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Quality Assurance Project Plan

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Quality Assurance Project Plan

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ABSTRACT

This Quality Assurance Project Plan documents the quality assurance activities for the Wastewater/Stormwater/Groundwater and Environmental Surveillance Programs. This QAPP was prepared in accordance with DOE guidance on compliance with 10CFR830.120.

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Quality Assurance Project Plan

1. Management

1.1 Program

Introduction

This Quality Assurance Project Plan (QAPP) applies to the Wastewater/Stormwater/Groundwater (WW/SW/GW) and Environmental Surveillance Programs at the Sandia National Laboratories, California. This QAPP follows *DOE Implementation Guide G-830.120 Rev. 0*.¹

The WW/SW/GW and Environmental Surveillance Programs are located within the Environmental Operations Department. The Environmental Operations Department is responsible for ensuring that SNL/California operations have minimal impact on the environment. The department provides guidance to line organizations to help them comply with applicable environmental regulations and DOE orders. To fulfill its mission, the department has groups responsible for waste management; pollution prevention; air quality, environmental planning; environmental surveillance; and wastewater, stormwater, and groundwater management.

The WW/SW/GW Program is responsible for ensuring that SNL/California complies with all Federal, State, and local regulations and with DOE orders regarding the quality of wastewater and stormwater discharges. The Program is also responsible for compliance groundwater monitoring. The Program monitors these discharges both visually and through effluent sampling. The Program ensures that activities at the SNL/California site do not negatively impact the quality of surface waters in the vicinity, or those of the San Francisco Bay. The Program verifies that wastewater and stormwater discharges are in compliance with established standards and requirements. The Program prepares numerous reports, permit applications, and other documents that demonstrate compliance.

The Environmental Surveillance Program assesses potential impacts to the public and the environment from site operations. The Program assesses the general environment near SNL/California to verify that emission controls are effective in preserving the local environs. The Program conducts these activities to ensure that SNL/California complies with Federal, State, and local regulations and DOE Orders governing protection of the environment. The Program prepares numerous reports and other documents to demonstrate compliance.

Responsibilities

The manager of the Environmental Operations Department retains the ultimate responsibility for the implementation of the WW/SW/GW and Environmental Surveillance Programs, including the implementation of this QAPP.

The manager will promote effective achievement of performance objectives through the following methods:

- establishing task assignments,
- identifying lines of communication, and
- determining and providing of the necessary resources and environment to accomplish the required activities.

Graded Approach

A grading process will be used to determine the scope and depth of the requirements applied to a specific activity. The graded process will apply controls that best suit the facility or activity. It will also determine the appropriate level of effort necessary to attain and document the requirements established through consideration of prescribed factors. The facility or task-specific factors to be addressed will include (but not necessarily be limited to):

- level of risk;
- age, status, and condition of a facility or process;
- history of problems at a site or facility;
- adequacy of existing safety documentation; and
- complexity of products or services involved.

The graded approach process shall not be used to obtain relief from the requirements of 10CFR830.120 or other federal, state, or local regulatory requirements.²

1.2 Personnel Training and Qualification

Introduction

A fundamental requirement for effective accomplishment of any mission is that all personnel be capable of performing their assigned tasks. Qualification and training programs ensure that the required capabilities are achieved and maintained by personnel.

Responsibilities

The manager of the Environmental Operations Department has the following responsibilities:

- develop job descriptions for all positions within the WW/SW/GW and Environmental Surveillance Programs describing the education and experience required to perform these functions,
- develop training and professional development plans which will allow personnel in the WW/SW/GW and Environmental Surveillance Programs to obtain and maintain the required level of expertise required to perform their duties efficiently, and
- provide adequate resources to ensure that Program personnel are able to meet established training and qualification goals and requirements.

Qualification of Personnel

Minimum applicable requirements will be established for all positions within the WW/SW/GW and Environmental Surveillance Programs. These requirements should include education, experience, and physical condition. Personnel may be qualified by the following factors:

- considering previous experience, education, and training,
- demonstrating and testing to verify previously acquired skills, or
- completing a training or qualification program.

