EP-DIV-SOP-20156, R.0

QUALITY CHECK FOR PREPARATION OF DATA SETS FROM THE LANL ENVIRONMENTAL INFORMATION MANAGEMENT (EIM) DATABASE

Effective Date: 4/4/13

Procedure Owner:	Signature:	Date:
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REVISION HISTORY

Document No./ Revision No.	Issue Date	Action	Description
EP-DIR-SOP-10007, R0	1/26/2011	New procedure	New Procedure
EP-DIR-SOP-10007, R1	9/8/2011	Major Revision	Changes made throughout the document and sections; Added Storm Water requirements.
EP-DIV-SOP-20156, R0	4/4/13	New Document Number	Applicability of document follows at the division level; therefore; document number revised to follow Document Numbering Guide where DIV numbers follow a 20000 series number.

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1. PURPOSE AND SCOPE

This standard operating procedure (SOP) describes the process and responsibilities for performing quality checks for the preparation of data sets retrieved from the Los Alamos National Laboratory (LANL) Environmental Information Management (EIM) database. Data sets are prepared once automated computer software checks, and routine auto-validation have been performed.

Data stewards and/or project team members of the ADEP's Engineering and Technology (ET) Division – Environmental Remediation Group have the primary responsibilities for performing quality checks and preparing final electronic data sets. These checks are performed on field-specific information, analytical data, and summary reports, ensuring the completeness and correctness of a data set.

All ET Division personnel are required to use this procedure when performing quality checks on samples obtained from all media including: waste characterization material, ground water, surface water, storm water, food stuff and biota; soil vapor, soil, and tuff. This procedure integrates multimedia functional support for various regulatory programs and is not applicable to all work the data team members support.

This procedure does not provide specific instructions on web-based applications, Microsoft software, and reporting tools used to produce electronic data sets. As necessary, the user should seek applicable online instruction or tutorial information regarding these applications.

This procedure does not cover specific instructions for requesting, handling, and managing a data set. See EP-DIR-SOP-20145 R0, Requesting and Managing Data Sets.

2. BACKGROUND AND PRECAUTIONS

2.1 Background

Most of the work specified in this procedure is driven by the Compliance Order on Consent and the Individual Permit National Pollutant Discharge Elimination System Permit No. M0030759 and, when applicable, personnel perform quality reviews. Data sets produced as a result of this procedure are provided to the end user and are presented in technical publications, including waste management documentation, environmental surveillance reports, monitoring and annual reports, work plans, investigation reports, and peer-reviewed journal articles and are submitted as deliverables to federal, state, local, and tribal governments and citizens's groups.

2.1 Background (continued)

NOTE: Data presented in technical publications require a quality check before release of the deliverable or document to the public or regulator. Data sets that have not undergone a quality check are considered preliminary and are available for internal use only.

Electronic data deliverables (EDDs) from external laboratories are checked for completeness using an automated computer system software checker and are electronically entered into the database using an EDD loader. The automated check ensures that all analyses were performed on each sample submitted to the contract analytical laboratory. Any discrepancies are resolved with the project field teams through the Sample Management Office (SMO) or the laboratory before the data can be accessed.

Analytical data undergo 100% automated validation performed in EIM utilizing algorithms based on the National Functional Guidelines for Organic and Inorganic data review and the Health and Safety Laboratory 300 (HASL-300) guidelines for radionuclides.

2.2 Precautions

Location x- and y-coordinates must be entered into EIM before data can be processed from the EIM database.

The data steward performs quality checks for preparation of final data tables such as the All Analyses Tables used for site-specific screening or evaluation. During preparation of final data tables, certain data types must be excluded, depending on programmatic and/or regulatory requirements. Excluded data types should be entered into separate tables. For example, *Toxicity Characteristic Leaching Procedure* (TCLP) data, rejected data, redundant records, screening data, waste characterization data, excavated samples, and field quality control samples are routinely provided in separate tables for surveillance, monitoring, and investigations reports.

Data assigned a web release date that has not been met upon delivery of the data set must be identified and communicated to the project leader. This date is set in the EIM and is linked to locations identified by third-party landowners, including tribal and county governments, and the Department of Energy, and requires usually a 90-day holding period before the data set is released to the public website Intellus. As applicable, personnel responsible for this procedure must communicate this information to the project or end user of the data.

A Sample Group in the EIM is the primary method of reporting groups of samples and associated analytical data for site investigations of solid waste management units (SWMUs).

2.2 Precautions (continued)

A Location Group in the EIM is the primary method of reporting groups of locations and associated samples and analytical data for sampling events such as the groundwater periodic monitoring events.

The analytical data in EIM can be accessed through temporary view tables and primary data tables using an ad hoc query tool, canned reports or data filters. Table views such as "v_lanl_report_chem_AQB_LANL," the primary data table queried in EIM by users, requires an overnight refresh to generate daily updates.

3. REFERENCES

- EP-DIR-AP-10001, *ADEP Document Control*
- EP-DIR-AP-10007, *Environmental Programs Procedure Preparation, Revision, Review, Approval and Use*
- EP-DIR-AP-10003, *Records Management Procedure for ADEP Employees*
- EP-DIV-SOP-20145, *Requesting and Managing Data Sets*

4. DEFINITIONS

Data Steward: A member of the Environmental Remediation Group Data Stewardship Team who is trained to this SOP and is responsible for performing tasks described within.

Project Chemist: A member of the ADEP who is trained to this SOP and is responsible for performing chemistry reviews and related data steward functions.

Validation: The process of giving legal force to or official confirmation of, or declaring legally valid. For analytical data, validation is a specific set of checks applied to the analytical laboratory quality control parameters/samples to ensure the analytical data are legally defensible. Data validation is performed automatically in EIM by algorithms based on the following:

- For inorganic data - U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review
- For organic data - EPA CLP National Functional Guidelines for Organic Data Review

4. Definitions (continued)

- For radionuclides - HASL-300 Environmental Measurements Laboratory guidelines

The data validation process results in the assignment of qualifiers to the analytical data. Data rejected during validation as *unusable* are assigned an R qualifier.

