

**CONTROLLED DOCUMENT**

QAPP-02, R0  
(Supersedes ENV-WQH-QAPP-  
GSWSED, R1)

Effective Date: 04/15/09

Next Review Date: 04/15/10

*This copy is uncontrolled if no  
signatures are present on printed  
copies. Users are responsible for  
ensuring they work to the latest  
approved revision.*

**Los Alamos  
National Laboratory**

**Water Stewardship Program**

**Quality Assurance Project  
Plan**

**for the**

**Groundwater and Base-Flow  
Monitoring Project**

Prepared by: Signature on File _____ Terry Morgan, WES-EDA	Date: 4/14/09 _____
Approved by: Signature on File _____ Tim Goering, Interim Facility-Wide Groundwater Monitoring Plan Project Leader	Date: 4/14/09 _____
Approved by: Signature on File _____ Danny Katzman, Project Integration/Regulatory Strategy PM	Date: 4/14/09 _____
Approved by: Signature on File _____ Paul Lowe, Institutional Quality (QA-IQ)	Date: 4/14/09 _____
Approved by: Signature on File _____ Paul Huber, LWSP Program Director	Date: 4/14/09 _____

## General information about this project plan

Table of Contents	Section	Topic	Page No.
	<b>1</b>	<b>Quality Program</b>	<b>4</b>
		Project Organization	4
	<b>2</b>	<b>Personnel Development</b>	<b>9</b>
		Personnel Training and Qualification	9
	<b>3</b>	<b>Quality Improvement</b>	<b>10</b>
		Improving Quality	10
	<b>4</b>	<b>Documents and Records</b>	<b>12</b>
		Project Documents	12
		Project Records	13
		Electronic Data Storage	14
	<b>5</b>	<b>Work Processes</b>	<b>16</b>
		Planning and Performing Work	16
		Preparation and Review of Sampling and Analysis Plans	18
		Waste Management Requirements	21
		Data Quality Objectives	22
		Sample Collection	23
		Sending Samples for Analysis	25
		Sample Handling and Tracking	26
		Calibration and Maintenance of Instrumentation and Equipment	27
		Data Verification and Validation	28
		Data Review and Assessment	30
		Publication of Water Quality Data	33
		Public Release of Proprietary Data	35
		Data Reporting	37
		Well Maintenance and Custodianship	38
		Requests for Data	39
	<b>6</b>	<b>Design</b>	<b>40</b>
		Design	40
	<b>7</b>	<b>Procurement</b>	<b>41</b>
		Procurement	41
	<b>8</b>	<b>Inspection and Acceptance Testing</b>	<b>42</b>
		Inspection and Acceptance Testing	42
	<b>9</b>	<b>Management Assessment</b>	<b>43</b>
		Management Assessment	43
	<b>10</b>	<b>Independent Assessment</b>	<b>44</b>
		Independent Assessment	44

### History of revision

This table lists the revision history of this plan.

<b>Revision</b>	<b>Date</b>	<b>Description of Changes</b>
0	6/03	New document (ENV-WQH-QAPP-GSWSED).
1	8/17/04	Annual review revision.
0		Major revision of previous Quality Assurance Project Plan (QAPP) for the Groundwater, Surface Water, and Sediment Monitoring Program (ENV-WQH-QAPP-GSWSED, August 17, 2004). Update reflects new procedures, new organizational structure of the Los Alamos National Laboratory (the Laboratory) Water Stewardship Program (LWSP), enhanced Conduct of Operations, and formalization of Compliance Order on Consent (Consent Order) requirements. Issued as QAPP-02, R0.

## **SECTION 1**

### **Quality Program**

#### **Project Organization**

---

##### **Policy**

The Groundwater and Base-Flow Monitoring Project supports Environmental Programs (EP) Directorate and the LWSP in efforts to

- determine the presence and fate and transport of known legacy-waste contaminants,
- determine efficacy of remedies, and
- validate proposed corrective measures.

---

##### **Purpose of the project**

The project provides data that are used by this and other programs to fulfill requirements of the March 1, 2005, Consent Order and to meet federal (including U.S. Department of Energy [DOE]) and state standards for protection of the drinking water, groundwater, and surface water.

The “Interim Facility-Wide Groundwater Monitoring Plan (Interim Plan) monitors the quality of groundwater and base flow. Base flow is defined as persistent surface water maintained by precipitation, effluent, and other sources. Storm runoff is not considered base flow. Storm runoff is sampled under the Stormwater Program and Individual Permit Compliance project.

---

##### **Regulatory drivers**

The drivers for the development and implementation of this monitoring project are

- the March 1, 2005, Consent Order,
  - DOE Order 450.1, “Environmental Protection Program,”
  - New Mexico Water Quality Control Commission Regulations,
  - 40 Code of Federal Regulations 264 Subpart F, as administered through the Laboratory’s Hazardous Waste Facility Permit,
  - DOE Order 5400.5, “Radiation Protection of Public and Environment,”
  - DOE Order 231.1, “Environment, Safety, and Health Reporting,”
  - DOE Order 435.1, “Radioactive Waste Management,” and
  - San Ildefonso Memorandum of Understanding (MOU).
-

---

<b>Uses for the data</b>	Data collected by the project are used to <ul style="list-style-type: none"><li>• meet requirements of the Consent Order,</li><li>• meet monitoring requirements for Laboratory programs,</li><li>• establish baselines of environmental quality for Laboratory site-specific radionuclides and other chemical constituents in groundwater and base flow,</li><li>• determine the Laboratory’s contributions of radionuclides and other chemical constituents to groundwater and base flow,</li><li>• characterize and define trends of radionuclides and other chemical constituents in groundwater and base flow,</li><li>• verify compliance with applicable environmental laws and regulations, and</li><li>• verify compliance with the effective dose equivalents in DOE Order 5400.5.</li></ul>
<b>Purpose and applicability of this plan</b>	This QAPP describes the policies and requirements that ensure the project processes are conducted in a consistent, agreed-upon manner and presents the roles and responsibilities for accomplishing these processes.
<b>Division organization</b>	At the Laboratory, groups led by a group leader have functional management responsibility for employees. Group or program employees are assigned to work for projects as needed in a matrix structure.  Projects focus on specific Laboratory water-quality responsibilities, deliverables, or products. Projects are supervised by project leaders, who have the responsibility to ensure the project is completed.
<b>Project organization</b>	The LWSP of the EP Directorate is overseen by the LWSP program director, who reports to the EP associate director. The Interim Plan project leader provides direction and is responsible for the daily operation of the groundwater monitoring project and reports to the project integration/regulatory strategy program manager of the LWSP. The operations program manager oversees sample collection services and implementation of field activities for the project.