Determination of qualification will be accomplished before personnel are allowed to perform tasks without supervision by qualified personnel.

Training

The only training considered by this QAPP is training concerning the specific tasks performed by WW/SW/GW and Environmental Surveillance Program personnel.

All Program personnel shall receive training in the performance of specific sampling or administrative procedures before they are allowed to perform that activity independently.

Training methods and materials shall be documented and maintained. Training will include mission goals, methods, requirements, process metrics, and skills required to adequately perform the task at hand.

Training Plans

Training plans should be developed for all personnel. These plans should maintain and promote aggressive improvement in job performance.

Instructors

Instructors may be external or internal training providers or qualified members of the WW/SW/GW and Environmental Surveillance Programs.

1.3 Quality Improvement

Introduction

Quality improvement is based on the premise that all work activities can be planned, performed, measured, and improved. The Environmental Operations Department manager is responsible for building a culture in which improvement is continuous and an integral part of the organization.

The continuous improvement approach focuses on problem prevention, corrective action, and performance improvement rather than relying on post-process inspection to prevent deficiencies.

Continuous Improvement

The WW/SW/GW and Environmental Surveillance Program leads will continuously evaluate program performance based on qualitative and/or quantitative information. These evaluations may include data from the following sources:

- periodic quality assurance assessment reports,
- nonconformance reports, and
- informal reports from program personnel.

All program personnel are encouraged to identify and report potential improvements to program activities.

The WW/SW/GW and Environmental Surveillance Programs have established a nonconformance reporting procedure. All nonconformances (including missed samples, equipment breakdowns, and data that does not meet acceptance criteria) are reported to the QA coordinator. Nonconformances and corrective action are tracked by the QA coordinator. The nonconformance reporting procedure is described in the operating procedure OP471411.³

1.4 Documents and Records

Introduction

Documents and records are required in order to manage, perform, and assess work. Management should commit the resources required to satisfy document and record requirements.

Documents

The WW/SW/GW and Environmental Surveillance Programs produce documents in several forms:

- operational and administrative procedures;
- reports to DOE, or other Federal, State, or local agencies;

- permit applications;
- field logbooks and notes;
- sample control logbooks; and
- analytical data reports;
- equipment history records (maintenance, calibration, etc.)

Document control requirements are included in operational and administrative procedures as appropriate.

Records

A record contains information that is retained for its expected future value.

SNL/California has established an ES&H Records Center. This records center maintains records from all ES&H programs as well as those of the WW/SW/GW and Environmental Surveillance programs. Records center personnel have established records retention schedules in accordance with National Archives and Records Administration and DOE requirements.

All WW/SW/GW and Environmental Surveillance Program procedures identify the records that are generated by those procedures. The procedures also address the schedule for transmittal of records from program personnel to the records center.

References

1. *DOE Implementation Guide G-830.120 Rev. 0.*
2. 10CFR830.120.
3. R. Holland, *Administrative Procedure for Nonconformance Reporting, Form, Logging, and Tracking (U)*, Sandia National Laboratories Operating Procedure OP471411 (October 15, 1994).

2. Performance

2.1 Work Processes

Introduction

A work process includes all activities involved in performing defined tasks to achieve an objective. The work process is a planned mix of people, equipment, environmental conditions, supply, management support, resources, and requirements. Each of these elements contributes to achieving process goals.

Management Responsibility

The Environmental Operations Department manager is responsible for setting requirements and policies that control the conditions under which the work process is required to function. These conditions should be considered as an element affecting product and service output and quality.

All work processes affecting quality shall be done in accordance with written procedures of a detail commensurate with the complexity and importance of the work. Personnel performing the work are included in the procedure preparation and review process as a means of implementing continuous process improvement.

Worker Responsibility

Workers are responsible for the quality of their own work. Workers should set goals for doing the work correctly the first time and to contribute to improving work processes.

Workers are considered prime resources concerning the various aspects of process performance.

Work Process Documents

The Environmental Operations Department manager should clearly identify authorities, responsibilities, and interfaces—both internal and external—regarding work processes.

Policies, procedures, goals, plans, and other information regarding a process are communicated to personnel performing that process through training, procedures, memoranda, and meetings.

