DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
CECW-ET Washington, DC 20314-1000

ER 1110-1-8157

Regulation
No. 1110-1-8157

1 October 2002

Engineering and Design
GEOTECHNICAL DATA QUALITY MANAGEMENT FOR HAZARDOUS WASTE REMEDIAL ACTIVITIES

1. Purpose. This regulation prescribes Geotechnical Data Quality Management (GDQM) responsibilities and requirements, from initial investigation through closeout at sites contaminated with hazardous, toxic, and radioactive waste. The intent is to assure that a site is sufficiently characterized, and that geotechnical data of acceptable quality are obtained and used properly within the project.

2. Applicability. This regulation applies to Headquarters U.S. Army Corps of Engineers (HQUSACE) elements, major subordinate commands (MSC), districts, laboratories, and separate field operating activities (FOA) responsible for site characterization, design, remediation, and geotechnical and materials testing work related to hazardous, toxic, and radioactive waste sites.

3. Distribution. Approved for public release, distribution is unlimited.

4. References. References are provided in Appendix A.

5. Definitions.

a. *Geotechnical Professional*. A geotechnical engineer, geological engineer, geologist, hydrogeologist, geochemist, or geophysicist.

b. *Geotechnical Data*. Data that characterize the physical properties of earth materials (soil, rock, water, vapor) occurring at or below ground surface, and the interactions among these materials and contaminants. In hazardous, toxic, and radioactive waste (HTRW) work these data, in addition to chemical data, are used for determining the nature and extent of chemical and radioactive waste contamination, and contaminant fate and transport. The data are also used for identifying, evaluating, and designing appropriate remedial actions.

c. *Geospatial Data*. Non-tactical data referenced either directly or indirectly to a location on the earth. Geospatial data identify the geographic location and characteristics of natural or constructed features and boundaries on the Earth.

d. Project Delivery Team (PDT). The group of technical specialists (e.g., geologist, chemist, risk assessor, regulatory specialist, etc.) needed to achieve the customer's goals for an HTRW project.

6. Background. Incomplete or faulty geotechnical data can be very costly to identify and correct. Collecting insufficient geotechnical data during the site characterization phase can lead to an incorrect or incomplete analysis of the risk posed by a site or of remedial alternatives during the feasibility study phase. A thorough understanding of site geology, hydrogeology, and geochemistry is required for identifying contaminant fate and transport potential and to aid in identifying, evaluating, and properly designing remedial measures, while avoiding costly overdesign. Poor understanding of contaminant distribution and the physical properties of site soils, bedrock, and groundwater, if discovered during construction of remedial measures, can result in time delays and costly contract modifications. If physical and geochemical properties remain unknown, misunderstanding or misinterpretation of the site can lead to failure of a remediation project.

7. Policy. The appropriate U.S. Army Corps of Engineers (USACE) functional element will:

a. Determine the geotechnical data needed to produce a quality, cost-efficient HTRW project meeting the customer's needs.

b. Collect data at the appropriate level of quality through cost-effective means to meet project objectives.

c. Manage those data so their level of quality is documented.

USACE will use appropriate principles of technical project planning to develop sound data quality objectives so that only necessary data and data at appropriate levels of quality are collected. USACE will make the best use of state-of-the-art investigation, sampling, and testing methods to attain these objectives. All USACE projects will consider natural attenuation, alone or in combination with other technologies, as a remediation option (reference Appendix B). All work will be done in accordance with Appendix B of ER 385-1-92 and in conjunction with ER 1110-1-263. The following principles and guidelines are provided to help assure that this policy is successfully followed.

8. Geotechnical Requirements.

a. Geotechnical Input and Review. Multidisciplinary teams will be used to develop and document site-specific data quality objectives (DQOs), as described in EM 200-1-2. Geotechnical input, review, or confirmation of no geotechnical involvement will be certified in the project-specific *Project Management Plan* (PMP, as described in ER 5-1-11) on all projects managed by USACE. The signature of the Geotechnical Branch chief or other branch chief with primary HTRW geotechnical design responsibility, or their designee, will constitute certification in the PMP.

(1) Written documentation of site-specific geotechnical DQOs will be prepared for data gathering activities and be placed in the project file. Assumptions and risks considered in developing data collection strategies for site-specific DQOs shall be clearly documented. If necessary, MSC shall ensure that requirements are included in the organizational *Quality Management Plan* for documenting discrepancies between planned and implemented site characterization programs, if those discrepancies significantly affect customer needs.

(2) All projects will include a review of existing site data and technical literature; the usability of those data will also be evaluated, as described in EM 200-1-2. Recommended sources of information include: previous site-specific studies; regional and site-specific studies by the US Geological Survey, state, or local agencies; aerial photos and remote sensing imagery; and technical journals.

(3) EM 200-1-2 will be used in planning all project activities. Input must be obtained from the appropriate geotechnical discipline during development of DQOs on all project activities (including preparation of project scope, work plans, and data analysis activities). Lead technical staff on the PDT should be present at all meetings with the customer where project criteria are discussed to ensure that the customer understands the minimum essential professional standards, laws, and codes applicable to the project. Products generated from project activities shall be reviewed and approved by project geotechnical personnel for compliance with DQOs.

(4) Geotechnical input must also be obtained for design services, such as feasibility studies, RCRA/CERCLA decision documents, design analyses, and plans and specifications, where the project involves any earthwork or work related to the subsurface. Examples of such activities include (but are not limited to) landfill design (e.g., cap and liner, subaqueous bottom cap); treatability studies (e.g., for contaminant solidification or stabilization); natural attenuation studies; groundwater and non-aqueous phase liquid remediation; and in situ remedies for groundwater or soils (e.g., soil vapor extraction, permeable reaction wall). Products generated from such activities will be reviewed and approved by project geotechnical personnel for compliance with project DQOs.

b. Conceptual Site Model. A conceptual site model should first be developed on the basis of available data. ASTM D 5979 (*Standard Guide for Conceptualization and Characterization of Ground-Water Systems*) and ASTM E 1689 (*Standard Guide for Developing Conceptual Site Models for Contaminated Sites*) may be used to guide creation of the conceptual model. The conceptual model should be modified as necessary as additional site-related information is collected.

c. Representative Sample Collection. Collection of representative samples at a site is critical for properly characterizing chemical and physical features. The PDT shall determine the need to collect representative samples from different lithologies and from materials of different depositional environments to improve the completeness of site characterization activities. This is particularly applicable to studies of background chemical concentrations (EPA 540/S-96/500;

Naval Facilities Engineering Command 1998, 1999). Once contamination has been discovered at a site, initial efforts will include characterizing site geology and hydrogeology. If groundwater is contaminated, characterizing the groundwater flow system and geochemical reactions within the aquifer shall be equally as important as characterizing the extent of chemical or radioactive contamination in the groundwater. Field screening or field analytical technologies and processes that are outlined in EM 200-1-2 and EM 200-1-3, Appendix H, shall be used as appropriate to develop site characterization strategies. Such characterization shall include vertical as well as horizontal delineation of contamination, as appropriate.

d. Sampling Unconsolidated Material. Requirements for collecting geotechnical samples will be determined by project geotechnical personnel to support the intended data uses and data needs of the project developed under paragraph 8*a* above. Use of direct push technologies is encouraged in unconsolidated material to determine site stratigraphy and obtain samples of site materials (soil and water). Data density is increased and investigation-derived waste is decreased, which reduces both project time and cost. Soil-type classifications generated by electric cone penetrometer testing (CPT) should be confirmed by comparison to site-specific soil samples collected from at least one boring on site. On large or geologically-complex sites, the number of confirmation borings and samples should be increased accordingly.

e. Sampling Consolidated (Bedrock) Material. For sites where intrusive work into bedrock is required, project geotechnical personnel will determine the location and depth of coring requirements in accordance with the geotechnical data uses and needs developed for the project under paragraph 8*a* above. Cores will be descriptively logged in accordance with EM 1110-1-1804, Appendix B. Other methods, such as (but not limited to) downhole geophysics and hydrophysics, fracture trace analyses, aquifer tests, tracer tests, and borehole flowmeters will be used as necessary to characterize fractured media and the potential for contaminant transport.

f. Alternative Sampling/Testing Methods.

