
BHI-EE-01, Environmental Investigations Procedures

Procedure No. 1.2

Rev. 3*

Effective Date 09/30/99

Data Quality Objectives

Page 1 of 14

Approved By:

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1.0 PURPOSE AND SCOPE

The data quality objectives (DQO) process, as outlined in *Guidance for the Data Quality Objectives* (EPA 1994), is an Environmental Restoration Contractor (ERC) -adopted approach to planning and coordinating data acquisition for environmental decision making.

The purpose of this procedure is to identify the actions required by the ERC staff in implementing the DQOs process, as well as to provide guidance on the types of tasks that require DQOs (Attachment 1).

This procedure places emphasis on maximizing the use of existing Hanford Site analytical and historical information (including process knowledge), thus reducing the costly data-gathering process. Agreements made through the DQO process will become the basis for preparing project task-level plans for conducting subsequent sampling and measurement activities and for conducting waste site or facility assessments.

This procedure implements a consistent, cooperative, and streamlined graded approach to ensure that the DQO process will be appropriate for the nature, size, cost, and risk associated with the task. Electronic templates for the scoping checklist and DQO workbook are available on the Bechtel Hanford, Inc. (BHI) DQO web page (www.erc.rl.gov/~dqd/dqd.htm).

2.0 REQUIREMENTS

The procedure does not provide direction to decision makers; it only identifies mechanisms for ERC interaction with decision makers.

The DQO results are the foundation for the preparation of sampling documents (BHI-EE-01, Procedure 1.15) and preparing and revising descriptions of work (BHI-EE-01, Procedure 1.4).

3.0 DEFINITIONS

Data Quality Objectives: Qualitative and quantitative statements that clarify study objectives, define the appropriate types of data, specify decision rules,

* This is a total rewrite; therefore, no revision bars are used to indicate changes.

specify the tolerable levels of potential decision errors, and define a defensible sample design that supports the decision-making process.

Decision Makers: The agencies (i.e., the U.S. Department of Energy, Richland Operations Office; the U.S. Environmental Protection Agency; or the Washington State Department of Ecology) that have responsibilities with respect to actions undertaken by the ERC.

DQO Team: The project and/or functional group that will develop DQOs for a particular task. The number of members and the areas of expertise will be directly related to the size and complexity of the problem.

4.0 EQUIPMENT

None.

5.0 PROCEDURE

The DQO process is comprised of seven individual activities: annual planning, task-specific planning, scoping, global issues, internal seven-step process, external seven-step process, and documentation/records. The following sections provide details on the implementation of these activities.

Attachment 1 identifies the types of project tasks that should be included or excluded from the DQO process.

5.1 Annual Planning

The purpose of the annual planning activity is to ensure that tasks requiring DQOs are identified prior to the beginning of each fiscal year so they can be scoped, budgeted, and scheduled in the detailed work plan (DWP).

- Project Engineer (PE)**
1. Apply the DQO criteria (Attachment 1) to detailed work plan (DWP) tasks requiring sampling and analysis.
 2. Identify tasks requiring a DQO. Allocate a budget and schedule in the DWP for each DQO effort identified. Obtain Project Manager's concurrence.

NOTE: It is recommended for planning purposes that 8% of the overall project budget be set aside to cover the cost for sampling and analysis.

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| DQO Coordinator | 3. | Perform a functional review of the DWPs to ensure that all tasks requiring DQOs have adequate scopes, budgets, and schedules. If any tasks requiring the DQO process were overlooked, proceed back to Step 2 of this section. Otherwise, proceed to Step 4 of this section. |
| DQO Coordinator | 4. | Finalize the list of tasks requiring the DQO process. |
| PE | 5. | Provide the list of project tasks slated to undergo the DQO process to the decision makers for review and feedback. Upon receipt of decision maker feedback, work with the responsible PE, resolve any differences and finalize the list for those project tasks requiring the DQO process. |
| PE | 6. | Revise the DWP (budget change proposal process for approved DWPs) for cost and schedule as required by decision maker feedback. |

5.2 Task-Specific Planning

Task-specific planning is performed prior to the commencement of the scoping process for the purpose of identifying staffing requirements, roles and responsibilities, and decision maker involvement for the DQO task.

