APPENDIXI
EXAMPLE HAZARDOUS, TOXIC AND RADIOACTIVE WASTE (HTRW) CHECKLIST

This checklist is intended to serve only as a guide in checking or reviewing HTRW investigation and design documents for errors and omissions. It cannot substitute for the exercise of sound engineering judgement by reviewers. Professionals must maintain control of their decisions, understand the technical basis for those decisions, and independently evaluate significant data upon which the design decisions are based. The main usefulness of a checklist such as this is to provide a "minimum" check of consistency between disciplines, and compatibility of drawings to specifications. It is expected that it will be modified by each W3ACE command to fit specific requirements. Each item in the checklist must be checked off to indicate that the item has been reviewed, or marked "NA" to indicate it is not applicable.

A. GENERAL

All applicable items on the Military and Civil checklists should also be reviewed when reviewing a HTRW project. In addition to the traditional checklists, the following HTRW checklists should also be reviewed.

B. CHEMICAL DATA QUALITY MANAGEMENT

In accordance with ER 1110-1-263, all sampling and analytical activities being conducted by the Corps of Engineers in support of environmental restoration for HTRW projects must be carried out in accordance with an approved Chemical Data Acquisition Plan (CDAP). For an investigation, the elements for the CDAP are defined in the scope of work. For Remedial Design/Remedial Action, the elements for the CDAP are defined within the design specifications, however, the draft CDAP is prepared by the construction contractor and reviewed in accordance with the HTRW Management Plan. To the extent possible, the specification should define for remedial action activities all sampling, analytical, specific data quality objectives, and reporting requirements. For an invitation for bid contract, at a minimum, sample numbers per quantity of material or per time are to be specified so that an accurate cost estimate can be produced.

1. For investigations, verify:

a. That the scope of work specify that a laboratory validated by CEMRD-ED-EC be used for all project analysis. _____

b. That the CDAP addresses the general and specific data quality objectives as defined by EPA 540/G-87/007. —

c. That the data quality objectives presentation in the CDAP include: _____

(1) Data users _____

(2) Summary of existing data and assessment of adequacy and quality _____

(3) Presentation and evaluation of site conceptual model _____

(4) Decision types for investigation data generation _____

(5) Data use categories _____

(6) Data quality needs _____

(7) Data quantity needs _____

(8) Sampling and analysis approach (phasing) _____

(9) PARCC parameters _____

d. That the CDAP specify, to the extent possible, all sampling, analytical and reporting requirements as defined in a memorandum from CEMRD-EP-C titled "Minimum Chemistry Data Reporting Requirements for DERP and Superfund HTRW Projects. " _____

e. That the CDAP specify the collection of split samples to be analyzed by USACE to monitor contractor generated analysis. _____

2. For remedial desigr/remedial action, verify:

a. That design analysis reports contain a chapter which addresses the general and specific data quality objectives as defined by EPA 540/G-87/003. _____

b. That the data quality objectives presentation in design analysis reports include:

(1) Data users _____

(2) Summary of existing data and assessment of adequacy and quality _____

(3) Presentation and evaluation of site conceptual model _____

(4) Decision types RA data generation _____

(5) Data use categories _____

(6) Data quality needs _____

(7) Data quantity needs _____

(8) Sampling and analysis approach (phasing) _____

(9) PARCC parameters _____

c. That the contract specifications contain a section which requires that the contractor generate a site specific chemical data acquisition plan in accordance with Appendix D of ER 1110-1-263. _____

d. That the contract specification section required in item 2c above specify, to the extent possible, all sampling, analytical and reporting requirements, including minimum data reporting requirements as defined in a memorandum from CEMRD-EP-C titled, "Minimum Chemistry Data Reporting Requirements for DERP and Superfund HTRW Projects. " _____

e. That the contract specification section required in item 2c above specify that a laboratory validated by CEMRD-ED-EC be used for all project analysis. _____

f. That the contract specifications state that USACE reserves the right to obtain and analyze split samples to monitor any contractor generated analyses. _____

C. HEALTH AND SAFETY

In accordance with ER 385-1-92, all USACE elements shall comply with and specify contractor compliance with OSHA standards, 29 CFR 1910 and 1926, specifically 29 CFR 1910.120, throughout all investigation, design, and remedial action phases of HTRW projects. ER 385-1-92 also specifies the preparation of certain health and safety documents for all HTRW project phases. For design, a site-specific Health and Safety Design Analysis (HSDA) and a safety and health technical requirements section of the remedial action contract specifications (Titled: "Safety, Health, and Emergency Response") is required. All elements of Appendix A of ER 385-1-92 shall be addressed in the HSDA and technical provisions of the contract plans/specifications.

