AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES	
	1	327

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0011	17-May-2004		

6. ISSUED BY CODE W91238

USACE SACRAMENTO DISTRICT
ATTN: CONTRACTING DIVISION
1325 J STREET
SACRAMENTO CA 95814-2922

7. ADMINISTERED BY (If other than item 6) CODE

See Item 6

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)

CODE FACILITY CODE

X	9A. AMENDMENT OF SOLICITATION NO. W91238-04-R-0001
X	9B. DATED (SEE ITEM 11) 05-Feb-2004
	10A. MOD. OF CONTRACT/ORDER NO.
	10B. DATED (SEE ITEM 13)

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer [ ] is extended, [X] is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

[ ] A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

[ ] B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

[ ] C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

[ ] D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

(a) Title. Hazardous and Toxic and Radioactive Waste Investigation and Studies Nationwide, including U.S. Territories.

(b) Purpose. This amendment replaces in their entirety the following: Section C - Statement of Work; Section H - Special Contract Requirements; Section J - List of Documents, Exhibits, and Other Attachments; Section L - Instructions, Conditions, and Notices to Offerors; Section M - Evaluation Factors for Award.

(c) Point of Contact. The Contract Specialist for this action is Rachel Rosas at 916/557-7716.

Contractor must acknowledge receipt of this amendment.
All other terms and conditions related to this solicitation remain unchanged.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) TEL: EMAIL:	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY (Signature of Contracting Officer)	16C. DATE SIGNED 17-May-2004

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

The following have been replaced in full text:

Section C – Descriptions and Specifications, has been replaced in their entirety. More specifically, the following changes have been made:

Section C – Statement of Work. Paragraphs 4.1.7 Health and Safety Manager, has been replaced in its entirety.

Section C – Statement of Work, Paragraph 4.1.8 Independent Asbestos Consultant, has been added.

Section C – Statement of Work, Paragraph 4.1.9 Independent Lead Consultant has been added.

Section C, Attachment C – Chemical Data Quality Management Plan. Method 6010 has been replaced by Method 6020.

Section C, Appendix A – Work Plan, has been replaced and renamed, "Attachment D – Workplan

Section C, Appendix B – General Management Plan, has been replaced and renamed, "Attachment E – General Management Plan

Section C, Appendix C – Safety and Health Program, has been replaced and renamed, "Attachment F - Safety, Health, and Emergency Response Plan

Section H – Special Contract Requirements

Section H – Special Contract Requirements, Index, has been renumbered to include all paragraph titles not previously shown on the index.

Section J – List of Documents, Exhibits, and other Attachments

Section J, Cost Charts 1A, 1B, and 2, have been replaced in their entirety. However, due to difficulties with font conversion a separate file in .pdf format has been made available for download on our website at: http://www.spk.usace.army.mil/cespk-ct/ . Please use these sheets and submit with your proposal.

Section L – Instructions, Conditions, and Notices to Offerors

Section L, Sample Problem. Due to difficulties with font conversion a separate file in .pdf format has been made available for download on our website at: http://www.spk.usace.army.mil/cespk-ct/ Please use these sheets and submit with your proposal.

Section M – Evaluation Factors for Award

Section M, Paragraph 6, Technical Evaluation Factors, Factor 3A Experience, has been replaced in its entirety.

SECTION C - DESCRIPTIONS AND SPECIFICATIONS

The following have been added by full text:
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ENVIRONMENTAL SERVICES

STATEMENT OF WORK

1.0 Introduction

1.1 Scope of Work

This Statement of Work (SOW) describes contractor services that will support the achievement of environmental objectives in the area of environmental compliance, pollution prevention, restoration, environmental planning and conservation, and Geographic Information Systems (GIS). Contractor activities under this SOW shall include Hazardous Toxic and Radioactive Waste Investigations and Studies Nationwide, including U.S. Territories. This SOW defines the full range of environmental services as well as defining management and reporting requirements. Contractor activities performed under this contract may be either Civil or Military projects for various and varied Government agencies (federal, state or local) in locations nationwide to include all U.S. territories. Work may occur within the South Pacific Division's civil and military boundaries (parts of California, Arizona, Nevada, Utah, Wyoming, Colorado, Idaho, and Oregon). Work may include providing support to the South Pacific Division including their customers the Department of the Interior, National Park Services Pacific West Region and Environmental Protection Agency, Region IX, the Department of the Interior, National Park Services Pacific West Region (PWR). Their territory includes parts of California, Hawaii, Idaho, Nevada, Oregon, Washington, and the islands of the outer Pacific American Samoa, Guam, and Saipan. We are currently supporting activities for PWR in the Alaska Area Region (Alaska and the Aleutian chain). Another customer is the Environmental Protection Agency, Region IX and their territories, which includes Arizona, California, Nevada, and Hawaii. EPA Region IX also work with 147 federally recognized tribes in the Pacific Southwest. Additionally, the regional office's environmental responsibilities extend into the Pacific Ocean well beyond Hawaii. To the west and south of Hawaii are hundreds of islands with an estimated population greater than 300,000, where EPA has an active and direct role. The islands are scattered over an area larger than the 48 contiguous United States. These island jurisdictions consist of the U.S. territories of Guam and American Samoa, the Commonwealth of the Northern Mariana Islands, and other unincorporated U.S. Pacific possessions.

The contract will be executed and task orders will be placed against it as requirements are identified. The detailed work assignments and associated deliverables will be specified in a separate Statement of Work (SOW) for each task order. As specified in each task order; the contractor may be required to present a workplan (Task Order Management Plan) describing in detail how the contractor proposes to complete the task. After Government approval of the workplan, the contractor shall complete the task as described in the SOW and the workplan. Performance-Based Service Contract procedures will be as described in individual Task Orders.

1.2 Background

The Department of Defense is committed to the protection of the environment. New initiatives are underway to further incorporate an environmental ethic and responsibility. These initiatives include efforts relating to environmental compliance, pollution prevention, environmental planning and conservation, and the use of Geographic Information Systems.

The following describes the services that will be required:

1.2.1 Environmental Compliance

Under this program, compliance with environmental laws is achieved through the use of comprehensive evaluation teams. Typical compliance activities that the contractor will also perform are preparing permit applications, conducting environmental studies and audits, developing and maintaining action plans, revisions and tracking systems and other tasks related to environmental compliance.

1.2.2 Pollution Prevention

The Department of Defense considers pollution prevention to be a priority in all environmental programs because prevention is more desirable than waste management and pollution control. The contractor shall support the

Department of Defense in providing environmental awareness and pollution prevention training to all Department of Defense military, civilian personnel and appropriate Department of Defense contractors. Additionally, the contractor may be tasked to support the Department of Defense in incorporating pollution prevention into all base procurement programs such as, reducing or eliminating the use, release, and disposal of hazardous materials, ozone depleting chemicals, municipal solid wastes, and air emissions. Examples of pollution prevention efforts include developing pollution control technologies, characterizing waste streams, establishing waste stream volumes and data bases for tracking progress toward achieving reduction goals, conducting opportunity assessments to identify pollution prevention opportunities, developing strategies to reduce the volume of waste or toxicity of waste that is generated, development of recycling programs including the affirmative procurement of recycled materials and other tasks related to pollution prevention. The contractor may also develop and implement Compliance through Pollution Prevention (CTP2) initiatives (including Management Action Plan, Opportunity Assessments, Return on Investment analysis, AFFTC specific P2 technology or process improvements, and HM/HW waste stream characterizations).

1.2.3 Environmental Planning and Conservation

While each of the described areas (compliance, pollution prevention, and planning) can be considered independently, it is important to recognize that these program areas are fully integrated and not necessarily exclusive. For example, pollution prevention can be used to comply with an environmental regulation, while current and future compliance, requirements are integral to all environmental planning.

All Federal agencies must comply with the National Environmental Policy Act (NEPA) and assess the environmental impact of its proposed actions. Environmental Impact Analysis Process (EIAP), specifies the procedural requirements that must be followed by the Air Force, thus providing a process for including environmental consequences in deciding whether to proceed with a proposed action. The contractor may also be required to comply with the California Environmental Quality Act (CEQA) which), which establishes the State of California's environmental requirement. Under this program area, the contractor may be tasked to prepare environmental impact statements (EIS), Records of Decision (ROD), environmental assessments (EA), findings of no significant impact (FONSI), environmental baseline surveys and special studies required to support the NEPA and planning process. Examples of areas of special studies are historic Preservation Plans, Fish and Wildlife Management Plans, Outdoor Recreation Plans; aviation and noise.

1.2.4 Installation Restoration Program

The Department of Defense has long handled toxic and hazardous materials within its operations. These materials, if released into the environment, could harm human, animal or plant life, or damage water supplies and other natural resources. To address the potential dangers posed by sites created by the past handling or disposal of hazardous material, the Department of Defense (DoD) initiated the installation restoration programs for active installations, closing, and closed installations and sites. Hazardous waste investigations are funded under the active installation environmental restoration accounts, under the formerly Used Defense Site environmental restoration accounts and under the base closure environmental restoration accounts. These accounts address investigations for both the CERCLA and RCRA corrective action efforts. This contract will be utilized for the environmental restoration investigation and definitization efforts**.**

1.2.5 Geographic Information System (GIS)

The contractor shall provide support for all identified efforts that require Geographic Information System (GIS) capability. Contractor shall support encoding (collection and entering), storing (organizing and managing), processing (spatial analysis and modeling), and displaying (maps and tables) of GIS data. All GIS work performed by the contractor shall comply with applicable Federal, and Department of Defense standards for data compatibility, database structure, graphics design, data dictionary, meta-data, and GPS. Contractor shall provide support that is consistent with task specific hardware and software configurations. Contractor shall be responsible for ensuring all GIS deliverables are properly prepared to allow integration into standards specified for each task order.

1.2.6 Wetlands Environmental Studies

The contractor shall perform activities such as the following as directed in individual task orders: review any existing installation reports and management plans for wetlands or floodplain resource information or management actions; review the U.S. Fish and Wildlife Service's "National Wetland Inventory" maps that cover the area of the installation to identify any recognized or designated wetlands; review Natural Resources maps; apply the Federal criteria for wetland delineation to any applicable areas of the installation (*Federal Interagency Committee for Wetland Delineation, 1987. Federal Manual for Identifying and Delineating Jurisdictional Wetlands, Washington D.C.*); prepare installation wetland maps; review any available Federal Emergency Management Agency floodplain insurance maps that cover the area of the installation; contact local U.S. Army Corps of Engineers district offices and other Federal agencies for wetlands and floodplain information; contact local or state planning agencies for locally imposed floodplain development contracts; and comply with Executive Order 11988, Floodplain Management, 24 May 1977 as amended by EO 12148, Federal Emergency Management, 20 July 1979.

1.3 General Contract Information

This in an Indefinite Delivery Type (IDT) contract for environmental services. It is effective for a one year period after contract award with four (4) one year option periods.

Delivery or performance shall be made only as authorized by task orders issued in accordance with the Ordering clause. The Contractor shall furnish the Government, when and if ordered, work for the items specific in individual task orders.

Except for any limitations on quantities in the Order Limitations clause, there is no limit on the number or size of orders that may be issued. The Government may issue concurrent orders requiring delivery to multiple destinations or performance at multiple locations.

Any task order issued during the effective period of this contract and not completed within that period shall be completed by the Contractor within the time specified in the task order. The Contract shall govern the Contractor's and Government's rights and obligations with respect to that task order's Period of Performance.

The Contracting Officer or his authorized representative will provide the Contractor with a description of the services to be provided for any prospective task order. A task order will be firm fixed price or cost reimbursable.

The Contractor shall be required to commence the work required by a task order at the time specified on the task order, execute the work, and complete the entire project not later than the completion time specified in the task order. The time stated for completion shall include final cleanup of the project site. The Contractor must receive approval from the Contracting Officer on all site-specific plans prior to initiating any on-site activity.

The Contractor shall notify the Contracting Officer upon completion of each individual **task** ~~delivery~~ order. The Contractor shall give advance notice of the date the work will be fully completed and ready for final inspection, if applicable.

The contractor shall submit a corporate quality control plan and a corporate safety and health plan within ninety days after the award of the IDT contract. Site-specific quality control plans and safety and health plans developed for task orders can refer to the corporate plans.

2.0 Compliance with Applicable Laws and Regulations

Environmental Programs are typically regulated by: public law and statutes; departmental, agency and command regulations/directives, and other state and local regulations. Unless otherwise specified in individual task orders, it shall be the contractor's responsibility to identify the applicable Federal, state and local laws and regulations for each task order and apply the procedures and protocols as required. Contractors shall comply with the issue or version (including; all changes and amendments) of Federal, state and local environmental statutes and other regulations in effect on the date of issuance of the individual task order(s), unless otherwise noted, including, the applicable portions of the documents cited in Attachment A. A list of potential public laws and statutes, DOD Directives, AF Policy Directives (AFPDs), AF Instructions (AFIs), Army COE regulations and technical manuals, and State and

Federal Regulations is included in Attachment A. This list is meant to be comprehensive though not exhaustive or complete.

3.0 Environmental Services

Contractor responsibilities under this SOW include: compliance with all environmental regulations; the planning and evaluation of pollution prevention technologies and strategies; and environmental land use planning activities.

3.1 Environmental Compliance

The contractor shall provide support in environmental compliance activities, including, but not limited to: air quality, hazardous waste management, hazardous materials management, solid waste management, noise management, pesticide management, petroleum, oil, and lubricants (POL) management, water quality (drinking water and wastewater management), compliance assessments, construction in support of compliance, and special programs (polychlorinated biphenyls (PCBs), radon, A 106 Pollution Abatement Plan, and lead-based paint). Specific compliance efforts may include tasks such as: preparing permit applications, characterizing waste streams, modeling and exposure assessment, developing databases, technical and economic evaluation, developing pollution control strategies, special compliance studies, construction in support of compliance, and developing and conducting training/education programs and materials. The Contractor shall also be responsible for supplying support for any new environmental laws that may be mandated in the future under compliance activities.

3.1.1 Air Quality

The Clean Air Act (CAA), as amended in 1990, is the basic Federal legislation that governs air pollution. Installations of concern to the Government may be required to reduce their major sources of air pollution emissions to comply with Federal legislation. In order to achieve national ambient air quality standards and hazardous air pollutant (HAP) standards the chiefs of installations of concern to the Government may require support to develop a plan for bringing their facilities in compliance with the provisions of the CAA. Additionally, they may require support to develop a schedule for the phase out of stratospheric ozone depleting substances (ODSs); obtain air permits; monitor and report emissions rates; and convert cars and trucks to "clean fuels".

To support the Government, the contractor shall carry out technical activities and analyses as specified in task orders in support of activities to comply with Federal, state, and local air quality rules and regulations. These shall include activities such as writing air permits, developing and characterizing facility air emissions inventories, identifying and implementing air dispersion models, preparing implementation plans for reducing the severity and number of violations of the national ambient air quality standards, analyzing pollution control technologies, preparing feasibility studies, and characterizing air emissions and reporting as described in the following. Carry out technical activities to assist the Government to obtain, review or renew air quality permits and to comply with the provisions of these permits.

Activities may include measuring pollutant concentrations, running dispersion models, analyzing and evaluating risks, and auditing emissions to determine compliance with permit requirements.

Select and use air dispersion models approved by the U.S. EPA, states or as otherwise specified in individual task orders, to study air quality issues. Identify and obtain data necessary as input to the model. Run models and interpret the results.

Prepare inventories of emissions from point, area and mobile sources. Obtain data from measurements of ambient air and sources of emissions, mass balance calculations, engineering calculations, calculations using emissions factors, or from a combination of these methods.

Analyze pollution control technologies and equipment to determine performance and capabilities. Survey vendors of commercial equipment to obtain performance and cost data.

3.1.2 Hazardous Waste Management

The United States Congress, with passage of RCRA, mandated regulations that control hazardous waste from its origin to ultimate treatment, storage, or disposal. The HSWA of 1984 recognized the importance of reducing or

eliminating the generation of hazardous and solid waste. Generators of hazardous waste are required under HSWA and referenced Federal laws to establish programs to reduce the volume or quantity and toxicity of such wastes to the degree determined to be economically practical.

The Defense Environmental Quality Program Policy Memorandum (DEQPPM) 80-05 designates the Defense Logistics Agency as the manager for disposal of hazardous waste within the DOD. DEQPPM 80-8 establishes management procedures for implementing the DOD Hazardous Waste Management Program.

As specified in individual task orders, the contractor shall perform activities such as general technical support and report preparation, development and implementation of a waste tracking system, preparation of permit applications and annual reports, hazardous waste characterization and inventories, identifying treatment and disposal sites, developing and maintaining the Hazardous Waste Management Plan and Spill Response Plan and their activities in support of the above laws, rules, and regulations. Some of these tasks are described in the following.

Characterize and prepare inventories of hazardous waste streams. Develop these data by sampling and analyzing waste streams, calculating mass balances, preparing engineering calculations, preparing calculations using generation rates, using existing reports and waste manifests, or from a combination of these methods.

Identify and survey treatment and disposal sites and carry out technical tasks to support the acquisition of treatment and disposal services for AF hazardous wastes. Analyze AF requirements and recommend treatment and disposal sites and services. Coordinate with the Defense Logistics Agency as specified in DEQPPM 80-05.

Revise, update, or develop hazardous waste tracking systems. Survey facilities; interview personnel, and analyze data and documents to determine wastes to be tracked. Test the system to verify utility effectiveness. Train AF personnel to operate and maintain the tracking system.

Revise, update, or prepare new applications for permits for treatment, storage, and disposal of hazardous wastes. Carry out all associated activities necessary to prepare permits, such as identifying and characterizing wastes, preparing wastes inventories, and identifying laws, regulations, and requirements.

Identify and carry out activities necessary to prepare, revise or update the Hazardous Waste Management Plan in accordance with DEQPPM 80-8.

Conduct technical activities necessary for spill prevention and response planning. Identify requirements in laws and regulations. Identify, analyze, and recommend methods for spill prevention and response. Revise, update, or prepare new spill prevention and response plans. Train Governmental and contractor personnel in spill prevention and response plans, methods, and activities.

3.1.3 Hazardous Materials Management

There is an assortment of regulations governing the transportation, handling, storage, and use of hazardous materials. Among the major regulations are the Hazardous Materials Act (HMA), which is administered by the Department of Transportation (DOT) to regulate the shipping, labeling, placarding, and record keeping for hazardous materials. CERCLA requires the reporting of the release into the environment of any hazardous material. Some hazardous materials, such as PCBs are regulated under TSCA and are discussed in Section 3.1.8.1 of this SOW. In addition, OSHA has established standards pertaining to hazardous waste cleanup operations and emergency chemical releases, and the storage and handling of flammable and combustible liquids. OSHA Hazardous Communication Standards specify practices and procedures, assigns responsibilities, and provides guidance for managing the Department of Defense Hazardous Communication Program, to reduce worker exposure to hazardous materials. Under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), certain chemical manufacturers, processors, and users are required to report to the U.S. Environmental Protection Agency (USEPA) total annual releases of approximately 300 toxic chemicals to the air, water, and land. These reporting requirements are outlined in Section 313 of SARA. Storage of hazardous materials in underground storage tanks (USTs) is regulated in RCRA.

As specified in individual task orders, the hazardous materials management activities that the contractor shall perform include, but are not limited to: the development or maintenance of hazardous materials control and/or

tracking systems, identifying and inventorying hazardous materials, review and development of management plans for hazardous materials storage and handling systems, development of health and safety plans for the handling of hazardous materials, emergency preparedness studies in case of hazardous materials spills, training military and civilian personnel and appropriate contractor personnel in the hazards and proper handling of hazardous materials, preparation of Toxic Release Inventory (TRI) Form R's and conducting audits for compliance with Federal, state and local laws and regulations.

3.1.4 Solid Waste Management

Subtitle D of RCRA established Federal standards for the management of non-hazardous wastes. Under the SWDA of 1965, as amended, Federal facilities are required to comply with all Federal, state, interstate and local requirements concerning the disposal and management of solid wastes.

As specified in individual task orders, the contractor's responsibilities shall involve a range of activities such as preparing applications for permits and licenses for on-base landfills, characterization of solid wastes, performing studies to assist the installation in complying with Federal, state and local regulations, defining requirements governing the separation of recoverable/non-recoverable wastes and the recycling of those materials, developing comprehensive recycling programs. Examples of these activities are described below.

Develop sampling and analysis plans to characterize solid wastes. Sample and analyze solid waste according to these plans. Use these data to identify and characterize solid wastes.

Conduct activities to prepare program plans, surveys, and educational and training materials for affirmative procurement of recycled materials. This includes identifying where recycled materials can be used in governmental activities and surveying and determining sources of recycled materials for acquisition.

Prepare program plans, surveys, educational and awareness materials to promote recycling of materials from solid waste. Identify components of solid waste streams that can be recycled. Identify, survey, analyze, and recommend methods for separating recyclable materials from other solid waste components.

Conduct activities for preparing solid waste minimization and recycling plans and programs. Analyze solid wastes to determine waste stream components. Identify and recommend methods and techniques to reduce waste stream volume. Identify and recommend substitute materials to reduce waste volume and increase recycling of materials.

3.1.5 Noise Management

All Federal agencies are required under the NCA of 1972 to comply with Federal, state, interstate and local noise abatement and control requirements. This requirement, while primarily directed at aircraft and airports, is also directed at other activities on base that produce sufficient noise to result in incompatible land uses in the surrounding community.

As specified in individual task orders, the contractor shall conduct activities such as; preparing Air Installation Compatible Use Zone (AICUZ) noise contour maps and plans, perform noise monitoring, run computer noise models, developing range plans, conducting tests to determine noise levels in the workplace and the surrounding area, and identifying cost-effective systems to reduce noise.

3.1.6 Pesticide Management

Installations are required to comply with a variety of Federal, state, and DOD regulations governing the use, storage, and handling of pesticides.

Among these are the FIFRA, the Occupational Safety and Health Standards, Federal regulations (40 CFR parts 152 through 158 and parts 160 through 180) governing pesticide labeling requirements, storage, disposal, and overall management, and various state and local regulations concerning pesticides sale, distribution and use, disposal requirements, and record keeping. DOD Directive 4150.7 requires that DOD facilities maintain safe, environmentally-sound, integrated pest management programs. Additional guidance is provided in a series of DOD Technical Information Memoranda 14 through 21.

As specified in individual task orders, the contractor shall conduct activities associated with the management of pesticides such as preparing annual reports, certifying and recertifying applicators, preparing recommendations and identifying measures for personal protection and pest control, and conducting audits to ensure compliance with environmental and health and safety regulations.

3.1.7 POL Management

The storage, use, handling and disposal of POL are regulated under an assortment of Federal regulations including the WQIA of 1974, RCRA (including the UST standards), and the CAA as amended. Many state and local governments have regulations patterned after the Federal regulations.

As specified in individual task orders, the contractor shall conduct activities such as preparing or modifying Spill Prevention and Response Plans, maintenance of the management plan for Recoverable and Waste Liquid Petroleum Waste, and conducting spill response training. This shall be done in accordance with the applicable statutes and regulations.

3.1.8 Special Programs

Special Programs are those, which have been called out or separated for "special" management. Such programs currently include PCBs, Asbestos, Radon and Low-Level Radioactive Waste, A106 and Lead Based Paint.

3.1.8.1 Polychlorinated Biphenyls (PCBs)

TSCA of 1976 (PL 94-469) requires USEPA to regulate and control harmful chemicals and substances in commercial use. PCBs are one class of chemicals that are of particular concern, often being present in transformers, capacitors, heat transfer systems, hydraulic systems, electromagnets, switches and voltage regulators, circuit breakers, reclosers and cables. The use, storage, and disposal of PCBs and items containing PCBs are regulated in 40 CFR 761.

As specified in individual task orders, the contractor shall provide PCB-related services such as audits of equipment and materials through testing of transformer oil and analysis or record searches determining the levels (i.e., whether they are regulated amounts) of PCBs that are present, and preparing PCB management plans to include recommending PCB equipment for replacement.

3.1.8.2 Asbestos

Asbestos is regulated under the CAA, the Occupational Safety and Health Act, TSCA, and the Asbestos Hazard Emergency Response Act (AHERA). 40 CFR Part 61, Subpart M describes emissions standards for disposal.

As specified in individual task orders, the contractor shall conduct activities necessary to identify the presence of asbestos-containing material (ACM) in facilities and equipment and plan for its removal, encapsulation or enclosure. These activities may include tasks such as using certified inspectors, conducting visual surveys for the presence of ACM, and sampling and analyzing material suspected of containing asbestos (such as boiler, pipe; and acoustical insulation, fire retardant material, floor tile, and transite sheet and cement-asbestos siding) or to determine levels of releases of asbestos to the workplace or ambient environment. Other contractor responsibilities shall include developing controls and protocols to minimize occupational exposure to asbestos, and include developing asbestos management plans.

3.1.8.3. Radon and Low-Level Radioactive Waste

While there are currently no legal standards for radon in residential housing, USEPA recommends mitigation when concentrations exceed four picoCuries per liter of air average annual dose.

The program is designed to assess radon levels in family housing, offices, dormitories**,** childcare facilities, temporary lodging facilities, etc. As specified in individual task orders, the contractor shall provide radon-related services including the development of mitigation plans and post-mitigation assessments. Low-level radioactive waste investigations and surveys may be performed as specified in individual Task Orders.

3.1.8.4 A-106 Pollution Abatement Plan

Office of Management and Budget (OMB) Circular A 106 under EO 12088, Federal Compliance with Pollution Standards, requires that Federal agencies, facilities, programs, and activities meet Federal, state and local environmental requirements, and correct situations that are not in compliance with regulations.

As specified in individual task orders, the contractor shall conduct activities such as preparing or updating the computerized A-106 Pollution Abatement Plan(s) and databases. The A106 report describes all projects that are necessary to comply with environmental laws.

3.1.8.5 Lead-Based Paint

The contractor shall ensure that tasks performed under this contract comply with the May 1993 AF Policy and Guidance on Lead-Based Paint (LBP) in Facilities. Congress directed the DOD to take a more active role in ensuring military members and dependents are not affected by LBP health hazards. Legislation restricted lead in paint used in non-industrial facilities effective 1978 (16 CFR 13 03) and in residential structures constructed and rehabilitated by Federal agencies (24 CFR Part 3 5).

Occupational Safety and Health Administration regulations specify worker protection requirements in construction and general industry (129 CFR 1926 and 29 CFR 1910.1025) and environmental regulations address restrictions on both emissions (40 CFR 50.12) and when LBP debris must be controlled as a hazardous waste (40 CFR240-280 and 40 CFR 302). The LBP Poisoning Prevention Act and TSCA were amended and a program established to evaluate and reduce LBP in housing.

As specified in individual task orders, the contractor shall provide LBP-related services such as preparation of management plans and studies to identify, evaluate, manage, and abate LBP.

3.1.9 Water Quality

As directed in individual task orders, the contractor shall be responsible for conducting projects in compliance with both drinking water and wastewater regulations. This includes sanitary wastewater, storm water runoff and industrial wastewater.

3.1.9.1 Drinking Water

Public drinking water quality is regulated under the SDWA However, many installations of concern to the Government are not considered to be public water systems because the facility (1) stores and distributes, but does not collect or treat drinking water, (2) gets all of its water from a public water system that is owned and operated by another party, or (3) does not sell water.

As specified in individual task orders, contractor shall conduct activities such as training of personnel for certification to operate a treatment or distribution system, analyzing water treatment methods, and preparing operational plans.

3.1.9.2 Wastewater

The Federal CWA of 1977 and its reauthorization in 1987 (PL 92-500, 33 USC 1251 et seq.) regulates point and non-point discharges into surface waters and publicly-owned treatment works (POTWs). Section 313(a) specifies that Federal facilities must comply with Federal, state and local requirements including categorical effluent limitations contained in 40 CFR Parts 405 through 471. Facilities must obtain discharge permits under the National Pollutant Discharge Elimination System (NPDES). Wastewater includes sanitary sewage, storm water, non-point source surface water discharge and industrial wastes. Wastewater facilities can include oil/water/fuel separators, pretreatment facilities, and industrial wastewater treatment plants.

As specified in individual task orders, the contractor shall conduct activities such as completing NPDES and other wastewater discharge permit applications, evaluating influent and effluent waste streams, identify, analyze and recommend surface water quality models, and provide and/or conduct training of personnel for certification to operate treatment systems.

3.1.10 Environmental Compliance Assessment

The general responsibilities include assessment of evaluation results, management of local program, correction of deficiencies, internal evaluations, and external evaluations. Conduct, as directed, annual environmental compliance evaluations, encompassing all applicable protocols at each designated task.

As specified in individual task orders, the contractor shall conduct compliance related activities such as performing environmental audits at Governmental installations and preparation of the assessment report (which combines background information about the specific evaluation, the installation, and the findings from the Internal or External Evaluation with a Management Action Plan for correcting noncompliance issues). The contractor may also be tasked to develop a tracking system for managing the assessment item deficiencies determined during an audit.