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| PE | 1. | Notify the DQO Coordinator of the intent to begin a DQO on a specific task. Notification should be provided one week prior to beginning work on the DQO. |
| DQO Coordinator | 2. | Determine if the specific task is on the list of tasks requiring DQOs. If it is on the list, proceed to Step 5 of this section. Otherwise, proceed to Step 3 of this section. |

BHI-EE-01, Environmental Investigations Procedures

Procedure No. 1.2

Rev. 3

Effective Date 09/30/99

Data Quality Objectives

Page 4 of 14

- | | | |
|--|----|--|
| DQO Coordinator | 3. | Add the task to the master list of tasks requiring DQOs. |
| PE | 4. | Provide scope, budget, and schedule for the task. Notify the decision makers and Environmental Lead of the new task requiring a DQO. |
| DQO Coordinator PE Environmental Lead | 5. | Conduct a DQO planning meeting to identify the following: <ul style="list-style-type: none">• Objectives/scope/milestones• Decision makers• Resources<ul style="list-style-type: none">– Facilitator– Recorder– Support staff.• Members of the DQO Team• Procurement activities• Action list that includes roles, responsibilities, and specific assignments. |
| | 6. | Determine if a previous DQO report of similar scope has been performed and identify applicable scoping items. |
| | 7. | Secure appropriate functional support staff through ERC Functional Managers. |
| | 8. | Notify the DQO Facilitator and DQO Team of the upcoming DQO. |

5.3 Scoping and Decision Maker Interviews

The scoping process involves gathering and evaluating existing historical information about the site or facility under investigation. This information may include historical reports, analytical data, maps, diagrams, photographs, process knowledge, etc. Decision-maker interviews are performed concurrent with historical information gathering, unless:

- Decision makers have chosen not to participate.
- Decision makers are not included (i.e., BHI internal DQO efforts).
- Decision makers' involvement is not needed for a particular DQO.

The purpose of these interviews is to identify decision maker concerns early in the DQO process so these concerns can be taken into consideration when performing the seven-step process.

5.3.1 Scoping

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| PE | 1. | Identify and assemble existing pertinent historical reports, analytical data, maps, diagrams, photographs, etc. NOTE: Coordinate with Environmental Information Systems to identify and assemble all existing analytical data pertinent to the project task. |
| DQO Facilitator | 2. | Prepare for DQO scoping meeting and schedule decision maker interviews (if appropriate). |
| PE DQO Facilitator DQO Team Environmental Lead | 3. | Conduct DQO scoping meeting. Assign scoping checklist items (see BHI DQO web page at www.erc.rl.gov/~dgo/dgo.htm) to DQO Team members. |
| Decision Makers | 4. | Provide scoping checklist input (if appropriate). |
| DQO Team | 5. | Complete scoping checklist items. Review, evaluate, and summarize existing information. |

BHI-EE-01, Environmental Investigations Procedures

Procedure No. 1.2

Rev. 3

Effective Date 09/30/99

Data Quality Objectives

Page 6 of 14

- | | | |
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| DQO Team | 6. | Prepare DQO scoping summary report by compiling DQO scoping checklist element summaries into a DQO scoping binder. NOTE: This binder should be concise and will serve as a summary of readily available project task information and data. The level of detail should be commensurate with the complexity of the project task. This binder is used by the DQO Team in preparing the “strawman” DQO report (see Section 5.5). |
| DQO Facilitator | 7. | Support preparation of DQO scoping checklist and scoping summary binder. |
| PE | 8. | Provide DQO scoping summary report to DQO Coordinator and DQO Team for review. |
| DQO Coordinator | 9. | If requested, review scoping checklist and scoping summary binder. Provide comments to the PE. |
| PE DQO Facilitator Environmental Lead DQO Team | 10. | Conduct scoping review meeting. The purpose of this meeting is to review the information gathered during the scoping process. Identify information/data gaps and major issues and concerns from the scoping process needing resolution and/or input from the decision makers. |
| DQO Team | 11. | Revise the scoping checklist and summary binder, as needed, based on the conclusions from the scoping review meeting. |
| PE DQO Coordinator | 12. | Concur on the adequacy and completeness of the scoping checklist and scoping summary binder. |
| PE | 13. | Approve and issue the DQO scoping summary report. |

5.3.2 Decision maker interviews (if appropriate)**DQO Facilitator
Select DQO Technical
Team Members**

1. As required, schedule interviews with the decision makers and appropriate project task and function support staff. Provide Decision makers with blank copy of the **DQO scoping checklist** form and, if applicable, a list of interview questions. Request input on the checklist from the decision makers. Allow sufficient time for the decision makers to review applicable materials and prepare for the interviews.
2. As required, conduct interviews with decision makers. Identify decision maker objectives, requirements, and concerns (e.g., regulatory requirements and other related factors that could influence the task scope, schedule, and budget). Identify issues where technical solutions are not possible (i.e., policy issues).

DQO Facilitator

3. Summarize issues and objectives obtained during the interviews. Verify the content with interviewees. Provide the PE (and others as appropriate) with the **DQO scoping checklist** comments from the decision makers.
4. Brief the PE (or primary designee), DQO Coordinator, and other organizations (e.g., ERC Cultural Resources, BHI Legal) that have a need to be advised of the issues.
5. Identify outstanding issues and concerns from the interview process requiring input from and resolution by decision makers.