5. EQUIPMENT AND TOOLS

A computer work station equipped with internet access to web-based application(s) and reporting tools with import and export functions and equipped with Microsoft Office.

Access to EIM at: https://www.locusfocus.com/eim/database

Access to a controlled copy of the Automated Waste Determination (AWD) Microsoft Excel workbook (required for waste characterization related data preparation only).

6. STEP-BY-STEP PROCESS DESCRIPTION

6.1 Completeness Check

Data Steward

[1] Track sample event(s) for completeness, following a data request. Check event status for completeness. To access the EIM Sample Tracking Options reporting tool box, use the following pathway: LANL>>Input>>Tracking>>Sample. If sample event(s) are complete in the EIM, export analytical results for review to Excel or Access.

NOTE: A sample event is complete when all submitted laboratory analyses have been received, and automatically validated in EIM for each sample/analyte combination. A completeness check may indicate that requested analyses have not been received. If data are missing, ask requestor if evaluation should proceed on the incomplete data set. If the missing data are required, contact SMO staff and/or coordinate data upload and auto-validation in EIM.

[2] Identify the number of samples and analytical results in the final data set and record the total record count.

[3] Check the web release date if applicable, to identify third party landowner location(s)/analytical data. Consult with the project.

6.1 Completeness Check (continued)

[4] Prepare and submit to database administrator a Sample or Location Group for approval and use in the EIM database for reporting, if applicable. Lead time is needed for Location Group approval by the EIM Software Change Board.

[5] Complete Appendix 1, Data Exports Checks and Balances Sheet, if applicable.

6.2 Field Data Checks

Data Steward

[1] Ensure sample information were correctly entered into EIM for each sample event by checking: EIM Sample Type (field matrix), EIM Sample Purpose (field QC type), and EIM Sample Usage (investigation, compliance, waste, etc.), and if applicable, EIM Background Comparison Media Code (background media code). Work with the SMO to update and correct any discrepancies. See Appendix 5-8 for allowable database codes.

NOTE: Review sample collection log and work with the SMO to resolve any discrepancies with field information. Ensure the spatial reference (i.e., solid waste management unit, technical area, reach, etc.) is correct for each new sample that has been collected.

[2] Check that background media code field entries are correct and consistent for sample locations and depth. Refer to media code look-up table for accepted values.

[3] Check that field matrix and media code entries are consistent and correct. Check field entries to ensure location, depth, and date match field duplicate and parent sample. Refer to media code and field matrix look-up tables for accepted values.

[4] Check "Sample Usage Code" field entries to identify the data types in the data set. Refer to sample usage code look-up tables for accepted values.

NOTE: It is important that exclusionary data types (i.e., waste characterization, screening data, excavated samples, TCLP data) are correctly identified and removed from the final data tables as required by programmatic or regulatory requirements.

6.3 Analytical Quality Checks

Data Steward

[1] Perform an analyte count per analytical method for completeness. See table below for acceptable range for a given analytical method. For a complete list of accepted and active methods see EIM>>LANL>>Setup>>Analytical>>Lab Methods:

Analytical Methods	Analyte Count
Metals by EPA SW-846: 6010 and 6020 or EPA 200.7 and EPA 200.8	23–29
Mercury by EPA SW-846:7471 or EPA:245.2	1
Gamma Spectroscopy Radionuclides EPA: 901.1	25–258
Alpha Spectroscopy Radionuclides by HASL:300	1-11
Volatile Organic Analytes by EPA SW-846:8260 or EPA 624	60–64
Semivolatile Organic Analytes by EPA SW-846:8270 or EPA 625	62–69
Pesticides by EPA SW-846:8081 or EPA 608	21
PCBs (polychlorinated biphenyls) by EPA SW-846: 8082 or EPA: 608	7
High Explosives by EPA SW:8330	14
High Explosives by EPA SW-846:8321	20
High Explosives (RDX degradation products)	3
Dioxin/Furans by EPA SW-846:8290 or EPA:1613B	25
Volatile Organic Analytes by EPA TO-14	62
PCB Congeners by EPA;1668A	~177

[2] Segregate redundant records by selecting data with an EIM Best Select Flag of N (0, False) Except for screening data, ensure that for each best value flag record of "N" there is a matching and corresponding "Y" record. Consult chemist as needed.

6.4 Results and Unit Checks

Data Steward

[1] Check that the unit is correctly reported for each field matrix. See table below for standard unit abbreviations:

Matrix	Unit	Unit Description
Gas	ppbv	parts per billion by volume
Gas	µg/m^3	micrograms per cubic meter
Gas	pCi/L	picocuries per liter
Soil or solid	%	Percent
Soil or solid	mg/kg	milligrams per kilogram
Soil or solid	pCi/g	picocuries per gram
Soil or solid	µg/kg	micrograms per kilogram
Soil or solid (TCLP extract)	mg/L	milligrams per liter
Soil or solid (TCLP extract)	µg/L	micrograms per liter
Water	CFS	cubic feet per second
Water	GPM	gallons per minute
Water	NTU	nephelometric turbidity units
Water	SU	standard pH units
Water	deg C	degrees Celsius
Water	mg/L	milligrams per liter
Water	pCi/L	picocuries per liter
Water	µS/cm^2	microsiemens per centimeter
Water	µg/L	micrograms per liter

[2] Check for zero and/or null standard results. Consult a project chemist to determine if data should be rejected.

[3] Check radionuclide results to ensure either minimum detectable activity or uncertainty value is reported. If both are missing, consult a project chemist to determine if data should be rejected.

[4] Check inorganic and organic analytical results to ensure method detection limit and estimated quantitation limit are reported. If both are missing, consult a project chemist.

6.5 Validation Checks

Data Steward

[1] Perform a general review of the qualifier flags in the data set. Refer to inorganic, organic, and radionuclide validation SOPs and/or consult with a project chemist for final review.

NOTE: A final chemist review is not required unless data quality issues are identified. A focused validation may be requested by the project for a specific parameter(s), result(s), and validation, in which case consult a project chemist.

[2] Verify that qualifier flag and/or reason code changes requested by the chemist have been updated in the EIM database. Only a qualified project chemist or equivalent trained to validation procedures can make or request changes to a qualifier flags in the EIM.