(1) In unconsolidated materials, “cuttings” samples generated by auger, air, or mud rotary drilling are not recommended because of the difficulty of accurately relating such samples to discrete depths. In addition, such samples may not be representative because coarse and fine materials may segregate before samples are collected during rotary drilling operations. Cuttings should be used for geotechnical sampling only as a last resort, where other sampling methods are impractical or ineffective. If cuttings samples are collected, the *Sampling and Analysis Plan* should specifically address the methods that will be used to help isolate samples to discrete depths. Cuttings samples are unacceptable for most chemical analyses.

(2) To improve cost effectiveness, samples for geotechnical analysis will be collected from the same borings used to collect chemical samples whenever possible.

(3) Downhole geophysics may be used, provided the geophysical logs have been correlated with at least one hole that has been continuously sampled or cored and descriptively logged. Geophysical methods should, at a minimum, allow determination of subsurface materials that

may affect how contaminants migrate (e.g., low permeability horizons, high porosity material, etc.). EM 1110-1-1802 provides guidance on applicable downhole geophysical methods and procedures.

g. Laboratory Testing of Samples. Based on site conditions, project geotechnical personnel will determine the appropriate number of field samples for geotechnical laboratory analysis. Such analyses will, at a minimum, include grain size distribution, Atterberg limits, and moisture content. Total organic carbon data will be collected on soils to support natural attenuation evaluation and vadose zone modeling. In addition, on projects where subaqueous caps or dredging are necessary, analysis of sediment (subaqueous) samples will include specific gravity and density (Dredging Research Program Report 93-3). These tests and the data they provide are inexpensive and useful for confirming visual soil classifications, helping determine soil properties, and helping identify additional testing that may be necessary on site materials. The above-described laboratory testing data will generally be presented as part of the optimum data collection option in the Technical Project Planning process, as described in EM 200-1-2.

(1) On sites where multiple aquifers will be delineated or where groundwater will potentially be remediated, data will be collected on groundwater geochemistry. Water samples will be collected and analyzed for total cations/anions, alkalinity, pH, dissolved oxygen, oxidation-reduction potential, total dissolved solids, temperature, and turbidity. This information is inexpensive and is helpful for designing remediation systems and for operation and maintenance (O&M) considerations.

(2) Additional testing will be specified as required to meet project-specific data needs. For example, laboratory hydraulic conductivity may be specified for fine-grained samples where data are required to: determine transport potential of contaminants; determine baseline soil conductivity for borrow source, cap, or liner feasibility; or determine suitability of soils for slurry wall key-in. Strength testing, such as unconfined compression testing, may also be required as part of treatability studies for solidification/stabilization.

h. Selection of Testing Laboratory. The appropriate Corps laboratory assigned responsibility for HTRW soils testing (as listed in ER 1110-1-8100) will perform the testing requirements outlined in paragraph 8*g*. Alternatively, a district office may contract directly with a non-Government commercial laboratory, provided the laboratory has been inspected and approved in accordance with ER 1110-1-261, or meets the requirements outlined in ASTM D 3740. Regardless of the laboratory used, adequate QA/QC procedures should be specified in the QAPP to generate data of known quality.

i. Field Oversight. Most questions regarding field activities, sampling methodology, procedural changes, etc., are asked early in the field work phase. For contracted site characterization work, the project delivery team will determine the need for field oversight. If oversight of site characterization work is deemed necessary, a trip report will be completed and placed in the project's permanent record after each site visit. Trip reports should note whether or not site activities are in compliance with the project work plans and the contract. Reports should also

note if study objectives are being fulfilled in the event field modifications have been made to work plans. Oversight and quality assurance testing of geotechnical work for construction projects will be performed in accordance with ER 1180-1-6.

(1) The frequency and length of site characterization oversight visits (field audits) and the need for unannounced visits will be determined by the project delivery team to ensure quality work and that project DQOs are met. Team members should consider the complexity and length of the field effort, the intended use of data being collected, and past contractor performance in determining oversight requirements. Guidance for conducting field audits, including recommended field audit checklists, may be found in Chapter 6 of EM 200-1-6.

(2) Project geotechnical or other qualified personnel will conduct field oversight of site characterization activities. If practicable, local geographic district personnel should be involved in oversight to increase their knowledge of the site, particularly if it is known during site characterization that the project will be remediated. Use of local geographic district personnel can also improve manpower utilization and contribute to oversight logistics. Inspectors for site characterization work will coordinate with the local or on-site Corps office (e.g., resident or project office) if one exists.

(3) If field oversight is done by anyone other than project geotechnical personnel, the project delivery team will prepare *Engineering Considerations and Instructions* (ECI). ECI will be prepared for field oversight personnel in accordance with Appendix C. For site characterization projects, the ECI will describe critical project elements that need to be monitored or verified by oversight personnel. For construction projects the ECI will:

(a) Include a description of critical or unique project features and the requirements necessary to provide adequate Government acceptance testing (if applicable).

(b) Be submitted to the Construction Division before the 90% design submittal to allow sufficient time for them to review the ECI and to improve the biddability, constructability, operability, and environmental review.

(4) The memo (ECI) discussed in paragraph 8*i*(3) above shall include or highlight any special customer-dictated requirements or concerns, and shall be discussed during a pre-mobilization (for site characterization) or pre-construction (for remediation) meeting. Alternatively, on construction projects, the memo can be discussed at the Contractor Quality Control/Quality Assurance (CQC/QA) coordination meeting. Suggested attendees at these meetings are designers, oversight personnel, the contractor, customer, and regulators (as discussed in EP 415-1-266). The intent is to improve partnering among all parties involved in the project.

j. Documentation Requirements.

(1) DQOs will be documented as described in EM 200-1-2. Plans for intrusive field activities and other sampling will be included in the *Field Sampling Plan* portion of the *Sampling and Analysis Plan* outlined in EM 200-1-3. Descriptive logging for intrusive field activities will be

done in accordance with EM 1110-1-4000 (for general logging requirements) and EM 1110-1-1804, Appendix B (for bedrock logging requirements). ASTM D 5434 (*Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock*) may also be used for borehole logging requirements.

(2) *Daily Quality Control Reports* will be completed for field sampling work. At a minimum, it is necessary to record the following information concerning collection of geotechnical and chemical samples: weather, description of samples collected, equipment used, field instrument calibrations and readings, unexpected conditions or changes/variations from the work plans, and perceived effects of changed conditions on sample quality.

(3) All field documentation will become part of the project files. Additional documentation requirements are described elsewhere in this regulation (e.g., preparation of written DQOs, field oversight trip reports, etc.).

k. Data Management. Large amounts of geotechnical and chemical data are generated at hazardous waste sites. The project delivery team shall review data stored in digital (electronic) form to ensure its accuracy. In order to comply with Executive Order (EO) 12906, all geotechnical data generated on HTRW projects *owned by USACE* (including Formerly Used Defense Sites) will be documented using FGDC-STD-001-1998, the Federal Geographic Data Committee *Content Standard for Digital Geospatial Metadata*. This requirement exists for data generated both in-house and by contractors. USACE customers for reimbursable work, such as Department of Defense installations, EPA, and other government agencies, are responsible for their compliance with EO 12906. These customers may request that USACE prepare metadata for their projects so as to comply with the EO. Appropriate funding shall be secured from the customer to prepare the metadata.