---

**Other projects** Projects are managed by project leaders and focus on specific projects defined by the program manager. The Interim Plan program is responsible for collecting data to support the following projects:

- facility-wide groundwater monitoring project (for compliance with Consent Order)
- surveillance monitoring projects
- chromium study
- TA-54 wells
- groundwater discharge monitoring compliance
- TA-16 Outfall project
- canyons and other environmental restoration projects
- LWSP data assessment project
- other special studies and projects, as directed by the LWSP director

**Structure of the quality program** The QAPP, including implementing procedures, is a subtier document to the EP Directorate quality program. The following documents prescribe the work requirements and processes for performing project work:

- Laboratory quality assurance program (QAP), SD 330
- EP-DIR-QAP-0001, QAP for the EP Directorate
- QAPP for the project (this document)
- QAP for the groundwater-level monitoring project (EP-ERSS-WSP-1003)
- applicable implementing procedures (listed on EP Directorate web page)

- Applicable quality criteria**
- DOE Order 414.1C, “Quality Assurance”
  - Laboratory QA Program Plan SD330
  - The Environmental Programs (ADEP) QAP, EP-DIR-QAP-0001
  - Quality Plan Implementing Matrices, EP-DIR-QAP-0002

**Implementation** The following table lists specific responsibilities.

<b>Who</b>	<b>What</b>
LWSP Director	Provides overall management of the LWSP. Approves the scope of this project. Provides sufficient funding and other resources to support this project as described in this plan.
Functional Supervisors	Provide qualified staff as requested to support the project. Ensure that Laboratory safety, security, and environmental requirements applicable to this project are implemented.

Who	What
Interim Plan Project Leader	<p>Works with project leaders and the operations program manager to plan and coordinate groundwater monitoring activities.</p> <p>Ensures monitoring meets the requirements of the Interim Plan.</p> <p>Reviews procedures to ensure compliance with requirements of the Consent Order.</p> <p>Updates the Interim Plan each May for submittal to the New Mexico Environment Department (NMED).</p>
Project Leaders	<p>Develop sampling plans in accordance with the Consent Order and various other NMED requirements. Communicate data needs and sample needs to the Interim Plan project leader for incorporation into the Interim Plan.</p> <p>Perform data review and reporting for their project area of responsibility.</p>
Sample Management Office (SMO)	<p>Evaluates, selects, and contracts with analytical laboratories to provide analytical services to meet the needs of sampling plans.</p> <p>Enters approved sampling plans into the Sample Management Database (SMDB).</p> <p>Tracks and loads analytical data.</p> <p>Tracks and resolves analytical laboratory issues.</p>
Data Assessment Team Leader	<p>Assesses data quality from analytical laboratories.</p> <p>Provides database reports to meet the needs of project leaders.</p>
Data Assessment Project Leader	<p>Reviews groundwater-monitoring data for exceedences of standards and new data trends.</p>
Operations Program Manager	<p>Oversees and authorizes all operational activities, including authorization/compliance basis; health, safety, and environmental management; security; quality assurance (QA) and production and work control; waste management; inventory control, materials purchasing, and shipping/receiving activities; training, and purchasing.</p> <p>Reviews, approves, authorizes, and releases both facility and programmatic integrated work and documents to ensure that hazards/vulnerabilities are appropriately identified and controls are adequate. Reviews procedures to help ensure compliance with integrated work management requirements.</p>
Groundwater Operations Designee	<p>Provides safety support and operational support to facilitate field operations and groundwater-monitoring activities.</p> <p>Interfaces with the facility operations directorate to ensure that field-sampling activities are conducted in accordance with all appropriate Environmental, Safety, and Health and Security requirements.</p> <p>Ensures that Laboratory safety and security requirements are met during sample collection.</p>

<b>Who</b>	<b>What</b>
Subcontract Technical Representative (STR)	Supports and participates in the subcontract development, formation, and preaward process. Manages subcontracts as assigned in accordance with Laboratory requirements for the STR program. Verifies that the work is performed, reviews and approves invoices, and evaluates the subcontractor's performance.
Field Sampling Team Leader	Oversees the teams that perform field-sampling work and ensures work meets requirements of the QAPP, approved procedures, and the Interim Plan. Oversees sample collection, sample handling, sample tracking, field instrument and equipment calibration, and documentation as specified in implementing procedures.
QA Team Leader	Ensures verification activities are scheduled and performed on work activities governed by this plan.



## SECTION 2

### Personnel Development

#### Personnel Training and Qualification

---

**Personnel qualification requirements** Personnel selection, training, and qualification requirements will be established to include the minimum applicable requirements for education, experience, skill level, and physical condition as prescribed in the EP Directorate quality plan.

---

**Training of personnel** All personnel who perform the work specified in this plan are required to obtain appropriate training. Training for personnel will be conducted and documented according to the Laboratory position description 781, "Training Program Management" and EP-DIR-Standard Operating Procedure (SOP)-2011, Personnel Training and Qualification.

---

**Implementation** The following table lists specific responsibilities.

Who	What
Functional Supervisors	Ensure that a core training program compliant with Laboratory training program requirements is implemented and that employees are current with their training. Develop and maintain employee training plans.
Project Leaders	Identify additional required training for specific work tasks and assignments. Ensure personnel working under their authority have the appropriate training and are authorized to perform work.
Project Employees	Ensure training and work authorizations are current.
Operations Program Manager	Indicate specific training to be added to personnel training plans. Authorize program personnel to perform work.
STR/QA Team Leader	Ensures each subcontract contains a training program equal to or greater than the Laboratory's training requirements. Periodically inspects subcontract records for compliance.
Deployed Training Organization Personnel	Provide periodic reports on core and job-specific training status.