[3] Check detect status code (Y or N) for each record to ensure consistency with report qualifier code.

6.6 Export All Analyses and Exclusion (Non-Investigation) Data Tables

Data Steward

[1] Generate and export all analyses and exclusionary data tables from database to Excel or Access for final reporting. If applicable, prepare and exclude data as shown in Appendix 1, Data Exports Checks and Balances Sheet.

NOTE: Always include the EIM FIELD_SAMPLE_RESULT_RECNO for all records as a cross-reference of each record to EIM and Intellus. TheFIELD_SAMPLE_RESULT_RECNO does not need to be included in the delivery of the final formatted data set to the client; but, should always be maintained in the archived data set for easy reference to EIM.

[2] To ensure that all requested records have been reported, compare the sum of excluded data plus the sum of the remaining data in the All Analyses Table to the initial record count obtained during completeness check.

6.7 Inorganic, Organic, and Radionuclide Frequency of Detect (FD) and Sample ID-specific (SID) Table Review

NOTE: Use the "EIM Statistics and Counts Options" reporting tool box to generate FD and SID tables. To access the tool box use the following pathway: LANL>>Analysis >>Statistics; click on

6.7 Inorganic, Organic, and Radionuclide Frequency of Detect (FD) and Sample ID-specific (SID) Table Review (continued)

"Advanced>>Soil/Sediment" for FD tables or click on "Client-Specific" for SID tables. Export tables from the EIM using pipe delimited text file or MS Excel.

Data Steward

[1] Generate and check the Inorganic FD Table or equivalent as required by the program for correctness and completeness. Verify that the number of analyses, number of detects, and number of detects and non-detects above LANL BVs are correct and agree with the data set. See Appendix 2, Inorganic FD Table.

NOTE: Refer to Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory, September 1998, LA-UR-98-4847.

[2] Generate and check Inorganic SID Table or equivalent as required by the program for correctness and completeness. Verify that results compare and agree with the Inorganic FD, LANL BVs as applicable, and the data set. See Appendix 3, Inorganic SID Table.

NOTE: The Inorganic SID Table contains both detected results and non-detected results above LANL BVs. If BVs do not apply, the detected results should be reported.

[3] Generate and check the Organic FD Table or equivalent as required by the program for correctness and completeness. Verify the number of analyses, and number of detects are correct and agree with data set.

[4] Generate and check Organic SID Table or equivalent as required by the program for correctness and completeness. Verify detected results are correct and results agree with data set.

NOTE: LANL BVs do not apply to organic results.

[5] Generate and check Radionuclide (RAD) FD Table or equivalent as required by the program for correctness and completeness. Verify the number of analyses, number of detects, and number of detects above LANL BVs are correct and agree with data set.

6.7 Inorganic, Organic, and Radionuclide Frequency of Detect (FD) and Sample ID-specific (SID) Table Review (continued)

NOTE: Refer to Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory, September 1998, LA-UR-98-4847.

[6] Generate and check RAD SID Table or equivalent as required by the program for correctness and completeness. Verify that results compare and agree correctly with the RAD FD Table, LANL BVs as applicable, and data set.

NOTE: The RAD SID Table contains only detected results above LANL BVs. If LANL BVs do not apply, detected results should be reported.

[7] Generate and check Samples Taken Table or equivalent for correctness and completeness. Verify metadata and analyses are consistent with data set. Use the EIM Sample Tracking Options tool box to generate Samples Taken Table, which can be located using the following pathway:LANL>>Input>>Tracking>>Samples. Export MS Excel Spreadsheet and format.

6.8 Waste Determination Using the Automatic Waste Determination (AWD) Workbooks

Data Steward

[1] Use the EIM pre-built query "AWD Feed" to generate a text file with the data requested for waste evaluation. To access Expert Custom Queries, use the following pathway in EIM: LANL>>Analysis>>Custom Queries>>Expert.

[2] Export the "AWD Feed" result file from EIM as a pipe delimited text file.

[3] Open the AWD master file called "ww_xxx.xlsm." An official copy of the master file is available in the project directory.

NOTE: In the file name "ww_xxx.xlms," ww stands for water waste, and xxx is the current version number. If an evaluation of solids is required, the "ww_xxx.xlsm" workbook will automatically link to all necessary files. For quality assurance purposes, the AWD workbook automatically collects information about the starting point, evaluations, and subsequent opening/saving/name changes.

6.8 Waste Determination Using the AWD Workbooks (continued)

[4] In the AWD workbook, allow macros and select the "Start" command button. When prompted, choose the data file to be imported into the AWD workbook (i.e., the text file generated above in step #1).

[5] Follow the prompts from the AWD workbook. Select samples to be evaluated.

[6] After samples are selected, press the "Evaluate" command button, If necessary, answer questions from the AWD program on unit recalculation and background selection.

[7] If program informs user that some data cannot be released because of the web release date, consult data requestor to determine the best path forward.

[8] At the end of the evaluation, the results are saved automatically in Excel default directory.

[9] From the "Results" sheet, review "Detects," "RCRA," and "RAD" forms

NOTE: E-mails with large AWD result file (bigger than 25—30 MB) may not be delivered properly because of user's e-mail limitations on Appendix size. In such cases evaluator may use transfer.lanl.gov protocol.

6.9 Periodic Monitoring Reports for Groundwater

Data Steward

[1] Determine if new Location Group is necessary. If it is, list all locations for new Location Group and request creation of the new group using EIM footprints system. Allow appropriate lead time.

[2] Use the EIM to generate groundwater summary reports for Periodic Monitoring Events.

[3] Use the following pathway in EIM to locate PMR Reports tool box: LANL>>Analysis>>Views>>Analytical.

[4] Select from list of PMR IDs in view to generate reports for existing PMR, or

[5] Select the "Generate PMR" button to generate a new report. Then choose a Location Group and enter date range, and select the "Submit" button. A new PMR will be created along with a new PMR ID.