9. Responsibilities.

a. The HQUASCE Environmental Division, Military Programs Directorate (CEMP-R), is responsible for program management and USACE HTRW policy and guidance development and dissemination. The HQUSACE Engineering and Construction Division, Civil Works Directorate (CECW-E) is responsible for USACE HTRW technical policy and technical guidance. HQUSACE is also responsible for distributing lessons learned from noncompliance with the quality control measures described in this regulation.

b. MSCs, in their quality assurance role, are responsible for monitoring and oversight of quality control activities of their districts and ensuring that the policies and procedures of this regulation are implemented. MSCs will document and forward to HQUSACE, for distribution as lessons learned, any issues arising from noncompliance with the quality control measures described in this regulation. MSCs shall develop a policy outlining requirements for documenting discrepancies between planned and implemented site characterization programs if the discrepancies significantly affect customer needs.

c. Districts and FOAs are responsible for implementing the guidance outlined in this regulation. Districts will document corrective actions resulting from noncompliance with the quality control measures described in this regulation. Project funds will be used to conduct the required planning, testing, data management, and field oversight outlined in this regulation. Project management personnel will ensure that sufficient funds are programmed for these activities and ensure that project schedules allow sufficient time for these activities to be adequately completed.

d. The Hazardous, Toxic, and Radioactive Waste Center of Expertise (HTRW CX) will:

(1) Perform technical reviews of selected documents and geotechnical data to verify compliance with this regulation, in accordance with Appendix D.

(2) Provide technical assistance to District, MSC, or HQUSACE offices upon request.

(3) Provide support to special programs, and provide assistance with resolution of issues identified by HQUSACE.

(4) Provide support to MSCs in their oversight of district quality control processes.

FOR THE COMMANDER:

JOSEPH SCHROEDEL
Colonel, Corps of Engineers
Chief of Staff

4 Appendices
Appendix A - References
Appendix B - Policy on Natural Attenuation
Appendix C - Engineering Considerations
and Instructions
Appendix D - CEMP-RT memo
dated 23 Sep 1997

APPENDIX A

REFERENCES

Air Force Center for Environmental Excellence 1999
Technical Protocol for Implementing Intrinsic Remediation with Long-Term Monitoring for Natural Attenuation of Fuel Contamination, Volumes I and II, March.

ASTM D-3740
Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction, American Society for Testing and Materials, West Conshohocken, PA.

ASTM D-5434
Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock, American Society for Testing and Materials, West Conshohocken, PA.

ASTM D-5979
Standard Guide for Conceptualization and Characterization of Ground-Water Systems, American Society for Testing and Materials, West Conshohocken, PA.

ASTM E-1659
Standard Guide for Developing Conceptual Site Models for Contaminated Sites, American Society for Testing and Materials, West Conshohocken, PA.

Dredging Research Program Report 93-3
Geotechnical Factors in the Dredgeability of Sediments, Report 1, Engineer Research and Development Center (formerly Waterways Experiment Station), November 1993.

EM 200-1-2
Technical Project Planning (TPP) Process.

EM 200-1-3
Requirements for the Preparation of Sampling and Analysis Plans.

EM 200-1-6
Chemical Quality Assurance for Hazardous, Toxic and Radioactive Waste (HTRW) Projects.

EM 1110-1-1802
Geophysical Exploration for Engineering and Environmental Investigations.

EM 1110-1-1804
Geotechnical Investigations.

EM 1110-1-4000
Monitoring Well Design, Installation, and Documentation at Hazardous Toxic, and Radioactive Waste Sites.

EP 415-1-266
Resident Engineer Management Guide (REMG) for Hazardous, Toxic, and Radioactive Waste (HTRW) Projects.

EPA 540/S-96/500
Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites.

EPA 600/R-98/128
Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water.

ER 5-1-11
U.S. Army Corps of Engineers Business Process.

ER 385-1-92
Safety and Occupational Health Document Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) and Ordnance and Explosive Waste (OEW) Activities.

ER 1110-1-261
Quality Assurance of Laboratory Testing Procedures.

ER 1110-1-263
Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial Activities.

ER 1110-1-8100
Laboratory Investigations and Testing.

ER 1180-1-6
Construction Quality Management.

Executive Order (EO) 12906
Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure.

FGDC-STD-001-1998
Content Standard for Digital Geospatial Metadata (revised June 1998), Federal Geographic Data Committee, Washington, DC.

Naval Facilities Engineering Command 1998
Procedural Guidance for Statistically Analyzing Environmental Background Data, Naval Facilities Engineering Command, Southwest Division and Engineering Field Activity West, September.

Naval Facilities Engineering Command 1999
Handbook for Statistical Analysis of Environmental Background Data, Naval Facilities Engineering Command, Southwest Division and Engineering Field Activity West, July.

APPENDIX B

POLICY ON NATURAL ATTENUATION FOR ENVIRONMENTAL RESTORATION

B-1. The Assistant Chief of Staff for Installation Management originally established interim policy regarding consideration of natural attenuation on all Army projects. This appendix describes USACE policy requiring that natural attenuation be considered as a remedial action alternative. This requirement applies to installation restoration activities under the authorities of Comprehensive Environmental Response, Compensation, and Liability Act; Superfund Amendments and Reauthorization Act of 1986; Resource Conservation and Recovery Act; Underground Storage Tanks; National Environmental Policy Act; or relevant State and local regulations.

B-2. While natural attenuation has no specific regulatory definition, the U.S. Army defines natural attenuation as "the reduction of contaminant concentrations in the environment through biological processes (aerobic and anaerobic biodegradation, plant and animal uptake), physical phenomena (advection, dispersion, dilution, diffusion, volatilization, sorption/desorption), and chemical reactions (ion exchange, complexation, abiotic transformation)." Terms such as "intrinsic remediation" or "biotransformation" are included within the more general natural attenuation definition.

B-3. Natural attenuation is not a no-further-action alternative. Natural attenuation typically requires extensive monitoring to ensure that the predicted natural processes are taking place. Natural attenuation remedies might take longer than engineered remedies to correct the problem. Additionally, there should be a readily available contingent remedy for the site in the event natural attenuation is found to be ineffective. Credible scientific data, site characterization data, and predictive modeling will be required to prove that natural processes are sufficient to reduce risk in the time frame required. This proof will be needed to ensure acceptability of the natural attenuation remedy.

B-4. Therefore, it is Corps policy that natural attenuation must be considered as a candidate remedy for all contaminated sites, either alone or in combination with active engineered measures, during the remedial investigation (RI) and feasibility study phases (FS). An engineered remedial action should not be used unless data exists to prove that natural attenuation is inappropriate for a site cleanup. Reasons for rejecting natural attenuation must be supported by data and related information, and be documented in the RI/FS report. Scopes of work for HTRW contracts should be modified where necessary to reflect this policy.

B-5. Until full protocols can be developed on the use of natural attenuation for classes of contaminants commonly found at Army installations, the following protocols are recommended:

a. The Air Force Center for Environmental Excellence (AFCEE) *Technical Protocol for Implementing Intrinsic Remediation with Long-Term Monitoring for Natural Attenuation of Fuel Contamination, Volumes I and II, 1999.*

b. EPA/600/R-98/128, *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water, 1998.*

APPENDIX C

ENGINEERING CONSIDERATIONS AND INSTRUCTIONS (ECI) FOR HTRW PROJECTS

C-1. Delivery of quality projects to our customers is our basic mission strength. It takes the collective efforts of many to fulfill this responsibility; however, Engineering and Construction are two elements whose performance have a direct bearing on the quality of our projects and thus on the level of customer satisfaction. It is, therefore, imperative that Construction Division be provided complete and accurate information on project designs. The plans and specifications are the vehicle for turning our designs into reality and they contain the information needed to construct the project as designed. In certain situations it would be desirable to provide additional information to Construction field personnel to ensure they have all the tools they need to construct quality projects.