3.2 Pollution Prevention

The 1990 Pollution Prevention Act officially made pollution prevention a national policy, stating that USEPA must consider the effect of its existing and proposed programs and regulations on source reduction. The 1990 CAA Amendments reinforced this position; stating that USEPA shall "encourage or otherwise promote reasonable Federal, state and local government actions consistent with the provisions of this act, for pollution prevention."

DOD Directive 4210.15, Hazardous Materials Pollution Prevention, requires all DOD activities to select, use and manage hazardous materials so as to incur the lowest life cycle cost to protect human health, the environment, and long-term liability. DOD is participating with other Federal agencies in the Waste Reduction Evaluation at Federal Facilities (WREAFS) Program. The program's primary objective is the evaluation of source reduction and recycling opportunities at Federal facilities.

As specified in individual task orders, the contractor shall conduct pollution prevention activities such as developing pollution prevention plans, establishing inventories (annual volumes and on-hand) for hazardous materials and municipal solid waste streams, conducting pollution prevention opportunity assessments, evaluating the economics and technical feasibility of process changes and recycling alternatives, creating databases to track progress in achieving each stated Federal pollution prevention goal, other special pollution prevention studies, developing and applying training/educational materials.

3.2.1 Pollution Prevention Management Plan (PPMP)

All Department of Defense installations must prepare a PPMP describing the overall pollution prevention strategy for the entire facility. The PPMP defines pollution prevention goals, establishes baselines and goals, analyzes pollution prevention opportunities, and identifies preferred options to reduce pollution.

As specified in individual task orders, the contractor shall prepare and/or revise PPMP for one or more installations.

3.2.2 Not Used

3.2.3 Pollution Prevention Inventories for Municipal Solid Wastes

Volumetric data must be prepared for municipal solid wastes and other waste streams to distinguish which waste streams are generated and disposed of in the greatest volumes and to provide a benchmark to measure progress in reducing waste quantities. The contractor shall, as specified in task orders, establish a volumetric inventory for municipal solid waste defining specific parameters such as the waste type, activity generating the waste, and waste composition (e.g., percent paper, plastic, metals, tires/rubber, yard wastes, etc).

3.2.4 Pollution Prevention Baselines for Hazardous Materials/Wastes

As specified in individual task orders, the contractor shall establish inventories (i.e., review records and supplies for accountability purposes) for environmentally hazardous materials/wastes such as for ozone depleting chemicals, EPAs 17 Industrial Toxic Project substances and other hazardous wastes, air pollutants, and surface water discharges and non-point source runoff.

3.2.5 Pollution Prevention Opportunity Assessments

As specified in individual task orders, the contractor shall conduct pollution prevention opportunity assessments for hazardous wastes, municipal solid wastes, air emissions and industrial wastewater in accordance with defined compliance documents.

3.2.6 Recycling Economic Analyses/Feasibility Studies

As specified in individual task orders, the contractor shall conduct an economic analysis to identify solid waste refuse items that can be recycled. In addition, as specified in individual task orders, the contractor shall develop an affirmative procurement plan to promote the purchase and reuse of recycled materials.

3.2.7 Pollution Prevention/Waste Database

As specified in individual task orders, the contractor shall develop and/or compile data for tracking all hazardous waste streams containing one or more of EPA's 17 target chemicals, municipal solid waste management and recycling, air emissions of volatile organic compounds and other air pollutants, use and release of ODCs to the environment, and any other streams that have been targeted for pollution prevention initiatives. The tracking system shall be computerized and tailored as described in the task order SOW.

3.2.8 Pollution Prevention Education and Awareness Training

As specified in individual task orders, the contractor shall develop, coordinate, and conduct pollution prevention workshops/training classes. In addition, as specified in individual task orders, the contractor shall develop fact sheets, articles, and other outreach materials.

3.2.9 Development of Pollution Prevention Strategies

As specified in individual task orders, the contractor shall develop pollution prevention strategies for implementing newly initiated pollution prevention technologies and practices, such as the Hazardous Material Pharmacy concept.

3.3 Environmental Planning and Conservation Support

The contractor shall comply with the National Environmental Policy Act (NEPA) of 1969 for all requirements to include pollution prevention, compliance, restoration and conservation. The contractor shall provide support in implementing natural and cultural resource programs, and in analyzing land use proposals and plans.

3.3.1 Environmental Impact Analysis Process (EIAP)

The National Environmental Policy Act and the President's Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1508) require that Federal agencies examine the potential impacts of its proposed actions. Department of Defense procedures for supplementing the implementing regulations are contained in the EIAP, as described in AFI 32-7601. California Environmental Quality Act (CEQA) requirements for environmental consideration may be required if the project is located in California and a non-Federal sponsor is involved. The contractor shall perform activities such as the preparation of the Description of the Proposed Action and Alternatives (DOPAA), environmental assessments (EAs), environmental impact statements (EISs), environmental impact report (EIRs), findings of no significant impact (FONSIs), Records of Decisions (RODs), mitigation plans and other associated documents that might be required. The contractor shall perform activities such as data identification, data collection (including site visits and interviews), data development, and data interpretation; sampling and analysis; preparation of human health risk and environmental impact evaluations and reports; preparation of expert testimony, and preparation of material for and attendance at public meetings and public hearings (including scoping meetings).

3.3.1.1 Description of Proposed Action and Alternatives (DOPAA)

All proponents of Department of Defense actions must prepare a description of the proposed action and reasonable alternatives to the proposed action (DOPAA), including the "no-action" alternative. The DOPAA is provided by the proponent of the action, and explains the proposed action and the alternatives that are to be considered in the EIAP. As specified in individual task order, the contractor shall prepare complete DOPAAs, review the information accuracy of DOPAAs prepared by proponent organizations, and analyze the reasonableness of alternatives prepared by proponent organizations.

3.3.1.2 Environmental Assessment (EA) and Finding of No Significant Impact (FONSI)

The EA is a concise public document that serves to briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or whether the decision maker can prepare and sign a FONSI. The EA facilitates the preparation of an EIS when one is necessary and included brief discussions of the need for the proposal, the alternatives considered, and the environmental impacts of the proposed action and alternatives. It also includes a listing of agencies and persons consulted. As specified in individual task orders, the contractor shall prepare EAs for specific actions. This includes activities such as obtaining and analyzing data to determine potential environmental impacts, preparing the text of the EA, preparing the text of the FONSI (if appropriate), and coordinating efforts with the appropriate Federal, state and local agencies.

3.3.1.3 Environmental Impact Statement/Report (EIS)/(EIR) and Record of Decision (ROD)

An EIS is a detailed written statement required by section 102(2)(C) of NEPA. An EIR is a detailed written statement required by CEQA. (Note – This section will explain the EIS process, but if there is involvement with a state or local agency, an EIR may be required). It is a detailed study of the potential significant environmental impacts that may be caused by a major Federal action. The format of an EIS and the procedures for developing and publishing such a study are contained in the CEQ regulations (40 CFR 1500-1508). The EIS provides a discussion of the purpose and need for a proposed action, alternatives including the proposed action, the affected environment, and potential environmental consequences. Actions that normally require an EIS include air space actions (such as creating a new military operating area), major force structure changes, base disposal and reuse, cumulative effects of multiple actions and any action for which a FONSI cannot be concluded. The EIS undergoes close public scrutiny including public hearings on any proposed action. The outcome of the process is a Record of Decision (ROD), signed by the proponent agency decision maker that explains the action, its environmental consequences, all alternatives considered, and discussing any mitigating measures adopted to minimize the impacts of the proposed actions (including any monitoring and enforcement program that is part of any mitigation). Until the ROD is issued, the proponent agency can take no action that would have an adverse environmental impact or that would limit the choice of reasonable alternatives.

The contractor shall prepare draft and final EISs as specified in individual task orders. The contractor shall undertake activities necessary to prepare the documents assigned. The contractor may be directed in individual task orders to perform activities such as identifying, collecting and developing data for preparation of EISs, interpreting data, analyzing environmental consequences, writing the EIS, providing support material for any public meetings (including, but not limited to, audiovisual aids, supporting text, court reporting, and other hearing-related printed materials), providing verbatim documentation of public hearings, preparing material responding to public comments, writing the ROD, and preparing draft and final EISs in conjunction with base disposal and reuse actions. The contractor shall additionally perform required activities such as obtaining and analyzing data and providing national, regional, and local area analysis of such topics as employment, population changes, economic effects, other socioeconomic effects of base disposal and reuse actions need to develop and write the EIS.

3.3.1.4 Air Space Planning

The contractor shall provide necessary support to conduct environmental planning and analysis of proposed activities and operations involving use of airspace. These efforts may include military aviation, civil aviation, and commercial aviation. ~~that The response to this factor will be evaluated to determine:~~

~~- The extent to which proposed small business concerns (SBCs) and historically black colleges and universities and minority institutions (HBCU/MIs) are specifically identified by name by the Offeror;~~

~~- The extent of commitment by the offeror to use the specifically identified firms, whether as a joint venture, teaming arrangement, or subcontractor;~~

~~- The complexity and variety of the work the identified firms are to perform.~~
~~affect air traffic, airspace utilization, and environmental considerations for both the natural and manmade environments.~~

As specified in individual task order**s**, the contractor shall conduct efforts as required in the National Environmental Policy Act, CEQ regulations, and applicable Department of Defense Instructions. All applicable substantive

environmental laws shall be considered for planning and analysis purposes. Contractor shall provide support for airspace noise analysis and airspace noise modeling as required.

As specified in task orders, the contractor shall obtain and analyze data to determine the effect of proposals on air traffic and air space utilization and the feasibility of proposals to use Department of Defense bases for commercial aviation activities. The contractor shall perform activities such as the following as directed in individual task orders: obtain, review, and analyze data on current and projected future commercial, general, and military aviation activities, such as air traffic volume, air space utilization, aviation support equipment, and passenger and air cargo volume; use data and analyses to determine the effect of proposals on air traffic, air space utilization, equipment, and facilities; develop plans for implementing proposals; recommend changes and mitigating measures necessary to overcome problems identified; and plan and carry out market analyses of accepting closing Department of Defense bases and assessing the environmental concerns as a result of the acceptance of the proposed missions.

3.3.2 Natural and Cultural Resources Plans and Programs

The contractor shall review, revise, amend, or prepare the reports and plans for the resource areas described below. The contractor shall conduct data gathering, field surveys, and prepare reports of findings. As specified in individual task orders, the contractor shall conduct activities in the development of training and educational programs. The contractor shall identify and follow the provisions of all applicable laws and regulations.

3.3.2.1 Biological Resources

As specified in individual task orders, the contractor shall identify, obtain, and review all data, documents and records relevant to review, revise, amend or prepare resource reports and management plans for threatened and endangered species, wetlands and floodplains, fish and wildlife resources, and coastal zone resources. The contractor shall perform activities such as those listed in the following subparagraphs.

3.3.2.1.1 Threatened and Endangered Species

The contractor shall perform activities, such as the following, as directed in individual task orders: review any existing installation reports and management plans for threatened and endangered species, consult the U.S. Fish and Wildlife Service's List of Threatened and Endangered Species for the county or counties in question to determine whether any threatened or endangered species are on the installation or use habitat on the installation, consult any state lists of threatened and endangered species to determine whether any threatened or endangered species are on the installation or use habitat on the installation, contact appropriate state wildlife offices for information on habitats of importance that are located on the installation, perform surveys on the installation to identify the presence of threatened or endangered species or the presence of habitat for such species, and develop procedures to protect any threatened or endangered species and to protect their habitat. Global Positioning Systems (GPS) may be used to identify locations of species or habitat.

3.3.2.1.2 Wetlands and Floodplains

The contractor shall perform activities such as the following as directed in individual task orders: review any existing installation reports and management plans for wetlands or floodplain resource information or management actions; review the U.S. Fish and Wildlife Service's "National Wetland Inventory" maps that cover the area of the installation to identify any recognized or designated wetlands; review Natural Resources maps; apply the Federal criteria for wetland delineation to any applicable areas of the installation (*Federal Interagency Committee for Wetland Delineation, 1987. Federal Manual for Identifying and Delineating Jurisdictional Wetlands, Washington D.C.*); prepare installation wetland maps; review any available Federal Emergency Management Agency floodplain insurance maps that cover the area of the installation; contact local U.S. Army Corps of Engineers district offices and other Federal agencies for wetlands and floodplain information; contact local or state planning agencies for locally imposed floodplain development contracts; and comply with Executive Order 11988, Floodplain Management, 24 May 1977 as amended by EO 12148, Federal Emergency Management, 20 July 1979.

3.3.2.1.3 Fish and Wildlife Resources

The contractor shall perform activities such as the following as directed in individual task orders: review any existing installation reports and management plans for fish and wildlife resource information or management actions, contact regional offices of the U.S. Fish and Wildlife Service for information on installation wildlife and wildlife habitats, and contact the state wildlife agencies for information on the installation and for their consideration of fish and wildlife resources on the installation that they consider important. The Contractor shall use the results of this data collection in the development of a Fish and Wildlife resources management plan.

3.3.2.1.4 Not Used

3.3.2.2 Cultural Resources

As specified in individual task orders, the contractor shall perform a variety of tasks to support cultural resource management actions to meet the requirements of the National Historic Preservation Act, Archaeological Resource Protection Act, Native American Graves Protection and Repatriation Act, National Environmental Policy Act and other applicable legislation and regulations. Tasks will generally be performed within installation boundaries but may also include areas outside installation boundaries that may be affected by installation undertakings. Tasks may include work that entails identifying, evaluating, interpreting, protecting or otherwise addressing effects to prehistoric and historic archaeological sites, Native American sacred and traditional sites, historic structures and objects, and Paleontological localities.

The contractor shall provide all of the expertise, support, research, supplies and equipment to undertake specific taskings. The Base Historic Preservation Office will make available all relevant reports, collections, forms, maps and other documentation relating to specific taskings. The contractor is accountable for all subcontractors and their timely performance. All coordination with the State Historic Preservation Officer (SHPO) or other interested parties shall be through the Base Historic Preservation Officer (BHPO), where applicable, or through a cultural resource specialist in Sacramento District's Planning Division. Key contractor personnel shall be qualified cultural resource specialists as specified in "Archaeology and Historic Preservation; Secretary of the Interior's Standards and Guidelines", FR Vol. 48, No. 190.

3.3.2.2.1 Cultural Resources (General)

The contractor shall perform activities as directed in individual task orders that may include, but is not limited to, review of existing literature and archival material relating to the installation resources, review of existing collections, preparation of research designs and technical reports, preparation of sensitivity maps, predictive modeling, field survey to identify sites, preparation and/or updating of management plans, programmatic agreements and memorandum of agreements, creation of databases, updating and maintenance of GIS data, use of remote sensing techniques and equipment, test excavation for assessing site eligibility, data recovery to mitigate adverse effects, design and creation of site protection measures, site and project monitoring, design and implementation of educational programs, preparation of National Register of Historic Register forms and associated documentation, site mapping and HABS/HAER documentation, oral history interviews, ethnographic research, cataloging and artifact analysis, faunal and floral analysis, and curation support.

3.3.2.2.2 Archeological Resources

The contractor must be prepared to deal with the full range of prehistoric and historic period archeological sites that occur within the geographic boundaries of the South Pacific Division. Prehistoric sites representing a variety of functions, activities, temporal periods and ethnic groups may be encountered.

3.3.2.2.3 Historic Resources

Historic period sites that may be present on Department of Defense installations include homestead remains, refuse deposits, mines and mining camps, railroad camps and stops, and military related archaeological sites.

3.3.2.2.4 Traditional Resources

The contractor shall aid in consulting and coordinating with Native American groups. Support required may include, but is not limited to, preparation of correspondence and documentation, distribution of information, providing escort for visitations, scheduling and documenting meetings, identification and recording of sacred or

traditional resources, and preparation of protection plans. For Department of Defense projects or actions within the State of California, the contractor shall contact the California Native American Heritage Commission for a list of Indian individuals, communities, or tribes that may have an interest in the particular project or action.

3.3.2.2.5 Paleontological Resources

The contractor shall perform Paleontological research, survey, monitoring, recovery, specimen identification, report protection plan preparation, and curation. The contractor may perform various paleoenvironmental analysis, such as Neotoma midden and geomorphological and soil analysis, to support interpretation and evaluation of cultural resources.

3.3.2.34- Natural Resource Use Analysis

As specified in individual task orders, the contractor shall identify, obtain, and review all data, documents, and records relevant to preparing resource plans for the following resource areas: grazing and cropland resources, forestry resources, and mineral resources.

3.3.2.4.1 Grazing and Cropland Resources

The contractor shall perform activities such as the following as directed in individual task orders: review any existing installation reports and management plans for grazing and cropland management information; consult with the local U.S. Department of Agriculture Land Use Committee for grazing and cropland potential for the installation; contact the appropriate U.S. Department of Agriculture Natural Resources Soil Conservation Service Office for any information on prime and unique farmlands on the installation; and prepare a grazing and cropland management plan.

3.3.2.4.2 Forestry Resources

The contractor shall perform activities such as the following as directed in individual task orders: review any existing installation management plan for any information on forestry resources or forestry resource management for the installation, review any published U.S. Forest Service Resource Management Plan (RMP) that covers the area of any off-installation National Forest land used for training, consult the regional or state office of the U.S. Forest Service for any revision to published RMPs or for RMPs about to be published, contact the U.S. Forest Service or state forestry department for any forestry resource information for the installation, and use the results of this data collection in the preparation of an RMP.

3.3.2.4.3 Mineral Resources

The contractor shall perform activities such as the following as directed in individual task orders: review any existing installation reports or management plans for any information on mineral resources or mineral resource management for the installation, contact the regional or state office of the U.S. Geological Survey and the state geological survey for information on mineral resource potential for the lands of the installation, and use the results of this data collection in the development or update of the installation mineral resources management plan.

3.3.2.4.4 Outdoor Recreation Resources

The contractor shall perform activities as directed in individual task orders: identify, obtain, and review all data, documents, and records relevant to the development of outdoor recreation reports; survey the existing outdoor recreation resources on the installation and include information on the location, physical status, levels of usage, budget requirements for upkeep, and other factors as specified in individual task orders; and survey the installation for the potential for development of additional outdoor recreation resources.

3.3.2.4.5 Geology and Soil Resource Analysis

The contractor shall perform activities such as the following as directed in individual task orders: identify, obtain, and review all data, documents, and records relevant to the development of reports and resource plans for geology and soils resources. For geological analyses, the contractor shall perform duties such as the following as directed in individual task orders: collect and review geological reports, surveys, and maps; analyze the collected data with regard to identifying potential geological constraints or limitations for development on the installation; and contact

the regional or state office of the U.S. Geological Survey and the state geological survey for information on the geological characterization of the installation, particularly with regard to the identification of geological constraints for development on the installation. For soil resource analysis, the contractor shall perform activities such as the following as directed in individual task orders: collect and review soils reports, surveys, and maps; analyze collected soils data particularly with regard to potential constraints or limitations to installation development due to the nature of the soils; and contact the appropriate offices of the Natural Resources Conservation Service for any information on soils-related development limitations or constraints. In addition, the contractor shall develop plans to obtain and analyze soil borings in order to determine the detailed soil characteristics in specified areas of the installation. The geology and soils data developed may be used as input to other analyses described in the SOW.

3.3.4 Land Use Planning and Analysis

The contractor shall perform activities such as the following as directed in individual task orders: obtain and analyze data to determine the effect of proposals on land use and land use plans; obtain, review and analyze land use documents and plans to determine current land use on Department of Defense installations; obtain, review, and analyze plans and studies of projected future land use; use these data and carry out analyses to determine the effect of proposals on installations, local and regional land use; identify and recommend mitigating measures necessary to overcome problems identified; and revise and update land use plans, with proper concurrence.

3.3.5 Environmental Baseline Survey Phase I

The contractor shall review available information and survey the condition of real property proposed by Department of Defense installations to be acquired, transferred, leased, sold or otherwise conveyed. The contractor shall perform activities such as the following as directed in individual task orders: document the nature, magnitude, and extent of any environmental contamination of property considered for acquisition or transfer, lease, sale, or other disposition; define potential environmental contamination liabilities associated with the subject real property transactions; determine possible effects on property valuation from any contamination discovered; and provide notice when required under Section 120(h) of CERCLA of the type, quantity, and time frame of any storage, release or disposal of a hazardous substance on the property.

The contractor shall, as directed, identify, obtain, and review all data, documents, and records relevant to determining the potential for present and past contamination of the property. The review shall include items such as: historical records, reports and data prepared as part of the Environmental Restoration Program; environmental surveys or inspection reports; regulatory agency reports, notices of violation of noncompliance, or other similar records; current or discontinued permits; title, deed, other real property records; aerial photographs; and other available documents to ascertain prior uses of the real property that may have involved hazardous substances or otherwise contaminated to property subject to transfer. Interview personnel with knowledge of past and current activities on the property subject to transfer. Hazardous conditions to be considered shall include areas such as hazardous materials and waste use, storage, treatment, and disposal; presence of underground and aboveground storage tanks, hydrant fuel systems, and oil/water separators; contaminated soil and groundwater; asbestos; radon; lead in paint or drinking water; and unexploded ordnance. Conduct visual inspections to determine or confirm the presence of an environmentally hazardous condition.

The contractor shall, as directed, identify, obtain, and review all data, documents, and records relevant to determining the presence of natural and cultural resources and other environmental considerations on the property. Resources and considerations include items such as historical resources, archaeological resources, wetlands and floodplains, threatened and endangered species, wellhead protection areas, and prime and unique farmlands. The contractor shall, as directed, conduct visual inspections of property as necessary to identify and confirm the presence of environmental resources and considerations.

3.4 Environmental Restoration Program

The contractor shall provide technical support nationwide, including U.S. territories, in complying with the Environmental Restoration Program activities, which ultimately lead to actual remediation of the site. The Environmental Restoration activities include CERCLA and RCRA corrective action responses.

3.4.1 Preliminary Assessment (PA)

The purpose of the PA is to describe the source and nature of the release; evaluate the type, magnitude, and likelihood of threats to public health and welfare and/or the environment; determine the need for the removal, Site Inspection (SI), Remedial Investigation/Feasibility Studies (RI/FS) or no action and gather existing data to facilitate Hazardous Ranking System. The contractor may collect the following information: interviews with personnel, past records, aerial photograph review, perimeter inspection of potential sites, on-site inspections (per Health and Safety Plans); and review of previous sampling results. The final result will be a PA report. The PA may be conducted to assess Ordnance and Explosives (OE) and/or Hazardous Toxic and Radioactive Wastes (HTRW).

3.4.2 Site Inspection (SI)

The contractor shall perform, as directed in individual task orders, a site inspection and shall further characterize the release by the following: eliminate from further consideration those releases that pose neither threat nor potential threat to public or military health, welfare or the environment; determine need for removal actions, and collect data to characterize the release for effective, rapid initiation of the RI/FS. Taskings could include: preparing a work plan, a sampling and analysis plan (SAP), health and safety plan, establish data quality objectives, sampling and analyzing soils, sediments, groundwater, and surface water using innovative field portable technologies as appropriate. The SI may be conducted to assess Ordnance and Explosives (OE) and/or Hazardous Toxic and Radioactive Wastes (HTRW). Note that SI activities conducted at OE sites under this contract will be limited to non-intrusive work only.

3.4.3 Remedial Investigation/Feasibility Study (RI/FS)

The contractor shall perform the following: prepare a workplan for the RI/FS; identify the study area by specific site; the contaminate media shall be identified and delineated on a conservative basis from available information; identify properties, transportation routes, treatment and disposal facilities, and any environmental resources that may be used for or directly impacted by potential remedial actions; determine the appropriate response mechanisms and authorities; initiate conformity data needed; identify likely response scenarios and potentially applicable technologies and operable units that may address site problems; describe the scope of subsequent RI/FS steps; prepare the health and safety plan; determine whether the Federal action is likely to be a major Federal action or will have significant Federal impacts; identify need for and set priorities for removals, operable units, and continuing monitoring requirements while the RI/FS is being conducted; identify preliminary Federal contaminant and location specific applicable or relevant and appropriate regulations (ARARs) based on available data and confirmatory data; submit to State regulatory agency and request State ARARs; conduct community interviews and prepare a Community Relations Plan (CRP); suggest a structure for a Technical Review Committee or Restoration Advisory Board, assist in the initiation of an Administrative Record and develop an information repository. The RI/FS may be conducted to assess Hazardous Toxic and Radioactive Wastes (HTRW).

3.4.4 Site Characterization

The contractor shall determine the extent of soil and/or groundwater contamination and provide the basis for determining types of response actions to be considered. The contractor may perform the following: implement the SAP; redefine RI/FS study area; perform additional field investigations; collecting soil, sediment, groundwater, surface water and air samples; analyzing samples in the laboratory; evaluating laboratory results to characterize the site; determine the adequacy of data for developing and evaluating remedial alternatives; development of alternatives and screening of alternatives and developing a baseline risk assessment. The contractor may perform inspection services and O & M support of remediation equipment/process. The site characterization activities may be conducted to assess Hazardous Toxic and Radioactive Wastes (HTRW).

3.4.5 Development of Alternatives

The purpose of the development of alternatives is to identify the range of potential remedial action alternatives or technologies suitable to satisfy the Corrective Action or ROD/RAP. The contractor may be required to perform the following: identify potential treatment technologies; identify containment/disposal requirements for residual or untreated waste; evaluate standard and innovative technologies; assemble suitable technologies into alternative remedial actions and identify action specific ARARs. The development of alternatives may be conducted to assess Hazardous Toxic and Radioactive Wastes (HTRW).

3.4.6 Screening of Alternatives

The purpose of alternative screening is to narrow the list of potential remedial alternatives for detailed analysis. The contractor may be required to perform the following: additional field investigation; detailed analysis of alternatives through effectiveness, implementability and cost. The screening of alternatives may be conducted to assess Hazardous Toxic and Radioactive Wastes (HTRW).

3.4.7 Treatability Studies/Investigation

The purpose of treatability investigation/study is to obtain data for the detailed evaluation of alternatives. The contractor shall perform treatability investigations to include: literature surveys for candidate control technologies; bench and pilot scale treatability testing; and collection and additional field data acquisition.

3.4.8 Detailed Analysis of Alternatives

The purpose of a detailed analysis of alternatives, which is typically carried out in an engineering evaluation/cost analysis (EE/CA), is to describe, evaluate, and compare alternatives. The contractor may be required to evaluate and compare alternatives according to the following: overall protection of human health and the environment; compliance with ARARs, long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment; short-term effectiveness; implementability; cost; state acceptance and community acceptance.

3.4.9 Proposed Plan, Remedial Action Plan (RAP), Record of Decision (ROD), Corrective Measures Implementation (CMI)

The purpose of this step is to propose and select a remedial action. Documentation the contractor may be tasked to develop at this step is the following: proposed plan; notice of proposed plan availability; public hearing transcript, record of decision (ROD), remedial action plan (RAP), Corrective Measures Implementation and various notices. In some cases, the Contractor may be tasked to prepare ROD/RAP amendments or Explanation of Significant Differences in support of existing projects. The selection of the remedy may be conducted for Hazardous Toxic and Radioactive Wastes (HTRW).

3.4.10 Engineering Support

The engineering efforts relating to the remedial action will be described in each individual task order. Engineering support to be performed in support of remedial actions will depend on the requirements of the individual task order. Engineering effort required may include preparing plans and specifications, report and decision document preparation, community outreach/communications, troubleshooting, construction inspection, and quality control testing.

3.4.11 Remedial Action Workplans

The requirements related to remedial action workplan development will be described in individual task orders. The Contractor shall perform all necessary actions to address specific requirements of the task order. By definition, remedial actions include, but are not limited to containment, removal, treatment (on-site or off-site), transportation, and disposal. Innovative treatment processes shall be considered when the innovative treatment technologies offer the potential for comparable or superior performance or economy compared to demonstrated treatment technologies. ~~*The Contractor Quality Control Requirements are included as Attachment E.*~~

3.4.12 Ordnance and Explosives

Ordnance and explosive (OE) avoidance and construction support workplan preparation and field coordination may be required under this contract. Additional health and safety requirements, QC requirements and personnel qualifications will be outlined in each individual task order.

All work shall be conducted in accordance with DOD and Department of Defense guidance and Engineering Pamphlet (EP 75-1-2 (Unexploded Ordnance Support during Hazardous, Toxic, and Radioactive Waste (HTRW) and Construction Activities. This requirement will be specified in each individual task order.