6.9 Periodic Monitoring Reports for Groundwater (continued)

[6] Generate Periodic Monitoring Reports: Select Report Type:

- Parameter:
  - current round detects and previous monitoring results from last four periodic monitoring events
- Analytical:
  - All results for current window (referred to as Current).
  - Round detects and previous monitoring results (referred to as Last 4)
  - Previously unreported data for location group (referred to as previously unreported)
  - Previously unreported data and previous monitoring results for location group (referred to as previously unreported Last 4)

NOTE: Data steward may review new Current PMR analytical report without locking data, but the report must be locked down for the current monitoring event before any of the "previously unreported data" reports are generated.

CAUTION: Copy "previously unreported results" report to Excel or Access file before locking it. If Data Steward locks "previously unreported results" report, it cannot be seen again. Locking "previously unreported results" is a necessary step which cannot be omitted.

6.10 Records Management

Data Steward

[1] Maintains and submits applicable electronic records and/or documents generated using this procedure on project servers to the Records Processing Facility according to EP-DIR-AP-10003, Records Management Procedure for ADEP Employees.

- Electronic records included in ADEP deliverables reviewed according to SOP-4005, Peer Review Process;

6.10 Records Management, (continued)

- Final data tables included in ADEP deliverables submitted by the ADEP Deliverables Compliance Team.
- Final data tables will include Level II data packages when applicable or for new sample planned data, Data stewards or equivalent will coordinate with Sample Management Office and provide enough lead time (2 weeks minimum) for preparation of reports.
- An EIM Auto-validated report will be included in the Level II data packaging for all new data when applicable.

7. APPENDIXES

Appendix 1: Data Exports Checks and Balances Sheet

Appendix 2: Inorganic Frequency of Detect (FD) Table

Appendix 3: Inorganic Sample ID Specific (SID) Table

Appendix 4: Samples Taken Table

Appendix 5: Sample Type Valid Values

Appendix 6: Background Comparison Media Code Values

Appendix 7: Sample Purpose Valid Values

Appendix 8: Sample Usage Code Valid Value

Click here for "Required Read" credit.

Appendix 1
Data Exports Checks and Balance Sheet
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Data Exports Checks and Balances Sheet		
1.	All Analyses – final reported table.	Record/Count
Excluded Data		
2.	CST SCREEN – remove mobile screening and other field screening data.	Record/Count
3.	CST ONSITE - historical data identified as screening only.	Record/Count
4.	CST OFFSITE – historical data identified as screening unless re-verified and –validated.	Record/Count
5.	AN-95 – historical data identified as screening unless re-verified and -validated	Record/Count
6.	Excavated – sample location(s) removed during environmental cleanup.	Record/Count
7.	Field QC – field quality control rinsate, trip blank, and duplicate sample.	Record/Count
8.	Reanalysis/Dilutions/Duplicates - duplicate runs for samples diluted or reanalyzed.	Record/Count
9.	Gamma Spec with Alpha - gamma spec removed if alpha spec analyzed.	Record/Count
10.	Rad Not Evaluated – radionuclides not evaluated.	Record/Count
11.	TCLP/WASTE - remove TCLP analyses and samples identified as waste.	Record/Count
12.	RFI CLASS OTHER – “OTHER” classification is assigned to non-evaluated data.	Record/Count
13.	REJECTED DATA - analytical results rejected by project chemist for data quality reasons.	Record/Count
	TOTAL	Record/Count

Appendix 2
Inorganic Frequency of Detect (FD) Table
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Inorganic FD Table

SWMU	Analyte	Media	Number of Analyses	Number of Detects	Concentration Range	Std Result UOM	Background Value (mg/kg)	Frequency of Detects Above Background Value	Frequency of Non-Detects Above Background Value	Min Detected Result	Max Detected Result
20-001(a)	Aluminum	QBT3	24	24	2640 to 5420	mg/kg	7340	0/24	0/24	2640	5420
20-001(a)	Antimony	QBT3	24	0	[0.955 to 1.05]	mg/kg	0.5	0/24	24/24	0	0
20-001(a)	Arsenic	QBT3	24	24	0.738 to 1.91	mg/kg	2.79	0/24	0/24	0.738	1.91
20-001(a)	Barium	QBT3	24	24	54.9 to 108	mg/kg	48	24/24	0/24	54.9	108
20-001(a)	Beryllium	QBT3	24	24	0.536 to 1.05	mg/kg	1.21	0/24	0/24	0.536	1.05
20-001(a)	Cadmium	QBT3	24	19	0.102 to [0.518]	mg/kg	1.68	0/24	0/24	0.102	0.267
20-001(a)	Calcium	QBT3	24	24	1090 to 3120	mg/kg	2200	3/24	0/24	1090	3120
20-001(a)	Chromium	QBT3	24	24	3.13 to 6.23	mg/kg	7.14	0/24	0/24	3.13	6.23
20-001(a)	Cobalt	QBT3	24	24	1.53 to 2.78	mg/kg	3.14	0/24	0/24	1.53	2.78
20-001(a)	Copper	QBT3	24	24	3.1 to 7.75	mg/kg	4.66	16/24	0/24	3.1	7.75
20-001(a)	Cyanide (Total)	QBT3	24	0	[0.225 to 0.264]	mg/kg	0.5	0/24	0/24	0	0
20-001(a)	Iron	QBT3	24	24	6540 to 9890	mg/kg	14500	0/24	0/24	6540	9890
20-001(a)	Lead	QBT3	24	24	9.19 to 12.1	mg/kg	11.2	6/24	0/24	9.19	12.1
20-001(a)	Magnesium	QBT3	24	24	879 to 1430	mg/kg	1690	0/24	0/24	879	1430
20-001(a)	Manganese	QBT3	24	24	263 to 395	mg/kg	482	0/24	0/24	263	395
20-001(a)	Mercury	QBT3	24	8	0.00432 to [0.0126]	mg/kg	0.1	0/24	0/24	0.00432	0.00654
20-001(a)	Nickel	QBT3	24	24	3.58 to 6.66	mg/kg	6.58	1/24	0/24	3.58	6.66
20-001(a)	Nitrate	QBT3	24	7	0.938 to [1.07]	mg/kg	na	7/24	na	0.938	1.02
20-001(a)	Perchlorate	QBT3	24	22	0.000765 to 0.00345	mg/kg	na	22/24	na	0.000765	0.00345
20-001(a)	Potassium	QBT3	24	24	771 to 1340	mg/kg	3500	0/24	0/24	771	1340
20-001(a)	Selenium	QBT3	24	0	[0.957 to 1.05]	mg/kg	0.3	0/24	24/24	0	0
20-001(a)	Silver	QBT3	24	23	0.191 to 0.731	mg/kg	1	0/24	0/24	0.191	0.731
20-001(a)	Sodium	QBT3	24	22	71.9 to 205	mg/kg	2770	0/24	0/24	71.9	205
20-001(a)	Thallium	QBT3	24	20	0.0978 to [0.238]	mg/kg	1.1	0/24	0/24	0.0978	0.135
20-001(a)	Vanadium	QBT3	24	24	6.48 to 13.1	mg/kg	17	0/24	0/24	6.48	13.1
20-001(a)	Zinc	QBT3	24	24	31 to 43	mg/kg	63.5	0/24	0/24	31	43