C-2. Therefore, all design elements are required to prepare an Engineering Considerations and Instruction (ECI) document for certain HTRW site characterization and construction projects. ECI will be prepared for all site characterization or pilot study projects with unique investigation methods or where additional discussion is necessary to familiarize oversight personnel with site characterization requirements. The ECI will describe project activities intended to collect critical design data that need to be monitored or verified by oversight personnel. As a general rule, for construction projects the ECI should be reasonably short – no more than five pages – and should be prepared for those projects with estimated construction costs greater than $10M, or as determined by the designer or Chief of Engineering Division as requiring special attention. This document is to be provided to Construction Division prior to the 90% design submittal.

C-3. The ECI will be a brief document outlining the engineering considerations used to formulate and design the project. The document should include discussions on why specific designs and material sources were selected, features which may require special attention, any particular user requirements, and other project-specific information deemed useful to provide field personnel the insight and background necessary to review contractor proposals and resolve minor construction or characterization problems without compromising the design intent. The ECI should also include a schedule of visits to the construction site by design personnel.

C-4. It should be noted that the ECI is not a contractual document and should not be used to supplement the plans and specifications, nor should it be in conflict with the contract requirements.

APPENDIX D

CEMP-RT memo, dated 23 SEP 97

DEPARTMENT OF THE ARMY
U.S. Army Corps Of Engineers
WASHINGTON, D.C. 20314-1000

REPLY TO
ATTENTION OF:

CEMP-RT (200-1 a) 23 SEP 1997

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Changes in HTRW Technical Roles and Responsibilities Due to Division Laboratory Closures

1. References.

a. CEMP-RT memorandum, 17 January 1996, subject: "Environmental Cleanup and Protection Management Plan for Military Programs."

b. CEMP-RT memorandum, 24 July 1996, subject: "Technical Roles and Responsibilities for the USACE Hazardous, Toxic, and Radioactive Waste (HTRW) Program."

2. The changes to Tables 1 and 2 are the result of announced division laboratory (HTRW Chemistry Laboratory) closures. Attachments 1 and 2 to reference 1.b were replaced by figures 1, 2, and 3 in the present enclosure to help clarify which projects require mandatory review by the HTRW Center of Expertise (CX). These revisions do not change the basic review concept described in reference 1.b.

3. In accordance with this update, personnel assigned to the technical project planning teams at each HTRW Design District will determine the best course of action to obtain replacement services for those quality assurance (QA) functions currently being provided by their division laboratories. However, project decision makers are strongly encouraged to use services available from the newly designated Chemistry and Materials Quality Assurance Laboratory (CMQAL), Omaha, Nebraska when designing project specific QA.

4. Enclosed is an update to the above listed references 1.a and 1.b. This revision to the HTRW mandatory review concept replaces Tables A and B in reference 1.a, supersedes reference 1.b, and shall take effect immediately.

5. Assistance in QA support transition is available from either the Chemical Data Quality Management Branch or Geoenvironmental and Process Engineering Branch of the HTRW CX in Omaha, Nebraska. Assistance from these branches should be coordinated with the Environmental Studies and Liaison Branch (402) 697-2615.
CEMP-RT (200-1 a)

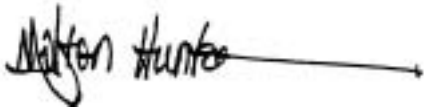
SUBJECT: Changes in HTRW Technical Roles and Responsibilities Due to Division Laboratory Closures

6. Closing division laboratories will coordinate with their respective ordering districts/customers for disposition instructions on all reports and supporting documentation for all projects serviced during their period of support to the USACE HTRW Program.

7. Request you disseminate this information to your laboratories, the engineering, construction, and project management elements of your HTRW Design Districts, and other elements and districts as necessary.

8. The point of contact for this action is Mr. Larry Becker, CEMP-RT, (202) 761-8882.

FOR THE COMMANDER:



Encl

MILTON HUNTER
Major General, USA
Director of Military Programs

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CEMP-RT 11 Sep 97

Technical Roles and Responsibilities for the USACE Hazardous, Toxic, and Radioactive Waste (HTRW) Program (Updated)

The types of HTRW projects executed by USACE vary from simple, straightforward, low cost projects to politically, chemically, and geologically complicated projects with complex regulatory issues. There are a variety of technical project submittals associated with the environmental cleanup activities of such HTRW projects. By categorizing projects and clearly identifying design district, Major Subordinate Command (MSC), and HTRW Center of Expertise (CX) roles and responsibilities we can simplify the review process. When technical issues significantly affecting the cost, direction, or use of innovative technology on a project remain unresolved between the HTRW Design District and the CX review comments, the CX will document their position by memo to the District Commander with copies to the MSC and CEMP-RT. The District Commander remains the responsible approving authority for projects.

The following table identifies the general roles and responsibilities of design districts, MSCs and the HTRW CX in the project technical verification process.

HTRW Project Technical Verification Process

Work Performed By	Work Product	QC - Design/Quality Review*	QA **CX Support
A-E	QC Plan (QCP) (contract requirement)	HTRW Design District	Division Oversight of QC process
	Deliverables (contract requirement)	HTRW Design District ***CX reviews	Division Oversight of QC process
HTRW Design District (In-House)	QC Plan	HTRW Design District - Independent Technical Review ***CX reviews/participation	Division Oversight of QC process
	SOWs (for A-E work)	HTRW Design District - Independent Technical Review ***CX reviews/participation	Division Oversight of QC process
	Deliverables	HTRW Design District - Independent Technical Review ***CX reviews/participation	Division Oversight of QC process

*The design district is responsible for all review (Table 1) for projects in Category A. Criteria for determining Category A projects are given below.
** The HTRW CX will support/participate with MSCs as requested in their QA oversight and audits of HTRW design district QC processes.
***The HTRW CX will review (multidisciplinary) selected key documents (see Table 2) for projects in Category B. Criteria for determining Category B projects are given below. Mandatory HTRW CX review may be met by CX (multi-disciplinary) participation in the design district's Independent Technical Review process.

HTRW Project Technical Categories:

Design districts shall screen each HTRW project against the following decision criteria to determine the appropriate review process. The design district is responsible for all review, as shown in Table 1, for projects in Category A (figures 1, 2 and 3). Key documents for projects in Category B (figures 1, 2 and 3) will be reviewed by the HTRW CX, see Table 2.

HTRW Project Technical Category Decision Criteria:
(RCRA terminology may be substituted wherever CERCLA terminology is used in this document)

The District Commander remains the responsible approving authority for projects.

Category A: (No mandatory HTRW CX Review)	a) All projects in the PA phase (figure 1) and those beyond the SI phase **not** meeting the decision criteria in the Decision Trees at figures 1, 2, and 3. b) All routine projects as defined by the ECP Management Plan
Category B: (Mandatory HTRW CX Review)	All projects **meeting** the decision criteria in the Decision Trees, see figures 1,2, and 3.

Certain **key documents** from designated category B projects have been selected for mandatory CX review. These key documents are identified in Table 2 by an "R," under the CX responsibility column. Table 2 identifies, for all of the programs executed by USACE, the major restoration program phases executed under the authority of either CERCLA or RCRA, the project submittals/activities under each phase, and the various roles and responsibilities of the different USACE offices. Each MSC will define any project document submission requirements for their QA process oversight role.

Design districts are responsible for documenting the screening process. This certification shall be included in the Quality Control Plan for each HTRW project. A suggested form for certifying that the screening process has been performed and for documenting its outcome is provided at figure 4.