3.4.13 Not Used

3.4.14 Transportation and Disposal

The Contractor shall ensure the transportation, storage, treatment, and disposal of all hazardous materials complies with all Federal, state, and local laws and regulations. The Contractor shall identify and perform any additional analyses necessary to ensure compliance with transportation, storage, treatment, and disposal requirements. Selection of the approved Treatment, Storage, or Disposal Facility (TSDF) shall be based upon cost-effectiveness, compliance status, regulatory agency input and Contracting Officer approval. If the waste sent for off-site storage or disposal, the Contractor shall provide to the Contracting Officer at a minimum what is listed below.

3.4.14.1 Identification of Transporter

Transportation to an approved TSDF shall comply with all appropriate DOT regulations. The Contractor shall coordinate the transportation of waste so that transporters arrive on schedule. With each task order proposal, the Contractor shall Provide the name, location, point-of-contact, EPA identification, verification that the transporter is a licensed Hazardous Waste Transporter in accordance with DOT regulations, and Notice of Violation (NOV) status.

3.4.14.2 Identification of the Disposal Facility

The Contractor shall characterize the waste stream to determine the most cost-effective TSDF facility, which is in compliance with Federal, state and local laws and regulations. For each task order, the Contractor shall provide the facility name, location, point of contact, telephone number, unit cost, total cost for treatment, storage or disposal, transportation, taxes and disposal fees.

3.4.14.3 Shipment Tracking

The Contractor shall notify the CO if shipments to the TSDF are within the required time frames and provide all required reports if receipt has been delayed (i.e. discrepancy reports or exception reports).

3.4.14.4 Tracking of Hazardous and/or Solid Wastes

Hazardous and/or solid wastes shall be removed from the site by the Contractor, within 90 days of generation, and disposed of at a facility approved by the CO.

3.4.14.5 Manifest Package

The "Manifest Package" shall consist of, at a minimum, all hazardous waste manifests, hazardous material shipping papers, waste profile sheets, the land disposal restriction notification and certification forms, and all other supporting documentation. Supporting documentation shall include waste disposal history, all analytical results, and any other information received in identifying the proper waste code. The Contractor shall also include as part of the supporting documentation, the specific type of inner and outer packaging, markings, labeling, and placards offered to the transporter. The Contractor shall also comply with the requirements below.

3.4.14.5.1 Preparation

The Contractor shall have a Regulatory Specialist review the complete manifest package and shipping documentation. The Regulatory Specialist shall certify as correct the Hazardous Waste Manifest, Waste Profile Sheets, and Land Disposal Restriction Notification and Certification forms and supporting documentation. Once the review is completed, the Contractor shall submit these documents to the CO for approval. The Contractor, as

specified in each individual TO, shall coordinate with the appropriate Government coordinator as designated in each task order for signing of Hazardous Waste Manifests, Waste Profile sheets, Land Disposal Restrictions, and supporting documentation.

3.4.14.5.2 Submittal

The Regulatory Specialist shall submit to the Project Manager and USACE clients a reproducible copy of the Manifest Package for each particular waste stream. The Contractor shall hold the original "Manifest Package" and make corrections based on Project Manager approval prior to submittal to the generator's representative for signature. Submittals that are disapproved will be returned to the Contractor to be revised. The Contractor shall not transport or ship any wastes prior to USACE approval of the Manifest Package. The Government will make every effort to conduct the approval process within five (5) working days after the CO receives the Manifest Package.

3.4.14.5.3 Transportation of the Manifested waste

The Contractor's on-site personnel overseeing the Transporter prior to shipment of the hazardous waste shall certify that the packaging, marking, labeling, handling, and placarding of waste complies with Federal, state, and local laws and regulations and it correlates with the waste classification and quantities designated on the manifest prior to the signature of the Transporter. The certification shall be submitted to the Project Manager prior to transport and included as part of the Final Report. The Contractor's on-site person responsible for certification shall be trained as per DOT Regulations.

3.4.14.5.4 Tabulated Waste Handling Information

The Contractor shall list all waste materials going off-site including the description, quantity, destination, purpose, the hazardous waste classification, when the waste was manifested, samples taken, results, transportation plans, disposal facility, etc; if applicable.

3.4.14.6 On-Site Personnel

The Contractor shall utilize the services of a Regulatory Specialist (see Paragraph: "Regulatory Specialist") experienced in hazardous waste manifesting and hazardous waste site operations. The Contractor shall utilize additional trained, experienced on-site personnel as necessary to ensure that all on-site procedures for transportation and disposal of hazardous wastes are implemented and enforced on-site. The Contractor's on-site personnel overseeing the Transporter prior to shipment of the hazardous waste shall ensure that the packaging, marking, labeling, handling, and placarding of waste complies with Federal, state, and local laws and regulations and it correlates with the waste classification and quantities designated on the manifest prior to the signature of the Transporter. The on-site person responsible for certification shall be trained as per DOT regulations. The on-site person's qualifications shall be approved by the CO. The Contractor, as specified in each individual TO, may be required to sign the Hazardous Waste Manifest on behalf of the Government.

3.4.14.7 Contractor Responsibilities

The Contractor is responsible for total management of their T & D procedures including scheduling, control, and certification of all manifest submittal. An integral part of the certification procedure is proper identification of listed waste streams. If requested by the Project Manager the Contractor shall draft, for generator signature, a letter to the TSDF certifying that the information listed is based on available historical data.

3.4.14.8 Government Responsibilities

The Government will review submittals designated for Government approval and approve those that conform to Contract requirements. Approval will not relieve the contractor of the responsibility for any error which may exist, as the contractor under the requirements of this contract is responsible for ensuring that the quantities, waste characterizations and classifications, and all other details of the waste matches what is on the manifest prior to signature of the manifest.

3.4.14.9 Subcontractor Coordination

If the subcontractor, consultant, or agent is retained by the contractor to perform any of the work required by this section of the Contract, the subcontract shall include all of this section, with appropriate adjustments for the subcontract, and include the Regulatory Specialist or other authorized employee of the contractor as the point of

contact for the submittal and communications between the subcontractor and the Government. The contractor shall remain responsible for compliance with this section and all other portions of the Contract and shall sign all certifications required by the Contract.

3.4.15 Site Specific Materials Handling Plan (MHP)

The MHP shall discuss the transportation and handling of investigative derived wastes, as well as, wastes generated by the work defined in the task order. The MHP will outline the procedures for handling and disposal of wastes through their arrival at a licensed Treatment, Storage, and Disposal (TSD) facility. The MHP will provide evidence of certification of all material haulers and TSDs to be used on the project.

3.4.16 Interim and Long Term Monitoring

The contractor shall perform interim and long term monitoring to detect whether contaminants exist at a site and, if so, track the concentrations and spread of contamination from the site. All IRP monitoring programs require a sampling and analysis plan which details the location, frequency, and type of samples to be collected and describes analytical techniques, QA/QC requirements and reporting protocol.

3.4.17 Chemical Data Management

See Attachment C for requirements concerning guidance for Chemical Data Quality Management Plan (CDQMP) and task order specific Sampling and Analysis Plans. These requirements will be followed unless specifically stated otherwise in individual task orders.

3.4.18 Relevant Environmental Data Quality Assurance Plan Annual Submittal

All data required to prepare the Environmental Data Quality Assurance Plan shall be submitted in the specified formats specified in each task order. In lieu of hardcopy data, electronic data forms may be used. Electronic formats will be designed within each task order. Data to be submitted may include, but is not limited to, the following:

- Summaries of data quality objectives and criteria;
- Summaries of quality assurance and quality control procedures;
- Data concerning performance evaluation samples, and/or corrective actions required;
- Summaries and analyses of laboratory audits conducted by the contractor under the data quality assurance program; and
- Other data as required within each task order.

The reporting period for the Environmental Data Quality Assurance Plan covers the entire calendar year. Changes to personnel responsible for data submission and the points of contact will be forwarded to the project managers identified for each task order.

3.5 Geographic Information Systems (GIS)

The contractor shall provide support for all identified efforts that require Geographic Information System (GIS) capability. Contractor shall support encoding (collection and entering), storing (organizing and managing), processing (spatial analysis and modeling), and displaying (maps and tables) of GIS data. All GIS work performed by the contractor shall comply with applicable Federal, DoD, Army, and Air Force standards for data compatibility, database structure, graphics design, data dictionary, meta-data, and GPS. Contractor shall provide support that is consistent with DoD hardware and software configurations. Contractor shall be responsible for ensuring all GIS deliverables are properly prepared to allow integration into the clients' GIS. See Attachment B, *DATABASE STANDARDS FOR GEOGRAPHIC INFORMATION SYSTEMS (GIS) DELIVERABLES* for further information on applicable GIS standards. The contractor shall follow these protocols unless specifically indicated otherwise in an individual task order.

3.6 Not Used

4.0 Project Management

The contractor shall conduct environmental compliance, pollution prevention, and environmental planning and conservation, Department of Defense General Planning and GIS activities as specified in individual task orders issued under this contract. Unless otherwise stated in individual task orders, the contractor shall supply all personnel, material, equipment, transportation, etc. required to perform work described in each task order. The contractor shall conduct management and planning functions during the course of the effort. The contractor shall plan project activities, schedule activities and milestones, describe the status of resources, report on activity and progress toward accomplishing objectives, and document the results of project efforts.

4.1 Staff Organization and Responsibilities

The contractor shall provide personnel for individual task orders. The requirements for on-site and off-site personnel may differ for each task. The following list of qualifications generally reflects the personnel requirements associated with types of activities to be conducted under this contract. Other disciplines not listed will be required to have comparable qualifications in their field of expertise. The Contractor shall utilize the personnel identified within the proposal and any changes to these personnel shall be approved by the Contracting Officer. Each position shall be fulfilled by a single person unless otherwise specified.

4.1.1 Contact with Regulatory Agencies

Under no circumstances shall the Contractor or any of the subcontractors used in a delivery or task order contact environmental regulatory agencies without first obtaining permission from the USACE Project Manager. Once permission has been granted, the Contractor shall attempt to schedule meetings or telephone conversations so that the USACE PM or technical team leader is present. Should this not be possible, the Contractor shall within 5 calendar days of the contact, prepare minutes of the meeting detailing the following:

a. The agency contacted.

~~a.~~b. The agency representative contacted and their phone number.

~~a.~~c. The time and date of the contact.

~~a.~~d. The Contractor staff involved in the contact.

~~a.~~e. A detailed description of the topic and other discussion points.

~~a.~~f. Any taskings that resulted from the conversation.

~~a.~~g. Any other issues or problems discussed or encountered.

The Contractor is cautioned not to make any agreements with regulatory agencies without explicit USACE understanding and concurrence. Failure to do so may result in costs to the Contractor that will not be reimbursed by the USACE.

4.1.2 Project Manager

For each task order issued to the contractor, the contractor shall designate a Project Manager (PM). The contractor shall identify the PM before issuance of the task order and the PM's qualifications, experience and performance history and shall be accepted by the Contracting Officer prior to the PM beginning work on the task order. The contractor shall designate a single point of contact for the task order, who shall be responsible for the management and execution of all activities in accordance with the approved plans and specifications, statement of work, approved work plans, and all Federal, state, and local laws and regulations as applicable. The PM shall ensure coordination between the Health and Safety Manager and the Site Safety and Health Officer (SSHO), if applicable, to ensure that all site activities are performed in a safe manner. The qualifications of the PM will be outlined in each individual task order. However, a minimum of five (5) years Project Management experience will be required for all task orders.

4.1.3 Environmental Engineer

The senior Environmental Engineer(s) is responsible for assuring that all engineering support goals required in each task order are attained. The senior Environmental Engineer(s) shall have a minimum of five (5) years experience in HTRW investigations, remedial design, treatability studies, advocacy and use of innovative investigative and remedial technologies and development of cost and performance reports. The minimum educational and registration qualifications for the Environmental Engineer include:

- A four (4) year college degree in civil engineering and/or environmental engineering or related field.
- Professional Engineer Registration in California, Nevada, Utah, Arizona or New Mexico.

4.1.4 Geologist

The Contractor shall utilize a Senior Geologist who will ensure that all geology and groundwater related goals (including field investigations) of each task order are attained. The Senior Geologist shall provide oversight for the staff/field geologist and provide technical support for all drilling, sampling, and monitoring well installation activities to ensure the goals of the field investigations are achieved. The Senior Geologist shall be responsible for project geological oversight. The minimum qualifications of the Senior Geologist shall include:

- A four (4) year college degree in geology, hydrogeology or geological engineering.
- Six (6) years experience in conducting field investigations, installing groundwater monitoring wells, studies, design, and HTRW remedial actions. Working knowledge of calibrating and operating various monitoring devices.
- Registered Geologist in the state of California, Nevada, Utah, Arizona or New Mexico.

4.1.5 Environmental Specialist

The Contractor shall utilize an Environmental Specialist(s) as appropriate for individual task orders. The Environmental Specialist shall have overall responsibility when performing any work related to air quality compliance, water quality compliance and noise pollution studies and/or abatement activities. The Environmental Specialist may also be the technical lead when preparing an EIS or EIR. The Environmental Specialist(s) shall have at least five (5) years of related experience in air quality, water quality, noise pollution, and EIS and EIR development, as appropriate. In addition, the Environmental Specialist shall have a minimum of a four (4) year college degree in civil/environmental engineering, environmental science, or related field.

4.1.6 Regulatory Specialist

The contractor shall designate Regulatory Specialist(s) as the point of contact for all compliance related regulatory matters and manifesting requirements. It is not expected that the Regulatory Specialist(s) will be required for each task order. The level of effort required shall be determined for each task order depending on the type of project and project specific needs. The Regulatory Specialist(s) shall have an in depth knowledge of CERCLA, RCRA, CWA, CAA, SDWA, TSCA, EPCRA, and Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). During any operations generating waste for disposal, the regulatory specialist shall have overall responsibility for the accuracy of hazardous waste identification, interpretation of characterization analysis, completion of waste profiles, completion of hazardous waste manifests, and all transportation and disposal reporting. The contractor shall coordinate review and approval procedures for all manifests. The Regulatory Specialist shall have, as a minimum, the following qualifications:

- A minimum of three (3) years working experience in Federal, state, and local laws and regulations, and guidance associated with compliance activities.
- The capability to identify all required permits.
- Specialized training in Hazardous Materials Transportation and required training in manifesting and DOT certification (49 CFR172, subpart H; 40 CFR 262/265; 40 CFR 268; 29 CFR 1926.65).

4.1.7 Health and Safety Manager (HSM)

The following qualifications shall be met for the HSM unless specifically indicated otherwise in the individual task order. The Contractor shall utilize the services of an Industrial Hygienist certified by the American Board of Industrial Hygiene (ABIH) to develop and implement the Contractor's Accident Prevention Plan (APP)/Site Safety and Health Plan (SSHP) and oversee all safety and health related aspects of this contract. The HSM shall perform initial site-specific training, direct air monitoring and assist the Contractor's

superintendent and Site Safety and Health Officer (SSHO) in implementing and ensuring safety and health requirements are complied with. The HSM shall have the following experience and qualifications unless specifically indicated otherwise in the individual task order:

- **A minimum of two (2) years comprehensive experience in planning and overseeing hazardous waste activities.**
- **Demonstratable expertise in air monitoring techniques and in development of respirator protection and personal protective equipment programs for working in potentially toxic atmospheres**
- **Working knowledge of applicable Federal, state, and local occupational safety and health regulations.**
- **Qualified as a competent person for lead in accordance with OSHA and other regulatory agencies.**
- **Qualified as a competent person for asbestos in accordance with OSHA and other regulatory agencies.**

4.1.8 Independent Asbestos Consultant

The need for the independent asbestos consultant will be indicated in individual task orders. An independent asbestos consultant shall prepare the Contractor's Asbestos Hazard Abatement Plan (AHAP), perform training, direct air monitoring and assist the Contractor's HSM, superintendent and SSHO in implementing the AHAP and ensuring safety and health requirements are complied with during the performance of all work. The HSM noted in 4.1.7 above cannot serve as the independent asbestos consultant. The Certified Asbestos Consultant is considered a team subcontractor. The Independent Asbestos Consultant shall have the following experience and qualifications unless specifically indicated otherwise in the individual task order:

- **A minimum of 2 years of comprehensive experience in planning and overseeing asbestos abatement activities.**
- **Qualified as a competent person for asbestos activities in accordance with OSHA and other Federal and State regulatory agencies.**
- **Completed an AHERA accredited Asbestos Supervisor course and subsequent required refresher training.**
- **Certified by applicable state and/or Federal agency for asbestos supervisory activities.**

4.1.9 Independent Lead Consultant

The need for the independent lead consultant will be indicated in individual task orders and be based upon the presence of LBP in residential or public buildings. An independent lead consultant shall prepare the Contractor's Lead Hazard Control Plan (LHCP), perform training, direct air monitoring and assist the Contractor's HSM, superintendent and SSHO in implementing the LHCP and ensuring safety and health requirements are complied with during the performance of all work. The HSM noted in 4.1.7 above cannot serve as the independent lead consultant. The Independent Lead Consultant is considered a team subcontractor. The Independent Lead Consultant shall have the following experience and qualifications unless specifically indicated otherwise in the individual task order:

- **A minimum of 2 years of comprehensive experience in planning and overseeing lead hazard control activities.**
- **Qualified as a competent person for lead activities in accordance with OSHA and other Federal and State regulatory agencies.**
- **Completed an accredited Lead Supervisor course and subsequent required refresher training certified by applicable state and/or Federal agency for lead supervisory activities.**
- ~~The need for an HSM will be indicated in each individual task order. The following qualifications shall be met for the HSM unless specifically indicated otherwise in the individual task order. The Contractor shall utilize a Certified Industrial Hygienist (CIH), certified by the American Board of Industrial Hygiene (ABIH) to develop, implement, and oversee all safety and health related aspects of this contract.~~

- ~~A minimum of two (2) years comprehensive experience in planning and overseeing hazardous waste activities.~~
- ~~Demonstrable expertise in air monitoring techniques and in development of respiratory protection and personal protective equipment programs for working in potentially toxic atmospheres. Working knowledge of applicable Federal, state, and local occupational safety and health regulations.~~
- ~~If the project includes asbestos work, an independent CIH shall have applicable asbestos certifications, prepare the Contractor's Asbestos Hazard Abatement Plan, prepare and perform training, direct air monitoring and assist~~

~~the Contractor's Project Foreman or Project manager in implementing and ensuring safety and health requirements are complied with during the performance of all asbestos work. The independent CIH shall have a minimum of 2 years of comprehensive experience in planning and overseeing asbestos abatement activities.~~

- ~~If the project includes lead-based paint abatement work, an independent CIH shall have applicable lead certifications, prepare the Contractor's Lead Compliance Plan, prepare and perform training, direct air monitoring and assist the Contractor's project Foreman or Project Manager in implementing and ensuring safety and health requirements are complied with during the performance of lead-based paint work. The independent CIH shall have a minimum of 2 years of comprehensive experience in planning and overseeing lead-based paint activities.~~

4.1.~~8~~10 Site Safety and Health Officer (SSHO)

The need for a SSHO will be indicated in each individual task order. The following qualifications shall be met for the SSHO unless specifically indicated otherwise in the individual task order. The contractor shall utilize a trained, experienced SSHO to ensure that all elements of the approved SSHP are implemented and enforced on-site. The SSHO or a qualified designated representative shall be on-site full time for the duration of the field activities. The minimum qualifications of the SSHO shall include:

- A minimum of two (2) years working experience in implementing safety and health programs at hazardous waste sites.
- Documented experience in construction techniques and construction safety procedures.
- Specialized training in personal and respiratory protective equipment, program implementation, and in proper use of air monitoring instruments, air sampling methods, and interpretation of results.
- Current training in First Aid and CPR by a recognized organization such as the American Red Cross.
- Working knowledge of applicable Federal, state, and local occupational safety and health laws, regulations, and guidance.
- **If the project includes lead hazard control activities, qualified as a competent person for lead in accordance with OSHA and other regulatory agencies.**
- **If the project includes asbestos abatement, qualified as a competent person for asbestos in accordance with OSHA and other regulatory agencies.**
- ~~For asbestos work, the SSHO shall have applicable asbestos certifications, a minimum one year working experience in asbestos abatement, have experience in overseeing asbestos abatement activities, and have demonstrable experience in asbestos air monitoring techniques.~~
- ~~For lead-based paint work, the SSHO shall have applicable lead certifications, have a minimum one year working experience in lead-based paint abatement and oversight, and have demonstrable experience in lead air monitoring techniques.~~

4.1.~~9~~11 Quality Control (CQC) Manager

The need for a CQC Manager will be indicated in each individual task order. The following qualifications shall be met for the CQC Manager unless specifically indicated otherwise in the individual task order. The CQC manager shall be responsible for overall management of the CQC and have authority to act in all matters for the Contractor and ensuring compliance with the requirements identified in each task order. The level of effort required for the CQC manager shall be determined for each task order depending on the type of project and project specific needs. The minimum qualifications of the CQC Manager shall include:

- A college degree in engineering, construction management, or related field.
- A minimum of five (5) years working experience in quality control or quality assurance,
- Working knowledge of applicable Federal, state, and local laws, regulations, and guidance.

- In addition to the above experience and/or education, requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management for Contractors". This course is periodically offered by the USACE, and is approximately a two-day course. Contact the Contracting Officer for more information.

4.1.12~~0~~ Program Chemist

The need for a Program Chemist will be indicated in each individual task order. The following qualifications shall be met for the Program Chemist unless specifically indicated otherwise in the individual task order. As part of the project organization, the contractor shall appoint a Program Chemist for sampling and analytical activities who is responsible to a senior company officer. The Program Chemist should have general knowledge of remedial process chemistry, fate and transport of organic and inorganic, knowledge of chemical quality control, experience in the sampling and analysis of toxic/hazardous chemicals and radiological contamination in environmental matrices. The Program Chemist will be required to have advanced expertise (senior level) in chemical data quality management of environmental analytical data. The Program Chemist will be appointed by senior corporate or project management to be principally responsible for oversight of all quality control operations for field and laboratory activities related to sampling and analysis. The Program Chemist shall have, as a minimum, the following qualifications:

- A minimum of a four (4) year college degree in Chemistry from an accredited post-secondary institution.
- A minimum of ten (10) years of professional experience in Chemistry of which a minimum of seven years must be directly related to environmental investigations and/or remedial actions as a part of a Contractor management team (i.e. not primarily employed at a laboratory).
- A minimum of two (2) years experience at the level of a commercial environmental analytical laboratory with expertise in standard analytical chemistry methods common for analyzing soil, water, air and other materials for chemical contamination assessment, including field analytical procedures such as immunoassay, energy dispersive x-ray fluorescence (EDXRF), etc.
- Working knowledge of calibration and operation of various field analytical and monitoring devices.
- Comprehensive knowledge of sampling protocols for soil, water, and air matrices, calibration and operational procedures for field monitoring devices, chemical properties of hazardous materials, EPA protocols for performance of environmental analyses (SW-846, EPA wastewater and surface water, Standard Methods, etc.), and data validation procedures.
- Comprehensive knowledge of the data quality objectives process and the proper protocol and requirements needed to implement that process.

The Program Chemist will be expected to have a lead role in management of project tasks associated with sampling and analysis including preparation of the CDQMP, preparation of Sampling and Analysis Plans, instruction of field personnel in sampling and preservation requirements, general oversight of field personnel involved in sampling activities, coordination with the analytical laboratory to insure readiness to implement project specific requirements, participation in on site inspections of the Contract Laboratory, review of analytical data as it becomes available to insure conformance with quality standards, implementation of corrective actions in accordance with these specifications when review of data uncovers deficiencies, and serve as a general point of contact for the USACE CO for issues related to environmental chemistry. The Program Chemist shall be employed or subcontracted by the Contractor and shall not be employed by a laboratory performing analyses for this contract.

4.1.13 Project Chemist

The need for a Project Chemist will be indicated in each individual task order. The following qualifications shall be met for the Project Chemist unless specifically indicated otherwise in the individual task order. The Project Chemist must have knowledge of environmental analytical chemistry methodologies as described in EPA SW-846, and quality control procedures as applicable to environmental analytical chemistry. The Project Chemist shall have, as a minimum, the following qualifications:

- A minimum of a 4-year college degree in Chemistry from an accredited post-secondary institution and a minimum of four (4) years of combined professional experience at the level of a commercial environmental analytical laboratory or working as a part of a Contractor project management team of which a minimum of 3 years must be directly related to environmental investigations and/or remedial actions as a part of a Contractor management team (i.e. not primarily employed at a laboratory).

- Working knowledge of calibration and operation of various field analytical and monitoring devices, *including field analytical procedures such as immunoassay, energy dispersive x-ray fluorescence (EDXRF),* etc.
- Comprehensive knowledge of sampling protocols for soil, water, and air matrices, calibration and operational procedures for field monitoring devices, chemical properties of hazardous materials, EPA protocols for performance of environmental analyses (SW-846, EPA wastewater and surface water, Standard Methods, etc.), and data validation procedures.
    - Comprehensive knowledge of the data quality objectives process and the proper protocol and requirements needed to implement that process.

The Project Chemist will be expected to have a "hands on" role in management of project tasks associated with sampling and analysis including preparation of the CDQMP, preparation of Sampling and Analysis Plans, instruction of field personnel in sampling and preservation requirements, general oversight of field personnel involved in sampling activities, coordination with the analytical laboratory to insure readiness to implement project specific requirements, review of analytical data as it becomes available to insure conformance with quality standards, implementation of corrective actions in accordance with these specifications when review of data uncovers deficiencies, and serve as a point of contact for the USACE Contracting Officer for issues related to environmental chemistry. The Chemist shall conduct or oversee all on-site analytical testing including field screening tests. The Project Chemist shall coordinate Government Quality Assurance testing that verifies the Contractor chemical data. The Chemist shall review and verify all chemical data for hazardous waste manifests. The Chemist shall also prepare all data validation reports or review for accuracy all data validation reports prepared by subcontractors. The Project Chemist will perform an inspection of the Contract Laboratory at or near the beginning of sample analyses for each task order to insure laboratory capability to implement method and contract specified aspects of work. Method specific checklists presented in USACE EM 200-1-1 or equivalent in conjunction with the contract specifications and the final CDQMP shall be used as the basis for this inspection. Findings of this inspection shall be delivered by memorandum to the USACE CO within 15 days of completion. Inspection checklists shall be included as an attachment to the memorandum of findings. This review of the Contract Laboratory may be conducted concurrently with a project kickoff meeting, preparatory, or initial inspection. The Project Chemist shall be employed or subcontracted by the Contractor and shall not be employed by a laboratory performing analyses for this contract.

Note: If the same laboratory is used for multiple task orders a complete technical systems review will not be required for concurrent task orders. However, if new analyses are performed for which the Program or Project Chemist has not performed an assessment of laboratory capability to execute the requirements of the CDQMP a technical systems review will be required for those analyses. At a minimum a technical audit of the laboratory will be performed on an annual basis and whenever required as a function of deficiencies in laboratory performance.

4.1.14 GIS Specialist

As a technical specialist/expert, utilizes knowledge of surveying, geodesy, photogrammetry, mapping, engineering, Geographic Information Systems (GIS) and computers to plan, coordinate, and accomplish surveying mapping and GIS tasks necessary to support a variety of projects in the areas of planning, environmental engineering, ordnance and explosive (OE) program, remedial construction, operation and maintenance. The work involves a wide variety of techniques utilizing current state-of-the-art computer equipment and technology. As such, requires the following abilities: this position requires a minimum of 5 years of experience in the hands-on use of Geographic Information Systems as well as ~~requires~~ the following abilities:

a. Plans, coordinates and develops digital data and mapping (raster & vector) products in the areas of remote sensing, photogrammetry, hydrographic surveying, topography and land surveying utilizing state-of-the-art methods, practices techniques and equipment. Generates three-dimensional digital terrain models, topographic contours and cross-sections from topographic survey or photogrammetric data. Using this data computes volumes and areas.

b. Ability to work with other professionals to identify and develop GIS applications and to promote the use of GIS and GPS technologies. For taskings under this contract requiring GIS tasks, has the ability to plan, coordinate and implement projects utilizing GIS and engineering technologies, and a variety of computer systems, software and

procedures to accomplish assignments in the most, expeditiously and economical manner. Can develop georeferenced digital databases and ensure that database information is correctly linked to appropriate mapping elements so that analyses of the information can be performed, displayed and output to create final products. Applies professional judgment, technical skills and knowledge to perform analyses of GIS data and produce final products for taskings under this contract.

c. Ensures all mapping and GIS products resulting from taskings under this contract adhere to all relevant standards and regulations.

4.1.15 Conservation Staff

Contractor shall provide support staff for Conservation efforts that have significant education and experience in the applicable discipline.

4.1.15.1 Environmental Planning Staff

The need for an environmental planning staff will be indicated in each individual task order. Environmental planning staff shall have minimum four (4) year bachelor degree in environmental planning or related environmental discipline and senior environmental planner shall have a minimum of six (6) years of experience in conducting environmental impact analysis. In addition, staff shall have equivalent experience in dealing with substantive environmental issues (e.g. air quality, hazardous waste, noise, etc.) to support specific project actions. Equivalent experience in conducting airspace analysis is required for those projects that involve airspace support.