Appendix 3
Inorganic Samples ID specific (SID) Table
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Inorganic SID Table

SWMU	Sample ID	Location ID	Depth (ft)	Media	Antimony	Barium	Calcium	Copper	Lead	Nickel	Nitrate	Perchlorate	Selenium
Inorganic Chemicals Above Background per Sample, Standard UOM = mg/kg													
Qbt2, 3, 4 Background Value					0.5	46	2200	4.66	11.2	6.58	na	na	0.3
Construction Worker SSL					124	4350	na	12400	800	6190	496000	217	1550
Industrial SSL					454	224000	na	45400	800	22700	1820000	795	5680
Recreational SSL					317	158000	na	31700	560	15800	1260000	555	3960
Residential SSL					31.3	15600	na	3130	400	1560	125000	54.8	391
20-001(a)	RE20-10-22666	20-612556	5-6	QBT3	1.04 (U)	68.3	-	5.52	-	-	-	-	1.04 (U)
	RE20-10-22667	20-612556	10-11	QBT3	1.02 (U)	72.2	-	-	-	-	0.94 (J)	0.00113 (J)	1.03 (U)
	RE20-10-22668	20-612556	14-15	QBT3	1.02 (U)	72.3	-	4.8	-	-	0.938 (J)	0.000852 (J)	0.999 (U)
	RE20-10-22669	20-612557	5-6	QBT3	1.03 (U)	82.3	-	5.61	11.8	-	1.02 (J)	0.00279	1.05 (U)
	RE20-10-22670	20-612557	10-11	QBT3	1.05 (U)	79.3	-	5.54	12.1	-	0.988 (J)	0.00243	1.05 (U)
	RE20-10-22671	20-612557	14-15	QBT3	1.02 (U)	80	-	5.56	11.9	-	1.01 (J)	0.0015 (J)	1.05 (U)
	RE20-10-22672	20-612558	5-6	QBT3	1.03 (U)	86.8	-	7.32	11.6	6.66	0.98 (J)	0.00201 (J)	1.04 (U)
	RE20-10-22673	20-612558	10-11	QBT3	1.04 (U)	78.5	-	5.06	-	-	-	0.00137 (J)	1.04 (U)
	RE20-10-22674	20-612558	14-15	QBT3	0.99 (U)	72	-	5.44	-	-	0.961 (J)	0.00345	1.02 (U)
	RE20-10-22675	20-612559	5-6	QBT3	1.02 (U)	89.3 (J-)	2700	6.01	-	-	-	0.000765 (J)	0.98 (U)
	RE20-10-22676	20-612559	10-11	QBT3	1.03 (U)	75.8 (J-)	-	5.04	-	-	-	0.00193 (J)	1.04 (U)
	RE20-10-22677	20-612559	14-15	QBT3	1.04 (U)	71.3 (J-)	-	-	-	-	-	0.00151 (J)	0.957 (U)
	RE20-10-22678	20-612560	5-6	QBT3	1.03 (U)	87 (J-)	-	6.25	-	-	-	-	1.02 (U)
	RE20-10-22679	20-612560	10-11	QBT3	0.97 (U)	87.9 (J-)	-	6.12	-	-	-	0.00102 (J)	1.03 (U)
	RE20-10-22680	20-612560	14-15	QBT3	0.955 (U)	65.6 (J-)	-	-	-	-	-	0.00161 (J)	1.04 (U)
	RE20-10-22681	20-612561	5-6	QBT3	1.05 (U)	72.2 (J-)	-	5.46	-	-	-	0.000979 (J)	1.04 (U)
	RE20-10-22682	20-612561	10-11	QBT3	1.04 (U)	75.8 (J-)	-	6.74	11.3	-	-	0.000886 (J)	1.02 (U)
	RE20-10-22683	20-612561	14-15	QBT3	1.02 (U)	84.2 (J-)	-	5.56	11.9	-	-	0.00116 (J)	1.01 (U)
	RE20-10-22684	20-612562	5-6	QBT3	1.05 (U)	108 (J-)	3120	7.75	-	-	-	0.00115 (J)	1.02 (U)
	RE20-10-22685	20-612562	10-11	QBT3	1.02 (U)	54.9 (J-)	-	-	-	-	-	0.000835 (J)	0.997 (U)
	RE20-10-22686	20-612562	14-15	QBT3	1.02 (U)	55.6 (J-)	-	-	-	-	-	0.000947 (J)	0.981 (U)
	RE20-10-22687	20-612563	5-6	QBT3	0.998 (U)	63.5 (J-)	-	-	-	-	-	0.00126 (J)	1.02 (U)
	RE20-10-22688	20-612563	10-11	QBT3	1.04 (U)	78.6 (J-)	2590	-	-	-	-	0.00146 (J)	1.04 (U)
	RE20-10-22689	20-612563	14-15	QBT3	1.03 (U)	60.9 (J-)	-	-	-	-	-	0.00217	0.999 (U)

