precautions are taken to extract from the sample bottle an aliquot representative of the whole sample, including premixing the sample in the sample container and discarding large pebbles from soil samples.

1.3.6 Comparability

Comparability is a qualitative parameter expressing the confidence with which one set of data can be compared to another. Data sets will be considered comparable only when precision and accuracy are considered acceptable during data validation. Comparability will be maintained by consistency in sampling conditions, selection of sampling procedures, sample preservation methods, analytical methods, and data reporting units. Each analytical procedure selected from among the acceptable options will be used for all analyses unless rationale is provided for any alteration.

1.3.7 Availability

Availability is the percentage of time that a system or function is available for service according to established criteria and the probability that a system is operating satisfactorily at any point in time, excluding times when the system is under repair. The key components of availability are reliability and maintainability.

1.3.8 Reliability

Reliability is the probability of a system performing a specified function without failure for a specified period of time. A failure occurs when a measurement or control action does not comply with established accuracy, completeness, or timeliness standards. The most common reliability parameter is “mean time between failures” (MTBF), which can also be specified as the failure rate or the number of failures during a given time period.

1.3.9 Maintainability

Maintainability is the ease with which a component (equipment, processes) can be modified to correct faults (often determined during design and by maintenance logistics). For example, if a particular component has 90% maintainability in 1 hour, this means that there is a 90% probability that the component will be repaired within 1 hour. The most common maintainability parameter is “mean time to repair” (MTTR), which is the mean time it takes to repair a failed component.

1.3.10 Timeliness

Timeliness is the promptness of reporting a measurement after it is made reporting deficiencies, submission of reports or other project documentation, addressing corrective actions, and reporting deviations within the time frames specified herein or within the Monitoring Plan or Agreement. Timeliness encompasses expected time delays for measurements to be reported to FPL (real time), and the time needed to post process the data into FPL databases (post processing).

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