## **SECTION 3**

### **Quality Improvement**

#### **Improving Quality**

---

**Policy** The project subscribes to the principles of problem prevention and continuous improvement. Project personnel will evaluate improvement opportunities identified by trending and reporting of project monitoring activities.

---

**Team meetings** Watershed kickoff meetings will be held with the operations personnel and groundwater-sampling teams before each watershed sampling campaign. Meeting topics may include

- current status of monitoring activities,
- equipment needs and issues,
- personnel needs and issues,
- project priorities and requirements, and
- suggested improvements to current operations.

---

**Corrective actions for the project** Corrective actions are initiated, tracked, corrected, and documented according to the applicable Laboratory requirements (P322-4, "Issues and Corrective Action Management" and/or LANL P330-6, "Nonconformance Reporting").

---

**Trending of issues** The Laboratory QA division trends the issues of nonconformances to standards and requirements.

---

**Implementation** The following table lists specific responsibilities.

<b>Who</b>	<b>What</b>
Interim Plan Leader	Holds regular meetings with groundwater sampling and operations personnel to discuss groundwater-monitoring issues, status, and priorities. Monitors program performance and ensures issues are corrected in a timely manner.
All Project Personnel	Identify opportunities for process improvement, health and safety enhancement, environmental protection, and increased efficiencies in sampling activities. Report issues report in a timely manner and facilitate corrective action of issues.
Project Leaders	Monitor and trend project performance and ensure issues are corrected in a timely manner.

<b>Who</b>	<b>What</b>
QA Team Leader	Conducts management assessments and surveillances. Writes up observations and findings. Generates Los Alamos Issues Management Tracking System's issues and prepares nonconformance reports as necessary. Ensures issues are corrected in a timely manner.

## SECTION 4

### Documents and Records

#### Project Documents

---

<b>Policy</b>	Project documents such as this QAPP and relevant procedures will be maintained current to accurately reflect the essential work of the project. The project will follow the EP Directorate system for procedure revision, review, approval, and control.
<b>Revising this plan</b>	The Interim Plan leader, at least one technical reviewer, the program integration/regulatory strategy program manager, and the QA team leader will approve revisions to this QAPP.
<b>Document control</b>	This document will be controlled under the EP Directorate document control system (EP-DIR-SOP-4001, Document Control) to ensure that those performing work for the project will have access to the latest revision of procedures and plans.
<b>Procedures</b>	Procedures will be developed as necessary and in accordance with the applicable Waste and Environmental Services (WES) procedure.
<b>Periodic review of procedures</b>	Procedures will be reviewed periodically at the frequency specified in each procedure (at least every 3 yr) to determine if revisions are necessary.
<b>Implementation</b>	The following table lists specific responsibilities.

---

<b>Who</b>	<b>What</b>
Interim Plan Project Leader	Ensures applicable procedures are reviewed at least every 3 yr and revised as necessary.
Procedure Owners	Review and update groundwater sampling-related procedures to ensure that they meet regulatory, technical, and program requirements. Revise procedures as necessary.

## Project Records

---

**Policy** The project will maintain appropriate records to demonstrate compliance with requirements. All records will be maintained and managed as directed by DOE, the Laboratory, and federal and state laws and regulations.

---

**Records resulting from this project** Records from this project include

- logbook entries and/or field forms to record repairs and maintenance,
- equipment and instrument calibration and maintenance records,
- general correspondence that documents critical decisions and information that affects the project,
- supporting analytical data reports,
- data in the SMDB,
- Waste characterization strategy forms, waste profile forms, and land application documentation, and
- field notes and documentation of sampling activities, as applicable.

---

**Records final disposition** Records listed above will be maintained and available in the records center at the WES Records Processing Facility in accordance with EP-DIR-SOP-4003, Records Management.

---

**Implementation** The following table lists specific responsibilities.

<b>Who</b>	<b>What</b>
QA Team Leader	Ensures project meets specifications for records documentation. Conducts surveillances of records to ensure that they are being submitted and filed in accordance with program requirements.
All Project Personnel	Submit records according to implementing procedures.

## Electronic Data Storage

---

**Policy** The project will utilize electronic means as necessary to maintain data and perform calculations. Data records maintained to meet regulatory requirements will be kept in hard copy as the official record. Analytical data packages will be stored electronically.

---

**Databases** Analytical data are submitted in electronic form by the analytical laboratories and added to the SMDB in accordance with applicable procedures. The SMDB is the primary data archive and a data source for project reports.

Backups—All databases or spreadsheets used to hold data and generate reports to be used in demonstrating compliance will be backed up daily to minimize potential losses of data. This is the responsibility of the individual.

Verification of data—All data uploaded into a database will be verified to be accurate against the original paper copy. Data uploaded through electronic means will undergo 100% verification. Data uploaded through manual means will undergo 100% verification.

Verification of calculations—Critical calculations will be verified by someone other than the originator of the calculations.

Software control—The integrity of the SMDB will be ensured by a database administrator. The administrator will control access to SMDB, allowing only trained and authorized persons access to manipulate data in the database.

---

**Spreadsheets** Backups—Spreadsheets used to hold data and generate reports will be maintained in a secure location and will be backed up on a regular basis.

---

## Electronic Data Storage, continued

---

**Implementa-  
tion**      The following table lists specific responsibilities.

<b>Who</b>	<b>What</b>
Project Leaders	Follow all policies for release of data to the database. Obtain independent review of critical calculations and data queries. Document calculations performed by spreadsheets or similar electronic methods.
Data Assessment Project Leader	Ensures critical data queries and manual calculations are verified and documented. Ensures critical data queries and manual calculations are verified and in accordance with specific project requirements.

## SECTION 5

### Work Processes

#### Planning and Performing Work

---

**Policy** Sampling activities will be conducted in a quality manner in accordance with applicable plans and procedures.

---

**Work processes** Work will be planned and conducted by qualified workers using the principles of integrated safety management and in compliance with the Laboratory requirements for integrated work management, conduct of operations, and release of work (ISD 312, "Institutional Service Model for Facility Management and Operations").