TABLE 1

Technical Roles and Responsibilities of USACE Elements

for Key HTRW Project Submittals/Activities from Category A Projects

LEGEND: A=Approve/Accept, E=Execute, R=Mandatory Review, I=Information Copy, Q=Quality Assurance Oversight, BCOE=Biddability, Constructibility, Operability, and Environmental Review

[Definitions and notes (indicated by "*n") are located at the end of the table]

Major Program Phases & Selected Activities		Roles & Responsibilities by USACE Element				
RCRA ACTIVITY The RCRA process is not followed in FUDS.	**CERCLA ACTIVITY**	**MILITARY HTRW DESIGN DISTRICT*1**	**MSC**	**CMQAL*2**	**CX**	**HQ USACE**
RCRA Permit Application	**Preliminary Assessment (PA)**					
(usually performed by the customer)	Scope of Work	E,A				
	Limited Site Safety & Health Plan (SSHP)	E,A				
	Report (Site Screening Analysis)	E	A *3			
RCRA Facility Assessment (RFA)	**Site Inspection (SI)**					
(usually done by EPA. If input is required	*4 Scope of Work/Workplan	E,A		I		
by USACE the same roles and responsibilities	*5 Investigation Activities					
shown for the equivalent CERCLA activity	Site Inspection Report	E,A				
should be followed).	Hazard Ranking System Score	(site scored by EPA)				
	*6 Relative Risk Project Evaluation	E				
RCRA Facility Investigation/ Corrective Measures Study (RFI/CMS)	**Remedial Investigation/ Feasibility Study (RI/FS)**					
Permit Negotiation & Compliance Schedule	---	E				
*4 Scope of Work/Workplan	*4 Scope of Work/Workplan	E,A		I		
~Contract Laboratory Validation	~Contract Laboratory Validation	I			E,A	
~Community Relations Plan (CRP)	~Community Relations Plan (CRP)	E,A				
(On IR projects, CRPs may be handled by the military facility; on FUDS projects CRPs are handled by the military geographic district.)						
~Sampling and Analysis Plan	~Sampling and Analysis Plan	E,A		I		
*7 ~Site Safety and Health Plan	*7 ~Site Safety and Health Plan	E,A				

Table 1 (continued)

Major Program Phases & Selected Activities		Roles & Responsibilities by USACE Element				
RCRA ACTIVITY The RCRA process is not followed in FUDS.	**CERCLA ACTIVITY**	**MILITARY HTRW DESIGN DISTRICT[*1]**	**MSC**	**CMQAL[*2]**	**CX**	**HQ USACE**
RCRA Facility Investigation/ (cont'd) Corrective Measures Study (RFI/CMS)	**Remedial Investigation/ (cont'd) Feasibility Study (RI/FS)**					
~Daily Quality Control Reports	~Daily Quality Control Reports	E,A		I[*8]		
~Chemical Data Interim Report	~Chemical Data Interim Report	E,A		R		
~Chemical Quality Assurance Rpt	~Chemical Quality Assurance Rpt	E[*2]		E	Q[*9]	
~Chemical Data Quality Assessment Rpt	~Chemical Data Quality Assessment Rpt	E			Q[*9]	
RF Investigation Report	Remedial Investigation Report	E,A				
[*5]~Treatability Studies Workplan	[*5]~Treatability Studies Workplan	E,A				
Corrective Measures Report/Interim Measure	Feasibility Study Rpt// Engineering Evaluation /Cost Analysis	E,A				
Statement of Basis	Proposed Plan/Record of Decision/ Decision Document	E				A[*10]
Corrective Measures Design	**Remedial Design (RD)**					
[*4] Scope of Work	[*4] Scope of Work/Workplan	E,A				
Value Engineering Study/Report	Value Engineering Study/Report	E,A				
[*5] Predesign Studies	[*5] Further Site Characterization					
Concept (30%) Design w/Cost Estimate	Concept (30%) Design w/Cost Estimate	E,BCOE,A				
Intermediate (60%) Design w/Cost Estimate	Intermediate (60%) Design w/Cost Estimate	E,BCOE,A				
Site Maintenance/Closure Plan	Project Maintenance/Closure Plan	E,BCOE,A				
Operation & Maintenance Manual	Operation & Maintenance Manual	E,BCOE,A				
Designers' Instructions to the Field	Designers' Instructions to the Field	E,A				
Fnl Design/As-Advtsd Plans & Specs w/Cost Estimate	Fnl Design/As-Advtsd Plans & Specs w/Cost Estimate	E,BCOE,A (See requisition regulations for correct approval authority)				
Corrective Measures Implementation	**Remedial Action Construction (RAC)**					
Value Engineering Change Proposal	Value Engineering Change Proposal	E,A				
Contract Laboratory Validation	Contract Laboratory Validation	I			E	

Table 1 (continued)

Major Program Phases & Selected Activities		Roles & Responsibilities by USACE Element				
RCRA ACTIVITY The RCRA process is not followed in FUDS.	**CERCLA ACTIVITY**	**MILITARY HTRW DESIGN DISTRICT** *1	**MSC**	**CMQAL** *2	**CX**	**HQ USACE**
Corrective Measures Implementation (continued)	**Remedial Action Construction (RAC) (continued)**					
Community Relations Plan	Community Relations Plan	E,A				
Sampling and Analysis Plan	Sampling and Analysis Plan	E,A		I		
Chemical Data Quality Control Plan	Chemical Data Quality Control Plan	E,A		I		
*7 Site Safety and Health Plan	*7 Site Safety and Health Plan	E,A				
Construction QA Plan	Construction QA Plan	E,A		I		
Daily Quality Control Reports	Daily Quality Control Reports	E,A		I*8		
Chemical Data Interim Report	Chemical Data Interim Report	E,A		I		
Contractor Final Report	Contractor Final Report	E,A		I		
Chemical Quality Assurance Rpt	Chemical Quality Assurance Rpt	E*2		E	Q*9	
~Chemical Data Quality Assessment Rpt	~Chemical Data Quality Assessment Rpt	E			Q*9	
Report of Remedial Action	Report of Remedial Action	E,A				
Operation & Maintenance (O&M)	**RA Operating & Long Term Monitoring**					
Preparation of Operation & Maintenance Contracts	Preparation of RA Operation & Long Term Monitoring Contracts	E,A				

NOTES:

GENERAL - This table shows the program phases & the major submittals or activities that are usually required for an environmental restoration project performed under either EPA's or a state's RCRA or CERCLA programs as appropriate (these include Superfund, most DERP projects and environmental restoration projects for other customers). Specific projects may not require all of these elements and/or may have specific requirements which are not shown. The order and phase in which a specific activity is performed may also vary from this table. This table does not address FUDS PRP projects. See appropriate guidance.

*1 Geographic military districts will perform project management, and construction contract management and supervision for military funded projects. See the *Environmental Cleanup and Protection Management Plan for Military Programs*, 17 January 1996. Geographic and design districts should work together to assure full coordination of responsibilities during the RAC phase.

Table 1 (continued)

NOTES: continued

*2 The HTRW Military Design District's technical project planning (TPP) team will determine need for and location of QA laboratory support. Use of CMQAL for QA support is strongly recommended. If CMQAL is selected to provide QA testing services, items in the CMQAL column will apply. Similarly, if the TPP Team selects another facility to provide project QA testing services, items in the CMQAL column will then apply to the lab QA provider. The CMQAL may perform any or all of the CQAR activities - analysis of split (QA) samples, data review, and writing of the comparative report.

*3 For FUDS Inventory Project Reports (INPRs) the MSC approves Findings & Determination of Eligibility. The OE CX reviews for adherence to program guidance & policy. Other programs may have program specific requirements.

*4 Workplan is a generic term. Attachments/appendices to the workplan may include any and/or all of the following: Sampling and Analysis Plan - includes Field Sampling Plan and Quality Assurance Project Plan; Site Safety and Health Plan; Monitoring Well Installation and Drilling Plan; Treatability Study Workplan; Investigative Derived Waste Management Plan; Community Relations Plan.

*5 Investigation activities as part of an SI, Treatability Study, or remedial design may require any or all of the elements marked with a ~ under RI/FS and RFI/CMS (e.g. SSHP, Sampling and Analysis Plan) as appropriate to the particular project and project phase. The same roles and responsibilities apply to these elements no matter the project phase in which they are performed.

*6 The Relative Risk Project Evaluation is performed on all FUDS projects by the executing district at each project phase, even though the evaluation is not repeated at each phase in this table. The HTRW CX performs QA review as requested by CEMP-RF on FUDS projects. The design district may be requested by the customer to perform this evaluation for other DoD projects.