**PE
DQO Team**

6. Revise scoping checklist and summary binder based on interview results.

5.4 Global Issues (if appropriate)

Any outstanding issues resulting from the scoping process and/or interviews should be resolved in a global issues meeting.

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| PE DQO Coordinator | 1. | Concur on whether there are any global issues. If so, proceed to Step 2. Otherwise, proceed to Section 5.5. |
| DQO Facilitator | 2. | Schedule the global issues meeting with decision makers and appropriate DQO Team staff. Prepare an agenda based on the outstanding scoping and interviews issues. |
| | 3. | Provide the decision makers with the agenda containing a summary of the outstanding scoping and interview issues. Allow sufficient time for the decision makers to review and prepare for the DQO global issues meeting. |
| | 4. | Conduct the Global Issues Meeting. Document the results of the Global Issues Meeting, with primary emphasis on agreement statements and action items. Issue meeting minutes to attendees for concurrence on issue resolutions. Compile meeting minutes. |
| PE | 5. | Distribute the meeting minutes to global issues meeting attendees for concurrence on issue resolutions. Proceed when issue resolution is achieved. |
| | 6. | Approve the DQO scoping checklist and scoping summary binder. |

5.5 Internal Seven-Step Process

An internal seven-step process (EPA 1994) is implemented when the decision makers choose not participate in the DQO process, when it is not appropriate for decision maker participation, or when the PE chooses to use the internal seven-step process as a tool to prepare for the external seven-step process. The decision to conduct an internal versus external DQO process is made by the PE, with concurrence from the decision makers.

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| DQO Team | 1. | Use the DQO workbook electronic template or DQO summary report outline (see BHI DQO web page at www.erc.rl.gov/~dgo/dgo.htm), to develop a “strawman” report. |
| PE | 2. | Determine if an internal seven-step process is applicable. If so, proceed to Step 3 of this section. Otherwise, proceed to Section 5.6. |
| DQO Facilitator | 3. | Schedule and conduct Internal seven-step DQO process meeting. |
| PE DQO Team Environmental Lead | 4. | Attend and participate in internal seven-step DQO process meeting. The “strawman” report should be used to focus discussions. |
| DQO Team | 5. | Prepare internal review draft based on “strawman” review in internal seven-step DQO process meeting. |
| DQO Facilitator | 6. | Distribute internal review draft. |
| | 7. | Compile comments. |
| DQO Team | 8. | Resolve comments and revise internal draft report. Prepare Rev. 0 or Draft A, as appropriate. |
| PE | 9. | Approve and issue report. If decision makers have chosen not to participate in an external seven-step process, this draft becomes a “Rev. 0.” Otherwise, this report becomes a “Draft A” report (or equivalent). In the latter case, proceed to Section 5.6. |

5.6 External Seven-Step Process

When decision makers chose to participate in the DQO process, an external seven-step process is implemented. An external DQO process involves the decision makers and needed members of the ERC DQO Team. The decision makers may chose to participate in a formal external seven-step process meeting, or they may chose a briefing session where only the highlights of the Draft A report (or equivalent) are presented for their concurrence.

BHI-EE-01, Environmental Investigations Procedures**Procedure No. 1.2****Rev. 3****Effective Date 09/30/99****Data Quality Objectives****Page 10 of 14**

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| PE | 1. | Provide Draft A report (or equivalent) to decision makers. |
| DQO Facilitator | 2. | Schedule and conduct external DQO process meeting (or briefing). Allow sufficient time for the decision makers to review the report and prepare for the meeting. |
| PE DQO Facilitator (DQO Team, as necessary) | 3. | Attend and participate in external DQO process meeting (or briefing). |
| DQO Team | 4. | Incorporate comments and prepare final DQO process summary report (BHI, Rev. 0). |
| DQO Facilitator DQO Team | 5. | Distribute DQO process summary report to PE, DQO Coordinator, and decision makers (if required) to obtain concurrence that agreed upon changes have been made. Make revisions as needed. Hold comment resolution meeting if needed. |
| PE | 6. | Approve and issue Rev. 0 DQO process summary report. |
| | 7. | Provide copies of the approved final DQO process summary report to ERC project task staff for their use as a definitive specification for preparing subsequent project planning documents (e.g., sampling and analysis plans and description of work). Agreement statements must be incorporated in subsequent planning efforts and reports. Deviations from agreement statements must be agreed to by the decision makers and must be documented. |

BHI-EE-01, Environmental Investigations Procedures

| | |
|-----------------------|-----------------|
| Procedure No. | 1.2 |
| Rev. | 3 |
| Effective Date | 09/30/99 |
| Page | 11 of 14 |

Data Quality Objectives

6.0 DOCUMENTATION/RECORDS

Submit a copy of approved DQO process summary report, DQO scoping checklist (including binder), and supporting documents (e.g., meeting minutes, agreements) to Document and Information Services (DIS) to establish a permanent record.