All WW/SW/GW and Environmental Surveillance Program personnel shall have a copy of the current operating and administrative procedures for processes they are required to perform.

Operational and administrative procedures will be written to a level of detail determined by the skills of the workers and the complexity and importance of

the work. Procedures will include any requirements for special processes that are highly dependent on the skill of the operator, and for which the quality of the product cannot be readily determined by inspection or test, such as collection of environmental samples.

Operational and administrative procedures will address methods to ensure sample integrity—including collection, handling, preservation, shipping, and chain-of-custody. Operational and administrative procedures will also address methods for maintaining sampling and other equipment in an operational status, as required.

2.2 Design

Introduction

Definition, control, and verification of design is necessary to ensure that systems, structures, and components fulfill contractual requirements and customer expectations.

Systems, structures, and components important to safety should be subject to more stringent operational criteria than those not important to safety.

Designs should provide for appropriate inspection, testing, and maintenance to ensure continuing reliability and safety of the system, structure, or component. The design should consider the expected use and life expectancy of the system, structure, or component.

For the WW/SW/GW and Environmental Surveillance Programs, design includes the design of sample collection programs, including sample collection locations, and the parameters that samples are analyzed for. Any changes to a sampling program constitutes a new sampling design.

Design Input

Inputs to the design process shall address the following issues:

- design bases,
- health and safety considerations,
- expected life cycle,
- performance parameters,
- codes and standards requirements, and
- reliability requirements.

Project-specific planning must involve the key users and customers of the systems.

Design Process

The design process translates design inputs into design output documents that are technically correct and meet the end user's requirements. In order to meet this goal, the following steps shall be performed:

- All calculations required during the design process shall be independently verified. This verification shall be documented.
- A preliminary design review shall be conducted. At a minimum this preliminary design review shall include reviews by the relevant Program lead and the end-users. This review shall be documented.
- A final design review shall be conducted. At a minimum, this final design review shall include reviews by the relevant Program lead, and the end-users. This review shall be documented.

Design Output

The completed design shall be recorded in design output documents such as drawings, specifications, test and inspection plans, maintenance requirements, and reports.

Design Verification

Design verification is a formal documented process to establish that the resulting system, structure, or component will be fit for the intended use. The following design verification methods are considered acceptable:

- technical reviews,
- peer reviews,
- alternate calculations, and
- qualification testing.

When appropriate, the verification may take previous validations of similar designs into account.

This verification should be performed by technically knowledgeable persons separate from those who performed the design.

Design verification shall be completed before design output is used to support other work such as procurement, manufacture, or construction.

Design Changes

Design changes, including field changes and nonconforming items dispositioned "use as is" or "repair" shall be controlled by measures commensurate with those applied to the original design. Any design changes shall be documented.

2.3 Procurement

Introduction

The procurement process should ensure that items and/or services provided by suppliers meet the requirements and expectations of the end-user. The stringency of procurement requirements should be commensurate with the importance of the purchased items or services to the project.

WW/SW/GW and Environmental Surveillance personnel will work with SNL/California Procurement personnel to ensure that appropriate requirements are included for items or services procured.

Procurement Documents

The procurement documents should clearly state test and inspection requirements and acceptance criteria for purchased items and services. Procurement documents should include any specifications, standards, and other documents referred to by the design documents.

Supplier Qualification

Qualified suppliers should be identified early in the design and procurement process. Programs personnel evaluate prospective suppliers on technical issues. Procurement personnel evaluate suppliers on cost considerations.

Prospective suppliers should be evaluated to verify their capability to meet performance and schedule requirements.

Supplier Monitoring

Required supplier monitoring should be performed during the procurement process to ensure that acceptable items or services and schedule requirements are being met. Monitoring may include the following activities:

- surveillance of work activities,
- inspection of facilities and processes,
- review of plans and progress reports,
- processing of change information, and
- review and disposition of nonconformances

Nonconformance and Corrective Action

Cases in which purchased items or services do not meet specifications shall be brought to the attention of Purchasing personnel for resolution.