*7 SSHPs for contractor conducted investigative activities and SSHPs, Health and Safety Design Analyses (HSDAs) and Safety, Health and Emergency Response (SHER) contract provisions shall be reviewed and accepted by the executing District's Engineering Division and by the District's Safety and Occupational Health Office function is prepared in-house. Remedial Action Construction SSHPs shall be reviewed and accepted by the Construction District's Safety and Occupational Health Office.

*8 The Daily Chemical Quality Control Report portion of these reports is to be sent to CMQAL for information, when used to provide QA support.

*9 See ER 1110-1-263 for explanation of the USACE chemical quality assurance program.

Table 1 (continued)

*10 Individual restoration programs must be consulted to determine the appropriate approval authority for records of decision or other decision docs.

DEFINITIONS:

A=Approve or accept, as appropriate. This essentially indicates that all comments have been appropriately handled and the submittal can be finalized and the next stage may proceed.

E=Execute; Execute includes performance of the actual activity for or from which a plan is prepared. These activities may be conducted in-house or by contract and **include appropriate quality verification activities by the design district**.

R=Mandatory Review. Mandatory review by the CX is not required on Category A HTRW projects.

BCOE=Biddability, Constructibility, Operability and Environmental Review by Construction Division per ER 415-1-11.

CX=Center of Expertise. The CX for HTRW projects is located in Omaha, NE. The CX for OE projects is located in Huntsville, AL.

HTRW=Hazardous, Toxic, and Radioactive Waste OE=Ordnance and Explosives I=For information only.

Q=Quality Assurance Oversight. CQARs and CDQARs from **all** projects are sent to the HTRW CX. The CX reviews 10% of the reports received.

CMQAL=USACE Chemistry & Materials Quality Assurance Laboratory or other provider requested to perform chemical data quality management activities for a project, including the analysis of split samples and the preparation of Chemical QA Reports. See ER 1110-1-263 and ER 1110-1-8100.

TABLE 2

Technical Roles and Responsibilities of USACE Elements

for Key HTRW Project Submittals/Activities from Category B Projects

LEGEND: A=Approve/Accept, E=Execute, R=Mandatory Review, I=Information Copy, Q=Quality Assurance Oversight, BCOE=Biddability, Constructibility, Operability, and Environmental Review

[Definitions and notes (indicated by "*n") are located at the end of the table]

Major Program Phases & Selected Activities		Roles & Responsibilities by USACE Element				
RCRA ACTIVITY The RCRA process is not followed in FUDS.	**CERCLA ACTIVITY**	**MILITARY HTRW DESIGN DISTRICT*1**	**MSC**	**CMQAL*2**	**CX**	**HQ USACE**
RCRA Permit Application	**Preliminary Assessment (PA)**					
(usually performed by the customer)	Scope of Work	E,A				
	Limited Site Safety & Health Plan (SSHP)	E,A				
	Report (Site Screening Analysis)	E	A*3			
RCRA Facility Assessment (RFA)	**Site Inspection (SI)**					
(usually only done by EPA. If input is	*4 Scope of Work/Workplan	E,A		I	R	
required by USACE the same roles and	*5 Investigation Activities					
responsibilities shown for the equivalent	Site Inspection Report	E,A			R	
CERCLA activity should be followed).	Hazard Ranking System Score	(site scored by EPA)				
	*6 Relative Risk Project Evaluation	E				
RCRA Facility Investigation/ Corrective Measures Study (RFI/CMS)	**Remedial Investigation/ Feasibility Study (RI/FS)**					
Permit Negotiation & Compliance	---	E				
*4 Scope of Work/Workplan	*4 Scope of Work/Workplan	E,A		I	R	
~Contract Laboratory Validation	~Contract Laboratory Validation	I			E,A	
~Community Relations Plan (CRP)	~Community Relations Plan (CRP)	E,A				
(On IR projects, CRPs may be handled by the military facility; on FUDS projects CRPs are handled by the military geographic district.)						
~Sampling and Analysis Plan	~Sampling and Analysis Plan	E,A		I		
*7 ~Site Safety and Health Plan	*7 ~Site Safety and Health Plan	E,A				

Table 2 (continued)

Major Program Phases & Selected Activities		Roles & Responsibilities by USACE Element				
RCRA ACTIVITY The RCRA process is not followed in FUDS.	**CERCLA ACTIVITY**	**MILITARY HTRW DESIGN DISTRICT** [*1]	**MSC**	**CMQAL** [*2]	**CX**	**HQ USACE**
RCRA Facility Investigation/ (cont'd) Corrective Measures Study (RFI/CMS)	**Remedial Investigation/ (cont'd) Feasibility Study (RI/FS)**					
~Daily Quality Control Reports	~Daily Quality Control Reports	E,A		I [*8]		
~Chemical Data Interim Report	~Chemical Data Interim Report	E,A		I		
~Chemical Quality Assurance Rpt	~Chemical Quality Assurance Rpt	E [*2]		E	Q [*9]	
~Chemical Data Quality Assessment Rpt	~Chemical Data Quality Assessment Rpt	E			Q [*9]	
RF Investigation Report	Remedial Investigation Report	E,A			R	
[*5]~Treatability Studies Workplan	[*5]~Treatability Studies Workplan	E,A			R	
Corrective Measures Report/Interim Measure	Feasibility Study Rpt// Engineering Evaluation /Cost Analysis	E,A			R	
Statement of Basis	Proposed Plan/Record of Decision/ Decision Document	E			R	A [*10]
Corrective Measures Design	**Remedial Design (RD)**					
[*4] Scope of Work/Workplan	[*4] Scope of Work/Workplan	E,A			R	
Value Engineering Study/Report	Value Engineering Study/Report	E,A				
[*5] Predesign Studies	[*5] Further Site Characterization					
Concept (30%) Design w/Cost Estimate	Concept (30%) Design w/Cost Estimate	E,BCOE,A			R	
Intermediate (60%) Design w/Cost Estimate	Intermediate (60%) Design w/Cost Estimate	E,BCOE,A				
Site Maintenance/Closure Plan	Project Maintenance/Closure Plan	E,BCOE,A				
Operation & Maintenance Manual	Operation & Maintenance Manual	E,BCOE,A				
Designers' Instructions to the Field	Designers' Instructions to the Field	E,A				
Fnl Design/As-Advtsd Plans & Specs w/Cost Estimate	Fnl Design/As-Advtsd Plans & Specs w/Cost Estimate	E,BCOE,A (See acquisition regulations for correct approval authority)				
Corrective Measures Implementation	**Remedial Action Construction (RAC)**					
Value Engineering Change Proposal	Value Engineering Change Proposal	E,A				
Contract Laboratory Validation	Contract Laboratory Validation	I			E	
Community Relations Plan	Community Relations Plan	E,A				

Table 2 (continued)

Major Program Phases & Selected Activities		Roles & Responsibilities by USACE Element				
RCRA ACTIVITY The RCRA process is not followed in FUDS.	**CERCLA ACTIVITY**	**MILITARY HTRW DESIGN DISTRICT*1**	**MSC**	**CMQAL*2**	**CX**	**HQ USACE**
Corrective Measures Implementation (continued)	**Remedial Action Construction (RAC) (continued)**					
Sampling and Analysis Plan	Sampling and Analysis Plan	E,A		I		
Chemical Data Quality Control Plan	Chemical Data Quality Control Plan	E,A		I		
*7 Site Safety and Health Plan	*7 Site Safety and Health Plan	E,A				
Construction QA Plan	Construction QA Plan	E,A		I		
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NOTES:

GENERAL - This table shows the program phases & the major submittals or activities that are usually required for an environmental restoration project performed under either EPA's or a state's RCRA or CERCLA programs as appropriate (these include Superfund, most DERP projects and environmental restoration projects for other customers). Specific projects may not require all of these elements and/or may have specific requirements which are not shown. The order and phase in which a specific activity is performed may also vary from this table. This table does not address FUDS PRP projects. See appropriate guidance.