---

**Work performance** The operations program manager will ensure that the following are clearly identified and conveyed to workers before beginning work:

- hazards associated with the work
  - safety, administrative, technical, and environmental controls to be implemented during the work
  - security requirements
-



## Planning and Performing Work, continued

---

**Implementa-  
tion**      The following table lists specific responsibilities.

<b>Who</b>	<b>What</b>
Operations Program Manager	Plans work using the principles of integrated safety management and in compliance with SOP-5018, Integrated Work Planning and Authorization, as appropriate. Defines processes necessary to accomplish project work and meet requirements. Communicates information on hazards and their mitigation to employees. Releases work according to requirements of ISD 312.ir
All personnel	Contribute ideas for improving work processes. Be involved in work-process design, process evaluation, and provision of feedback necessary for improvement. Document deficiencies or system failures according to LANL ISD 330-6, "Nonconformance Reporting."

## Preparation and Review of Sampling and Analysis Plans

---

**Policy** The project leader requiring groundwater sampling will develop and maintain a sampling plan that addresses the requirements of the project. The sampling requirements will be entered into the SMDB to be used to plan sampling activities. Variations from major negotiated conditions in the Interim Plan will be submitted to NMED for approval before sampling.

---

**Projects submitting sampling plans** The sampling plan in the SMDB is an integration of the following sampling requirements:

- the Interim Plan
- Groundwater Discharge Monitoring Plan (prepared by the ENV Division.
- municipal well drinking water monitoring (prepared by the ENV Division)
- Pueblo de San Ildefonso monitoring
- TA-16 Outfall Project
- canyons and other Environmental Restoration Characterization Projects
- monitoring well drilling projects
- other projects or special studies created to meet regulatory or other requirements, as needed or directed by the LWSP Director.

---

**Contents of sampling plan** Sampling plans developed by project leaders will contain the following information:

- sampling locations and names, media to be sampled
- sampling schedule or priority requirements
- special instructions for sampling methodology if different from existing SOPs
- analytes to be collected and analytical methods (specified as order codes)
- special laboratory requirements
- special waste management requirements
- field preparation, bottle, and preservation requirements if different from existing procedures
- special data handling requirements such as database security or web release limitations

---

**Formal peer review and regulatory approval**

Some plans (e.g., the Interim Plan and the Groundwater Discharge Monitoring Plan) require peer review and approval by management and NMED. The responsible project leader will ensure that needed reviews and approvals are obtained.

**Enter plans into SMDB**

The SMO combines and integrates sampling requirements from each project's sampling plan into the SMDB. The SMDB entries will be used by the field sampling task leaders to plan and conduct the field sampling.

**Changes to sampling plans**

For any changes to previously approved sampling plans, project leaders will revise the applicable sampling plan to reflect the changed project requirements (and obtain NMED approval, if required). Revised plans will indicate changes and will undergo the same review and approval as the original plan.

Last-minute changes may be made only with close cooperation with SMO personnel and the Interim Plan project leader.

**Implementation**

The following table lists specific responsibilities.

<b>Who</b>	<b>What</b>
Project Leaders	<p>Develop sampling plans that meet customer and project requirements and have appropriate data quality objectives (DQOs).</p> <p>Consult with waste coordinators to address waste sampling requirements.</p> <p>Include appropriate QA/quality control (QC) samples.</p> <p>Obtain proper review of the draft sampling plan, and provide reviewed sampling plan to SMO for entry into the SMDB.</p>
Interim Plan Project Leader	<p>Reviews draft sampling plans from project leaders for consistency with other plans, appropriateness of analyses, laboratories to be used, etc.</p> <p>Discusses sampling plans with the project leaders as necessary, and incorporate them into the Interim Plan.</p> <p>Ensure that the Interim Plan undergoes a formal peer review and receives NMED approval.</p>
SMO	<p>Reviews sampling plans from project leaders and enters sampling plans into the SMDB. Ensures availability of an adequate supply of sample bottles and other sampling supplies.</p>

<b>Who</b>	<b>What</b>
Operations Program Manager	Provides a list of planned field activities for upcoming weeks to LWSP management, and project leaders. Schedules sampling at Pueblo de San Ildefonso with the San Ildefonso Department of Environment and Cultural Properties at least 2 wk in advance. Schedules water supply well sampling with Los Alamos County or City of Santa Fe Utility Departments.

## Waste Management Requirements

### Policy

Waste management requirements for wastes generated by groundwater monitoring activities are discussed in procedure ER-ERSS-SOP-5022, Characterization and Management of Environmental Restoration Project Waste.

Analytical data for water purged from wells for drilling operations, well rehabilitation, and sampling will be evaluated using the notice of intent (NOI) decision tree process to determine whether the water can be land-applied. This process is described under procedure ENV-RCRA-SOP-010.0, Land Application of Groundwater, and is used to identify the appropriate disposal path for the water.

### Implementation

The following table lists specific responsibilities.

Who	What
Project Leaders	During development of the sampling plan, consults waste management coordinators to ensure that any additional analytical needs for waste management purposes are included in the sampling plan.
Waste Management Coordinators	Assist with management and disposal of waste. Inspect waste storage areas for regulatory compliance. Evaluate sample analytical results using the NOI decision tree process to determine the appropriate disposal path for the wastes.
SMO	Ensures analytical results needed for evaluation of purge water are made available in a timely manner to allow prompt assessment by the waste management coordinators.
Operations Program Manager	Ensures waste characterization strategy forms are maintained (e.g., by the waste management coordinators) and updated in accordance with applicable requirements. Works with waste management coordinators and ENV-RCRA personnel to facilitate prompt and proper disposal of the waste.

## Data Quality Objectives

---

**Policy** DQOs for sampling of groundwater will be developed in accordance with SOP-5229 and discussed in the Interim Plan. DQOs will be updated as necessary on a regular basis. DQOs for specific projects covered under the Interim Plan may be developed separately by the project leaders.

---

**Implementa-  
tion** The following table lists specific responsibilities.

<b>Who</b>	<b>What</b>
Interim Plan Project Leader	Reviews groundwater sampling activities annually during development of the Interim Plan to ensure compliance with the DQOs and updates DQOs as necessary.
Project Leaders	Develop DQOs for their individual projects and incorporate the DQOs in their sampling plans.

## Sample Collection

### Purpose

Sample collection and analysis will meet the requirements of the NMED Consent Order applicable to groundwater monitoring.