4.1.15.2 Natural Resources Staff

The need for a natural resources staff will be indicated in each individual task order. Natural resource staff shall have a minimum four (4) year bachelor degree in biology or natural resources sciences and the senior biologist and/or senior natural resources scientist shall have a minimum of six (6) years of experience in natural resource work to include field experience in desert eco-systems. In addition, staff personnel shall have direct experience in dealing with related management issues (consultations with regulatory agencies to include USFWS – ESA Section 7 & USCOE -CWA Section 404 and development of management plans and procedures, etc).

4.1.15.3 Cultural Resources Staff

The need for a cultural resources staff will be indicated in each individual task order. Cultural resource staff shall have a minimum four (4) year bachelor degree in archeology or related field and the senior archaeologist shall have a minimum of six (6) years of experience in cultural resource work to include experience working with surveys, test and evaluations, and mitigation/monitoring efforts for archeological sites and historic buildings as applicable. In addition, staff personnel shall have direct experience in dealing with related management issues (consultations with regulatory agencies to include California SHPO or equivalent historic preservation agencies in other states and development of management plans and procedures, etc.)

4.1.16 Other Personnel

Each task order shall require a variety of support staff for each task order. Support staff such as various program/project/remediation managers, environmental engineers, process engineers, chemical engineers, treatment plan operators, biologists, archeologists, etc., shall have appropriate bachelors degrees or training certificates, as applicable, and at least three (3) years of experience comparable to their assigned tasks. The Contractor's staff must include Registered Professional Engineers (various disciplines), biologists, archaeologists, chemists, toxicologists, certified industrial hygienists, and registered geologists. It is the responsibility of the Contractor to obtain the necessary staffing for each task order.

4.2 Submittals / Deliverables

Timely submission of all deliverables is essential to the successful completion of the task orders issued under this contract. The Department of Defense conducts its environmental program according to DoD, Army, Air Force, and Federal regulatory/statutory requirements. Hence, the proper, complete, and timely reporting of all activities, progress, and documents is critical for Department of Defense compliance with environmental laws. Draft reports are considered "Draft" only in that they have not been reviewed and approved by the Government. In all other

respects "draft reports" shall be complete, in proper format, fully illustrated, and free of grammatical and typographical errors. The contractor's name and the usual "prepared under contract number XXXX" text *shall not* be on the cover or the title page. All deliverables shall look like they were actually prepared by the USACE. The title blocks on the drawings shall be USACE standard title block, but not show the contractor's name and logo. Drawings that require a contractor to affix a professional seal can include the contractor's name and any other information commonly put on the seal. The preparer of the document should be listed in an appendix. The appendix can state all the preparers, the corporate logo, contract number, etc. The appropriate document cover page format shall be prepared under separate cover. Schedules for deliverables will be specified in the task order.

All submittals/deliverables shall be submitted on a CD and in hard copy format, unless specifically indicated otherwise in the task order. All submittals shall be submitted in Adobe Acrobat version 4.0 or higher and Microsoft Word. The Adobe Acrobat submittal shall include all text, figures, tables, photographs, appendices, etc. in a single searchable format file. Bookmarks shall be included which direct the user to the beginning of each numbered section, table, figure, photograph and appendix.

4.2.1 Monthly Status Report

The contractor shall prepare a monthly status report that briefly summarizes project activities to include:

a. Current Field/Office work.

b. Deliverables under preparation.

c. Schedules and schedule deviations.

d. Upcoming events or meetings involving regulatory agencies.

e. Any contacts with regulatory agencies.

f. Anticipated problems.

To facilitate the compilation of all Monthly Status Reports the report can be submitted in electronic format as specified below, as well as in hard copy format for review by the USACE PM.

This deliverable is specifically designed to provide the regulatory agencies a concise summary of current permitting activities related to this effort.

4.2.1.1 Action Plan

The first monthly report submitted will be considered the Action Plan and further monthly reports will report any changes, current activities and upcoming events to this Plan. The Action Plan shall outline the required technical support required by this SOW, with action items, milestones, and assignment of responsibilities.

4.2.2 Photo Documentation

A photo documentation log shall be established to include one set of site photographs (color - 8" x 10") and photo CD that shall be delivered to the Project Manager, including those not presented in the report, clearly labeled and described in a photo log, submitted with the final report.

4.2.3 Field Notes

The contractor shall submit one (1) set (xerographic) of all field notes.

4.2.4 Presentation Materials

Presentation materials shall be prepared for each meeting with regulatory agencies. Materials shall consist of overhead projector transparencies and/or Microsoft Power Point presentations and hard copy handouts.

4.2.5 Monthly Invoice Status Report

The contractor shall electronically submit a monthly invoice status report to the USACE. The report shall include all awarded task orders. Contract Number, task order number, awarded amount, each modification and amount, total invoiced amount and task order expiration date shall be included in the submittal.

Invoices will be sent to: USACE, Sacramento

Programs and Project Management Division

Designated Project Manager

1325 J Street

Sacramento, California 95814-2922

USACE, Sacramento

Contracting Division (Rachel Rosas)

1325 J Street

Sacramento, California 95814-2922

4.2.6 Deleted.

4.2.7 Other Reports

All other reports shall be completed to conform as specified in each individual task order.

4.2.8 Deliverables

All "hard copy" deliverables shall be submitted on recycled-content paper, and printed double-sided unless otherwise specified in individual task order(s). All deliverables shall be prepared and submitted according to format, content, and schedule described in each task order.

4.3 Meetings, Conferences, and Site Visits

4.3.1 Kick-off Meetings

The contractor shall attend kick-off meetings as specified in each task order at the startup of work. In addition to contractor's representatives, attendees may include, but are not limited to USACE, installation personnel, and representatives from regulatory agencies that are involved in the project. The Project Manager and contractor personnel shall attend the initial coordination/kick-off meeting. The Proposed methods for meeting the task order objectives shall be presented by the contractor, along with any other information pertinent to the successful completion of the project. Meeting agenda and minutes shall be prepared by the contractor as described in paragraph 4.2.2.2.

4.3.2 Meetings

The contractor, subcontractor and technical staff shall attend meetings, such as progress meetings, as specified in the individual task orders. The location and time of these meetings will be established by the USACE Project Manager. The purpose of these meetings will be to discuss plans, progress, status, and any obstacles encountered or foreseen during performance and to provide technical support to USACE personnel. The contractor shall prepare agendas and minutes of these meetings and submit to the Project Manager as required by the task orders. The minutes shall document all items discussed at the meeting and shall include a list of meeting attendees. The USACE and other attendees will review the minutes and submit comments, which shall be incorporated into the final minutes.

4.3.3 Hearings and Public Meetings

The contractor shall attend public meetings and hearings as specified in individual task orders, and to present technical information or provide logistical support (i.e., preparation of handouts, reports, recordings of the meeting, slides, etc.) for the USACE policy and position.

4.3.4 Site Visits

The contractor shall visit sites and interview personnel as specified in individual task orders. As specified in individual task orders, site-visit reports shall be prepared following each site visit whenever information is collected that will be used to complete a given task. The report shall include a statement of the purpose for the visit, a summary of activities, photos (if the visit is to a previously unvisited HTRW site), a list of contacts, and a discussion of observations, data obtained, and any anticipated follow-up activities.

4.3.5 Training/Education/Briefings

If specified in individual task orders, the contractor shall conduct activities in the development of training and educational programs. Subjects may include GIS usage, environmental awareness, compliance (i.e., hazardous waste/material handling, spill response, ECAMP, pesticide certification, operation of water treatment or distribution systems), Toxic Reduction Inventory, planning, and pollution prevention issues (opportunity assessments, recycling studies, annual Department of Defense Worldwide Pollution Prevention Conference and Exposition, base-level workshops, and regional demonstration projects). Training shall be conducted to meet the requirements under Federal and state certification regulations and laws.

4.4 Special Notifications

4.4.1 Health Risk

The contractor shall immediately report to the contracting Officer's Representative (COR) and the USACE Project Manager, via telephone, any data or results generated during this investigation that my indicate any potential imminent health risk or violation of state, Federal or local laws. Following this telephone notification, a written notice with supporting documentation shall be prepared and delivered within three (3) days. Upon request of the USACE, the contractor shall provide all pertinent data within three (3) weeks of the telephony notification.

The contractor shall identify potentially significant health and safety problem areas as they arise while providing the technical support required by this SOW.

4.4.2 Change of Contractor Personnel

The contractor shall notify the COR and the USACE Project Manager of all professional personnel to work on the specific tasks required in this SOW. The contractor shall notify the COR and the USACE Project Manager of any significant changes in project personnel along with the steps that the contractor is taking to ensure there are no impacts to the schedule or individual tasks. Upon the request of the COR or Project Manager, a revised organizational chart displaying key personnel involved in this effort and their respective labor categories shall be submitted with the next monthly Status Report. Any change in contract personnel must be approved by the USACE Contracting Officer.

4.5 Site Specific Requirements

4.5.1 Work Site Cleanup

Unless otherwise noted in individual task orders, at the completion of each day the contractor shall remove from the work premises any rubbish, tools, and materials that are not property of the Government. Upon completing required work at a site, the contractor shall leave the area clean, orderly, and return the work sites to their original condition.

4.5.2 Storage

Unless otherwise noted in individual task orders, the contractor shall be responsible for the security of his equipment. The contractor shall be responsible for security and weather proofing of any stored material and equipment. The contractor shall be responsible for maintaining the storage areas in good condition. Missing or damaged material or equipment shall be replaced at no additional cost to the Government. At the completion of the contract, all temporary fences and structures the contractor used to protect materials and equipment shall be removed, and the storage area shall be cleaned of all debris and repaired as required to return the site to its original condition.

4.5.3 Work Hours

Normal work hours are Monday through Friday, 7:00 A.M. to 5:00 P.M., except for Federal holidays. Exceptions to this will be noted in individual task orders.

4.5.4 Security

Security requirements, if any, will be detailed in the individual task orders.

4.5.5 Excavation Permit

Excavation permits, if required, will be detailed in the individual task orders

4.5.6 Natural or Cultural Resources Protection

Natural or cultural resource protection requirements, if any, will be detailed in the individual task orders

4.5.7 Facility Access and Exit

Facility access and exit requirements, if any, will be detailed in the individual task orders

4.5.8 Vehicle and Equipment

The contractor shall hold valid licenses, insurance, permits or bonds as required, covering his/her vehicles, equipment, and personnel. The contractor shall ensure that all vehicles and equipment are in safe mechanical condition and that they meet the safety standards required in accordance with the State in which the work is to be performed.

4.5.9 Vehicle Seat Belts

The contractor shall ensure that all employees, drivers and passengers, wear seat belts in compliance with Federal and State vehicle codes.

4.5.10 Vehicle and Employee Identification

The contractor may need to provide a complete list of all vehicles to be used on the project for identification and registration purposes. If required, the contractor shall provide a complete list of all employees anticipated for the project which shall be furnished to the USACE PM.

4.5.11 Questions from the Public

The contractor shall refer all questions from the public to the USACE PM.

4.5.12 Missing Criteria

The contractor shall be responsible for notifying the USACE PM of any missing criteria required for completion of the scope of work.

4.5.13 Ownership of Deliverables.

All data, reports, and material relative to this work are the property of the Government, and shall not be released by the contractor, subcontractor or their employees without written authorizations from the USACE PM.

4.5.14 Not used

ATTACHMENT A – PUBLIC LAWS AND STATUTES

Attachment A
PUBLIC LAWS AND STATUTES

Contractors shall comply with the issue or version (including; all changes and amendments) of Federal, state and local environmental statutes and other regulations in effect on the date of issuance of the individual task order(s), unless otherwise noted, including, the applicable portions of the documents cited below. This list is meant to be comprehensive though not exhaustive or complete.

(1) American Indian Religious Freedom Act of 1978

~~(1)~~(2) Anadromous Fish Act

~~(1)~~(3) Archaeological Resources Preservation Act

~~(1)~~(4) Asbestos Hazard Emergency Response Act (AHERA)

~~(1)~~(5) Bald and Golden Eagle Protection Act

~~(1)~~(6) Ban of Lead-Containing Paint and Certain Consumer Products Bearing Lead-Containing Paint. Implementing the Consumer Product Safety Act of 1977

~~(1)~~(7) Clean Air Act (CAA) and the 1990 CAA Amendments

~~(1)~~(8) Clean Water Act (CWA), 1977

~~(1)~~(9) Coastal Zone Management Act of 1972

(10) Comprehensive Environmental Response Compensation and Liabilities Act (CERCLA) of 1980 as amended by the Superfund Amendment and Reauthorization Act (SARA)

(11) Department of Interior regulations

~~(11)~~(12) Department of Transportation (DOT) regulations

~~(11)~~(13) Emergency Planning and Community Right to Know Act of 1986

~~(11)~~(14) Endangered Species Act (ESA), 1973

~~(11)~~(15) Engle Act, 1958

~~(11)~~(16) Environmental Safeguards on Activities for Animal Damage Control on Federal Lands, Executive Order (EO) 11870, 1975

~~(11)~~(17) Federal Compliance with Pollution Control Standards, EO 12088, 1978

~~(11)~~(18) Federal Emergency Management (Executive Order 12148)

~~(11)~~(19) Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

~~(11)~~(20) Federal Land Policy and Management Act (FLPMA)

~~(11)~~(21) Federal Water Pollution Control Act, 1976 (22) Fish and Wildlife Coordination Act, 1965

[Attachment A – Public Laws and Statutes]

(22) Floodplain Management (Executive Order 11988)

~~(22)~~(23) Historic Sites, Buildings and Antiquities Act

~~(22)~~(24) Lead-Based Paint Poisoning Act

~~(22)~~(25) Lead-Based Paint Poisoning Prevention in Certain Residential Structures

~~(22)~~(26) Marine Mammal Protection Act of 1972

~~(22)~~(27) Migratory Bird Protection Act

~~(22)~~(28) National Emission Standard for Asbestos, 40 CFR Part 61, Subpart M.

~~(22)~~(29) National Environmental Policy Act (NEPA) and CEQ Regulations implementing NEPA

~~(22)~~(30) National Historic Preservation Act

~~(22)~~(31) National Monument Act

~~(22)~~(32) National Oil and Hazardous Substances Contingency Plan (NCP)

~~(22)~~(33) National Primary and Secondary Ambient Air Quality Standards for Lead

~~(22)~~(34) Noise Control Act (NCA) of 1972

~~(22)~~(35) Occupational Safety and Health Act and implementing regulations

~~(22)~~(36) Occupational Safety and Health Standards, Lead

~~(22)~~(37) Office of Management and Budget Circular A 106

~~(22)~~(38) Oil Pollution Act of 1990

(39) Pollution Prevention Act, 1990

~~(39)~~(40) Protection and Enhancement of the Cultural Environment, EO 11593

~~(39)~~(41) Protection of Historic and Cultural Properties

~~(39)~~(42) Protection of Migratory and Insectivorous Birds

~~(39)~~(43) Protection of Wetlands, EO 11990

~~(39)~~(44) Public Buildings Cooperative Use Act of 1976

~~(39)~~(45) Reservoir Salvage Act of 1960

~~(39)~~(46) Residential Lead-Based Paint Hazard Reduction Act of 1992

~~(39)~~(47) Resource Conservation and Recovery Act (RCRA) of 1976, as amended by the Hazardous and Solid Waste Amendment (HSWA), of 1984

~~(39)~~(48) Safe Drinking Water Act (SDWA), 1965, as amended

~~(39)~~(49) Safety and Health Regulations for Construction

~~(39)~~(50) Sikes Act

~~(39)~~(51) Solid Waste Disposal Act (SWDA)

~~(39)~~(52) The Marine Protection, Research and Sanctuaries Act

~~(39)~~(53) The Wilderness Act of 1964

~~(39)~~(54) Threatened and Endangered Wildlife and Plants, 1980

~~(39)~~(55) Toxic Substances Control Act (TSCA), 1976

~~(39)~~(56) Water Quality Improvement Act (WQIA) of 1974

~~(39)~~(57) Wild and Scenic Rivers Act, 1972

~~(39)~~(58) Wild Free-Roaming Horses and Burros Act, 1971

~~(39)~~(59) PL 93-633 - Hazardous Materials Transportation Act, 1974.

(60) PL 96-510 - Comprehensive Environmental Response, Compensation and Liability Act 1980.

(61) PL 99-499 - Superfund Amendments and Reauthorization Act of 1986.

~~(61)~~(62) Clean Air Act as amended (42 U.S.C. §7401 to 7671q)

~~(61)~~(63) Federal Water Pollution Control Act (33 U.S.C. §§1251 to 1387

~~(61)~~(64) Endangered Species Act of 1966 (16 U.S.C. §§1531 to 1544)

~~(61)~~(65) Federal Technology Transfer Act of 1986 (15 U.S.C. §§3701 to 3714)

~~(61)~~(66) Fishery Conservation and Management Act of 1976 (16 U.S.C. §1801 et seq.)

~~(61)~~(67) Hazardous Materials Transportation Act of 1970 as amended (49 U.S.C. §1801 et eq.)

~~(61)~~(68) Low Level Radioactive Waste Policy Act of 1985 as amended (42 U.S.C. §§2021b to 2021j)

~~(61)~~(69) Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. §§1401 et seq., 16 U.S.C. 1431 et seq.)

~~(61)~~(70) Nuclear Waste Policy Act of 1984 (42 U.S.C. §§10101 et seq.)

~~(61)~~(71) Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. §§3701 et seq.)

~~(61)~~(72) Toxic Substances Control Act of 1976 as amended (15 U.S.C. §§2601 to 2671)

~~(61)~~(73) 40 CFR 268 Land Disposal Restrictions (LDR)

~~(61)~~(74) 40 CFR 280 through 281 EPA Regulations for Underground Storage Tanks

~~(61)~~(75) 40 CFR 300 through 311 EPA Regulations Implementing CERCLA

~~(61)~~(76) 40 CFR 761 EPA PCB Regulations

~~*(61)*~~*(77)* 40 CFR 1500 through 1508 CEQ Regulations Implementing NEPA

~~*(61)*~~*(78)* 49 CFR 170 through 179 DOT Hazardous Materials Transportation Regulation

Federal Registers (FR)

(1) FR 11796-11877, March 29, 1990, Hazardous Waste Management System Identification and Listing of Hazardous Waste; Toxicity Characteristics Revisions

~~(1)~~(2) 55 FR 30798 - 30884, July 27, 1990, Corrective Action for Solid Waste Management Units (SWMUs) at Hazardous Waste Management Facilities; Proposed Rule

~~(1)~~(3) 57 FR 958-1042, January 9, 1992, Land Disposal Restrictions for Newly Listed Wastes and Contaminated Debris; Proposed Rule

State and Local Laws/Ordinances

(1) State Standard Preliminary Assessment and Site Inspection Forms

EPA Publications

(2) EPA Characterization of Hazardous Waste Sites, A Methods Manual, 2 Vol. EPA/600/4-84/075.

~~(2)~~(3) EPA Community Relations in Superfund, Office of Solid Waste and Emergency Response (OSWER) Directive 9230.0-3B.

~~(2)~~(4) EPA CERCLA Compliance with Other Laws Manual, Interim Final, EPA 540 G-89/006, and Part II Clean Air Act and Other Environmental Statutes and State Requirements, EPA 540 G-89/009.

~~(2)~~(5) EPA Contract Laboratory Program Statement of Work for Inorganics Analysis (SOW 788) and for Organic Analysis (SOW).

~~(2)~~(6) EPA Corrective Measures for Releases to Soil from Solid Waste Management Units, EPA/530/SW-88/022

~~(2)~~(7) EPA Data Quality Objectives for Remedial Response Activities, EPA/9335.0-7B

~~(2)~~(8) EPA Data Quality Objectives for Remedial Response Activities, Example Scenario: RI/FS Activities at a Site with Contaminated Soils and Ground Water, EPA/540/G-87/004

~~(2)~~(9) EPA Definition of Solid Waste Management Units for the Purpose of Corrective Action Under Section 3004(u), OSWER Directive 9502.00-6

~~(2)~~(10) EPA Drum Handling Practices at Hazardous Waste Sites, EPA/600/2-86/013

~~(2)~~(11) EPA Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference, EPA/600/3-89/013

~~(2)~~(12) EPA Expanded Site Inspection Guidance, EPA/9345.1

~~(2)~~(13) EPA Exposure Factors Handbook, EPA/600/8-89/043

~~(2)~~(14) EPA Furthering the Use of Innovative Technology in OSWER Programs, OSWER Directive 9380.0-17

~~(2)~~(15) EPA Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup, EPA-560/5-86-017

~~(2)~~(16) EPA Geophysical Techniques for Sensing Buried Wastes and Waste Migration, EPA-600/7-84-064

~~(2)~~(17) EPA Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA.

~~(2)~~(18) EPA/540/SW-89/031, OSWER Directive 9355.3-01

~~(2)~~(19) EPA Guide for Conducting Treatability Studies Under CERCLA, EPA/540/R-92/071a

~~(2)~~(20) EPA Guide for Conducting Treatability Studies under CERCLA: Aerobic Biodegradation Remedy Screening EPA/540/2-91/013A

~~(2)~~(21) EPA Guide for Conducting Treatability Studies under CERCLA: Chemical Dehalogenation EPA/540/R -92/013a

~~(2)~~(22) EPA Guide for Conducting Treatability Studies under CERCLA: Soil Vapor Extraction (Interim Guidance) EPA/540/2-91/019A

~~(2)~~(23) EPA Guide for Conducting Treatability Studies under CERCLA: Soil Washing (Interim Guidance) EPA/540/2-91/020A

~~(2)~~(24) EPA Guide for Conducting Treatability Studies under CERCLA: Solvent Extraction Remedy Selection (Under Development).

~~(2)~~(25) EPA Guide for Conducting Treatability Studies under CERCLA: Solvent Extraction (Interim Guidance) EPA/540/R-92/016a

~~(2)~~(26) EPA Guide for Conducting Treatability Studies under CERCLA: Thermal Desorption Remedy Selection (Under Development).

~~(2)~~(27) EPA Guide for Conducting Treatability Studies under CERCLA: Thermal Desorption Remedy Selection (Interim Guidance) EPA/540/R-92/074A

~~(2)~~(28) EPA Guidance for Data Useability in Risk Assessment, Interim Final, EPA 540 G-90 008

~~(2)~~(29) EPA Guidance on Applying the Data Quality Objectives Process for Ambient Air Monitoring Around Superfund Sites (Stages I & II), EPA-450/4-89-015

~~(2)~~(30) EPA Guidance on Applying the Data Quality Objectives Process for Ambient Air Monitoring Around Superfund Sites (Stage III), EPA-450/4-90-005

~~(2)~~(31) EPA Guidance on Implementation of the "Consistency" Exemption to the Statutory Limits on Removal Actions, EPA/9360.0-12A

~~(2)~~(32) EPA Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites, EPA 540/G-88/003

~~(2)~~(33) EPA Guide for Decontaminating Buildings, Structures, and Equipment at Superfund Sites, EPA/600/2-85/028

~~(2)~~(34) EPA Guide to Selecting Superfund Remedial Actions, EPA/9355.0-27FS

~~(2)~~(35) EPA Integrated Risk Information System (IRIS)

~~(2)~~(36) EPA Management of Investigation-Derived Wastes During Site Inspections, EPA/540/G-91/009

~~(2)~~(37) EPA Manual: “Alternative Methods for Fluid Delivery and Recovery (EPA/625/R-94/003).”

~~(2)~~(38) EPA Methods For Chemical Analysis of Water and Wastes, EPA-600/4-79-020

~~(2)~~(39) EPA Methods for the Determination of Organic Compounds in Drinking Water, EPA/600/4-88/039

~~(2)~~(40) EPA Outline of EE/CA Guidance, EPA Memorandum

~~(2)~~(41) EPA Preliminary Assessment Petition, EPA/9200.5-301

~~(2)~~(42) EPA Guidance for Data Useability in Risk Assessment, Interim Final, EPA 540 G-90 008

~~(2)~~(43) EPA Guidance on Applying the Data Quality Objectives Process for Ambient Air Monitoring Around Superfund Sites (Stages I & II), EPA-450/4-89-015

~~(2)~~(44) EPA Guidance on Applying the Data Quality Objectives Process for Ambient Air Monitoring Around Superfund Sites (Stage III), EPA-450/4-90-005

~~(2)~~(45) EPA Guidance on Implementation of the "Consistency" Exemption to the Statutory Limits on Removal Actions, EPA/9360.0-12A

~~(2)~~(46) EPA Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites, EPA 540/G-88/003

~~(2)~~(47) EPA Guide for Decontaminating Buildings, Structures, and Equipment at Superfund Sites, EPA/600/2-85/028

~~(2)~~(48) EPA Guide to Selecting Superfund Remedial Actions, EPA/9355.0-27FS

~~(2)~~(49) EPA Integrated Risk Information System (IRIS)

~~(2)~~(50) EPA Management of Investigation-Derived Wastes During Site Inspections, EPA/540/G-91/009

~~(2)~~(51) EPA, Methods For Chemical Analysis of Water and Wastes, EPA-600/4-79-020

~~(2)~~(52) EPA, Methods for the Determination of Organic Compounds in Drinking Water, EPA/600/4-88/039

~~(2)~~(53) EPA Outline of EE/CA Guidance, EPA Memorandum

~~(2)~~(54) EPA Preliminary Assessment Petition, EPA/9200.5-301

~~(2)~~(55) EPA Risk Assessment Guidance for Superfund Volume I - Human Health Evaluation Manual (Part A), EPA/540/1-89/002

~~(2)~~(56) EPA Risk Assessment Guidance for Superfund Volume I - Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals), OSWER Directive 9285.7-01B

~~(2)~~(57) EPA Risk Assessment Guidance for Superfund Volume I - Human Health Evaluation Manual (Part C, Risk Evaluation of Remedial Alternatives), OSWER Directive 9285.7-01C

~~(2)~~(58) EPA Risk Assessment Guidance for Superfund Volume II - Environmental Evaluation Manual, EPA/540/1 -89/001

~~(2)~~(59) EPA Risk Assessment, Management and Communication of Drinking Water Contamination, EPA 625/4 -89/024

~~(2)~~(60) EPA RCRA Corrective Action Decisions Documents: Statement of Basis and Response to Comments, OSWER Directive No. 9902.6

~~(2)~~(61) EPA RCRA Corrective Action Plan EPA/530/SW-88/028

~~(2)~~(62) EPA RCRA Facility Assessment Guidance, EPA/530/SW-86/053

~~(2)~~(63) EPA RCRA Facility Investigation (RFI) Guidance, 4 Vol., EPA/530/SW-89/031,

~~(2)~~(64) EPA RCRA Ground Water Monitoring Technical Enforcement Guidance Document, OSWER Directive 9950.1

~~(2)~~(65) EPA Soil Sampling Quality Assurance User's Guide, EPA 600/8-89/046

~~(2)~~(66) EPA Standard PA and SI Forms

~~(2)~~(67) EPA Superfund Community Relations Program: A Handbook, EPA/540/G-88/002

~~(2)~~(68) EPA Superfund Exposure Assessment Manual, EPA/540/1-88/001

~~(2)~~(69) EPA Superfund Removal Procedures: Action Memorandum Guidance, OSWER 9360.3-01

~~(2)~~(70) EPA Superfund Removal Procedures, EPA/9360.0-03B

~~(2)~~(71) EPA SW-846, Test Methods for Evaluating Solid Waste Physical / Chemical Methods, 3rd Edition, with updates.

~~(2)~~(72) EPA Use of Removal Approaches to Speed Up Remedial Action Projects, EPA 9335.0-25A

~~(2)~~(73) EPA Verification of PCB Spill Cleanup by Sampling and Analysis, EPA-560/5-85-026

National Institute of Occupational Safety and Health (NIOSH) Publications

(1) NIOSH/OSHA/USCG/EPA, "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities." (DHHS (NIOSH) Publication No.85-115)

~~(1)~~(2) NIOSH Registry of Toxic Effects of Chemical Substances [updated frequently]

~~(1)~~(3) Manual of Analytical Methods, 3rd Edition, National Institute of Occupational Safety and Health, 1984 and all supplements.

Nuclear Regulatory Commission

(1) Nuclear Regulatory Commission Standards, 10 CFR 19 - 171.

Occupational Safety and Health Administration (OSHA)

(1) Occupational Safety and Health Administration (OSHA) General Industry Standards, 29 CFR l9l0, and Construction Industry Standards, 29 CFR 1926; especially 29 CFR 1910.120 / 29 CFR 1926.65 - "Hazardous Waste Site Operations and Emergency Response."