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NOTES: (continued)

*2 The HTRW Military Design District's technical project planning (TPP) team will determine need for and location of QA laboratory support. Use of CMQAL for QA support is strongly recommended. If CMQAL is selected to provide QA testing services, items in the CMQAL column

will apply. Similarly, if the TPP Team selects another facility to provide project QA testing services, items in the CMQAL column will then apply to the lab QA provider. The CMQAL may perform any or all of the CQAR activities - analysis of split (QA) samples, data review, and writing of the comparative report.

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*4 Workplan is a generic term. Attachments/appendices to the workplan may include any and/or all of the following: Sampling and Analysis Plan - includes Field Sampling Plan and Quality Assurance Project Plan; Site Safety and Health Plan; Monitoring Well Installation and Drilling Plan; Treatability Study Workplan; Investigative Derived Waste Management Plan; Community Relations Plan. Only those portions of the workplan containing the site background, project strategy (including regulatory framework), DQOs, and data collection design requirements need be submitted for review by the CX.

*5 Investigation activities as part of an SI, Treatability Study, or remedial design may require any or all of the elements marked with a ~ under RI/FS and RFI/CMS (e.g. SSHP, Sampling and Analysis Plan) as appropriate to the particular project and project phase. The same roles and responsibilities apply to these elements no matter the project phase in which they are performed.

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*8 The Daily Chemical Quality Control Report portion of these reports is to be sent to CMQAL for information, when used to provide QA support.

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*10 Individual restoration programs must be consulted to determine the appropriate approval authority for records of decision or other decision docs.

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R=Mandatory Review. For projects which meet the significant project criteria, the documents with the R must be reviewed by the CX.

BCOE=Biddability, Constructibility, Operability and Environmental Review by Construction Division per ER 415-1-11.

CX=Center of Expertise. The CX for HTRW projects is located in Omaha, NE. The CX for OE projects is located in Huntsville, AL.

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CMQAL=USACE Chemistry & Materials Quality Assurance Laboratory or other provider requested to perform chemical data quality management activities for a project, including the analysis of split samples and the preparation of Chemical QA Reports. See ER 1110-1-263 and ER 1110-1-8100.

DISTRICT CERTIFICATION OF HTRW PROJECT TECHNICAL CATEGORY SCREENING
SAMPLE

COMPLETION OF SCREENING
The District has screened (project name and location) to determine the HTRW Project Technical Category for type of review. This project is in the (PA, SI, RI/FS, RD/RAC, or other appropriate phase) and meets the criteria as discussed below:
(Give a short discussion of how the project met or did not meet the criteria in order to support the Category into which the project is placed)

FINDINGS
This project, for the reasons given above, is found to be a category (A or B). The HTRW CX (will, will not) be involved in review of this project.

CERTIFICATION OF THE TECHNICAL CATEGORY EVALUATION
As noted above, this project has been screened and found to be a Category (_____) project. This project will have appropriate parties involved in the review per the designated category.

_____ (Signature) _____ (Date) Technical Manager

_____ (Signature) _____ (Date) Technical Planning Team Member[1]

_____ (Signature) _____ (Date) Technical Planning Team Member

_____ (Signature) _____ (Date) Technical Planning Team Member

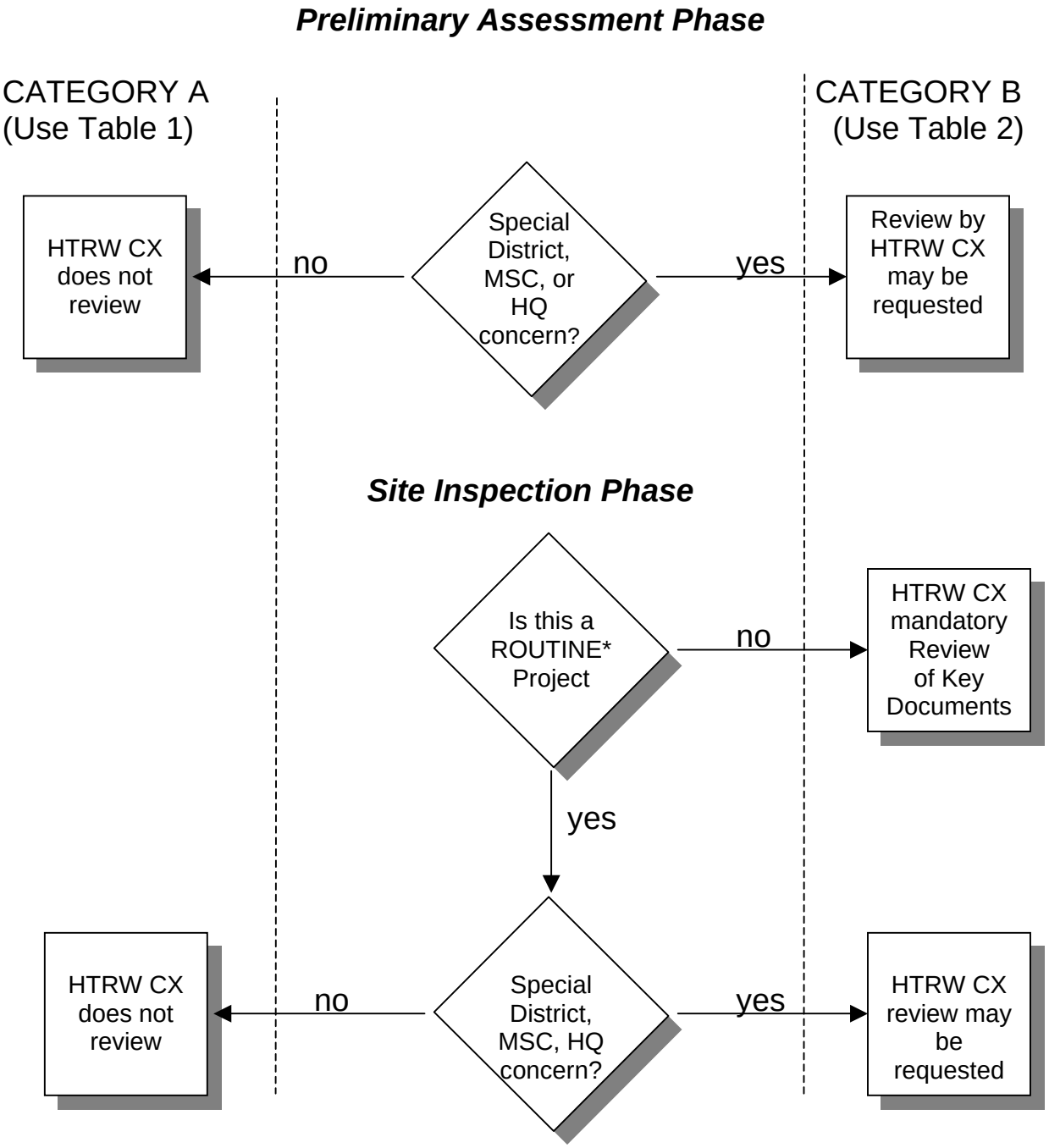
(Signature)		(Date)	Technical Planning Team Member [1]
(Signature)	(Signature)	(Date)	Safety and Industrial Hygiene Technical Planning Team Members

ENDORSEMENT:
I hereby endorse the findings of the Technical Planning Team as indicated above.

(Signature)	(Date)
Chief, Engineering Division	

[1] Technical Planning Team is defined in EM 200-1-2.