Verify:

1. That design analysis reports contain a chapter (HSDA) which addresses site-specific and hazard-specific health and safety considerations and protective measures to be instituted during remedial action tasks and operations, including the decision-logic used in their selection. _____

2. That the HSDA addresses each of the following safety and health elements. (Where use of an element is not applicable to the project, the HSDA should provide a negative declaration and brief justification for its omission or reduced level of detail.) _____

a. Site description and contamination characterization _____

b. Hazard/risk analysis _____

c. Accident prevention _____

d. Staff organization, qualifications, and responsibilities _____

e. Training _____

f. Personal protective equipment (PPE) _____

g. Medical surveillance _____

h. Exposure monitoring/air sampling program _____

i. Heat/cold stress monitoring _____

j. SOPS, engineering controls, and work practices _____

k. Site control measures _____

l. Personal hygiene and decontamination _____

m. Equipment decontamination _____

n. Emergency equipment/first aid requirements _____

0. Emergency response and contingency procedures (on-site and off-site) _____

p. Logs, reports, and recordkeeping requirements _____

3. That the contract specifications contain a section which delineates the minimum safety, health, and emergency response requirements (developed from the HSDA) to which the remedial action contractor shall adhere. This technical requirements section shall be entitled - "Safety, Health, and Emergency Response" (SHER). _____

4. That the SHER contract requirements specify that remedial action contractor develop and implement a Site Safety and Health Plan (Construction-SSHP), which must be submitted for USACE review and approval prior to commencement of on-site activities. _____

5. That the Site Description/Contamination Characterization and Hazard/Risk Analysis portions of the HSDA are incorporated or appended to this section of the specifications. _____

6. That the SHER contract requirements address each of the elements (as applicable to the site) listed in Para. 2a-p, above, which are biddable and enforceable. _____

D. HTRW PROCESS ENGINEERING

The following checklist contains general information pertinent to HTRW projects involving process design. If more specific information is necessary, the Environmental/Chemical Engineering Branch at CEMRD should be contacted. Information on the following topics is available from CEMRD:

Air stripping
Incineration
Bioremediation
Chemical dehalogenation
UV oxidation
Air pollution control

Underground storage tanks
Oil water separators
Ion exchange
Coagulation/flocculation
Solidification/stabilization
Soil vapor extraction
Soil washing
Adsorption
Filtration
Filter presses
Chemical feed systems
Landfill off gas collection and treatment

Verify:

1. Design calculations are clearly presented to substantiate process and equipment selection. _____

2. Treatability studies are accomplished in accordance with guidance provided in EPA/540/G-89/O04, Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA. _____

3. Treatability studies include information on the site, waste stream treated, a description of the technology, the apparatus, objectives of the treatability study, analytical protocols, schedule, summary, conclusions and recommendations. General information is contained in EPA/540/2-89/058 Guide for Conducting Treatability Studies Under CERCLA. _____

4. All ARARs (Applicable, Relevant, and Appropriate Requirements) are considered, including final treatment standards are documented in the Design Analysis. _____

5. A process designer is given the primary responsibility for treatability studies performed to ensure that any adjustments to the treatability study can be made with minimal schedule impacts. _____

6. That chemicals used in treatment processes are evaluated for thermal and pH effects, impacts on sludge generation, properties of residuals, efficiency, potential impacts on other discharge requirements and safety. _____

7. Incineration test burns include: toxicity evaluation of the bottom ash, destruction efficiency, the potential for slag formation, metals partitioning, and carry over. Produce enough ash to perform solidification/stabilization testing. _____

8. Feed and ash handling systems for thermal treatment processes are closely scrutinized to ensure proper operation. Impacts from stones, frozen clods, and debris to the feed system need to be addressed early in the design or as a portion of the RFP, to avoid delays during start up. _____

9. That materials of construction are compatible with the liquids, vapors, and chemicals they are in contact with at the concentrations and temperatures encountered. _____

10. A process flow diagram and process instrumentation diagram is provided for the entire treatment system. _____

11. A hydraulic profile is provided for systems that do not rely on pumping between treatment units. _____

12. Operational flexibility is designed into treatment plants which allow bypassing one or several unit operations. _____

13. Multiple treatment trains are evaluated to accommodate flow variations. _____

14. All treatment units are covered and off-gas treatment incorporated into the design where potential exists for the release of volatile materials. _____

15. Thermal treatment materials handling, staging and storage are addressed to avoid intermittent shut down of the unit. _____

16. Utilities of adequate capacity are available at the treatment facility site. If utilities are not available; provisions for extensions, connections and upgrades must be included in the project cost estimate.