Appendix 4
Samples Taken Table
Page 1 of 1

Samples Taken Table

SWMU	Sample ID	Location ID	Depth (ft)	Media	Field QC Type	ANION	GAMMA_SPEC	HEXP	ISO_U	METALS	PCB	PERCHLORATE	SR_90	SVOC	VOC	WET_CHEM
20-001(a)	RE20-10-22666	20-612556	5-6	QBT3	na	10-3800	10-3801	10-3799	10-3801	10-3800	10-3799	10-3800	10-3801	10-3799	10-3799	10-3800
	RE20-10-22667	20-612556	10-11	QBT3	na	10-3800	10-3801	10-3799	10-3801	10-3800	10-3799	10-3800	10-3801	10-3799	10-3799	10-3800
	RE20-10-22668	20-612556	14-15	QBT3	na	10-3800	10-3801	10-3799	10-3801	10-3800	10-3799	10-3800	10-3801	10-3799	10-3799	10-3800
	RE20-10-22669	20-612557	5-6	QBT3	na	10-3800	10-3801	10-3799	10-3801	10-3800	10-3799	10-3800	10-3801	10-3799	10-3799	10-3800
	RE20-10-22670	20-612557	10-11	QBT3	na	10-3800	10-3801	10-3799	10-3801	10-3800	10-3799	10-3800	10-3801	10-3799	10-3799	10-3800
	RE20-10-22671	20-612557	14-15	QBT3	na	10-3800	10-3801	10-3799	10-3801	10-3800	10-3799	10-3800	10-3801	10-3799	10-3799	10-3800
	RE20-10-22672	20-612558	5-6	QBT3	na	10-3800	10-3801	10-3799	10-3801	10-3800	10-3799	10-3800	10-3801	10-3799	10-3799	10-3800
	RE20-10-22673	20-612558	10-11	QBT3	na	10-3800	10-3801	10-3799	10-3801	10-3800	10-3799	10-3800	10-3801	10-3799	10-3799	10-3800
	RE20-10-22674	20-612558	14-15	QBT3	na	10-3800	10-3801	10-3799	10-3801	10-3800	10-3799	10-3800	10-3801	10-3799	10-3799	10-3800
	RE20-10-22675	20-612559	5-6	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826
	RE20-10-22676	20-612559	10-11	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826
	RE20-10-22677	20-612559	14-15	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826
	RE20-10-22678	20-612560	5-6	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826
	RE20-10-22679	20-612560	10-11	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826
	RE20-10-22680	20-612560	14-15	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826
	RE20-10-22681	20-612561	5-6	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826
	RE20-10-22682	20-612561	10-11	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826
	RE20-10-22683	20-612561	14-15	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826
	RE20-10-22684	20-612562	5-6	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826
	RE20-10-22685	20-612562	10-11	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826
	RE20-10-22686	20-612562	14-15	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826
	RE20-10-22687	20-612563	5-6	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826
	RE20-10-22688	20-612563	10-11	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826
	RE20-10-22689	20-612563	14-15	QBT3	na	10-3826	10-3827	10-3825	10-3827	10-3826	-	10-3826	10-3827	10-3825	10-3825	10-3826

Appendix 5
Sample Type Valid Values

Page 1 of **2**

Sample Type Valid Values		
Valid Value	**Type**	**Description**
A		Animal
AIR		Air Samples for AirNet
APP		Apples
ASH		Volcanic Ash
D		Debris
EM		Engineered Material
F		Filter, total
FCC		Channel Catfish
FCP		Carp
FCS		Carp Sucker
FRT		Rainbow Trout
FSMB		Smallmouth Bass
FWLY		Walleye
FWS		White Sucker
GAS		Gas
LET		Lettuce
LIQ		Liquids other than water or oil
MOSS		Moss
NA		Not Applicable
NASH		Nongeologic Ash
NSED		Nongeologic Sediment
OIL		Oil
OTH		Other
PA		Filter Particulates and/or adsorbates
PLM		Plum
R	SUBSURFACE	Rock
RAIN		Rain
S	SUBSURFACE	Soil
S_FTB	SUBSURFACE	soil for FTB, used for replacement W->S for FTB
SED	SUBSURFACE	Geologic Sediment
SLD		Sludge, Dry
SLW		Sludge, Wet
SNOW		Snow
SWP		Wipe (Including Swipes)
UA		Unassigned
UNK		Unknown
V		Vegetation
W	GW	Water
W_FTB	GW	Water for FTB, used for replacement S->W in FTB
WD	GW	Drinking Water from Fountain or Tap
WE	GW	Effluent
WG	GW	Ground Water
WI	GW	Influent
WIP	GW	Industrial Process Water
WM	GW	Snowmelt
WO	GW	Outfall

Appendix 5
Sample Type Valid Values
Page 2 of 2

Sample Type Valid Values		
Valid Value	**Type**	**Description**
WOE	GW	Outfall Effluent
WP	GW	Persistent Flow
WS	GW	Base Flow
WT	GW	Storm Runoff

Appendix 6
Background Comparison Media Code Values

Page 1 of 4

Background Comparison Media Code Values		
Valid Value	**Type**	**Description**
ACORN	NATIVEPRODUCE	Wild Acorn
AH	SOIL	Soil A Horizon
ALF	NATIVEVEG	Alfalfa
ALLH	SOIL	Soil All Data
APP	PRODUCE	Apple
APR	PRODUCE	Apricot
ARU	PRODUCE	Arugula
ASH	OTHER	Volcanic Ash
BEAN	PRODUCE	Green Bean
BEEF	NONGAME	Cow
BEES	NONGAME	Honey Bee
BEET	PRODUCE	Beet
BER	PRODUCE	Berry
BH	SOIL	Soil B Horizon
BIRD	NONGAME	Small Bird
BLG	FISH	Blue Gill
BROC	PRODUCE	Broccoli Rabe
BWT	PRODUCE	Buckwheat
CAB	PRODUCE	Cabbage
CAC	PRODUCE	Prickly Pear Cactus
CAPP	PRODUCE	Crab Apple
CAR	PRODUCE	Carrot
CCHR	PRODUCE	Choke Cherry
CH	SOIL	Soil C Horizon
CHAM	NATIVEVEG	Chamisa
CHIL	PRODUCE	Chile
CHR	PRODUCE	Cherry
CHRD	PRODUCE	Ruby Chard
CORN	PRODUCE	Corn
CRAW	ANIMAL	Crawfish
CTEA	NATIVEPRODUCE	Cota Tea (Navajo)
CUC	PRODUCE	Cucumber
CURR	NATIVEPRODUCE	Wax Currant
CWMLK	ANIMAL	Cow Milk
DEER	GAME	Deer
DMSE	NONGAME	Deer Mice
EGG	ANIMAL	Egg
ELK	GAME	Elk