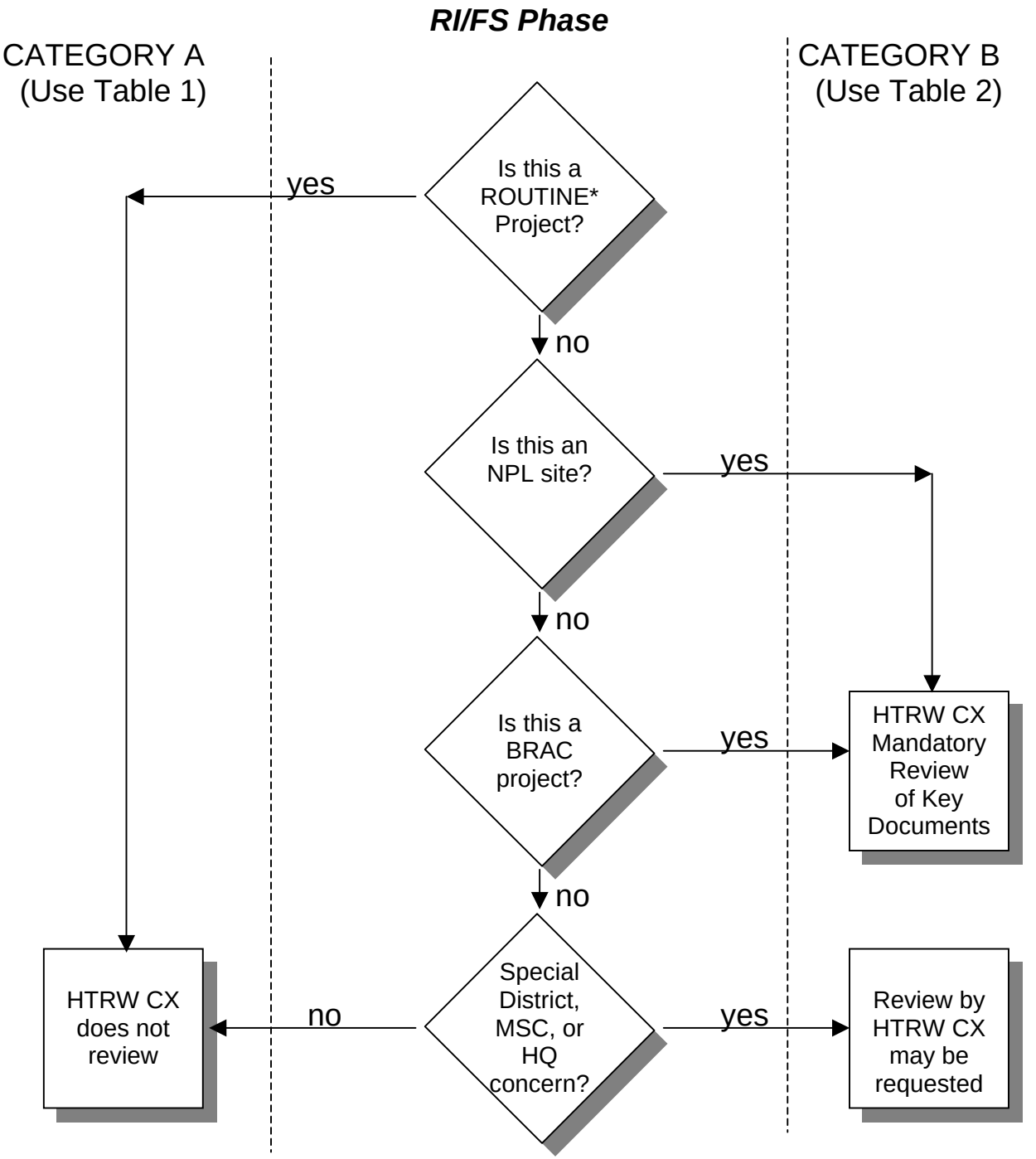
HTRW Project Technical Category Decision Tree



*Routine projects include building demolition/debris removal (BD/DR) and containerized HTRW projects (Con HTRW), transformer, hydraulic systems, and underground storage tank (UST) removals.

Figure 1

HTRW Project Technical Category
Decision Tree



*Routine projects include building demolition/debris removal (BD/DR) and containerized HTRW projects (Con HTRW), transformer, hydraulic systems, and underground storage tank (UST) removals.

Figure 2

HTRW Project Technical Category
Decision Tree

RD/RAC Phase

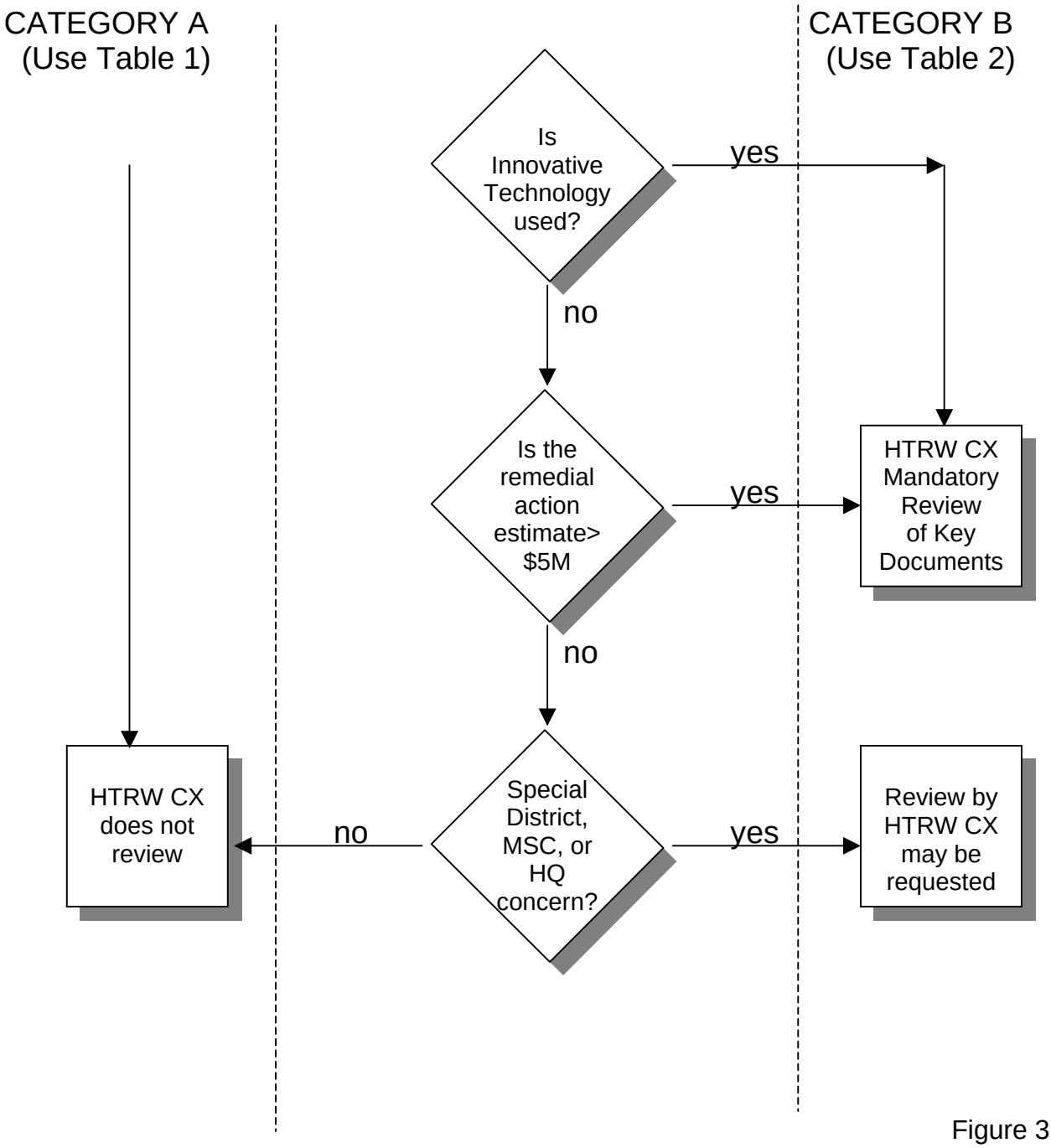


Figure 3