DOD Directives, AF Policy Directives (AFPDs), AF Instructions (AFIs), Army COE Regulations. and Technical Manuals, State and Federal Regulations

The Contractor shall comply with the issue or version of the DoD and AF directives; regulations, policies and other documents in effect on the date of issuance of the task order, unless otherwise noted, including, but not limited to the documents cited below. This list is meant to be comprehensive through not exhaustive or complete.

(1) AFPD 32-70: Environmental Quality

~~(1)~~(2) AFI 23-502: Management of Recoverable and Waste Liquid Petroleum Products

~~(1)~~(3) AFI 32-1024: Standard Facility Requirements

~~(1)~~(4) AFI 32-1052: Facility Asbestos Management

~~(1)~~(5) AFI 32-1053: Pest Management Programs

~~(1)~~(6) AFI 32-4002: Hazardous Material Emergency Planning and Response Compliance

~~(1)~~(7) AFI 32-7001: Environmental Budgeting

~~(1)~~(8) AFI 32-7002: Environmental Information Management System

~~(1)~~(9) AFI 32-7005: Environmental Protection Committees

~~(1)~~(10) AFI 32-7006: Environmental Program in Foreign Countries.

~~(1)~~(11) AFI 32-7020: The Environmental Restoration Program

~~(1)~~(12) AFI 32-7040: Air Quality Compliance

~~(1)~~(13) AFI 32-7041: Water Quality Compliance

~~(1)~~(14) AFI 32-7042: Solid and Hazardous Waste Compliance

~~(1)~~(15) AFI 32-7044: Storage Tank Compliance

~~(1)~~(16) AFI 32-7045: Environmental Compliance Assessment and Management Program

~~(1)~~(17) AFI 32-7047: Compliance Tracking and Reporting

(18) AFI 32-7060: Interagency and Intergovernmental Coordination for Environmental Planning

(19) AFI 32-7061: The Environmental Impact Analysis Process

~~(19)~~(20) AFI 32-7062: Department of Defense Comprehensive Planning

~~(19)~~(21) AFI 32-7063: Air Installation Compatible Use Zone Program

~~(19)~~(22) AFI 32-7064: Integrated Natural Resources Management

~~(19)~~(23) AFI 32-7065: Cultural Resources Management

~~(19)~~(24) AFI 32-7066: Environmental Baseline Surveys in Real Estate Transactions

~~(19)~~(25) AFI 48-119: Medical Service Environmental Quality Programs

~~(19)~~(26) AFI 63-118: Civil Engineer Research, Development, and Acquisition

~~(19)~~(27) AFM 19-10: Planning in a Noise Environment

(28) AFM 91-320: Operation and Maintenance of Domestic Industrial Wastewater Systems

(29) AF Policy and Guidance on Lead-Based Paint in Facilities, May 1993

(30) AF Action Memorandum: Department of Defense Ban on Purchases of Ozone Depleting Chemicals

(31) AF Action Memorandum: AF Pollution Prevention Program

~~(31)~~(32) DOD Directive 4150.7: DOD Pest Management Program

~~(31)~~(33) DOD Directive 4210.15: Hazardous Materials Pollution Prevention

(34) DOD Directive 5030.41: Oil and Hazardous Substance Pollution Prevention Contingency Program.

(35) DOD Directive 6050.1: Environmental Effects in the US of DOD Actions

~~(35)~~(36) Overseas Baseline Guidance Document

(37) USAF Program Action Directive. (PAD) 90-1, Hazardous Material Integrated Management Program

~~(37)~~(38) AF Guidance for Rating and Assessing Damage and Exposure (GRADE) System (USAF OEHL)

~~(37)~~(39) Defense Environmental Quality Program Policy Memorandum (DEQPPM 80-05, Hazardous Waste Management Program Designation of Defense Logistics Agency as manager for disposal of hazardous wastes in DOD

(40) DEQPPM 80-8, DOD Hazardous Waste Management Program Procedures

~~(40)~~(41) AFH 32-1024, Standard Facility Requirements

~~(40)~~(42) AFH 32-1084, Standard Facility Handbook

~~(40)~~(43) Tri-Service GIS Manual, Geospatial Data Standards

~~(40)~~(44) California Code of Regulations, Title 22, 23, and 8, Social Security, Division 4, Environmental Health, Chapter 20, "Hazardous Waste Permit Program".

~~(40)~~(45) California Leaking Underground Fuel Tank (LUFT) Manual, 1989.

(46) Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites, 10 August 1990.

(47) OSHA 29 CFR 1910, 1910.120, 1926 - Safety and Health Regulations.

~~(47)~~(48) OSHA 40 CFR 260-270 - USEPA Hazardous Waste Requirements.

~~(47)~~(49) DM 4-805-10 -Survey Requirements, Dec 1991.

~~(47)~~(50) EM 385-1-1 - USACE Safety and Health Requirements Manual.

(51) EP 1110-1-11 - USACE Engineering Pamphlet Work Practices and Procedures, 15 July 1992.

~~(51)~~(52) EM 1110-1-2909 – USACE Engineering and Design - Geospatial Data and Systems

~~(51)~~(53) ER 385-1-92 - USACE Engineering Regulation Safety and Occupational Health Document Requirements for HTRW Activities.

(54) ER 1130-2-434 - Response to Oil and Hazardous Substances Incidents.

~~(54)~~(55) ETL 1110-3-456 - Army Guide for Lead Paint Practices.

~~(54)~~(56) ACGIH, "Threshold Limit Value and Biological Exposures Indices" for 1990-1991.

(57) ER 1110-1-263, Chemical Data Quality Management for Hazardous Waste Remedial Activates.

~~(57)~~(58) U.S. Army Engineer Division Manual, "Schedule of Services and Fees for Tests and Analyses", October 1991.

(59) U.S. Army COE, Volume 2, Cost Estimating A-E Guide, I October 1992.

~~(59)~~(60) F.A.R Clause 52.236-13 -Accident Prevention.

(61) NIOSH/OSHA/USCG/EPS -Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities.

(62) CAL-OSHA, 8CCR - General Safety Orders.

~~(62)~~(63) AR 405-90 - Disposal of Real Estate.

~~(62)~~(64) Army TB5-890-2 - Ordnance and Explosive Waste Risk Assessment.

(65) 49 CFR 171-178 (DOT) - Transport of Hazardous Wastes and Hazardous Substances.

~~(65)~~(66) 22.4.30 California Administrative Code - Minimum Standards for Management of Hazardous Wastes and Hazardous Substances.

(67) EPA Guide 560/5-851-024, June 1985, Guidance for Controlling Asbestos -Containing Materials in Buildings.

~~(67)~~(68) EPA OSWAR Directive 9355.3-01 - Guidance for Conducting Remedial Investigations (RI) and Feasibility Studies (FS) Under CERCLA (Interim Final), October 1988.

(69) USEPA- Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, February 1988.

~~(69)~~(70) USEPA - Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses, July 1988.

~~(69)~~(71) EPA Guide 540/G-90/008 - Guidance for Data Usability in Risk Assessment, October 1990.

~~(69)~~(72) EPA Guide 540/G-87/003 - Data Quality Objectives for Remedial Response Activities, Development Process, March 1987.

~~(69)~~(73) COE Technical Guidelines for Hazardous and Toxic Waste Treatment and Clean-up Activities.

(74) (74)EP 1110-1-18 Ordnance and Explosives Response, April 2000.

~~(74)~~(75) (75)EM 1110-1-4009 Ordnance and Explosives

~~(74)~~(76) ER 1110-1-8153 Ordnance and Explosives Response

~~(74)~~(77) ER 1110-1-263 Engineering and Design - Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial Activities

~~(74)~~(78) ER 1110-1-8100 Laboratory Investigations and Testing

~~(74)~~(79) ER 1110-1-8156 Policies, Guidance, and Requirements for Geospatial Data and Systems

~~(74)~~(80) ER 1110-2-1150 Engineering and Design For Civil Works Projects

~~(74)~~(81) ER-1110-2-1200 Plans and Specifications For Civil Works Projects

~~(74)~~(82) ER 1110-2-1302 Civil Works Cost Engineering

~~(74)~~(83) ER 1110-3-1301 Cost Engineering Policy and General Requirements for Hazardous, Toxic Radioactive Waste (HTRW) -Remedial Action Cost Estimates

~~(74)~~(84) ER 1110-345-700 Design Analysis, Drawings and Specifications

~~(74)~~(85) ER 1140-1-211 Work for Others - Support for Others: Reimbursable Work

~~(74)~~(86) ER-1140-3-1 Work for Others - Support to Defense Departments and Agencies

~~(74)~~(87) ER 1165-2-132 Hazardous, Toxic Radioactive Waste (HTRW) Guidance for Civil Works Projects

~~(74)~~(88) ER 1180-1-9 Design-Build Contracting

~~(74)~~(89) ETL 1110-1-154 Standard Outlines for Scopes-of-Work for Investigations and Studies at Hazardous, Toxic, and Radioactive Waste (HTRW) Sites Under CERCLA (SARA), RCRA, and NEPA

~~(74)~~(90) ETL 1110-1-178 Horizontal Directional Drilling for Environmental Applications

Attachment B - Database Standards for GIS Deliverables

Attachment B

Database Standards for Geographic Information Systems (GIS) Deliverables

The Contractor shall use Version 2.30 or later of the Federal Government's *Spatial Data Standard for Facilities, Infrastructure, and Environment (SDSFIE).* The standard may be downloaded at the USACE CADD/GIS Technology Center website: http://tsc.wes.army.mil. In addition, the contractor shall obtain and comply with USACE EM 1110-1-2909, *Engineering and Design - Geospatial Data and Systems*. The Contractor may download this engineering manual at the following website: http://www.usace.army.mil/inet/usace-docs/eng-manuals/em.htm.

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Chemical Data Quality Management Plan
Version 1.08

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AA	Atomic Absorption
ARARs	Applicable or Relevant and Appropriate Requirements
ASTM	American Society for Testing and Materials
BFB	1,4-Bromofluorobenzene
BGS	Below Ground Surface
BNA	Base Neutral Acid
CAR	Corrective Action Report
CCC	Calibration Check Compound
CCV	Continuing Calibration Verification
CDQMP	Chemical Data Quality Management Plan
CL	Control Limit
CLP	Contract Laboratory Program
CMECC	California Military Environmental Coordination Committee
CO	Contracting Officer
COC	Chain of Custody
COPC	Chemical of Potential Concern
CQAR	Chemical Quality Assurance Report
CRQL	Contract-Required Quantitation Limit
CVAA	Cold Vapor Atomic Absorption
DCB	Decachlorobiphenyl
DFTPP	Decafluorotriphenylphosphine
DI	De-Ionized
DO	Delivery Order
DOD	Department of Defense
DQCR	Daily Quality Control Report
DQO	Data Quality Objective
DRO	Diesel Range Organic
ECD	Electron Capture Detector
EPA	Environmental Protection Agency
FID	Flame Ionization Detector
FLAA	Flame Atomic Absorption
FPD	Flame Photometric Detector
FSP	Field Sampling Plan
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometer
GFAA	Graphite Furnace Atomic Absorption
GPC	Gel Permeation Chromatography
GRO	Gasoline Range Organic
HECD	Hall Electrolytic Conductivity Detector
HNO3	Nitric Acid
HPLC	High Performance Liquid Chromatography
HTRW	Hazardous, Toxic, and Radioactive Waste
IC	Ion Chromatography
ICP	Inductively Coupled Plasma
ICS	Interference Check Standard
ICV	Initial Calibration Verification
ID	Identification
IDL	Instrument Detection Limit
IR	Infrared
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LIMS	Laboratory Information Management System
LQMP	Laboratory Quality Management Plan

LUFT	Leaking Underground Fuel Tank
MB	Method Blank
MD	Matrix Duplicate
MDL	Method Detection Limit
MEK	Methyl Ethyl Ketone
MIBK	Methylisobutyl Ketone
MQL	Method Quantitation Limit
MRD	Missouri River Division
MRL	Method Reporting Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MSA	Method of Standard Additions
NIST	National Institute of Standards and Technology
NPD	Nitrogen Phosphorus Detector
OIG	Office of Inspector General
OSHA	Occupational Safety and Health Administration
PAH	Polynuclear Aromatic Hydrocarbons
PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparability
PBMS	Performance Based Measurement System
PCB	Polychlorinated Biphenyl
PDS	Post Digestion Spike
PES	Performance Evaluation Sample
PID	Photoionization Detection
PPB	Parts Per Billion
PPM	Parts Per Million
PQL	Practical Quantitation Limit
QA	Quality Assurance
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QC	Quality Control
QCSR	Quality Control Summary Report
RCRA	Resource Conservation and Recovery Act
RF	Response Factor
RFP	Request For Proposal
ROD	Record of Decision
RPD	Relative Percent Difference
RSD	Relative Standard Difference
RSE	Relative Standard Error
SAP	Sampling and Analysis Plan
SD	Serial Dilution
SOP	Standard Operating Procedure
SOW	Scope of Work
SPCC	System Performance Calibration Check
SPE	Solid Phase Extraction
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TAT	Turnaround Time
TCL	Target Compound List
TEPH	Total Extractable Petroleum Hydrocarbon
TIC	Tentatively Identified Compound
TPH	Total Petroleum Hydrocarbon
TPPH	Total Purgeable Petroleum Hydrocarbon
TRPH	Total Recoverable Petroleum Hydrocarbon
USACE	United States Army Corps of Engineers
USCS	Unified Soil Classification System
USDOT	United States Department of Transportation

USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VOA	Volatile Organic Analysis
VOC	Volatile Organic Compound
XRF	X-Ray Fluorescence
~~u~~µg/L	Micrograms per liter
µ~~u~~g/kg	Micrograms per kilogram
mg/L	Milligrams per liter
mg/kg	Milligrams per kilogram
^{0}C	Degrees Celsius
µ~~u~~l	Microliter
ml	Milliliter
r	Linear Regression or Correlation Coefficient
r^2	Coefficient of Determination
%	Percent

1.0 SUMMARY

This section provides specifications for Environmental Data Quality Management for sampling and analysis associated with characterization of soils, ground water, and other media for this contract. This section delineates the responsibilities and procedures for all sampling and analytical activities to assure that the data obtained is of sufficient quality to meet intended uses and Applicable or Relevant and Appropriate Requirements (ARAR's) within the project. This section also provides guidance in the preparation of the Contractors Chemical Data Quality Management Plan (CDQMP) and delivery order specific Sampling and Analysis Plans. The CDQMP shall be composed of a Field Sampling Plan (FSP) and a Quality Assurance Project Plan (QAPP). The CDQMP shall include detailed plans for sampling, analysis, and chemical quality control (QC) activities. Unless otherwise specified in a delivery order, normal turn-around time (TAT) shall be defined as 21 days and shall be applicable for analyses for this project. The CDQMP is intended to be an installation-wide document covering the overall requirements for the field and analytical programs. The QAPP portion should be revised annually for long term (>2 years) projects. For those project that do not require a CDQMP, the requirements for work plans must be approved by the District Chemist prior to initiation of work.

Note: The successful offeror will be notified of any deficiencies in the CDQMP included in the RFP submittal. All deficiencies identified in comments provided to the Contractor by the Contracting Officer (CO) must be resolved to the satisfaction of the Government within 30 calendar days of receipt of comments and prior to the start of fieldwork for any delivery orders involving sampling and analysis. Multiple cycles of review and comment may be required as necessary to complete revisions to the CDQMP to meet the requirements of this RFP. This work will be performed at no additional expense to the Government.

This document contains minimum standards. Each project must prepare a project-specific sampling and analysis plan (SAP), which stipulates the data quality objectives and chemical data quality requirements. The project-specific SAP must be provided to the laboratory prior to initiation of work.

2.0 REFERENCE PUBLICATIONS

The following documents were used to develop these specifications.

2.1 Environmental Protection Agency (EPA)

- EPA SW-846 Test Methods for Evaluating Solid Waste, Third Edition (Update III), December 1996.
- EPA QA/R-5 EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations, Interm Final, November 1999.
- EPA QA/G-4 EPA Guidance for the Data Quality Objectives Process, EPA/600/R-96/055, Final, September 1994.
- EPA QA/G-5 EPA Guidance for Quality Assurance Project Plans, EPA/600/R-98/018, Final, February 1998.
- EPA QA/G-9 EPA Guidance for Data Quality Assessment – Practical Methods for Data Analysis, EPA/600-R-96-/084, July 1996.
- EPA EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. EPA540/R-94/012, February 1994
- EPA EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. EPA540/R-94/012, February 1994

2.2 U.S. Army Corps of Engineers (USACE)

- EM 200-1-1 Validation of Analytical Chemistry Laboratories, July, 1994

- EM 200-1-2 Technical Project Planning Guidance for HTRW Data Quality Design
- EM 200-1-3 Requirements for the Preparation of Sampling and Analysis Plans, Sept 1994
- EM 200-1-6 Chemical Quality Assurance for HTRW Projects, October 1997.
- ER-110-1-263 Engineering and Design Chemical Data Quality Management for Hazardous Waste Remedial Activities, December 1997
- Draft Shell for Analytical Chemistry Requirements, Version 1.0, November 1998.
- USACE CRREL Special Report No. 96, Comparison Criteria for Environmental Chemical Analyses of Split Samples Sent to Different Laboratories – Corps of Engineers Archived Data, Grant, C.G., Jenkins, T.F., and Mudambi, A.R., USACE Cold Regions & Environmental Research Laboratory, Hanover NH, May, 1996

Deviations from EM 200-1-3 minimum requirements must go through the approval process described in EM 200-1-3. As documents listed above are revised, the contractors performing work on long-term projects (greater than 2 years duration) are responsible for updating the CDQMP to be compliant with most recent guidance based on approval of District Chemist.

2.3 OTHER

- CMECC Best Practices for the Detection and Deterrence of Laboratory Fraud, California Military Environmental Coordination Committee, Chemical Data Quality/Cost Reduction Process Action Team, Version 1.0, March 1997

3.0 SUBMITTAL REQUIREMENTS

The Contractor shall submit the following items required by this section:

Chemical Data Quality Management Plan (Section 5.1-5.4)
Analytical Data Package Reports (Section 5.5)
Data Validation Reports (Section 5.6)
Daily Quality Control Reports (Section 5.7)
Quality Control Summary Report (Section 5.8)
Non-Routine Occurrences Report (Section 5.9)
Data Report for the Chemical Quality Assurance Report (CQAR) (Section 5.10)

4.0 CHEMICAL ANALYSIS

The Contractor shall execute chemical analyses as described in delivery orders for this contract. The CDQMP shall contain all details described in Section 5.0 (including subsections) of these specifications for the following analyses that will be relevant for work on this contract: EPA Method 8000B; 8021A; 8041; 8081A; 8082; 8141A; 8151A; 8260B; 8270C; 8280A; 8290; 8310; 8321A; 8330; 8015B (purgeable); 8015B (extractable); **1664**; metals by 7000A series; metals by 6020, mercury by 7470A/7471A, and hexavalent chromium by Method 7196A. Analytical procedures shall conform to the most recently promulgated version of SW-846 (currently Update III, December 1996) and the State requirements for the specific project. Total petroleum hydrocarbons (TPH) as gasoline range organics, diesel range organics, and motor oil organics reporting and quantitation shall conform to the requirements outlined in Method 8015B, unless State requirements supersede this method.

This specification establishes a basic approach for application of analytical chemistry methods (e.g., SW-846, performance-based methods) by the USACE. The concepts included here specify a baseline implementation of several analytical chemistry methods. However, when a performance-based analytical approach is employed, additional regulatory approval may be necessary to ensure acceptance of data generated.

In order to promote flexibility as well as some degree of consistency in the data generated to support USACE HTRW projects, when inconsistent or mutually exclusive method requirements are encountered, the following hierarchy applies: (1) Project-specific documents (e.g., SAP), (2) USACE Engineer Manuals or other policy guidance, and (3) the SW-846 methods. Hence, the laboratory should be aware of and review these sources to determine project-specific data quality objectives (DQOs) and applicable project requirements.

4.1 PERFORMANCE BASED METHODS IMPLEMENTATION

As the various Federal, State, and Local regulatory agencies acknowledge the adoption of Performance Based Measurement Systems (PBMS) as a means to achieve required environmental monitoring, the applicability of performance based methods to individual projects will increase. PBMS are defined by USEPA as a set of processes wherein a monitoring program's DQOs are designated, rather than specifying the approved standard analytical method necessary. To date however, the details for establishing data quality and performance requirements for required monitoring to support the assessment and selection of performance based methods have not been fully defined within the various USEPA and state environmental offices. In addition, progress in updating federal, state and local regulations to incorporate the PBMS philosophy, and remove the requirements for specified standard reference methods for the use of new and innovative technologies are necessary to help assure successful PBMS implementation. Currently, PBMS has encouraged the application of field analytical technologies to environmental restoration projects.

This performance based method approach empowers the analytical service (data) provider with the flexibility to vary aspects of an analytical system and protocols as long as the demonstrated method performance meets the requirements established by the data user(s). A PBMS may employ completely different chemistries or detection systems from those identified in current standard reference methods; may alter a sample preparatory or determinative procedures that enhance or inhibit extraction/digestion or signal efficiency; or may encompass only minor modifications to a standard method's instrument configuration. Due to this inherent flexibility, additional effort is necessary in the planning and executing phases to ensure successful implementation of performance based methods. *This may include any or all of the following: (1) establishing and maintaining proper PBMS documentation (i.e., method SOPs, records of data analyses/results), (2) USACE and regulatory agency review/approval, (3) evaluation of method performance via data quality indicators, and (4) comparison of PBMS data to data generated from a standard reference method.* Before implementation of performance based methods, the analytical service provider must establish the capabilities of the method/technique, to include selectivity, sensitivity, and range of detection, precision and bias. These are evaluated against performance criteria established by USEPA, state regulatory agencies, or the technical project planning team to assess the usability of the PBMS or PB method. *The accuracy of the developers / manufacturers' claims and technical data, and the comparability amongst various techniques should be scrutinized for it is an area which requires standardization.* In the event that the method capabilities do not meet project requirements, differences shall be reconciled prior to project execution. Reconciliation may require modifying the selected method, choosing an alternative method or techniques, or modifying the project DQOs. *Project application of performance based methods requires that performance be demonstrated for the analytes of concern, at the levels of concern in the matrix of concern within a specified acceptable error tolerance.* Data generated from performance-based methods are evaluated using the same procedures as standard reference methods, as presented in Section 4.3 through 4.9. In addition, if the PBMS (1) is considered an emerging technology, (2) lacks established records of use, or application to environmental matrices, or (3) varies significantly from the standard reference method, suggest acquiring a percentage of split samples for redundant analysis by the standard reference method. This will allow a comparison or calculation of a correlation factor between the data sets to evaluate the usability of the performance-based method in that project matrix.

4.2 SW-846 METHODS ORGANIZATION

The following sections summarize the guidance requirements for typical HTRW projects. Program and project-specific requirements should be presented in the CDQMP.

4.2.1 SW-846 Methods Implementation

EPA Publication SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," contains the analytical testing methods that the EPA has evaluated and found to be acceptable for analysis of samples under Subtitle C of the Resource Conservation and Recovery Act (RCRA). As stated in the Final Rule that incorporated the Third Edition of SW-846 (and its updates) into the RCRA regulations, use of this publication is required for only certain activities in the RCRA program. In other situations, this EPA publication functions as a guidance document setting forth acceptable, although not required, methods to be implemented by the user, as appropriate, in satisfying RCRA-related sampling and analysis requirements. These methods are intended to promote precision, accuracy, low bias, sensitivity, specificity, and comparability of analyses and test results. SW-846 includes several separate test methods addressing hundreds of analytes or compounds. For any given analyte or compound, multiple methods, with varying detection limits, are potentially available from this resource. USACE data needs focus on the use of SW-846 for the methods are comprehensive for many environmental matrices and chemical parameters, they are current with instrument capabilities and industry standards, and are flexible to adaptation based on project-specific requirements.

4.2.2 SW-846 Method Updates

SW-846 is a dynamic document that is subject to change as new information and data are developed. Advances in analytical instrumentation and techniques are continually reviewed by the EPA Office of Solid Waste and Emergency Response, and periodically incorporated into SW-846 updates to support changes in the regulatory program and to improve method performance. Any of these promulgated or draft SW-846 methods or other methods may be used by the USACE to support the project-specific requirements. However, it should be noted that recent SW-846 updates have deleted several methods where technology was considered outdated (i.e., packed chromatographic columns), as well as the incorporation of several new field-screening methods. Therefore, it is advisable to maintain current knowledge of these method advances, and design projects taking advantage of the most recently promulgated methods.

4.3 GENERAL ANALYSIS REQUIREMENTS

The following sections outline the requirements for application of these requirements for HTRW projects. It is important to note that sporadic marginal failures are not accepted unless approved by the USACE Project Chemist. Problematic analytes should be identified and QC limits adjusted accordingly. Chemicals of concern should be specified in the SAP and corrective action should be taken if the QC criteria are not met. If chemicals of concern have not been established, the laboratory should control on a representative subset (gas, ketone, ether, chlorinated solvent, etc.) to establish system performance and standard quality.

To ensure that quality data are continuously produced during analysis and allow the eventual compliance review, systematic QC checks are incorporated into the analyses to show test results remain reproducible and that the analytical method is actually measuring the quantity of target analytes without unacceptable bias. Systematic QC checks include the scheduled analyses of replicates, standards, surrogates, or spiked samples. *Method quality objectives (acceptance criteria or ranges) for these systematic QC checks are established to allow the review of data quality indicators providing an assessment of data usability and contract compliance.* This program of systematic QC checks may be viewed from two aspects, batch QC and matrix-specific QC.

4.3.1 Project Application

The requirements presented in this guidance shall be applied to all analytical methods unless specifically overridden by project-specific requirements. Target compound and analyte lists are variable and are dependent upon project-specific considerations. Examples of common target compound and analyte lists are included for eight SW-846 methods.

4.3.1.1 Method Development and Initial Demonstration of Capability. For each method performed, the laboratory shall maintain documentation that demonstrates each analyst's ability to perform the method

within the sensitivity and precision/bias limits as stated in the published method, and any requirements outlined within the project SAP. Repeat these procedures when there is significant change in the method, instrumentation, or personnel. For each new method the laboratory shall perform and maintain documentation for the following:

- Develop a detailed standard operating procedure (SOP) before implementation of that method. Refer to EPA QA/G-9 for SOP requirements.

- Evaluate method sensitivity by performing an initial method detection limits (MDL) study for each matrix per Section 5.2.3.4.1.6 Sensitivity. Due to the difficulty in obtaining a solid interference-free matrix for metals determinations, process spiked reagent water for both the aqueous and solid digestion method to estimate aqueous and solid MDLs for graphite furnace atomic absorption (GFAA) and ICP analyses.

- Determine an appropriate practical quantitation limit (PQL) or method quantitation limit (MQL) and method-reporting limit (MRL) for each compound and matrix based upon the calculated MDL and the guidance established in Section 5.2.3.4.1.6.

- Perform an initial demonstration for the method, noting all key employees' (i.e., technicians and analysts) ability to perform the method within the precision/bias limits as stated in the published method. A minimum of four laboratory control samples shall be carried through the method at the same time, or over a period of consecutive days. This control sample shall be obtained from an outside source, if available, or from a lot independent of the calibration standards. The concentration of each target analyte shall be approximately 10 times the MDL. Using the four results, calculate the mean recovery, and standard deviation for each parameter or target analyte of interest. Compare the laboratory's method precision and bias to the method performance summary presented within the published reference method. If any target analytes exceed the acceptance range, the performance is unacceptable. For all unacceptable target analytes or parameters, corrective actions shall be taken to locate the source of the problem, and repeat the test. The laboratory must maintain documentation for each analyst performing analysis.

4.3.1.2 Continuing Demonstration of Capability. Each analyst shall be required to demonstrate their continuing capability to perform any given method by ensuring the following:

- All applicable SOPs are kept current and represent the laboratory's current implementation of the method.

- The sensitivity of each method shall be demonstrated quarterly by analyzing the MDL check sample, or annually via an MDL study.

- Make any adjustments to the PQL, based upon noted changes in method sensitivity.
- Analyze a minimum of one (1) blind performance evaluation (PE) sample successfully on an annual basis.

- The precision and bias of the method shall be demonstrated by analyzing laboratory control samples and other quality control (QC) check samples with each batch of samples processed, and monitored by review of method control ranges/charts.

4.4 DATA FRAUD AND INAPPROPRIATE PRACTICES

The data produced by a laboratory typically provide the primary basis for environmental cleanup decisions and enforcement actions. The data may also end up in court. *Data must be produced according to the project-specific requirements as specified in the final approved project documents.* The laboratory must be aware of these requirements and be able to show that these requirements were followed. Documentation that would clearly show how all of the analytical values were obtained must be maintained. *The unfortunate aspect of data fraud/inappropriate practices, is the inability to readily detect them without*

significant cost. Project quality assurance (QA) procedures employed should be designed to help deter and expose any misrepresentation of data. Refer to Section 5.0 for information on application of various QA procedures to aid in the prevention of fraudulent activities. Best Practices for the Detection and Deterrence of Laboratory Fraud, California Military Environmental Coordination Committee, Chemical Data Quality/Cost Reduction Process Action Team, Version 1.0, March 1997 provides guidelines for laboratory fraud deterrence.