- PE**
1. Submit Rev. 0 DQO process summary report and all applicable DQO records to DIS.

7.0 REFERENCES

EPA, 1994, *Guidance for the Data Quality Objectives*, EPA QA/G-4, U.S. Environmental Protection Agency, Washington, D.C.

BHI-EE-01, *Environmental Investigation Procedures*, Bechtel Hanford., Richland, Washington.

Procedure 1.4, "Preparing and Revising Descriptions of Work"
Procedure 1.5, "Sampling Documents"

8.0 FORMS

None.

9.0 ATTACHMENTS

1. Criteria for Initiating Data Quality Objectives Process

**ATTACHMENT 1
CRITERIA FOR INITIATING DATA QUALITY OBJECTIVES PROCESS
(3 pages)**

The decision as to whether or not a DQO is required shall take into consideration the risk (e.g., financial) that a task analytical data will have on BHI if an incorrect decision is made based on the collected data. If the risk is low, performing a DQO is optional. If the risk is moderate to high, serious consideration should be given to performing a DQO. The rationale for not performing a DQO should be clearly documented. If the decision is made not to perform a DQO for a particular task, written concurrence must be obtained from the Manager of Site Assessment and Closure.

For a project task that is similar in scope to a historical project task that had a DQO prepared (e.g., waste disposition), use the historical DQO to support the preparation of the new DQO. When making this assessment, particular attention should be given to the list of process history, contaminants of concern, and land disposal restriction issues.

This attachment presents a list of criteria that the Project Engineer (PE) determine whether or not the DQO process is needed to support a particular task.

Criteria for Project Task Exclusion from the DQO Process:

If the project task only involves:

1. Data collection for emergency response actions due to spills or other unplanned contaminant releases to the environment.
2. Uncontaminated solid waste (e.g., office waste) designated for disposal in municipal landfills.
3. Containerized *Resource Conservation and Recovery Act of 1976* or *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* wastes with material safety data sheets, prior characterization data, or process knowledge.
4. Air monitoring, where sampling frequency requirements are defined in Washington State Department of Health and/or EPA air permits (or equivalent documentation for CERCLA projects).
5. Disposal of known materials (e.g., expired chemicals in labeled containers).
6. Disposal of homogeneous mixtures (e.g., purgewater).

**ATTACHMENT 1
CRITERIA FOR INITIATING DATA QUALITY OBJECTIVES PROCESS
(3 pages)**

7. One (or a few) containers to be dispositioned for waste designation and each container is to be sampled individually.
8. Scope that has been documented (e.g., by memorandum to DIS) to be addressed by a generic DQO (e.g., BHI-01241, *Generic Waste Disposition DQO Workbook*, November 1998).

Criteria for Project Task Inclusion in the DQO Process:

If the project task will:

1. Involve feasibility studies, remedial investigations, limited field investigations, closure plans, sampling and analysis plans, or other waste/site characterization activities where data acquisition is required to support remediation, designated waste disposal, or site closure decisions.
2. Verify compliance with cleanup goals, closure standards, performance standards, applicable or relevant and appropriate requirements, measures of protection, release standards, waste acceptance criteria, discharge standards, or other regulatory compliance monitoring.
3. Demonstrate attainment of dangerous or radioactive waste containment.
4. Collect data to support risk assessment (i.e., human health or ecological) efforts, which include the following: establishing environmental concentrations in environmental media, environmental pathways, flux rates, dilutions, hazard analysis, estimating cancer or health risks, and toxicity determinations.
5. Involve evaluations of waste containment or contaminant migration under current or future site conditions.
6. Collect engineering design data for the remediation of dangerous or radioactive wastes.
7. Involve waste management issues such as the development of waste profiles, waste classifications, waste acceptance criteria, waste site designations, or documentation of historical waste process knowledge.
8. Involve data collection/evaluation to support waste site reclassification efforts.

**BHI-EE-01, Environmental
Investigations Procedures****Procedure No. 1.2****Rev. 3****Effective Date 09/30/99****Data Quality Objectives****Page 14 of 14**

**ATTACHMENT 1
CRITERIA FOR INITIATING DATA QUALITY OBJECTIVES PROCESS
(3 pages)**

9. Involve waste identification/evaluation/classification for facility cleanout (e.g., decontamination and decommissioning).
10. Potentially reduce project costs through retrospective examination/evaluation (e.g., modification of baseline monitoring programs).
11. Potentially reduce analytical or site remediation costs.
12. Establish bases for demonstration and regulatory agency acceptance of innovative technologies or alternative approaches for compliance (e.g., field screening methods).