Appendix 6
Background Comparison Media Code Values
Page 2 of 4

Background Comparison Media Code Values		
Valid Value	**Type**	**Description**
FBT	FISH	Brown Trout
FCC	FISH	Channel Catfish
FCP	FISH	Carp
FCS	FISH	Carp Sucker
FILL	SOIL	Fill Material, Undifferentiated
FLB	FISH	Largemouth Bass
FNP	FISH	Northern Pike
FRT	FISH	Rainbow Trout
FSA	FISH	Salmon
FSMB	FISH	Smallmouth Bass
FWB	FISH	White Bass
FWC	FISH	White Crappie
FWLY	FISH	Walleye
FWS	FISH	White Sucker
GAR	PRODUCE	Garlic
GPHR	NONGAME	Pocket Gopher
GRN	PRODUCE	Grain & Nut
GRP	PRODUCE	Grape
GRS	GAME	Grouse
GTMLK	ANIMAL	Goat Milk
HON	ANIMAL	Honey
JUNPR	NATIVEVEG	Juniper
KALE	PRODUCE	Kale
LET	PRODUCE	Lettuce
LICHEN	NATIVEVEG	Lichen
MACRO	ANIMAL	Benthic Macroinvertebrates
MELN	PRODUCE	Melon
MOSS	NATIVEVEG	Moss
MSE	NONGAME	Mouse
MTNL	NONGAME	Mountain Lion
MUSH	PRODUCE	Wild Mushroom
NA	OTHER	Not Applicable for type of sample
NASH	OTHER	Nongeologic Ash
NEC	PRODUCE	Nectarine
NSED	SOIL	Nongeologic Sediment
OTH	OTHER	Other
OVSTY	NATIVEVEG	Overstory
PCH	PRODUCE	Peach

Appendix 6
Background Comparison Media Code Values
Page 3 of 4

Background Comparison Media Code Values		
Valid Value	**Type**	**Description**
PEA	PRODUCE	Sweet Pea
PEAR	PRODUCE	Pear
PEP	PRODUCE	Bell Pepper
PER	FISH	Perch
PINON	NATIVEPRODUCE	Pinon Nut
PLM	PRODUCE	Plum
PLTRY	NONGAME	Poultry
PNTB	PRODUCE	Pinto Bean
POT	PRODUCE	Potato
PPST	NATIVEVEG	Pinon Pine Shoot Tips
PRSLY	PRODUCE	Parsley
PUM	PRODUCE	Pumpkin
PURS	NATIVEPRODUCE	Purslane
QAL	SOIL	Quaternary Alluvium
QBO	TUFF 3	Quaternary Otowi Member of the Bandelier Tuff, Ignimbrite
QBOF	TUFF 3	Quaternary Otowi Member, Ash flow
QBOG	TUFF 3	Quaternary Otowi Member of the Bandelier Tuff, Guaje Pumice Bed
QBT1G	TUFF 3	Quaternary Tshierge Member of the Bandelier Tuff 1G
QBT1V	TUFF 2	Quaternary Tshierge Member of the Bandelier Tuff 1V
QBT2	TUFF 1	Quaternary Tshierge Member of the Bandelier Tuff 2
QBT3	TUFF 1	Quaternary Tshierge Member of the Bandelier Tuff 3
QBT4	TUFF 1	Quaternary Tshierge Member of the Bandelier Tuff 4
QBT5	TUFF 1	Quaternary Tshierge Member of the Bandelier Tuff 5
QBTT	UA	Quaternary Tshierge Member of the Bandelier Tuff, Tsankawi Pumice Bed
QCT	TUFF 3	Quaternary Cerro Toledo Interval
QMT	UA	RC assigned Geo Mod
RAB	GAME	Rabbit
RACN	NONGAME	Raccoon
RAD	PRODUCE	Radish
RASP	NATIVEPRODUCE	Wild Raspberry
RHUB	PRODUCE	Rhubarb
ROBIN	NONGAME	Robin
ROSE	NATIVEPRODUCE	Wild (Hip) Rose
RSQL	NONGAME	Rock Squirrel
SED	SED	Alluvial Sediment
SJAY	NONGAME	Shrub Jay
SOIL	SOIL	Soil
SPN	PRODUCE	Spinach

Appendix 6
Background Comparison Media Code Values
Page 4 of 4

Background Comparison Media Code Values		
Valid Value	**Type**	**Description**
SQU	PRODUCE	Squash
STRAW	NATIVEPRODUCE	Wild Strawberry
TA	UA	Old Alluvium
TCB	UA	Cerros del Rio volcanics
TOHEE	NONGAME	Spotted Tohee
TOM	PRODUCE	Tomato
TP	UA	Puye Formation
TPF	UA	RC assigned 2 GeoMod
TPT	UA	Totavi Lentil
TRNP	PRODUCE	Turnip
TSFB	UA	Santa Fe Group Basalt
TSFU	UA	Santa Fe Group Sediments, Undifferentiated
TT	UA	Tschicoma Formation
UA	UA	Unassigned
UNDSTRY	NATIVEVEG	Understory
UNK	OTHER	Unknown
VOL	ANIMAL	Vole
WGA	UA	Groundwater, alluvial
WGI	UA	Groundwater, intermediate depth perched
WGR	UA	Groundwater, regional
WGS	UA	Groundwater, springs
WM	UA	Snow melt
WMS	UA	Water, Municipal Supply
WP	UA	Water, Precipitation
WRHUB	NATIVEPRODUCE	Wild Rhubarb
WS	UA	Surface Water
WSPN	NATIVEPRODUCE	Wild Spinach
WT	UA	Storm water
WTFWL	GAME	Waterfowl
WWT	PRODUCE	Winter Wheat