4.4.1 Data Fraud

Data fraud can be loosely defined as a gross deviation from contract-specified or method-specified analytical practices, combined with the intent to conceal the deviation. The difference between poor analytical judgement and fraud may be assessed in the documentation of intent within laboratory records. Gross deviations from specified procedures should be investigated for potential fraud, and findings of fraud prosecuted to the fullest extent of the law. A few examples of fraudulent practices have been identified below:

- Inappropriate use of manual integration to meet calibration or method QC criteria would be considered fraud. For example, peak shaving or peak enhancement is considered fraudulent activities if performed solely to meet QC requirements.

- Time travel of analyses to meet method 12-hour clock requirements.

- Falsification of results to meet method requirements.

- Reporting of results without analyses to support (e.g., “dry-labing”).

4.4.2 Inappropriate Practices

Several inappropriate practices have also been identified which deserve prudent action. *Issues of this caliber should not be tolerated and corrective action taken immediately to resolve all matters between the laboratory and the data user.* These inappropriate practices may include:

- Selective exclusion of data to meet QC criteria (i.e., initial calibration points dropped without technical or statistical justification).

- Misrepresentation of laboratory performance by presenting calibration data or QC limits within data reports which are not linked to the data set reported, or QC control limits presented within the laboratory QA Manual, which are not indicative of historical laboratory performance or used for batch control.
- Notation of matrix inference as basis for exceeding acceptance limits (typically without implementing corrective actions) in interference-free matrices [e.g., method blank or laboratory control sample (LCS)].

To avoid miscommunication, a laboratory must clearly document all errors, mistakes, and basis for manual integration within the case narrative. Include corrective actions when necessary, and provide appropriate peer review of this information. *Notification should also be made to the appropriate people such that appropriate corrective actions can be initiated.* It is recommended that laboratories also maintain an electronic audit trail that clearly shows all changes to data, who made the change, date, and why.

4.5 ANALYTICAL STANDARDS PREPARATION AND TRACEABILITY

The laboratory shall have, in-house, the appropriate standards for all target analytes. These standards can either be prepared from neat-high purity bulk materials or purchased as certified solutions. A critical element in the generation of quality data is the purity/quality and the traceability of the standard solutions and reagents used in the analytical operations. Primary reference standards and standard solutions used by the laboratory shall be obtained from reliable commercial sources (i.e., NIST, EPA, etc.) to ensure the highest purity possible. Certificates shall be available upon request that verify each standard's purity or concentration. The use of correction factors for all standards that are not at least 99.9% pure for inorganic analyses and 96% pure for organic analyses will be required. Care should be exercised in the proper storage

and handling of all standards and standard solutions. The laboratory shall continuously monitor the purity or quality of reagents and standard solutions through a series of well-documented procedures. Requirements for standards re-preparation shall be based on unacceptable performance. For example, initial calibration standards shall be verified with a freshly prepared initial calibration verification (ICV). For analyses that allow analytical sequence initiation by a continuing calibration verification (CCV) standard, the frequency of standard re-preparation will be based on whether standard performance is compliant with the method acceptance criteria. The quality of CCVs failing to meet method criterions should be verified against a freshly prepared CCV. In general, stock and working standards shall be checked regularly for signs of deterioration, such as discoloration, formation of precipitates, or changes in concentration. All standards and standard solutions shall be fully documented to verify compliance with USACE requirements.

4.5.1 Sample Screening
It is highly recommended that the laboratory screen samples or extracts by methods of their choice to determine which target analytes are present and at approximately what levels.

4.5.2 Target Compound Lists
Target analyte lists necessary for a project should be identified within project contract documents based upon project-specific data quality objectives. However, for instances where a particular SW-846 method is specified but the target analyte list for the method is not, Tables 4-1 through 4-6 may be used to identify target analyte lists for the following SW-846 methods: 8021, 8081, 8082, 8260, 8270, and 8330. These lists were compiled of target compounds common to the various versions of each SW-846 method. Note however, that the most recent revision of several organic methods may contain additional target compounds not included here. The organic target analyte lists (Tables 4-2, 4-3A, 4-4, 4-5A, and 4-5B) were augmented to include those compounds included within the Target Compound List (TCL) as defined by the EPA Contract Laboratory Program (CLP). *Each list should be reviewed based upon project data needs and edited accordingly. Special considerations for target compound reporting for the following methods should be evaluated and clearly identified within project contract documentation.*

4.5.2.1 Method 8021 – Volatile Organic Compounds (VOCs) by GC/PID-HECD.
The target analyte list for Method 8021 includes those analytes previously associated with deleted SW-846 methods 8010 and 8020 and some additional target analytes. *Therefore, depending upon project requirements, the entire 8021 target analyte list or a subset may be specified for the project. The following target analyte lists may apply: (1) the full 8021 target analyte list, (2) halogenated volatile compounds (HVOs) (compound list from deleted Method 8010), (3) aromatic volatile compounds (AVOs) (compound list from deleted Method 8020), (4) benzene, toluene, ethylbenzene, and total xylenes (BTEX), and/or 5) methyl tertiary butyl ether (MTBE).*

4.5.2.2 Method 8081 – Organochlorine Pesticides by GC/ECD. *Note whether multi-component pesticides (i.e., chlordane and toxaphene) are actually compounds of concern.* The additional instrument and method QC samples required for these multiple-component analytes significantly increase the level of effort for this method. *It should also be determined if chlordane quantitation should be performed and reported as technical chlordane or the individual chlordane isomers (i.e., alpha and gamma chlordane).* In the absence of guidance to the contrary, assume that quantitation is required for toxaphene, and the individual chlordane isomers (rather than for technical chlordane). Recently promulgated revisions of Method 8081 do not include polychlorinated biphenyls (PCBs) as target compounds. Therefore, guidance on PCB reporting is not included here. Reference Section 4.5.2.3 for additional information on reporting considerations for PCBs.

4.5.2.3 Method 8082 - PCBs by GC/ECD. Regulatory aspects of PCBs are based upon the quantitation as Aroclors. However, when not used for regulatory purposes and depending upon project requirements, the analytical results may be reported as individual PCB congeners, or the values summed over an appropriate chromatographic range and reported as total PCBs. When weathered PCBs are encountered and the data use requires the use of Aroclors, then the quantitation as Aroclors may be performed by measuring the total area of the PCB pattern and quantitating on the basis of the Aroclor standard that is most similar to the sample. Peaks within the sample chromatogram not related to PCBs should be subtracted from the total

area. Full documentation of this approach must be provided in the case narrative when this option is chosen. Caution should be exercised when using differing quantitation techniques; comparability of project data may be reduced if new data is handled significantly different from previous data. Studies have shown that concentrations derived from samples, as Aroclors were larger than those determined using the congener method. Due to the potential regulatory aspect and unless otherwise indicated, all samples must be analyzed for the PCB compounds as Aroclors.

4.5.2.4 Method 8330 - Explosives by HPLC. Due to the lack of resolution between 2,4-DNT and 2,6-DNT, and between 2-Am-DNT and 4-Am-DNT, reporting of these compounds may be combined and reported as 'isomeric pairs'.

4.6 ANALYTICAL METHODS SUMMARY

The guidance introduces two (2) inorganic (~~6010~~6020, 7000) and six (6) organic (8021, 8081, 8082, 8260, 8270, 8330) SW-846 analytical methods. *The guidance has deliberately omitted method revision numbers from the analytical method designations, so as to enforce its application to any revision of the method in use by USACE. Note also that many of the QA/QC principles and policies included herein, apply to methods not directly addressed.* Technical details on the eight methods implementation and default limits for performance-based QC parameters are presented. *As noted, these acceptance limits are considered a baseline standard, but may be modified based upon project-specific DQOs. Reference USACE Engineering Manuals EM 200-1-2, Technical Project Planning Process guidance for information on the establishing project DQOs, and EM 200-1-6, Chemical Quality Assurance for HTRW Projects for a review of Chemical Data Quality Management (CDQM) elements available to aid in the design of a project chemical data quality management program. Project-specific contract documents (e.g., scopes of work, guide specifications, etc.) should reference or identify all applicable analytical methods and QC elements necessary for the project to assure correct and accountable execution of the work.* If, however, this information is not adequately defined, then the laboratory shall default to using the latest promulgated revision of the appropriate SW-846 method, and application of the QC acceptance limits described herein as the default USACE requirements. The following guidance outlines general requirements, which apply uniformly to all methods by subject heading with any additional parameter or method-specific requirements presented in subsequent sections by chemical parameter, analytical technique, or the individual chromatographic method.

4.6.1 Inorganic Analytical Methods. The inorganic methods presented focuses exclusively on metals' analyses. This encompasses inductively coupled argon plasma-emission spectroscopy (ICP) and graphite furnace-atomic absorption spectroscopy (GFAA), and cold vapor-atomic absorption (CVAA) methodologies. Project inorganic method requirements should be clearly identified based on project DQOs. *Note than when the quantitation limit of a metal (e.g., Sb, Pb, As, Tl, and Se by ICP) is higher than the project-required action level, an alternate analytical method capable of achieving a lower quantitation limit for that metal should be used.* Baseline inorganic QC requirements are discussed in subsequent sections by the individual method, and summarized in attached tables.

Classical (wet chemistry) techniques are not addressed directly within this guidance. However, the field of conventional, non-metals analysis involves a variety of instrumental and wet chemical techniques. Instruments include spectrophotometers and other analyzers.

4.6.1.1 Inorganic Preparatory Methods. Several preparatory method options may exist for each determinative method and matrix. However, comparability of the data generated from different preparatory procedures is not guaranteed, nor likely. *Therefore in order to ensure comparability of data generated throughout the life of a project or between different laboratories, proper preparatory methods must be clearly identified for each chemical parameter/matrix and maintaining consistent analytical protocols.*

Aqueous liquid samples for ICP may be processed by a hotplate technique following Methods 3005 or 3010, or by using a microwave technique following Method 3015. Aqueous liquid samples for GFAA are processed by a hotplate technique following Method 3020, or using a microwave technique following Method 3015. *When a comparison of dissolved metals and total recoverable metals results are anticipated, it is recommended that both the field-filtered and non-filtered water samples be subjected to the proper digestion procedures (preparatory method) prior to analyses. This ensures a matrix matching of the acid concentrations between the samples. If only dissolved metals' results are required, the preparatory method is optional, and analysis by direct aspiration is allowed. Under these circumstances and per method requirements, the calibration standards must be changed to matrix match the samples analyzed. The matching of acid concentrations between samples and standards assures similar viscosity and surface tensions, which affect aspiration characteristics and thus may vary the resulting concentrations.* Solid samples are processed for ICP and GFAA by hotplate following Method 3050, or by microwave following Method 3051. Preparatory procedures for the CVAA analysis of mercury are incorporated into the individual analytical methods (7470 for liquids and 7471 for solids).

Proper preparatory procedures to be employed should be identified within the project contract documents (e.g., SOW, SAP, guidance specification, etc.). When the method of digestion is not specified, the laboratory must attempt to obtain this information from appropriate USACE project technical personnel. In lieu of project specific information, the default preparatory procedures shall follow hotplate techniques following Method 3005 for ICP and Method 3020 for GFAA (3005 for antimony) for aqueous matrices, and Method 3050 for solid matrices. It should be noted that future updates of SW-846 are anticipated to combine these preparatory methods under a common methodology.

4.6.1.1.1 Method ~~6010~~6020. This method is used to determine the concentrations of select metals in the digestates of liquid and solid matrices, using inductively coupled plasma-atomic emission spectroscopy (ICP-AES). The requirements apply to simultaneous or sequential ICPs. ICPs may be equipped with a torch, which is viewed from the radial or axial (e.g., trace ICP) position. For the ICP, Mass Spectral (MS) detectors are also available.

4.6.1.1.2 Method 7000. The SW-846 7000 series methods are used to determine the concentrations of select metals in the digestates of liquid and solid matrices, employing flame, graphite furnace, gaseous hydride and cold vapor techniques in conjunction with atomic absorption spectroscopy (AAS). This discussion will be limited to graphite furnace-atomic absorption (GFAA), with an appropriate background correction system. Recommend GFAA instruments have a Zeeman background correction capability. *Graphite furnace atomic absorption (GFAA) is commonly used for several elements due to its sensitivity capabilities.* It should be noted that the proposed Update IV of SW-846 includes all GFAA methods being combined under Method 7010. Mercury shall be analyzed by a cold-vapor AA technique. The AA can be integrated with an appropriate cold vapor accessory for mercury analyses, or independent cold vapor units are also available.

4.6.2 Organic Analytical Methods

The principles and QC requirements established within SW-846 Method 8000 apply to all organic chromatographic methods (e.g., GC, GC/MS, and HPLC methods). Therefore, they are presented generally by topic. *Packed-column methods were formally deleted from SW-846 with the promulgation of SW-846 Update III on June 13, 1997.* These methods, in general, possessed less stringent performance criteria (e.g., column resolution is lower and method QC is less stringent) than their associated capillary column method. *Due to these factors, the laboratory should default to the use of capillary column methods, (e.g., Methods 8260B, 8081A/8082, and 8021B for the deleted Methods 8240, 8080, and 8010/8020, respectively).* The laboratory shall not use capillary columns in conjunction with packed column methods in order to apply less stringent QC criterion.

4.6.2.1 Organic Preparatory Methods. Several preparatory method options may exist for each determinative method and matrix. However, comparability of the data generated from different preparatory procedures is neither guaranteed nor likely. *Therefore in order to ensure comparability of data generated throughout the life of a project or between different laboratories, proper preparatory methods must be clearly identified for each chemical parameter/matrix and maintain consistent analytical protocols.* Liquid

samples may be prepared for extractable organic analyses using a separatory funnel following Method 3510, a continuous liquid-liquid extractor following Method 3520, or solid-phase extraction by Method 3535. Liquid samples for purgeable organic analyses utilizing purge and trap procedures follow Method 5030. Nonaqueous samples should be prepared by solvent dilution techniques following Method 3580 for extractable organic analyses and Method 3585 for purgeable analyses. Solid samples may be processed for extractable organic analyses by soxhlet extraction procedures following Method 3540, automated soxhlet by Method 3541, pressurized fluid extraction by Method 3545, or ultrasonic extraction procedures by Method 3550. For petroleum hydrocarbons analysis, a supercritical fluid extraction may be used following Method 3560. *Typically, Method 3550 (sonication) is used to prepare solid samples known to have high concentrations of target compounds, whereas Method 3540 (soxhlet), 3541 (soxhlet), and 3545 is generally used in an unknown situation or when low-level concentrations are known or suspected.* Solid samples for purgeable organic analyses utilize Method 5035. *Several notable changes in the protocols covering soil sampling, analysis, preparation have occurred with the promulgation of Method 5035. These changes will require a significant increase in the coordination between field and laboratory personnel. Refer to USACE policy guidance titled USACE Sample Collection and Preparation Strategies for Volatile Organic Compounds in Solids for details on implementation. When the method of preparation is not specified, the laboratory must attempt to obtain this information from appropriate USACE project technical personnel.* If no information is provided for the project specific preparatory methods required, the default preparatory procedures for extractable organic analyses shall follow Method 3520 for aqueous samples; Method 3540 or 3541 for solid samples; and those noted above for purgeable organic analyses.

It is anticipated that project fieldwork will entail the use of proper sample handling protocols, which result in the acquisition of a representative sample. These include the use of appropriate sample containers, obtaining sufficient sample volumes, and proper preservation techniques based on the anticipated chemical analyses. Refer to EM 200-1-3 for information on proper sample containers, sample volumes, and preservatives necessary. As noted in section 5.1 these items are verified upon sample receipt, and any discrepancies notified back through appropriate channels. For chemical parameters, which do not allow this assessment during sample login (e.g., VOCs), verification is done post sample sub-sampling or analysis, and any problems are noted within the case narrative.

Whenever possible, a quantitative transfer of the entire (1-Liter) aqueous liquid sample is done to ensure there is no loss of target compounds through the adhesion of contaminants on the walls of the sample bottle. A solvent rinse should be performed to avoid this loss. This procedure; however, may not be possible when significant amounts of sediment are present within the water sample. *Due to the problems these fines may invoke on the extraction process, recommend that appropriate project technical personnel be contacted to verify the procedures to employ. (e.g., decanting water sample, physical separation of the phases and subsequent analysis of each, etc.)* To avoid cross-contamination, the laboratory should mark the meniscus on the liter sample container, pour out the sample into the extraction apparatus, and solvent rinse the sample container. To determine original sample volume the laboratory should pour water to original sample volume, transfer the water to a class-A graduated cylinder and record the volume.

4.6.2.2 Organic Cleanup Methods. If significant non-target interference exists, corrective action shall include implementing appropriate cleanup procedures. Dilution techniques should not be used in preference to cleanup procedures for organic methods. The laboratory shall have a minimum capability of at least one cleanup method for each type and range of organic analyses it provides services. Refer to the individual determinative methods and Method 3600 to identify recommended cleanup methods based on the type and concentration of interferences present, the selectivity of the determinative method, and project method reporting limit requirements. However, analyst professional judgment should also be used to identify appropriate cleanup techniques to employ. *If cleanup procedures are not routinely employed by a laboratory, a formal notification procedure must be in place to advise the client of this.*

4.6.2.3 Method 8021. This method is used for the analysis of select volatile organic compounds in aqueous and solid matrices by purge and trap device according to methods prescribed above and subsequently analyzed by GC using a HECD and PID in series.

4.6.2.4 Method 8081. This method is used to determine the concentrations of select organochlorine pesticides in the extracts of liquid and solid matrices, using fused-silica capillary columns with an electron capture detector (ECD). *Method 8081A no longer includes PCBs as target compounds to eliminate the complications inherent to the combined pesticide/PCB analysis. Therefore, PCB analysis must be performed using Method 8082. This may be accomplished by submitting an additional environmental sample for PCB analysis; or the extract may be split prior to implementation of any cleanup procedures, processing individual extract portions for pesticide analysis following Method 8081 and the other portion for PCB analysis following Method 8082.*

4.6.2.5 Method 8082. This method is used to determine the concentrations of select polychlorinated biphenyls (PCBs) as the seven Aroclors, as individual PCB congeners, or as total PCBs in the extracts of liquid and solid matrices, using fused-silica capillary columns with electron capture detectors (ECDs). *Refer to project required chemical parameters and Section 4.6.8 in order to determine the necessity for an additional environmental sample for PCB analysis, or the use of an aliquot from the extract (prior to cleanup procedures) for both pesticide and PCB analyses.*

4.6.2.6 Method 8260. This method can be used for the analysis of select volatile organic compounds (most compounds with boiling points below 200°C) in aqueous and solid matrices by purge and trap device according to methods prescribed above and subsequently analyzed by GC/MS. Volatile water-soluble compounds can be analyzed with this method but higher quantitation limits may apply. A notable deviation allowed by Method 8260B (vs. 5030) is the utilization of a heated purge for aqueous samples.

4.6.2.7 Method 8270. This method is used to analyze the extracts of aqueous and solid samples for semivolatile organic compounds (SVOCs), also referred to as base/neutral and acid extractables (BNAs). The extracts are analyzed by GC/MS using a capillary column.

4.6.2.8 Method 8330. This method is used for the analysis of select explosives in the extracts of solid and liquid matrices. The extracts are analyzed by high performance liquid chromatography (HPLC) with a UV detector, using C-18 and cyanide reversed-phase columns as the primary and confirmatory columns, respectively. The method specifies extraction procedures for solid samples, and low-level and high-level aqueous samples. In general, aqueous samples for low concentration are extracted by a salting-out extraction procedure using acetonitrile and sodium chloride. Aqueous samples for the high concentration is diluted with acetonitrile, filtered, and analyzed by direct injection. Soil and sediment samples are extracted using acetonitrile in a cooled ultrasonic bath and filtered prior to analysis. *Project-specific approval should be sought for the use of solid phase extraction (SPE - Method 3535) in lieu of the low-level salting out procedure described in Method 8330, or the use of a photodiode ray detector as the confirmation technique.*

4.7 PRELIMINARY METHOD SET-UP

In addition to the general items noted in Section 4.6, method initiation must include the following procedures as applicable.

4.7.1 Inorganic Analyses - Method ~~6010~~6020

The following sections outline the general procedures for method initiation for Method ~~6010~~6020.

4.7.1.1 Linear Dynamic Range. The upper limit of the linear dynamic range for each ICP must be determined for each analyte wavelength used in order to determine an appropriate concentration for the high calibration standard. This is done for each analyte by analyzing successively higher standard concentrations (approximately 3 to 5 standards) until--because of curvature--the highest analyte concentration is ± 10% of the "expected" concentration obtained by extrapolating the calibration line from the lower standards. The concentration chosen for the highest standard must then be chosen below the upper limit of the linear range. The linear dynamic range must be checked initially and whenever there is a significant change in instrumental hardware or operating conditions. If the ICP is routinely calibrated using one standard and a blank, the linear dynamic range must be checked every six months.

4.7.1.2 Interelement Spectral Correction Factors. All interelement spectral correction factors must be determined per method requirements initially and updated at least once every six months, based upon failure of the interelement check standard, or whenever there are significant instrument modifications.

4.7.2 Organic Analyses - Methods 8000 Series

Retention time windows are established to compensate for minor shifts in absolute retention times as a result of sample loading and normal chromatographic variability. The width of the retention time window should be carefully established to minimize the occurrence of both false positive and false negative results. Tight retention time windows may result in false negatives or may cause unnecessary reanalysis of samples when surrogates or spiked compounds are erroneously not identified. Excessively wide retention time windows may result in false positive results that cannot be confirmed upon further analysis. Retention time windows must be determined as specified in the latest revision of Method 8000 for all chromatographic methods, except when mass spectroscopy (MS) or infrared (IR) detectors are employed. Calculate absolute retention time windows for each compound and surrogate for each chromatographic column employed per method instructions. New retention time windows must be established whenever a new chromatographic column is installed, or when there are significant changes in the operating conditions. The use of reasonable "default" values, programmed into instrument software for the width of the retention time window is allowed if (1) the laboratory demonstrates that the calculated three-sigma width is consistently less than the default width, and (2) the default width is not "excessively large" (i.e., more than 1% to 2% of the absolute retention time).

4.7.2.1 Method 8081. Retention time windows must be established as specified in Section 4.7.2 for each surrogate and single-component pesticide target compound, and for at least three to five characteristic peaks of multiple-component pesticides. For multi-component pesticide standards, the analyst should also rely heavily on pattern recognition and the analyst's experience in the interpretation of the chromatograms.

4.7.2.2 Method 8082. Retention time windows will vary based upon the project requirements for PCB quantitation as noted in Section 4.6.7.3. Absolute retention times will be used when identification of PCBs as Aroclors is performed. Retention time windows must be established as specified in Section 4.7.2 for each surrogate and congeners or for at least three to five characteristic peaks of each Aroclor. If PCB congeners are quantitated, normally internal standard calibration techniques are used and relative retention times are determined.

4.8 INSTRUMENT PERFORMANCE CHECKS

Several methods outline additional QC procedures to verify the instrumentation is in good working condition. These QC samples must be analyzed and meet method-specified acceptable limits prior to commencing sample analyses.

4.8.1 Method ~~6010~~6020 - Interference Check Standard (ICS). An ICS (interference check standard) must be analyzed at the beginning of the analytical sequence to verify the correction factors established in Section 4.7.1 are valid. The ICS typically consists of a set of solutions: ICS-A contains only the interferents (at relatively high concentrations) and ICS-AB contains both the interferents and the analytes of interest. The interferents in both solutions must be present at the concentration that is at least as high as the high-level calibration standard. The ICS-AB solution must contain the analytes of interest (the metals which are not interferents) at concentrations approximately mid-level. The metals of interest in the ICS-AB solution must be within 20% of their expected values. When the ICS check is unacceptable, take corrective action to remedy the failure. Check that the background correction factors applied are appropriate, and readjust if necessary. If the ICS fails immediately after the daily initial calibration, recalibrate and reanalyze the ICS. If the ICP can display over corrections as negative readings, then the ICS-A solution alone may be used to check for interferences. If the analytes of interest are within two times the absolute value of the MDLs (± |MDLs|), the ICS check is acceptable and the ICS-AB solution need not be analyzed.

4.8.2 Method 8081 - Injection Port Inertness Check. Verify injection port inertness by performing %Breakdown checks for 4,4'-DDT and endrin as specified in Method 8081. The mid-level standard containing only endrin and 4,4'-DDT must be analyzed at the beginning of the analytical shift/sequence,

before the initial calibration or the continuing calibration verification. If the %Breakdown is not less than 15% for either DDT or endrin, perform injector maintenance (e.g., column clipping). Do not proceed with the calibration or analysis until the %Breakdown for each compound is less than 15%.

4.8.3 Methods 8260 and 8270 - Mass Spectrometer (MS) Tuning. Verify that the MS meets standard mass spectral abundance criteria prior to initiation of any analyses by the injection of 4-bromofluorobenzene (BFB) tune standard for Method 8260 and decafluorotriphenylphosine (DFTPP) for Method 8270. The tune standard must be analyzed: (1) At the beginning of the analytical shift/sequence and (2) every 12 hours of continuous analysis. The 12-hour clock starts at the time of injection of the tune standard. Recommend evaluating the ion abundance by using any of the following scan scenarios: (1) use one scan at the apex peak, (2) use the one scan either directly preceding or following the apex, (3) use the mean of the apex and the proceeding and following scans, or (4) use the average across the entire peak. The tune must satisfy the ion abundance acceptance criteria listed within the appropriate method. Background correction should be compliant with method specifications and employ only for the purpose of correcting for instrument background ions. If a 12-hour tune fails, take corrective action (e.g., clean the MS source) and re-inject the tune standard (BFB/DFTPP). Do not proceed with analysis until the tune is acceptable. Once an acceptable tuning procedure has been established for the GC/MS analyses, the procedure must be documented in the SOP and consistently performed by all analysts performing analysis.

4.8.4 Method 8270. In order to verify column condition and injection port inertness, the DFTPP tune standard shall contain appropriate volume of 4,4'-DDT, benzidine and pentachlorophenol as stated within Method 8270.

4.8.4.1 Injection Port Inertness Check. Similar to Method 8081, the injection port inertness of the GC portion of the GC/MS is evaluated by the %Breakdown of 4,4'-DDT. This procedure is done to verify acceptable instrument performance, regardless of whether DDT is a target compound. The %Breakdown of 4,4'-DDT to 4,4'-DDE and 4,4'-DDD should not exceed 20%, in order to proceed with calibration procedures.

4.8.4.2 Column Performance Check. The condition of the GC column is evaluated by the tailing of benzidine and pentachlorophenol (PCP). Benzidine and pentachlorophenol must be present at their normal responses, with no visible peak tailing, as demonstrated by the peak tailing factors. The acceptance criteria for the peak tailing factor for benzidine is < 3.0 and pentachlorophenol is < 5.0.

4.9 CALIBRATION PROCEDURES AND FREQUENCIES

The calibration of instruments and support equipment are required to ensure that the analytical system is operating correctly and functioning at the proper precision, bias (accuracy) and sensitivity. *The frequency of calibration and calibration verification are presented below, based upon by the various analytical methods, industry standards, or may be changed based upon project-specific DQOs.* Tables 4-7 through 4-14 are enclosed to highlight key information on calibration procedures and acceptance limits for each SW-846 method discussed.

4.9.1 Analytical Support Areas Calibration Verification. Suggest referring to the Standard Specification for Minimum Requirements for Laboratories Engaged in Chemical Analysis of Soil, Rock, and Contained Fluid, ASTM D5522-94, Annual Book of ASTM Standards, for additional details on the following procedures and performance criteria. Thermometers must be calibrated as specified by the ASTM standard. All thermometer calibrations must be traceable to the instrument used for calibration.

4.9.1.1 Balances. The calibration of analytical balances shall be verified on first daily use at a mass or masses, which bracket, or are representative of the measurements routinely performed at that balance. The quality of the weights used for this calibration verification shall be documented and in accordance with the quality requirements established within the referenced ASTM standard. Balance calibration verifications shall be documented in appropriate logbooks. Acceptance criteria shall be clearly identified. Apply a 1% performance criterion to top-loading balances, and 0.1% to analytical balances. Refer to Standard Test Method of Testing Top Loading, Direct-Reading Laboratory Scales and Balances, ASTM Methods Vol.

14.02 E 898-88, June 1990 and Standard Practice for the Evaluation of Single-Pan Mechanical Balances, ASTM E 319-85, Annual Book of ASTM Standards for additional details.