Watershed sampling will be conducted during a 21-calendar-day window as described in the Interim Plan and the Consent Order. Each watershed will have a target completion period of 18 d. Sampling personnel will notify the operations program manager and the Interim Plan project leader if the 21-d window is likely to be exceeded.

After each watershed has been sampled, the sampling team will prepare a "Samples Taken Table" (STT) for submittal to the Interim Plan project leader. The STT will document samples collected and variances from the sampling plan.

### Sampling procedures

Sample collection will be carried out in accordance with approved SOPs.

### Implementation

The following table lists specific responsibilities.

Who	What
Operations Program Manager	Ensures relevant field collection procedures are appropriate for the work. Requests revision of procedures as necessary. Notifies Interim Plan project leader whenever sampling requirements or deadlines cannot be met.
STR	Oversees subcontractors performing field operations to ensure compliance with contract requirements.
Groundwater Shift Operations Manager (SOM)	Coordinate with the Field sampling team leader to ensure that all sampling activities are authorized and that the daily work activities are included in the plan-of-the-day.

<b>Who</b>	<b>What</b>
Field Sampling Team Leader	<p>Reviews the Interim Plan and schedule watershed sampling activities. Prepares sampling paperwork and coordinates with SMO. Hold a field kickoff meeting several days before sampling to review readiness activity paperwork, field logistics, etc.</p> <p>Coordinates with the SOM to ensure sampling activities are authorized, and that the daily work activities are included in the plan-of-the-day.</p> <p>Ensures proper procedures for sample collection, preparation, preservation, handling, and shipping are followed.</p> <p>Provides daily status of sampling activities to Interim Plan project leader, the STR, and the operations program manager. Includes information on special circumstances or deviations from the Interim Plan.</p>
Field Sampling Personnel	<p>Follow all applicable procedures for performing work.</p> <p>Document procedure deviations and special circumstances encountered during sampling in field notebooks or data sheets.</p> <p>Collect the samples and submit them to the SMO for shipping to an offsite analytical laboratory.</p>
Interim Plan Project Leader	<p>Coordinates with the data assessment project leader to ensure that appropriate QA/QC samples are collected.</p>
QA Team Leader	<p>Periodically conducts assessments, surveillance, or reviews of sampling activities.</p>



## Sending Samples for Analysis

### Policy

The SMO is the central point for analytical laboratory selection, evaluations, sample submittal, and data return. The SMO will evaluate potential analytical laboratories and arrange contracts for analysis of all samples. The SMO will accept samples from field collection personnel, process the sample, ship the samples to the analytical laboratories, and receive the data packages from the laboratories.

Sample analysis work will conform to all applicable requirements of the Consent Order as specified in the Interim Plan and EP-WES-SOP-5099, Laboratory QA/QC Requirements for Compliance to the NMED Compliance Order on Consent. Contract analytical laboratories will follow the DOE model SOW.

### Analytical standards

Analytical laboratories will perform all sample analyses pursuant to analytical SOWs prepared by the SMO. The SMO will prepare, issue, and manage subcontracts containing analytical and QC requirements for the requested analytical methods, including initial and continuing calibrations; analysis of surrogate compounds; and analysis of method blank, matrix spike, duplicate, and laboratory control samples.

### Implementation

The following table lists specific responsibilities.

Who	What
Project Manager	Makes appropriate arrangements with the SMO to accept, process, and submit samples to the analytical laboratories.
SMO	Develops SOWs for analytical laboratories that perform work for the project. Regularly evaluates the quality performance of analytical laboratories through audits. Accepts samples and submits to analytical laboratory for analysis. Tracks status of data at analytical laboratories and ensures data results are received in a timely manner. Uploads electronic data deliverables received from analytical laboratories. Verifies completeness of data package and adherence to contract requirements. Contacts analytical laboratories to resolve any problems or issues with data quality, data completeness, and contract requirements. Provides the Interim Plan project leader and project managers with monthly invoice updates.

## Sample Handling and Tracking

**Purpose** Any persons involved in the preparation, retrieval, and analysis of samples must maintain positive control of samples at all times until sample shipping. Personnel will follow applicable procedures for chain of custody and for handling, packaging, and transporting field samples.

Sampling activities and implementing procedures under this program will conform to the particular requirements of the Consent Order and the Groundwater Discharge Plan that are applicable to groundwater monitoring.

**Implementation** The following table lists specific responsibilities.

Who	What
Field Sampling Team Leaders	Ensure implementing procedures for sample handling and control during sample preparation and retrieval are followed. Review sample collection procedures on a regular basis to ensure they accurately reflect work as performed.
Project Leaders	Review implementing procedures to ensure project and program requirements are met.
SMO	Ensures analytical laboratories meet requirements for chain of custody. Ensures analytical laboratories retain samples for possible reanalysis or other purposes under chain-of-custody controls for a reasonable period of time.

## Calibration and Maintenance of Instrumentation and Equipment

---

**Equipment calibration and maintenance** All technical work that depends upon the accuracy of data will be performed using equipment for which the calibration status and limits of accuracy are known. Instrumentation used for environmental measurements will be calibrated on a routine basis as prescribed by appropriate procedures and/or manufacturer's instructions.

Field team personnel will calibrate and perform maintenance on all monitoring and analytical field instruments to ensure accuracy of measurements and will keep appropriate records of such activities. Field team checks will be performed to ensure instruments are operating properly and/or are within calibration tolerances, as recommended by the manufacturer.

---

**Implementation** The following table lists specific responsibilities.

Who	What
Field Sampling Team Leaders	Ensure proper procedures are used for equipment and instrumentation calibration, and field-checks are conducted as necessary. Develop implementing procedures for the calibration and maintenance of instrumentation and equipment.
Field Sampling Personnel	Calibrate and maintain instrumentation and equipment in accordance with manufacturer's recommendations.

## Data Verification and Validation

---

### Policy

All analytical data will be received from analytical laboratories in electronic format and uploaded into a database. Data will be checked for completeness and adherence to contract requirements and will undergo verification and validation (V&V) for evidence of laboratory contamination and other issues that could potentially affect data quality. Data validation will be performed in accordance with the National Nuclear Security Administration model data validation procedure. If significant V&V issues are identified, results will be forwarded to and discussed with the data assessment project leader and responsible project leaders for inclusion in the monthly data review.