Appendix 7
Sample Purpose Valid Values
Page 1 of 1

Sample Purpose Valid Values		
Valid Value	**Type**	**Description**
CO	FQ	Collocated
DUP	LQ	Duplicate
EQB	FQ	Equipment Rinsate Blank
FB	FQ	Field Blank
FD	FQ	Field Duplicate
FPR	FQ	Field Prepared Reagent
FPS	FQ	Field Prepared Spike
FR	FQ	Field Rinsate
FS	FQ	Field Split
FTB	FQ	Field Trip Blank
FTR	FQ	Field Triplicate
INB	FQ	Equipment blank taken during installation and not assoc with a sampling event
ITB	FQ	Trip blank taken during installation and not assoc with a sampling event
LCS	LQ	Lab Control Sample
LCSD	LQ	Lab Control Sample Duplicate
MB	LQ	Method Blank
MS	LQ	Matrix Spike
MSD	LQ	Matrix Spike Duplicate
NA	FQ	Not Applicable
PE	FQ	Performance Evaluation
PEB	FQ	Performance Equipment Blank
PEK	LQ	Performance Evaluation Known
REG	FN	Regular Investigative Sample
RES	FN	Resample
SS	FN	Special sampling event, data unique
SS-FB	FQ	Field Blank of special sampling event, data unique
SS-FD	FQ	Field Duplicate of special sampling event, data unique
SSEQB	FQ	Equipment Blank of special sampling event, data unique
SSFTB	FQ	Field Trip Blank of special sampling event, data unique
TB	LQ	Tumble Blank for TCLP Analysis
UA	FQ	Unassigned
WST	FN	Sample specifically for Waste disposal

Appendix 8
Sample Usage Code
Page 1 of 1

Sample Usage Code		
Valid Value	**Type**	**Description**
BASE		Baseline Evaluation, samples possibly affected by LANL activities
BKGD		Background Evaluation, samples not affected by LANL activities
CANCEL		Sample cancelled due to field or analytical problems
CLN		Cleanup samples, used to determine final closure
COMP		Compliance samples (e.g. NPDES)
CONST		Well under construction
DEV		Well development
ENVSUR		Environmental Surveillance samples, ongoing monitoring at non-compliance sites
HS		H&S Evaluation samples such as TLDs
IGMP		Interim Groundwater Monitoring Plan, samples associated with LWSP
INV		Investigation samples for most data needs
PE		Performance Evaluation samples results (e.g. blank spikes)
PUMT		Pump/Aquifer test
PURGE		Purge water, sample collected before 3 well bore volumes
QC		QC Evaluation results from QC samples
REHAB		Well rehabilitation
SCR		Screening samples for screening purposes only
SUMP		Sump water
UA		Unassigned
WST		Waste Classification samples collected for waste determination purposes only

Document Action Request

Section 1 – Originator Request

Document No.: EP-DIV-SOP-21056	Revision No.: 0
Title: Quality Checks for Preparation of Data Sets from the Project Technical Databases	Page 1 of 2

Description of requested action (Attach numbered additional sheets if needed.):
New Procedure to include only applicable changes to quality checks per new database management.

Originator Name (print):	Z#:	Organization:	Date:
Tim Goering	140890	ET-EI	3/27/13

Section 2–Approval for Processing - Responsible Manager

☒ New Document ☐ Minor Revision ☐ Deactivation ☐ Perform Concurrent Periodic Review?
☒ Major Revision ☐ Cancellation

Superseded Document(s) and Revision Number: EP-DIR-SOP-10007

☒ Approved ☐ Disapproved (return to originator) Comments: PCRs N/A

Signature:	Print Name, Title:	Z#:	Date:
/s/ Alan Macgregor	Alan Macgregor, RLM	112808	2/5/13

Section 3 – Hazard Determination – Responsible Manager

Hazard Determination: ☒ Low ☐ Moderate ☐ High/Complex ☐ N/A

Document is authorized to serve as IWD? ☐ Part I only ☐ Full IWD ☒ N/A

Section 4 – Required Reviews (see P315, Ch 16, Section 16.5.3)

Discipline:	Name:	Signature:	Date:
ET-ER	Rebecca Hollis	/s/ Rebeccas Hollis	3/19/13
ENV-EDA	Nita Patel	/s/ Nita Patel	3/19/13
QPA-QI	Robert Trujillo	/s/ Robert Trujillo	3/19/13

Validation Required (SME): ☐ Yes ☐ No ☒ Waive Comment:

Scope of Validation: ☐ Entire Procedure ☐ Change Only

Validation Method: ☐ Walkdown ☐ Simulation ☐ Tabletop ☐ First Time Use

Training Determination completed?: ☐ Yes ☐ N/A Completed by:

USQ/USI Number (if needed):	Signature:	Z#:	Date:
N/A	N/A	N/A	N/A

Derivative Classifier: ☐ Unclassified ☐ OUO ☐ UCNI ☐ Classified	Signature:	Z#:	Date:
☒ DUSA DUSA # ENVPRO	William Hasdesty	118549	4/2/2013

Section 5– Final Approvals – Responsible Manager

☒ Release ☐ Hold	Details:		
Responsible Manager Signature:	Print Name, Title: ALAN MACGREGOR GROUP LEADER	Z#: 112808	Date: 4.2.13
Additional Approval Signature:	Print Name, Title:	Z#:	Date:

DAR Continuation

Document No.: EP-DIV-SOP-20156	Revision No.: 0
Title: Quality Checks for Preparation of Data Sets from the Project Technical Databases	Page 2 of 2

Description of Requested Action (continued from Section 1)

Approval/Disapproval Comments (continued from Section 2)

Required Reviews (continued from Section 4)

Discipline:	Name:	Signature:	Date:
ET-ER	William B. Hardesty	/s/ William B. Hardesty	2/28/13
ET-ER	Stanislaw Marczak	/s/ Stanislaw Marczak	3/19/13

Validation Comments (continued from Section 4

Release/Hold Details (continued from Section 5)