4.9.1.2 Refrigerators/Freezers. All refrigerators and freezers shall be monitored for proper temperature by measuring and recording internal temperatures on a daily basis. The calibration of all thermometers used or these measurements shall be verified at least annually against NIST-certified or NIST-traceable thermometers. Electronic thermometers shall be calibrated at least quarterly. Temperatures shall be recorded in appropriate logbooks. Acceptance ranges shall be clearly identified. Maintain refrigerators to 4 ± 2^0C, and freezers to -10 to -20^0C. Refer to Standard Test Method for Inspection and Verification of Liquid in Glass Thermometers. Refer to ASTM Methods Vol. 14.03 E 77-89, June 1990 for additional details on thermometers calibration.

4.9.1.3 Pipets and Other Volumetric Labware. All volumetric devices, glassware, or labware shall be initially inspected, and all cracked or damaged items pulled from use. The calibration of variable volume Eppendorf-type pipets shall be verified at the volume of use, or at two volumes which bracket the range of use on the day of use, or at a minimum of weekly. The calibration of all fixed volume Eppendorf type pipets shall be verified monthly. In addition, the accuracy of all nonstandard labware (K-D tubes, Zymark tubes, plastic cups, centrifuge tubes, etc.) used to measure the initial sample volume, or final volume of sample extracts/digestates must be verified. Accuracy must be verified to within 3%. If the check reveals greater than 3%, steps should be taken to improve the accuracy of these measurements, or use alternative procedures, which meet this requirement. It is also recommended that the calibration of all other volumetric glassware (flasks and pipets) be verified at the time of purchase for each lot of labware received. Each calibration check shall consist of at least three measurements, the average calculated, and recorded in appropriate logbooks. Refer to Standard Practice for Calibration of Volumetric Ware, ASTM Methods Vol. 14.02 E 542-94 for additional details.

4.9.1.4 Water Supply System. The laboratory shall maintain an appropriate water supply system that can furnish high purity water that can meet the needs of the various analytical areas. Method blanks' performance provides an indication of the source water suitability for the analysis. However, the water supply system should be monitored on a regular basis (i.e., daily or before use) by conductivity readouts or implementation of general chemistry parameters. Appropriate general chemistry parameters should be based upon the analysis performed at the laboratory. Refer to ASTM D 1193-91, Standard Specification for Reagent Water for additional details.

4.9.1.5 Other Analytical Support Equipment. Other support equipment used to maintain appropriate temperatures as prescribed within the analytical method (i.e., hotplates, water baths, etc.) should be monitored for compliance with the method-specified ranges. Recommend notation of any critical times or temperatures onto appropriate bench sheets or laboratory logbooks. All HVAC systems must be routinely monitored for potential contamination of the analytical system. Chronic long-term or systematic contamination is not acceptable. Corrective action procedures must be initiated upon detection of ambient or systematic contamination. Resolution of the nonconformance must be documented.

4.9.2 Initial Calibration Curve. An analytical instrument is considered calibrated when an instrumental response can be related to the concentration of an analyte. This relationship may be depicted graphically, and referred to as a 'calibration curve'. Initial calibration curves must be established based upon the requisite number of standards identified within the method for each target analyte (and surrogate for organic analyses). As described in Section 5.2.3.4.1.6, the practical quantitation limit(s) shall be established by the laboratory at the low standard for each target analyte. All reported concentrations for target analytes shall be within the high and low initial calibration standards. Data generated below the low standard shall be reported as estimated (J-flag) values. Data generated above the high standard shall be diluted into the calibration range and reanalyzed. The frequency requirements for the initial calibration vary amongst the individual methods and are presented below. Tables 4-7 through 4-14 highlight key information on initial calibrations by method also.

4.9.2.1 Inorganic Analyses. For metals analyses, an initial calibration must be performed at the beginning of each analytical shift, and when a CCV fails or significant instrument maintenance is performed.

Linearity is acceptable only if the linear regression coefficient r > 0.995. If r > 0.995, take corrective action and recalibrate.

As previously noted, classical (wet chemistry) techniques are not addressed directly. Nevertheless, while calibration and standardization procedures vary depending on the type of system and analytical methodology, the general principles outlined in these calibration sections apply universally. Analytical systems for wet chemistry techniques shall be calibrated prior to analyses being conducted. The calibration consists of defining the working range by use of a series of standard solutions. A minimum of five to seven standards is typically used. The calibration shall be verified on an ongoing basis (every ten to twenty samples at a minimum and at the end of the analysis sequence) to ensure that the system remains within specifications.

4.9.2.1.1 Method ~~6010~~6020. The term "standard" may refer to a "mixed" standard solution containing all the metals of interest (when the metals are compatible) or to a set of standard solutions where each standard contains a subset of the (compatible) metals of interest. The initial calibration must be established following one of the options presented below.

- Calibration Option 1. Perform the initial calibration with a high-level standard and a calibration blank. The concentration of the single standard establishes the linear calibration range, and must fall below the upper linear dynamic range of the instrument (see Section 4.7.1.1). To ensure accuracy of concentrations at the PQL, verification at a low-level standard is prepared from the primary source standard and results must be within ± 20% of its expected value. If the 20% criterion cannot be consistently met, then the concentration of the daily low-level CCV standard (and associated quantitation limits) should be increased until compliance is attained. If the PQL check standard fails during execution of the analysis, the laboratory PQLs must be evaluated for compliance with the project specific requirements and the data quality objectives.

- Calibration Option 2. The ICP-AES may be alternatively calibrated with three standards and a calibration blank. Evaluate linearity as described in Section 4.9.2.1. The concentration of the low-level calibration standard must be set no lower than the PQL for each analyte. The concentration of the high-level standard establishes the linear calibration range, and must fall below the upper linear dynamic range of the instrument (see Section 4.7.1.1).

All standards and samples analyzed shall have a minimum of three exposures and the mean of each set of exposures used for quantitation. The exposure times should be optimized for instrumental response and analysis time. Evaluate the RSD for high-level and mid-level standards and calibration verification standards to < 5%. Take corrective action (e.g., recheck the appropriateness of the exposure time) and recalibrate if the QC criteria are not met.

4.9.2.1.2 Method 7000. An initial calibration for GFAA must be established from at least three standards and a calibration blank. CVAA calibration requirements are similar to the standard AA procedures but with a minimum of 5-points. Evaluate linearity as described in Section 4.9.2.1. For GFAA a minimum of duplicate injections shall be performed for all standards and samples to improve precision and help reduce furnace pipetting uncertainty. The RPD between duplicate injections for all standards shall be < 10%. If unacceptable, reanalyze the standard. If still unacceptable, perform instrument maintenance as needed to correct the problem and recalibrate.

4.9.2.2 Organic Analyses. The initial calibration curve is established as specified in the individual methods, using (a minimum of) five standards for all single-component target compounds and surrogates, and at least three standards for multiple component target compounds (e.g., toxaphene, chlordane, and PCBs). Care should be exercised to avoid using inappropriate practices identified in Section 4.4.2. Once verified, an initial calibration is valid until a CCV fails or significant instrument maintenance is performed. The shapes of calibration 'curves' are typically a linear function between the concentration of each target compound to the instrument response. However, many method target compounds listings have been expanded to include compounds, which cannot be optimized without application of models for quadratic or

higher order mathematical functions. When these models are employed, additional standards must be analyzed to accurately delineate the relationship as outlined in Method 8000B.

Linearity may be determined using linear regression analysis for each target compounds by calculating the "correlation coefficient" (r). The resulting line would normally not be forced through the origin, or use the origin as a calibration point, unless it is demonstrated that the intercept of the regression line is not statistically different from zero at the 95% level of confidence. Another term used to describe the goodness of fit of the line is 'Coefficient of Determination' (r^2), the squared correlation coefficient). Alternatively, for chromatographic methods, the average calibration factor (CF) or response factors (RF) may be calculated for each target compound. Linearity may be evaluated by calculating the percent relative standard deviation (%RSD) of the CFs/RFs from the initial calibration standards for each target compound. Linearity is presumed if the "correlation coefficient (r) is equal to or greater than 0.995 or the coefficient of determination (r^2)" is equal to or greater than 0.99, or if the %RSD is less than or equal to 15% or 20% (depending on the method specifications). A visual inspection of the calibration curve should also be used as a diagnostic tool when nonlinear behavior is observed to verify if there is a large percentage error in any particular portion of the calibration curve. If the visual inspection indicates problems, or if one of the above criterions is not met, then the laboratory shall evaluate the following items for implementation based on an understanding of the detector response/contaminant concentration relationship:

- Check the instrument operating conditions or the initial calibration standards used and make adjustments to achieve a linear calibration curve.

- Narrow the calibration range using the same number of standards as required by the individual method. In general, the highest standard would be lowered first. The consequences of all actions taken must also be addressed, i.e., reduction of the calibration range, raising of the PQL, etc.

- Evaluate the use of a nonlinear calibration curve, when applicable. When nonlinear calibration models are used, the resultant line should not be forced through the origin and the origin should not be used as a calibration point. No higher than a third, order (cubic) calibration model shall be used. Note that when a nonlinear calibration model is employed, more data points are needed to maintain at least three degrees of freedom. For example, use of a quadratic function requires a six-point initial calibration curve. The resulting 'coefficient of determination' (r^2) should be greater than or equal to 0.99 for this to be considered acceptable.

- Use of alternative techniques (e.g., relative standard error (RSE)) outlined in the EPA Memorandum titled, Clarification Regarding Use of SW-846 Methods, dated 7 August 1998.

- Despite implementation of the above alternatives, method limitations may exist which make the acceptance criteria unattainable for all target compounds. Therefore, SW-846 has incorporated an allowance to evaluate the <u>mean</u> of the RSD values for all target compounds in the calibration is less than the method acceptance criterion. To avoid the inclusion of target compounds showing gross method failure, this approach may be utilized as long as the target compounds do not exceed the criteria established for poor performers in the enclosed method-specific tables. *If the averaging option is employed, the laboratory must communicate the following information within the case narrative to the client: summary of all of the target compounds exceeding method acceptance criteria, the individual RSD results for those compounds, and the mean RSD calculated.*

4.9.2.2.1 Method 8021. Apply the principles as stated in Section 4.9.2.2 and summarized in Table 4-9. Poor performers for Method 8021 are typically associated with the gaseous compounds and those identified with poor purging efficiency on Table 4-1. Marginal failure for %RSD for these compounds shall not exceed 40%.

4.9.2.2.2 Method 8081. Several single-component pesticides may co-elute on certain GC columns. Therefore, it may be necessary to use two calibration mixtures to ensure sufficient separation for quantitation. Choose calibration mixes to minimize the peak overlap. Surrogates may be calibrated from either mix. For each multiple-component pesticide (e.g., toxaphene), analyze a mid-level standard to aid in

pattern recognition. Based upon the positive identification of either compound in the samples, calibrate the instrument for that multi-component pesticide with a minimum of three standards and reanalyze the extract to enable accurate quantitation. Note that if technical Chlordane is required, a separate three-point calibration must be performed using technical Chlordane standards. Professional judgment should be employed in conjunction with the method instruction to determine the approach used to calculate the appropriate CF(s) (e.g., the use of total area or selection of a minimum of 4 to 6 characteristic peaks for toxaphene and 3 to 5 for chlordane). Calibration factors are then used to calculate the mean calibration factors, standard deviation, and relative standard deviation and apply the principles as stated in Section 4.9.2.2 for both single and multi-component pesticides and as summarized in the Table 4-10. Marginal failure for %RSD for poor performing compounds shall not exceed 40%.

4.9.2.2.3 Method 8082. *Procedures for initial calibrations will vary based on the project requirements for PCB quantitation as noted in Section 4.6. (e.g., PCBs as Aroclors, PCB congeners, or total PCBs)*. When PCBs are to be determined as Aroclors, external standard calibration techniques should be used; when determined as PCB congeners, an internal standard calibration should be used. Table 4-11 summarizes appropriate QC limits.

- Aroclors. The approach taken for an initial calibration will differ depending on the project DQOs. For instance, projects, which have defined a few specific Aroclors associated with the site, recommend the following procedures. Perform the initial calibration using five standards for each Aroclor identified by the project. When samples contain a known mixture of different Aroclors, the analyst may perform a five-point calibration using that Aroclor mixture. When a multi-point calibration is performed for individual Aroclors, calculate and use the calibration factors from a minimum of 3 to 5 peaks for those standards and evaluate linearity as presented in Section 4.9.2.2. If the PCBs are unknown or the types of PCBs have not been determined, recommend the following procedures. Perform the initial calibration using five standards for a mixture of Aroclor 1016 and Aroclor 1260 standards in order to determine linearity of the detector response. For the remaining five Aroclors, a mid-level standard is analyzed to aid in pattern recognition. Based upon the positive identification of any PCBs in samples corresponding to the Aroclors with only the mid-level standard analyzed, calibrate the instrument for that PCB with a minimum of three standards and reanalyze the extract to enable accurate quantitation. Again, using a minimum of 3 to 5 peaks, calculate appropriate CFs for the 1016/1260 and any positively identified PCB standards and apply the principles as outlined in Section 4.9.2.2 to evaluate linearity.

- PCB Congeners. Table 4-3B identifies 19 congeners that have been successfully tested by the method. However, the procedure may be appropriate for additional congeners. When PCB congeners are to be determined, Decachlorobiphenyl (DCB) is recommended for use as the internal standard. Perform a five-point initial calibration using standards containing all PCB congeners. Calculate the response factor (RF) for each congener in the calibration standards, and evaluate the linearity of the initial calibration using principles as outlined in Section 4.9.2.2.

4.9.2.2.4 Method 8260. Apply the principles as stated in Section 4.9.2.2, in addition to the items presented below. Poor performers for Method 8260 are typically associated with the gaseous compounds and those identified with poor purging efficiency on Table 4-4. Marginal failure for %RSD for these compounds shall not exceed 30%. QC elements and acceptance limits are summarized in Table 4-12.

- Verify the mean Response Factors (RFs) for the SPCCs (system performance check compounds) satisfy the minimum RFs requirements specified in Method 8260. If these criteria are not met, evaluate the system (e.g., for standard mix degradation, injection port inlet contamination, contamination at the front end of the analytical column and active sites in the column or chromatographic system). Take corrective action and recalibrate for all target compounds.

- If the regression coefficient r > 0.995 or RSD < 30% for CCCs, this is indicative of system leak or column degradation. Take appropriate corrective action (e.g., instrument maintenance) and recalibrate for all target compounds and surrogates.

4.9.2.2.5 Method 8270. Apply the principles as stated in Section 4.9.2.2, in addition to the items presented below. Poor performers for Method 8270 are typically associated with the compounds, which exhibit poor chromatographic behavior. Marginal failure for %RSD for these compounds shall not exceed 40%. QC elements and acceptance limits are summarized in Table 4-13.

~~4.9.2.2.5~~4.9.2.2.6 Verify the mean Response Factors (RFs) for the SPCCs (system performance check compounds) satisfy the minimum RFs requirements specified in Method 8270. If these criteria are not met, evaluate the system (e.g., for standard mix degradation, injection port inlet contamination, contamination at the front end of the analytical column and active sites in the column or chromatographic system). Take corrective action and recalibrate for all target compounds.

- If the regression coefficient r > 0.995 or RSD < 30% for CCCs, this is indicative of system leak or column degradation. Take appropriate corrective action (e.g., instrument maintenance) and recalibrate for all target compounds and surrogates.

4.9.2.2.6 Method 8330. Perform the initial calibration as specified in Section 4.9.2.2 with the following points considered. Marginal failure for %RSD for these compounds shall not exceed 30%. QC elements and acceptance limits for Method 8330 are summarized in Table 4-14.

- Due to the lack of resolution between 2,4-DNT and 2,6-DNT, and between 2-Am-DNT and 4-Am-DNT, calibrations of these compounds may be based on 'isomeric pairs'. Improved resolution may be obtained using a Supelco C-18 column with an eluent of 55/45 (v/v) methanol/water at 0.8 mL/min.

- The C-18 column may be substituted with a C-8 column (as the primary column) if 2-NT and 4-NT are not target analytes or project-specific approval is obtained. (These two analytes generally coelute on C-8 columns.) Note that a C-8 column must not be used in place of the confirmatory CN-column.

4.9.3 Initial Calibration Verification. The initial calibration curve shall be verified as accurate with a standard purchased or prepared from an independent source. This initial calibration verification (ICV) involves the analysis of a standard containing all of the target analytes, typically in the middle of the calibration range, each time the initial calibration is performed. The % recovery of each target analyte in the ICV is determined from the initial calibration and compared with the specifications for the CCV in each method (except for mercury by CVAA) as outlined in Tables 4-7 through 4-14.

Note for methods, which report several (>5) target analytes, a small percentage of sporadic marginal failures may be tolerated (i.e., will not trigger re-extraction and analysis of the entire batch). This is subject to approval by the district chemist and based on the data quality objectives. The number of target analytes reported for the method will dictate the number of allowable QC failures as given below. Refer to the individual method tables for details on the implementation of this concept.

N [1]	X [2]
5 – 15	1
16 – 30	2
31 – 45	3
46 – 60	4

61 – 75	5
76 – 90	6
91 – 105	7

The marginal failure allowance entails the application of an expanded acceptance criterion. If these QC criteria are not met, a new initial calibration must be performed.

4.9.3.1 Method 8081. A separate ICV standard is required for each multiple-component target compound (e.g., toxaphene and chlordane), if a calibration is performed based upon its presence in samples.

4.9.3.2 Method 8082. The ICV standards may be limited to contain a mixture of Aroclors 1016 and 1260 or the project-specified Aroclors.

4.9.4 Initial Calibration Blanks (ICBs) and Continuing Calibration Blanks (CCBs)
ICBs and CCBs are required for inorganic metals analyses to verify the system is free of contamination. The frequency of ICB/CCB analyses is presented in Tables 4-7 and 4-8 as outlined within Methods ~~6010~~6020 and 7000. The concentrations of each target analyte in the ICB/CCB must be less than or equal to the MDL check sample (~ 2 times the MDL) as presented in Tables 4-7 and 4-8. Samples must not be analyzed until the ICB is acceptable, and all results must be bracketed by passing CCBs in order to be considered valid.

4.9.5 Continuing Calibration Verification (CCV)
CCVs are analyzed to determine whether the analytical system is working properly, and if a new initial calibration (and the reanalysis of sample extracts) is required. Calibration "verification" differs in concept and practice from "continuing calibration". In this latter technique, a standard is analyzed and new response factors are calculated, or a new calibration curve is drawn from the analysis of the continuing calibration standard. The former verifies compliance with the initial calibration curve, but does not overwrite the response factors used for the quantitation, nor allows re-sloping of the calibration curve. Calibration verification shall be used for all analytical methods, calculating a % Drift when the initial calibration is based on regression analysis, and a % Difference when the initial calibration is determined based upon % RSD values. Continuing calibration verification (CCV) typically involves the analysis of a single primary source standard in the middle of the calibration range, between the concentrations of low-level and mid-level calibration standards. The frequencies of the CCV vary between methods, but are related to the type of detector used, and sample matrices analyzed. The analysis of more frequent CCVs is recommended for very sensitive detectors and when analyzing difficult matrices. This frequency is typically presented within SW-846 methods as (1) At the beginning of the analytical shift/sequence; (2) every 12 hours of analyses or every 10 to 20 samples; and may include (3) at the end of the analytical sequence. Refer to Section Tables 4-7 through 4-14 for details on requirements for CCV implementation and acceptance limits for the individual methods. If these QC criteria are not met, take corrective action to inspect the analytical system to determine the cause and perform instrument maintenance to correct the problem before analyzing a second CCV. If the second CCV is acceptable after system maintenance is performed, re-calibration is not required but all sample extracts analyzed after the last acceptable CCV must be reanalyzed. If however, the second CCV fails, a new initial calibration must be performed and all associated sample extracts reanalyzed. The CCVs do not have to be from the primary source standards.

4.9.5.1 Inorganic Analyses. A calibration verification pair of a CCB and CCV must be analyzed after every 10 samples (including batch QC samples) and at the end of the analytical sequence as outlined in Sections 4.9.4 and 4.9.5. Refer to Tables 4-7 through 4-8 or a summary of CCV implementation and QC requirements.

4.9.5.2 Organic Analyses. Calibration verification must be analyzed as outlined in Section 4.9.5, as summarized in Tables 4-9 through 4-14, in addition to the following:

- For certain organic analyses, additional CCVs at low- and high-level concentrations are recommended, due to the instability of their detectors (e.g., HECD, ECD). Method quality objectives (acceptance limits) for the high-level CCV should be in accordance with the mid-level CCV criteria. *This criterion however, may not be achievable for the low-level CCV. Therefore, no method quality objectives for low-level CCV are included at this time, and should be identified within project documents based upon the data's use. For instance, if low-level detection is critical based on project action levels or decision levels, appropriate method quality objectives should be determined based on an acceptable level of error to support the data's use.*

- For methods that contain multi-component target compounds (e.g., PCBs), typically only a subset of these analytes would be used in the CCV.

- For GC/HPLC methods, concepts similar to that presented for initial calibrations apply. For the methods may possess limitations for certain, target analytes, which make the stated method acceptance criteria unattainable. Therefore, SW-846 has incorporated an allowance to evaluate the <u>mean</u> of the % Difference (%D) or %Drift values for all target analytes in the calibration verification standard that are less than the method acceptance criteria. To avoid the inclusion of target analytes showing gross method failure, this approach may be utilized as long as the target analytes do not exceed the criteria established for poor performers in the enclosed method-specific tables. *In addition, the laboratory must communicate this information within the case narrative to the client. Provide a summary of all of the target analytes exceeding method acceptance criteria, the individual %D values for those compounds, and the mean %D calculated.*

- For GC/HPLC methods, compare the retention time of each analyte in the CCV with the absolute retention time windows established in Section 4.7.2. Each analyte must fall within its respective retention time window. If this criterion is not met, the chromatographic system must be adjusted to allow another CCV to meet the criterion, or a new initial calibration performed and new retention time windows established.

4.9.5.2.1 Method 8021. Due to the instability and potential drift of the electrolytic conductivity (HECD) detector, the following procedures are highly recommended. When analysis includes the halogenated volatile organic (HVO) target analytes, suggest alternating the mid-level CCV with high- and low-level CCVs as noted in Section 4.9.5.2.

4.9.5.2.2 Method 8081. Due to the instability and potential drift of the electron capture (ECD) detector, the following procedures are also highly recommended. Suggest alternating the mid-level CCV with high- and low-level CCVs as noted in Section 4.9.5.2, and also recommend incorporating periodic multi-component pesticide CCVs (i.e., toxaphene and chlordane), when applicable. Multi-component pesticide CCVs must be incorporated when identified as potential chemicals of concern (COPC).

4.9.5.2.3 Method 8082. When quantitating for PCBs as Aroclors, a mid-level CCV standard containing a mixture of Aroclors 1016 and 1260 (or Aroclors of interest) must be analyzed. When quantitating for individual PCB congeners, the CCV standard must contain all congener target compounds. Due to the instability and potential drift of the electron capture (ECD) detector, the following procedures are also highly recommended. Suggest alternating the mid-level CCV with high- and low-level CCVs as noted in Section 4.9.5.2.

4.9.5.2.4 Methods 8260 and 8270. Apply the principles as stated in Section 4.9.5.2, in addition to the items presented below. It is further recommended that a CCV be analyzed at the end of the analytical sequence.

- Evaluate the RFs of the SPCCs in the CCV. If the SPCCs do not satisfy the minimum response factor requirements specified by methods 8260/8270, take corrective action and re-inject the CCV. However, if CCV remains unacceptable, a new initial calibration must be performed.

- Evaluate the responses and retention times of the internal standards in the CCV as soon as possible. If the retention time for any internal standard changes by more than 30 seconds, or the EICP area changes by a factor of two (-50% to + 100%) from that of the mid-point standard of a current initial calibration, inspect the mass spectrometer for malfunctions and take corrective action. Reanalyze any affected samples if required.

- Evaluate the concentration of each target compounds and surrogate in the CCV. Verify the % Drift or % Difference for the CCCs (calibration check compounds) and all project-specified contaminants of concern are within ± 20% of its expected value. Evaluate remaining target compounds to assess instrument stability and survey the need for performing instrument maintenance.

4.10 General Laboratory Requirements

Per ER 1110-1-263, each laboratory performing work for the USACE shall comply with ISO/IEC Guide 25, General Requirements for the Competence of Calibration and Testing Laboratories, 1990 Edition and Updates. This may be accomplished by the application of the USACE laboratory validation as identified in ER 1110-1-263. Procedures for the laboratory validation process are described in EM 200-1-1. The following laboratory requirements are pursuant to meeting the standards established within the noted references. *Individual project requirements may be more or less stringent than those listed below*. Having MRD validation does not preclude a laboratory or project from conducting project-specific audits. The QAPP shall specify the number and type of audits to be performed and specific certifications required for the project. The QAPP shall also provide an example audit checklist for review by the District Chemist. Laboratories performing non-routine analyses or analyses not validated by the USACE are required to meet minimum standards of quality and proficiency. These standards must be documented in the CDQMP.

4.10.1 Laboratory Quality System. A laboratory must establish, implement, and maintain a quality system appropriate for the type, range, and volume of analytical services it provides. The elements of this quality system shall be documented within a Laboratory Quality Management Plan or related documentation. Laboratory management is responsible for communicating the stated policies and practices to laboratory personnel, ensuring all information is clearly understood and implemented. The laboratory shall perform periodic audits of activities to verify compliance with the quality system. When deviations are discovered, the laboratory shall take immediate corrective action to remedy the situation or practice, notifying any client whose work may have been affected.

4.10.2 Laboratory Quality Management Plan. The laboratory shall prepare a written Quality Management Plan, which describes the general and specific procedures used within the laboratory to achieve scientifically valid and legally defensible data. *This documentation requirement pertains exclusively to the laboratory, and is not considered equivalent to the Quality Assurance Project Plan (QAPP) which is an integral part of the project-related SAP*. However, the laboratory may be required to submit this documentation as an appendix to the project-specific QAPP. *When conflicting language exists between the project QAPP and the Laboratory Quality Management Plan, the project QAPP takes precedence over the LQMP.*

The Quality Management Plan should present the laboratory's policies, organization, objectives, functional guidelines, and specific QA and QC activities designed to achieve the data quality requirements when running performance-based methods, such as the SW-846 methods. Standard operating procedures pertaining to each element shall be included or referenced as part of this QA Management Plan and should describe the specific operational and analytical procedures as normally implemented by the laboratory. This plan should include, at a minimum, the following elements:

· QA policy, objectives, and commitments, any allowable departures from documented policies;

· Organization structure and personnel - include descriptions of key personnel, identify relationship between management, operations, support, and QA personnel;

· Facilities and equipment;

· Document control - notebook policy, sample tracking and custody procedures, LQMP and SOP organization and control;

· Scope of analytical methodologies provided - sample preparatory and determinative procedures available; Methods' implementation - calibration procedures and frequency, standards' preparation procedures, traceability of measurements and procedures employed, decision processes/procedures/responsibility for initiation of corrective action;

· Data generation - data collection procedures, data reduction procedures, data evaluation procedures, data reporting/authorization procedures;

· Quality control - solvent/reagent checks, reference material analysis, internal QC checks, retesting or corrective action implementation, verification of electronic data management systems;

· Quality assurance - Determination and monitoring of method QA performance, systems/internal audits, customer complaints' resolution, performance/external audits, interlaboratory comparisons and proficiency programs, corrective action procedures, and QA reporting procedures.

Submission of this Laboratory QA Management Plan for review, along with some or all of the standard operating procedures, may be required before sample testing can be initiated on any given project. These documents shall be amended should deficiencies be noted during review or whenever the fundamental elements described above are updated (i.e., annually).

4.10.3 Laboratory Organization, Management, and Analytical Personnel Responsibilities. The laboratory shall have sufficient personnel with appropriate education, current training, and experience to fulfill their assigned duties. The laboratory shall promote independence of judgment and integrity with well-defined responsibilities outlined for each individual within the laboratory organization. Personnel training records shall be maintained by the laboratory.

4.10.3.1 Laboratory Management. Laboratory management shall at a minimum have a technical director/manager responsible for overall technical operations. The technical director shall have a minimum of a Bachelor's degree in chemistry or any related scientific/engineering discipline, and a minimum of 2 years of laboratory experience. The laboratory management shall have sufficient authority and resources to fulfill their duties accordingly. Management staff shall be responsible for actively supporting the following at a minimum: (1) implementation of the policy and practices defined within the Laboratory Quality Management Plan, (2) maintaining accurate standard operating procedures and enforcing their use in the laboratory, (3) participation in interlaboratory comparisons and proficiency testing, (4) certifying that personnel performing all tests have proper education and training, (5) providing appropriate management and supervisory support to ensure adequate supervision of technical staff, (6) provide a contingency plan which identifies backup personnel for key laboratory positions (i.e., technical director/manager, QA officer/manager, etc.) in the event of personnel absence, (7) have policy and procedures in place which ensure protection of clients' confidential information and proprietary rights, and (8) maintaining a work environment that emphasizes the importance of data quality.