---

### Documenting data issues

The source of and follow-up on data quality issues discovered through V&V or by other means will be documented in the database with appropriate quality flags by the data assessment team or subcontractors.

Follow-up on field data collection issues may include

- incorrect preservation,
- lack of supporting data or documentation,
- sampling system issues,
- potential cross-contamination issues,
- sample collection issues, and
- shipping and receipt issues (e.g., breakage, leakage, or late arrival).

Follow-up on analytical laboratory issues may include

- systematic analytical laboratory errors such as process or contamination issues, and
- reanalysis of samples as necessary.

Significant data issues that result from procedural failures, personnel errors, or failures to follow requirements will be documented as deficiencies and corrected as appropriate.

---

### Implementation

The following table lists specific responsibilities.

Who	What
SMO	Uploads or enters data from field forms into computer system and verifies the entered data. Validates the field data after entry.

<b>Who</b>	<b>What</b>
Data Assessment Team Leader	Performs V&V of data packages or sends data packages to a subcontractor company for independent V&V. Enters appropriate flags and remarks into the database to identify and otherwise qualifies analytical results based on the V&V process. Incorporates results of V&V in the requested data sets and forward results of concern to the data assessment project leader. Ensures results of analyses of “screening samples” are appropriately flagged in the database so they will not be published on the public web.

## Data Review and Assessment

---

<b>Policy</b>	<p>Analytical data will be reviewed and assessed on an ongoing basis. Analytical data will be assessed weekly and results presented monthly. Data will be reviewed according to the criteria specified in the Consent Order Section IV.A.3.g, "Notification."</p> <p>Weekly data review meetings may be held to present and discuss recent sample results. Monthly data review meetings will be held to discuss sample results with project leaders and managers and to consider any required notifications to NMED and other stakeholders.</p>
<b>Assessment requirements</b>	<p>Groundwater data loaded into the WQDB during the prior week or month will be assessed. Analytical results will be compared with screening criteria, including regulatory standards or risk levels and to previous exceedences. Summary screening reports will be generated for discussion at monthly data assessment meetings.</p>
<b>Identifying and reporting results of concern</b>	<p>Groundwater-monitoring results that meet screening criteria will be compared with historical concentrations from the same location. Screening criteria will include the criteria in the modification of the Consent Order (IV.A.3.g, "Notification") that specifies levels of new contaminant detections to be reported to NMED within 15 d or within 24 h.</p>
<b>Response to results of concern</b>	<p>The data assessment project leader will evaluate the data to confirm its reliability by reviewing pertinent information such as the analytical data packages, field notes, sample reanalysis, or submittal of additional samples for verification.</p>
<b>Screening criteria for groundwater</b>	<p>Groundwater analytical results will be screened against standards specified in the Consent Order.</p>
<b>Weekly data review meeting</b>	<p>A weekly meeting will be led by the data assessment project leader with members of the data assessment project to</p> <ul style="list-style-type: none"><li>• discuss assessment of data loaded in the past week,</li><li>• plan investigation path forward for significant results or trends, and</li><li>• prepare information to be presented at the monthly data assessment meeting.</li></ul>

**Monthly data assessment meeting** The data assessment project leader will present a summary of significant results, ongoing investigations, and other relevant information at a meeting held before the 15<sup>th</sup> of each month. The purpose of the meeting is to

- discuss the status of previous investigations of results,
- present new significant results of concern,
- discuss the significance of trends in results,
- discuss investigation paths forward,
- summarize the information to be sent to the NMED and other stakeholders, and
- identify data that may need to be reported to NMED within 24 h of the meeting date.

Invitees to the meeting may include

- members of the data assessment project,
- program director, project leaders, and program managers within the LWSP,
- WES Division and EP Directorate upper managers and directors,
- ENV-RCRA group,
- DOE Los Alamos Site Office, and
- others as deemed appropriate.

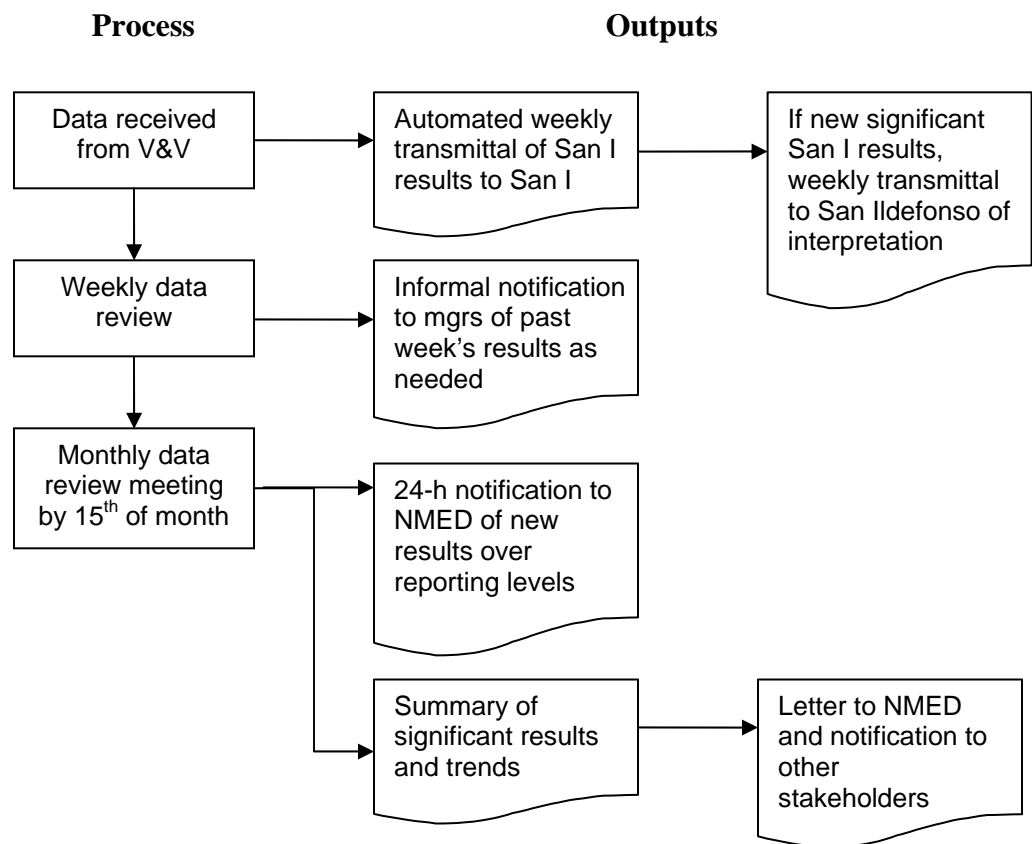
**Actions resulting from results of concern** Decisions will be made during the meeting regarding possible next steps, including formal notification of Laboratory/DOE/stakeholders, resampling, or conducting additional studies to assess potential contaminant sources.