Inspection

Requirements for inspections are obtained from design documents. WW/SW/GW and Environmental Surveillance personnel shall work with Procurement personnel to ensure that appropriate inspection provisions are included in purchase documents. Inspection may include the following methods:

- inspections of materials or equipment at the supplier's plant,
- receipt inspection of the shipped items,
- review of objective evidence such as certifications and reports, and
- verification of testing of items prior to or following shipment.

Product Documentation

Supplier-generated documents should be included in the Document and Record system as outlined in Section 1.4 of this QAPP. These documents may include certificates of conformance, drawings, analyses, test reports, maintenance data, nonconformances, corrective actions, approved changes, waivers, and deviations.

2.4 Inspection and Acceptance Testing

Introduction

Inspections and tests are accomplished to verify that physical characteristics and functions of systems, structures, and components are acceptable.

Inspections and tests should be conducted according to a graded approach based upon the importance of the systems and upon the expected reliability of the system, structure, or component.

Inspections and tests shall be performed by technically qualified personnel. Final acceptance of the systems, components, or structures will be verified and documented by the WW/SW/GW or Environmental Surveillance personnel responsible for those systems, components, or structures.

All personnel should check items supplied to their work process to ascertain that the items are correct and suitable for use. All personnel should check their process output to verify that it meets or exceeds requirements.

Process

Required inspections and tests are included in the operating and administrative procedures of the WW/SW/GW and Environmental Surveillance Programs. These procedures also include instructions for proper documentation of inspections and tests. Required inspections and tests may include visual inspections of equipment, periodic replacement of equipment, and periodic calibration of instruments.

Control of Measuring and Test Equipment

The following measuring and test equipment is used by the WW/SW/GW and Environmental Surveillance Programs:

- pH meters (both fixed and portable),
- liquid-level sensors (fixed),
- conductivity meters (portable), and
- turbidity meters (portable).

Fixed measuring and test equipment is calibrated on a quarterly basis. A third party contracted by SNL/California will perform this calibration. Documentation of the calibrations includes the “as found” condition of the sensors. Calibrations are traceable to authoritative standards. Documentation is retained in the ES&H Records Center.

Portable measuring and test equipment is calibrated prior to each use. Calibrations are performed with standards that are supplied by the instrument manufacturer or are purchased for the specific calibration performed. Documentation of these calibrations is retained in the ES&H Records Center within the field data package submitted for the sampling performed.

3. Assessment

3.1 Management Assessment

Introduction

The manager of the Environmental Operations Department will periodically assess the performance of the WW/SW/GW and Environmental Surveillance Programs to determine how well they meet the customer's requirements and expectations. This assessment should place emphasis on the use of human and material resources to achieve the program's goals and objectives. The management assessment should include an introspective evaluation to determine if the integrated management system effectively focuses on meeting strategic goals.

Responsibility

The manager of the Environmental Operations Department retains overall responsibility for management assessments. Direct participation by the manager is essential to the success of the process since management is in the position to view the organization as a total system.

Process

The management assessment shall include the following methods:

- direct observation of work,
- interviews of workers, and
- reviews of documentation.

The processes assessed should include the following methods:

- strategic planning,
- organizational interfaces,
- cost control,
- use of performance indicators,
- staff training and qualifications, and
- supervisory oversight and support.

Results

Management assessment results should be used as input to the continuous improvement process.

3.2 Independent Assessment

Introduction

Periodic independent assessments will be used in order to evaluate the performance of the WW/SW/GW and Environmental Surveillance Programs with regard to the requirements and expectations of customers.

Performing Organization

These independent assessments will be carried out under the auspices of the ES&H Assessment Department.

Process

An independent assessment of the WW/SW/GW and Environmental Surveillance Programs will be performed annually. The criteria used for assessment will be developed by the CA Site Interface and Assessment Department. The assessor's responsibilities include the following tasks:

- evaluating work performance and process effectiveness,
- identifying abnormal performance and potential problems,
- finding opportunities for improvements,
- documenting and reporting results, and
- verifying satisfactory resolutions of reported problems.

Results

Assessment results shall be documented and presented to the Programs and to the manager of the Environmental Operations Department for review.

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