**Implementation** The following table lists specific responsibilities.

<b>Who</b>	<b>What</b>
Data Assessment Project Leader	Assigns qualified personnel to assess groundwater data. Develops and updates procedures for data assessment. Reviews and screens analytical data on an ongoing basis. Brings results of concern to the attention of management for appropriate action at the weekly and monthly meetings. Plans and leads weekly meetings to assess data. Plans and leads the monthly meetings to present the results of data assessment. Prepares data reports and notification to NMED. Ensures results of analyses of screening samples are not evaluated or reviewed for monthly reporting purposes.

Who	What
Conceptual Modeling and Data Assessment Program Manager	Notifies NMED within 24 h after monthly data review meeting.

## Flowchart of data reporting processes





## Publication of Water Quality Data

### Policy

The project will publish Laboratory-generated data meeting the requirements of the Consent Order via the RACER database. Proprietary data may be held for 30 or 60 d to allow for review by the affected organization.

Some samples are collected for special studies, such as well drilling, well rehabilitation, well screen data quality analysis, and other work outside of monitoring plans. Analytical results from such samples may not be included in periodic monitoring reports. However, these data will generally be made available to the public through other reports, such as well completion reports, well rehabilitation reports, or other technical reports as shown in the table below.

<b>Type of Data</b>	<b>Requirement for Collection</b>	<b>Analytical Lab</b>	<b>Validated? (as defined in Consent Order)</b>	<b>RACE R</b>	<b>Periodic Monitoring Reports</b>	<b>Other Reports</b>
All Analytes	Interim Plan, drinking water monitoring, discharge monitoring permits, special studies	all external	yes	yes	Yes	yes
Stable Isotopes	Interim Plan, other groundwater monitoring, special studies	Earth and Environmental Sciences– Hydrology, Geochemistry & Geology (EES-6)	No	yes	Yes	yes (well completion, rehab, canyons investigation)
Analytes Other Than Stable Isotopes	Interim Plan, drilling, well rehabilitation, special studies	EES-6	No	no	no	yes (well completion, well rehabilitation, canyons investigation)
Data Collected by NMED and Others	Special Studies, NMED DOE Oversight Bureau requirements	other	Some, not all	yes	no	published by NMED

<b>Type of Data</b>	<b>Requirement for Collection</b>	<b>Analytical Lab</b>	<b>Validated? (as defined in Consent Order)</b>	<b>RACE R</b>	<b>Periodic Monitoring Reports</b>	<b>Other Reports</b>
Groundwater-level measurements	Interim Plan, other groundwater monitoring, special studies	Not applicable	Yes	No	Yes	Yes

**Implementa-  
tion**

The following table lists specific responsibilities.

<b>Who</b>	<b>What</b>
Data Assessment Team Leader	Ensures all data are properly flagged in the database. Requests appropriate changes to the database to ensure data are flagged and managed in accordance with the requirements above.
Data Management Team Leader	Makes appropriate changes to the database management programs to manage the data as requested by the data assessment project leader.

## Public Release of Proprietary Data

---

**Policy** Analytical data for this project are stored on the SMDB, WQDB, and in RACER. RACER data are generally available to the public as soon as they are uploaded. Proprietary data collected in cooperation with other political entities (San Ildefonso Pueblo, Los Alamos County, and City of Santa Fe) will be released only after the organizations are given an adequate opportunity to review the data.

---

**Data protection requirements** Data in the SMDB that are collected from locations belonging to Pueblo de San Ildefonso, County of Los Alamos, and City of Santa Fe will not be publicly released without permission of those agencies. These data are considered "Official Use Only" and will be protected according to requirements of DOE Order 471.3, "Identifying and Protecting Official Use Only Information" and Laboratory requirements IA-6303, Electronic Information Protection Regimes, Protection Regime 1: "Unclassified Protected Information Group".

---

**Obtaining release of data from San Ildefonso** Data from Pueblo de San Ildefonso samples will be automatically sent to the Pueblo weekly in accordance with the protocol in Appendix A of the MOU between DOE and Pueblo de San Ildefonso. Data will not be released to the public until 60 d after being sent to the Pueblo. If the Pueblo requests, the data may be held for an additional 30 d.

---

**Obtaining release of data from Los Alamos County** By agreement between DOE, the Laboratory, and Los Alamos County, the County will be given time to review monitoring data before public release. The responsible project leader will provide Los Alamos County with a written report containing the sample data as soon as possible after sample collection. Data will be automatically released 120 d after the collection date.

---

**Obtaining release of data City of Santa Fe** By informal agreement, City of Santa Fe will be given 60 d to review monitoring data before public release. Data will be automatically released 120 d after the collection date.

---

**Implementa-tion** The following table lists specific responsibilities.

<b>Who</b>	<b>What</b>
Project Leaders	<p>Ensure the agreed-upon waiting period has passed or obtain formal releases from each external agency before releasing data that pertains to that agency.</p> <p>Send or ensure the database system automatically sends required data reports to each external agency, as required by the individual agreements between the Laboratory and the agencies.</p> <p>If necessary, obtain formal releases from external agencies to release data early.</p>
Data Management Team Leader	<p>Manages the data in the database to hold proprietary and screening data as required and automatically release data as required, as specified by project leaders.</p>

## Data Reporting

**Policy** Results of data assessment (Data Review and Assessment) will be used to generate periodic reports described in that section.

**Implementa-  
tion** The following table lists specific responsibilities.

<b>Who</b>	<b>What</b>
Project Leaders	Compile reports as required by the Consent Order or other requirements. Ensure data reports are sent to NMED or other stakeholders to notify them of significant new results or trends.
Conceptual Modeling and Data Assessment Program Manager	Prepares periodic monitoring reports for NMED, according to the requirements specified in the Consent Order. Makes required oral notification to NMED within 24 h if specified levels of new contaminants (see Consent Order Section IV.A.3.g “Notification”) are identified at a monthly data review.
Project Leaders	Compile reports as required by project objectives including Consent Order requirements.

## Well Maintenance and Custodianship

---

### Policy

Groundwater-monitoring wells at the Laboratory will be maintained, inventoried, and secured so that data collected from the wells is not impacted by outside influences, vandalism, and degradation. Access to wells will be controlled. The Laboratory will maintain an inventory of all monitoring wells for which it has been assigned responsibility for custodianship.

---

### Implementa- tion

The following table lists specific responsibilities.

Who	What
Operations Program Manager	Provides for the physical security and maintenance of all on-site monitoring wells. Coordinates access to monitoring wells. Communicates major changes in maintenance methods, schedules, or equipment to the Interim Plan project leader and project leaders.
Interim Plan Leader	Coordinates corrective actions to address well maintenance issues.
Project Leaders	Review proposed maintenance activities for potential project impacts.

## Requests for Data

---

### Policy

All Laboratory monitoring data will be made available to the public. Data are available on the public web via the RACER database. Proprietary data may be released only after the required waiting period specified in the chapter Public Release of Proprietary Data.

Members of the public may make formal requests for data. The WES Division's public relations personnel will be notified of all requests and may coordinate the response. For requests from Indian pueblos, the Laboratory Tribal Relations Office will also be informed.

---

### Implementa- tion

The following table lists specific responsibilities.

<b>Who</b>	<b>What</b>
Data Management Team	Ensures proprietary data are not released before the agreed waiting period.
All Project Personnel	When data requests from external agencies or the public are received, notify EP Directorate's public relations personnel; if request is from a pueblo, notify the Laboratory Tribal Relations Office.  Inform LWSP managers and the Interim Plan project leader of the request.

## ***SECTION 6***

### **Design**

#### **Design**

---

**Identify design requirements** This project does not require design activity.



## SECTION 7

### Procurement

## Procurement

---

**Procurement of items and services** Procurement of items and services used in this project will follow the Laboratory procurement process and the requirements in the applicable division- or group-level plans. Procurement quality requirements are contained in ISD 840-1, Procurement Quality (also the QA Form 838c, Quality Assurance Supplement 838.c form), the ISD 840-2, “Requester Guide for Meeting Requirements for Procurement of Items and Services,” and P151-1, LANL “Packaging and Transportation Program Procedure.”

---

**Implementation** The following table lists specific responsibilities.

Who	What
Interim Plan Project Leader	Recommends to field operations program manager contracting items and services.
Groundwater Operations Designee	Recommends to the operations program manager necessary contracted items and services. Develops criteria for the procurement of items as necessary.
Sample Management Office	Develops SOWs for analytical work to be procured according to Laboratory ISD 841-1 (“Procurement Quality”). Conducts preaward assessment of analytical laboratories to determine the Laboratory’s capability to supply needed analytical services according to LANL ISD 330-4 (“Supplier Evaluations”).
QA Team Leader	Reviews and approves purchase requisitions.

## SECTION 8

### Inspection and Acceptance Testing

#### Inspection and Acceptance Testing

**Policy**

Any materials or services will be inspected and/or tested before acceptance for use in this program according to LANL P330-8 (“Inspection and Test for Acceptance”) or EP-DIR-SOP-8001 (“Inspection, Test, and Acceptance”). Most supplies used during performance of program activities are commercial grade in nature and require no special acceptance practices or procedures.

**Implementa-  
tion**

The following table lists specific responsibilities.

Who	What
Groundwater Operations Designee	Establishes inspection and acceptance criteria when needed for procured items or services and verifies that materials and services meet the criteria.
QA Team Leader	Performs acceptance testing as required on designated materials and services.

## SECTION 9

### Management Assessment

#### Management Assessment

**Internal  
assessment**

The EP Directorate will conduct internal management assessments of all projects and programs in the directorate in accordance with requirements in the applicable quality plans. Assessments of the project will be documented and filed as records according to LANL P328-3 (“Management Assessment”) and/or LANL ISD 328-4 (“Management Observation and Verification”).

**Responding  
to assessments**

When issues are noted during a management assessment, a nonconformance or corrective action report will be initiated. Corrective actions will be tracked and documented in accordance with appropriate Laboratory procedures.

**Implementa-  
tion**

The following table lists specific responsibilities.

Who	What
LWSP Program Director	Ensures program management assessments are conducted according to Laboratory requirements and meet requirements of the division quality plan.
Interim Plan Project Leader	Recommends topic areas to be assessed. Participates in assessments and review assessment reports, as necessary. Oversees implementation of resulting corrective actions.
QA Team Leader	Selects topics to be assessed. Conducts assessments and review assessment reports. Oversees implementation of resulting corrective actions.
STR	Recommends topic areas to be assessed. Conducts assessments and review assessment reports. Oversees implementation of resulting corrective actions.
Operations Program Manager	Participates in management assessments.

## SECTION 10

### Independent Assessment

#### Independent Assessment

---

**Policy** Independent assessments are those assessments conducted by organizations external to the EP Directorate. As required by LANL P328-1 (“Independent Assessment”) and/or LANL P330-3 (“Quality Audits”), this project may include assessments by outside organizations.

---

**Laboratory-  
required audits** Laboratory audit groups external to the EP Directorate may be delegated responsibility for assessments of the program. External audits and assessments may be conducted periodically.

---

**Implementa-  
tion** The following table lists specific responsibilities.

Who	What
Program Directors	Ensure independent assessments are conducted and meet requirements of the EP quality program.
Interim Plan Project Leader	Provides input to the Laboratory audit team as required. Reviews audit reports for factual accuracy. Addresses all findings and implement corrective actions as appropriate.
Project personnel	Cooperate with auditors by providing information, data, etc. Implement corrective actions as necessary.

[Using a CRYPTO Card, click here for “Required Read” credit.](#)

If you do not possess a CRYPTOCARD or encounter problems, contact the EP Central Training Office.