4.10.3.2 Laboratory Quality Assurance Officer. The laboratory shall at a minimum have a quality assurance (QA) officer/manager, responsible for the laboratory's quality system. The laboratory QA officer shall be responsible for maintaining the quality system and overseeing the quality assurance aspects of the data. The QA officer shall work independent of the laboratory's production management and have direct access to the highest level of management for decisions on laboratory policy and resources. In laboratories with limited staff (i.e., <10 technical personnel) the QA officer may also perform duties as the technical director or deputy technical director. QA officer shall at a minimum: (1) serve as a focal point for QA issues, (2) perform oversight and QA review for all nonconformance reports, (3) perform QA review for a percentage of laboratory analytical batches or project data packages, (4) evaluate data objectively, independent of laboratory management influence, (5) possess a general knowledge of the methods for which data review is performed, (6) conduct internal audits on the entire technical operation annually, and

(7) monitor laboratory method performance by control charts/ranges evaluation, promoting method improvements as necessary. This individual should have a minimum of a Bachelor's degree in chemistry or any related scientific/engineering discipline and be familiar with all laboratory operations. A minimum of three years of laboratory experience, including at least one year of applied experience with quality assurance (QA) principles and practices in an analytical laboratory are required. In addition, a working knowledge of general statistical concepts is recommended to support data review and method performance monitoring responsibilities.

4.10.3.3 Organic Chemistry Section. If applicable, the laboratory shall maintain an Organic Chemistry Section with appropriate personnel, facilities, and instrumentation to conduct the work required. The following disciplines must be clearly represented and staffed as project testing dictates.

4.10.3.3.1 Organic Section Supervisor(s). The gas chromatograph/mass spectrometer (GC/MS), GC, or Sample Preparation Laboratory Supervisors are responsible for all technical efforts of their respective laboratories, providing sufficient oversight of activities to ensure data meet all terms and conditions expressed for the project. These individuals shall possess documentation, which supports demonstration of performance for all areas, which they provide supervision. In addition, they should have a minimum of a bachelor's degree in chemistry or any related scientific/engineering discipline, and a minimum of three years of laboratory experience, including at least one year of supervisory experience.

4.10.3.3.2 GC/MS Analyst. Qualifications for these individuals should be at a minimum of one year of experience in operating and maintaining GC/MS/DS with a bachelor's degree in chemistry or in any related scientific/engineering discipline, or in lieu of the bachelor's degree, three years of experience in operating and maintaining the GC/MS and interpreting GC/MS data.

4.10.3.3.3 Gas Chromatography (GC)/High Performance Liquid Chromatography (HPLC) Analyst(s). Qualifications for these individuals should be at a minimum of one year of experience in operating and maintaining GC/HPLC equipment, respectively, with a bachelor's degree in chemistry or a related scientific/engineering discipline, or in lieu of the bachelor's degree, three years of experience in operating and maintaining the GC/HPLC and interpreting GC/HPLC data.

4.10.3.3.4 Extraction/Concentration Technician. Qualifications for these individuals should be at a minimum of a high school diploma and one year of college general chemistry. These individuals should also have a minimum of one year of experience in extraction/concentration.

4.10.3.4 Inorganic Chemistry Section. If applicable, the laboratory should maintain an Inorganic Chemistry Section with the appropriate personnel, facilities, and instrumentation to conduct the work required for the project. The following disciplines must be clearly represented and staffed as project testing dictates.

4.10.3.4.1 Inorganic Section Supervisor(s). The metals, wet chemistry, or sample preparation laboratory supervisor(s) is responsible for all technical efforts of their respective laboratories, providing sufficient oversight of activities to ensure data meet all terms and conditions for each project. These individuals shall possess documentation, which supports demonstration of performance for all areas, which they provide supervision. In addition, they should have a minimum of a bachelor's degree in chemistry or any related scientific/engineering discipline, and a minimum of three years of laboratory experience, including at least one year of supervisory experience.

4.10.3.4.2 ICP Analyst. Qualifications for these individuals should be at a minimum of a bachelor's degree in chemistry or any related scientific/engineering discipline with one year of experience in operating and maintaining ICP instrumentation, or, in lieu of the educational requirement, three additional years of experience in operating and maintaining ICP instrumentation.

4.10.3.4.3 Atomic Absorption (AA) Analyst. Qualifications of these individuals should be at a minimum of a bachelor's degree in chemistry or any related scientific/engineering discipline with one year of experience in operating and maintaining AA instrumentation for graphite furnace, flame, and cold vapor

AA, or, in lieu of the educational requirement, three additional years of experience in operating and maintaining AA instrumentation, including graphite furnace, flame, and cold vapor techniques.

4.10.3.4.4 Inorganic Sample Preparation Technician. Qualifications for these individuals should be at a minimum of a high school diploma and a college level course in general chemistry or equivalent. These individuals should also have a minimum of one year of experience in sample preparation in an analytical laboratory.

4.10.3.5 Wet Chemistry Analyst. If applicable, qualifications of these individuals should be at a minimum of a bachelor's degree in chemistry or any related scientific/engineering discipline. These individuals should also have a minimum of one year of experience with classical chemistry laboratory procedures, in conjunction with the education qualifications, or, in lieu of the educational requirement, 2 years of additional equivalent experience.

4.10.3.6 Radiochemical Techniques Analyst. Qualifications of these individuals should be at a minimum of a bachelor's degree in chemistry or any related scientific/engineering discipline with one year of experience in performing radiochemical analyses, or, in lieu of the educational requirement, three additional years of experience in operating and maintaining radiochemical instrumentation.

4.10.3.7 Technical Staff Backup. The laboratory should have a minimum of one chemist available at any time as a backup technical person for each analytical area to ensure continuous operations and accomplish the work required. These individuals should have similar education and experience requirements to the primary analyst.

4.10.3.8 Sample Custodian and Data Management. The laboratory should also maintain and staff support positions for Sample Custodian and Data Management personnel. Qualifications for these individuals should be at a minimum of a high school diploma, and appropriate on-the-job training.

4.10.4 Laboratory Facility and Equipment

4.10.4.1 Laboratory Facility Requirements. The laboratory shall provide a secure testing facility, which can accommodate the proper performance for the type, range, and volume of analytical services it provides. Facility entries must be controlled, and monitored as necessary to assure restricted access is maintained, especially for areas affecting the quality of activities or data. The design must provide effective separation of incompatible testing activities; and adequate energy sources, lighting, heating/cooling and ventilation to ensure stability of voltage, temperature, humidity, or other pertinent environmental conditions. This may involve inclusion of an area under positive pressure for VOC analysis. Adequate monitoring of environmental conditions and general housekeeping should be maintained to avoid any influence on the testing activities performed.

4.10.4.2 Laboratory Equipment Requirements. The laboratory shall provide sufficient equipment, instruments, and related supplies for proper performance of work. All equipment used shall be reflective of the measurement accuracy necessary. The laboratory shall ensure that all equipment and supplies purchased are inspected, a unique identifier assigned to it and the equipment verified as compliant with all relevant requirements prior to their initial use. Records of all suppliers used to obtain support services and materials shall be maintained.

4.10.4.2.1 Equipment Preventive Maintenance. To minimize downtime and interruption of analytical work, preventive maintenance shall be routinely performed on each analytical instrument. Designated laboratory personnel should be trained in routine maintenance procedures for all major instrumentation. When repairs are necessary, the equipment shall be taken out of service, repairs performed by either trained staff or trained service engineers, and an evaluation of the impact on previous calibrations or tests performed. It is generally recommended that maintenance contracts be maintained on all major analytical instruments.

Detailed SOPs shall be on file or the information incorporated into method SOPs/Laboratory Quality Management Plan that describes preventive maintenance procedures and schedules. The laboratory shall maintain detailed logs for each instrument documenting the preventive maintenance and repairs performed. 4.10.4.2.2 Equipment Backup Capabilities. Backup instruments shall be designated in case of an extended breakdown for an analytical instrument. It is the laboratory's responsibility to have a backup plan in force such that all sample holding times can be met. This plan can include rental of backup instruments, or the use of another USACE validated laboratory for a given procedure. All equipment outside of the laboratory's permanent control shall be evaluated to ensure that all relevant requirements are met prior to their initial use. *Before any subcontracting is performed, USACE must be informed and approval given, in writing.* The laboratory shall ensure, and be able to provide documentation, that all subcontractors employed are competent to perform the duties requested, and comply with all of the requirements established within this guidance and EM 200-1-1, as appropriate.

4.10.4.2.3 Laboratory Equipment Records. The laboratory shall maintain appropriate records or documentation for all instruments and support equipment to identify: (1) type of equipment, (2) manufacturers' name or equipment make, model, and any serial numbers or unique identifiers, (3) dates received and placed into service, (4) condition when purchased (new, used, etc.), (5) current location, (6) manufacturer instructions/manuals, (7) history of any damage, modification or repair, (8) instrument maintenance logs, and (9) calibration/calibration verification run logs.

4.10.5 Laboratory SOPs. Laboratories shall be required to maintain written, approved laboratory-specific standard operating procedures (SOPs) for all methods and general operations. Laboratory-specific SOPs that fully detail the actual procedures and documentation used to implement performance-based methods. Simply referencing a given method or method number is not sufficient. Overall, these SOPs should be based on the guidance as published by EPA (QA/G-6 Guidance for the preparation of Standard Operating Procedures (SOPs) for Quality -Related Documents, November 1995).

The SOP shall be a written narrative, stepwise description of laboratory operating procedures. The SOPs shall accurately describe the equipment, and actual procedures used in the laboratory. Copies of the SOPs shall be readily available to the appropriate laboratory personnel. Calculations that are performed external to an instrument or in its automation software shall be documented in the SOP. The SOP should also identify an appropriate estimation of uncertainty for all measurements by the designation of appropriate class/grade of equipment within the SOP, or by the number of significant figures recorded based upon the accuracy of the equipment used. The format for SOPs may vary depending upon the kind of activity for which they are prepared, however, at a minimum, the following sections shall be included: Title/Signature/Effective Date page; Scope and Application; Method Summary; Sample Preservation, Containers, Handling, and Storage; Interferences and Potential Problems; Equipment and Apparatus; Reagents and Solutions; Procedures; Calculations; Quality Assurance/Quality Control; Corrective Actions, Data Evaluation; MDL studies/Sensitivity Assessment; Health and Safety; Sample Disposal; References; and Example Forms. Laboratory SOPs shall be given unique ID numbers. These SOPs shall be controlled documents which are reviewed annually, or updated as necessary whenever procedure/method changes are made and a new version number assigned. Retired SOPs shall be maintained on file by the laboratory in case data quality questions arise later.

4.10.6 Document Control Procedures. The laboratory shall maintain records documenting all phases of sample handling from sample receipt to final analysis. Accountable documents used by laboratories include, but are not limited to, logbooks, chain-of-custody records, sample work sheets, bench sheets, instrument printout, and other documents relating to the sample or sample analysis. The laboratory shall use a document numbering and identification system for all documents/logs. All observations and results recorded by the laboratory shall be either recorded on preprinted laboratory forms, permanently bound laboratory logbooks, or entered into secure computer systems. Recommend observations include noting basis for any manual integrations performed. Pages in both the bound and unbound logbooks shall be sequentially numbered.

Preprinted laboratory forms shall contain the name of the laboratory and be dated (month/day/year) and signed by the person(s) performing the activity at the time the activity was performed. Permanently bound

laboratory logbooks shall be dated and signed by the person performing the activity at the time the activity was performed. All logbook entries shall be in chronological order.
All entries shall be recorded in indelible ink. Unused portions of the logbooks shall be "z'd" out. Corrections to logbooks shall be made by drawing a single line through the error and entering the correct information. Corrections and additions shall be dated and initialed. Computer forms shall contain the name of the laboratory, be dated, and signed by the person performing the activity at the time the form is printed. Computer systems must be established to maintain the integrity of the data, i.e., verified to ensure accurate capture, processing, manipulation, recording, and reporting of data, configured to restrict access and provide for appropriate backups and audit trails, etc.

4.10.6.1 Standard Preparation Log. Standard preparation logs should document the preparation of all calibration standards and spiking standards associated with the respective analysis (e.g., the initial calibration, CCV, and ICV standards as well as the MS, LCS, surrogate, and PDS spiking standards). The laboratory shall maintain complete internal documentation for all standards and reagents used that allow traceability back to the original source. At a minimum, the standard preparation logs must clearly specify the following for all standards:

- Sources (e.g., manufacturer and lot number for commercial stock solutions),
- Composition (e.g., initial and final concentration of all target analytes, type and purity of standards)
- Preparation and expiration dates
- Unique ID number of the standard
- Reagents and solvents added to standards (including source and lot numbers)
- Name of preparer

When a standard is prepared via the dilution of a stock solution, the spiking volume and concentration of the stock solution, and the final volume and concentration of the diluted standard should be specified and documented accordingly. Manufacturer certificates for commercially purchased stock standards must be maintained. When the laboratory prepares its own stock solutions, calculations and conversion factors should be shown in the standard preparation log (e.g., a general formula or sample calculations).

4.10.6.2 Sample Preparation Log. Sample preparation logs should document all significant sample preparation activities. All reagents/standards used shall be clearly identified (e.g., with lot numbers) on the appropriate laboratory bench log sheets. The sample preparation logs must include the following information:

- Sample and batch ID numbers
- Matrix
- Preparatory method (method or laboratory SOP ID number)
- Date of sample preparation
- Initial volume or weight of the sample processed
- Final volume of the sample processed (after digestion, extraction or cleanup)
- Percent moisture (for solid samples)
- Reagents and solvents added to the samples (including source and lot numbers)

- Any pH and preservation checks and adjustments performed
- Spiking standards (ID number of the LCS, and MS spiking solutions, volume added, and the final spike concentration)
- Name of analyst

4.10.6.3 Instrument Run Log. Instrument run logs shall be maintained for each instrument to enable a complete reconstruction of the analytical run sequence. Run sequence logs must indicate the unique identifier appropriated for the instrument used to generate the data, the date of analysis and the aliquot volume of the sample analyzed (e.g., the injection volume for chromatographic methods). The time of analysis must be specified for chromatographic methods. The order in which field and QC samples are collected and presented should be consistent with the temporal order in which the analyses were performed. Run logs must clearly indicate which field and batch QC samples are associated with each initial calibration, ICV, and CCV. Instrumental analysis logs are particularly important since they provide the basic link between the sample analyses and QC data. Computer logs may be used if all of the preceding information is captured.

4.10.6.4 Computer/Instrument Outputs. Computer/instrument printouts or other independent information can be incorporated into logbooks if such printouts can be permanently affixed to the appropriate logbook.

4.10.6.5 Electronic Data Management. Electronic data management systems shall be verified by the laboratory to ensure accurate data transfer, data reduction, and reporting. All aspects of the data management system shall be fully documented as compliant with USEPA Good Automated Laboratory Practices (GALP) requirements.

4.10.7 Laboratory Quality Assurance Procedures. The laboratory shall ensure the quality of results by maintaining an integrated quality assurance system of activities involving the planning, implementation, assessment, reporting, and quality improvement of data. Refer to ISO/IEC Guide 25, General Requirements for the Competence of Calibration and Testing Laboratories and ANSI/ASQC E4, Specification and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs for additional information. These activities are typically performed or facilitated by the Laboratory QA officer and include the (1) performance of periodic audits (system and technical); (2) participation in proficiency testing programs/interlaboratory comparisons, (3) routine analysis of certified reference materials or second source reference materials, and (4) monitor method performance (sensitivity, precision and bias) through an evaluation of the MDL study or MDL check sample, and batch QC sample (MB, LCS) control ranges/charts.

4.10.7.1 Laboratory Audits. Annual laboratory audits shall be conducted internally for each analytical area to verify the following at a minimum, (1) procedures are compliant with SOPs, (2) documentation practices are complete and traceable to a certified source(s), (3) data reviews are complete, well-documented, and effective, and (4) data reporting practices, including electronic or manual data transfer and client report generation are accurate and complete. All audit findings, any corrective actions, root cause determination, etc. shall be fully documented in QA reports to management. The QA officer shall document that all corrective actions necessary are verified complete within a reasonable time frame. Audits performed by external agencies or accrediting authorities shall not substitute for internally conducted laboratory audits.

4.10.7.2 Laboratory Method Performance Monitoring Using LCS. The laboratory shall generate in-house warning (2-sigma) and control (3-sigma) limits for all target analytes from LCSs. The LCSs are prepared from an interference-free aqueous and solid matrices in order to evaluate the quality of the method performance. These 'mean' control limits/charts are generated from bias measurements (e.g., LCS recoveries) to assess the method performance and data quality over an extended period of time. The 'warning' and 'control' limits for mean control charts set at '2-sigma' and '3-sigma' approximate the 95% and 99% confidence intervals, respectively. A minimum of thirty points should be used to establish these control ranges or charts. In addition, data from all analyses (including method failures) should be used to generate the limits, so as not to diminish the ranges by biasing the data input. Outliers may be excluded

from the data if proper QA procedures are employed such as using appropriate statistical tests (e.g., Dixon's Extreme Value test, Discordance test). It would not be necessary to maintain graphical control charts for all target analytes. Recommend a representative subset of target analytes for each method be chosen for control chart generation to observe method trends. These control ranges should be updated every six months, and reviewed by the QA officer annually at a minimum. Additionally, 'range' control charts may be used to evaluate precision between interbatch LCSs. Range control charts set the 95% and 99% confidence intervals at '2.456-sigma' and '3.268-sigma' for the 'warning' and 'control' limits, respectively. *Because so many laboratories mistakenly apply the 2-sigma and 3-sigma factors to calculate precision control limits in lieu of the correct factors noted above, caution should be exercised when comparing control limits between different laboratories.*

Evaluate laboratory control limits against the method quality objectives presented in the project DQOs, the published reference method, or this guidance to survey the need for method evaluation, or modifications. Note the baseline method quality objectives summarized in Tables 4-7 through 4-14 are intended for evaluation of batch control acceptance and may not be reflective of a laboratory overall performance as depicted by their internal control limits. Evaluate the calculated mean for a general assessment of the method systematic bias, and review of representative control charts for evidence of analytical trends. Information gathered should be used to troubleshoot analytical problems associated with method implementation, offering suggestions for quality improvements and corrective action to tighten limits.

4.11 Laboratory Sample Handling Requirements.

4.11.1 Sample Receipt. The receiving laboratory's chain-of-custody, sample storage, and dispersement for analysis shall be documented per specific laboratory standard operating procedures (SOPs) and project requirements. *Information on project custody, analysis, and data reporting requirements as noted in the SAP and highlighted on the Laboratory Notification Information Checklist (LNC) or similar, should be received by the laboratory prior to (or accompanying as with the LNC) the first shipment of incoming samples.* Individual 'Cooler Receipt Forms' or similar, shall be used by the laboratory for each cooler to verify sample condition, including proper sample containers, volumes, preservation, etc. and document any problems noted. Corrective action will be required for any deficiencies identified. Refer to Chapter 3 (figures 3-4 and 3-3) of EM 200-1-3, Requirements for the Preparation of Sampling and Analysis Plans for examples of the Laboratory Notification Sheet, and Cooler Receipt Form. *It is required that all coolers contain at least one temperature blank.* The temperature blank should be a 40-mL VOA vial filled with water and placed in a representative position inside the cooler. Multiple vials could be used, if needed. The laboratory should document when the temperature blank was positioned inappropriately or was not representative of the cooler temperature measurement. Sample login procedures shall follow the noted Cooler Receipt Form. The chain-of-custody form, any shipping documents, completed cooler receipt forms, telephone conversation record forms, and any corrective action forms will be maintained by the laboratory for each shipment and included in the reporting package when the results are submitted.

4.11.2 Sample Storage. The laboratory shall provide an adequate, contamination-free, and well-ventilated workspace for the receipt of samples. All samples and their associated extracts shall be stored under conditions that will ensure their integrity and preservation and are demonstrated to be free from all potential contaminants.

Sufficient refrigerator space shall be provided for the proper storage of all samples and their associated extracts. Samples shall not be stored with standards. Samples designated for volatile organic analyses testing shall be segregated from other samples while samples suspected to contain high levels of volatile organic analyses (e.g., UST soil samples) should be further isolated from other volatile organic analyses samples. *In the absence of project-specific criterion, samples and their associated extracts shall be stored under proper conditions for a minimum of sixty (60) days after receipt of the final data report for those samples.* After that time, the laboratory is responsible for the disposal of the samples and their associated extracts in compliance with all federal, state, and local regulations unless arrangements have been made for the return of any unused sample portions back to the site.

4.11.3 Sample Security and Tracking. The laboratory shall maintain the integrity of the samples received, their associated extracts, and the data generated. Limited and controlled access to all laboratory areas shall be maintained. *If required by the project, the laboratory should maintain sample and extract chain-of-custody within the laboratory at all times through the use of appropriate documentation and forms, otherwise strict internal chain-of-custody would not be required.*

4.11.4 Sample Holding Times. Extraction/digestion holding times shall be defined from the date/time of sample collection in the field to the date/time when the sample is first exposed to the extraction/digestion solvent. Analysis holding times shall be defined from the date/time of sample extraction to the date/time of sample analysis. It is required that laboratories maintain documentation that clearly shows the dates (and times when applicable) for all sample handling/manipulation processes. Samples should be analyzed as soon as possible after sample collection. Published holding times are generally considered maximum times that samples may be held before analysis and still be considered compliant with method guidelines. Sufficient time should be allowed for the re-preparation or reanalysis of samples within holding times should calibration, method, or quality control failures occur. For meeting holding times, sample extraction is considered complete when the method analytes have been removed from the sample matrix.

TABLE 4-1
TARGET COMPOUND LIST FOR METHOD 8021 VOLATILE ORGANIC COMPOUNDS

Target Compound	CAS Registry No.
Benzene [2, 3]	71-43-2
Bromobenzene [1]	108-86-1
Bromochloromethane	74-97-5
Bromodichloromethane [1]	75-27-4
Bromoform [1]	75-25-2
Bromomethane [1, 5]	74-83-9
n-Butylbenzene	104-51-8
sec-Butylbenzene	135-98-8
tert-Butylbenzene	98-06-6
Carbon tetrachloride [1]	56-23-5
Chlorobenzene [1, 2]	108-90-7
Chloroethane [1, 5]	75-00-3
Chloroform [1]	67-66-3
Chloromethane [1, 5]	74-87-3
2-Chlorotoluene	95-49-8
4-Chlorotoluene	106-43-4
Dibromochloromethane [1]	124-48-1
1,2-Dibromo-3-chloropropane [4]	96-12-8
1,2-Dibromoethane	106-93-4
Dibromomethane [1]	74-95-3
1,2-Dichlorobenzene [1, 2]	95-50-1
1,3-Dichlorobenzene [1, 2]	541-73-1
1,4-Dichlorobenzene [1, 2]	106-46-7
Dichlorodifluoromethane [1, 5]	75-71-8
1,1-Dichloroethane [1]	75-34-3
1,2-Dichloroethane [1]	107-06-2
1,1-Dichloroethene [1]	75-35-4

Target Compound	CAS Registry No.
trans-1,2-Dichloroethene [1]	156-60-5
1,2-Dichloropropane [1]	78-87-5
1,3-Dichloropropane	142-28-9
2,2-Dichloropropane	594-20-7
1,1-Dichloropropene	563-58-6
cis-1,3-Dichloropropene [1]	10061-01-5
trans-1,3-Dichloropropene [1]	10061-02-6
Ethyl Benzene [2, 3]	100-41-4
Hexachlorobutadiene	87-68-3
Isopropylbenzene (Cumene)	98-82-8
p-Isoproplytoluene (p-Cumene)	99-87-6
Methylene chloride [1]	75-09-2
Naphthalene	91-20-3
n-Propylbenzene	103-65-1
Styrene	100-42-5
1,1,1,2-Tetrachloroethane [1]	630-20-6
1,1,2,2-Tetrachloroethane [1]	79-34-5
Tetrachloroethene [1]	127-18-4
Toluene [2, 3]	108-88-3
1,2,3-Trichlorobenzene	87-61-6
1,2,4-Trichlorobenzene	120-82-1
1,1,1-Trichloroethane [1]	71-55-6
1,1,2-Trichloroethane [1]	79-00-5
Trichloroethene (trichloroethylene) [1]	79-01-6
Trichlorofluoromethane [1, 5]	75-69-4
1,2,3-Trichloropropane [1]	96-18-4
1,2,4-Trimethylbenzene	95-63-6
1,3,5-Trimethylbenzene	108-67-8
Vinyl chloride [1, 5]	75-01-4

Target Compound	CAS Registry No.
o-Xylene [2, 3]	95-47-6
m-Xylene [2, 3]	108-38-3
p-Xylene [2, 3]	106-42-3

[1] Halogenated Volatile Organic (HVO) target compounds
[2] Aromatic Volatile Organic (AVO) target compounds
[3] BTEX target compound list.
[4] Exhibits poor purging efficiency or instrumental response
[5] Gaseous target compound

TABLE 4-2
TARGET COMPOUND LIST FOR METHOD 8081 ORGANOCHLORINE PESTICIDES

Target Compound	CAS Registry No.
Aldrin	309-00-2
Alpha-BHC	319-84-6
Beta-BHC	319-85-7
Gamma-BHC (Lindane)	58-89-9
Delta-BHC	319-86-8
Alpha-Chlordane	5103-71-9
Gamma-Chlordane	5103-74-2
4,4'-DDD	72-54-8
4,4'-DDE	72-55-9
4,4'-DDT	50-29-3
Dieldrin	60-57-1
Endosulfan I	959-98-8
Endosulfan II	33213-65-9
Endosulfan sulfate	1031-07-8
Endrin	72-20-8
Endrin aldehyde	7421-93-4
Endrin ketone	53494-70-5
Heptachlor	76-44-8
Heptachlor epoxide	1024-57-3
Methoxychlor	72-43-5
Toxaphene	8001-35-2

TABLE 4-3A
TARGET COMPOUND LIST FOR METHOD 8082 PCBS AS AROCLORS

Target Compound	CAS Registry No.
Aroclor-1016	12674-11-2
Aroclor-1221	11104-28-2
Aroclor-1232	11141-16-5

Aroclor-1242	53469-21-9
Aroclor-1248	12672-29-6
Aroclor-1254	11097-69-1
Aroclor-1260	11096-82-5

TABLE 4-3B
TARGET COMPOUND LIST FOR METHOD 8082 PCB CONGENERS

Target Compound	CAS Registry No.
2-Chlorobiphenyl	2051-60-7
2,3-Dichlorobiphenyl	16605-91-7
2,2',5-Trichlorobiphenyl	37680-65-2
2,4',5-Trichlorobiphenyl	16606-02-3
2,2',3,5'-Tetrachlorobiphenyl	41464-39-5
2,2',5,5'-Tetrachlorobiphenyl	35693-99-3
2,3',4,4'-Tetrachlorobiphenyl	32598-10-0
2,2',3,4,5'-Pentachlorobiphenyl	38380-02-8
2,2',4,5,5'-Pentachlorobiphenyl	37680-73-2
2,3,3',4',6-Pentachlorobiphenyl	38380-03-9
2,2',3,4,4',5'-Hexachlorobiphenyl	35065-28-2
2,2',3,4,5,5'-Hexachlorobiphenyl	52712-04-6
2,2',3,5,5',6-Hexachlorobiphenyl	52663-63-5
2,2',4,4',5,5'-Hexachlorobiphenyl	35065-27-1
2,2',3,3',4,4',5-Heptachlorobiphenyl	35065-30-6
2,2',3,4,4',5, 5'-Heptachlorobiphenyl	35065-29-3
2,2',3,4,4',5',6-Heptachlorobiphenyl	52663-69-1
2,2',3,4',5,5',6-Heptachlorobiphenyl	52663-68-0
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	40186-72-9

TABLE 4-4
TARGET COMPOUND LIST FOR METHOD 8260 VOLATILE ORGANIC COMPOUNDS

Target Compound	CAS Registry No.
Acetone [1]	67-64-1
Benzene	71-43-2
Bromobenzene	108-86-1
Bromochloromethane	74-97-5
Bromodichloromethane	75-27-4
Bromoform	75-25-2
Bromomethane [1]	74-83-9
2-Butanone (methyl ethyl ketone) [1]	78-93-3
n-Butylbenzene	104-51-8
sec-Butylbenzene	135-98-8
tert-Butylbenzene	98-06-6
Carbon disulfide [1]	75-15-0
Carbon tetrachloride	56-23-5
Chlorobenzene	108-90-7
Chloroethane [1]	75-00-3
Chloroform	67-66-3
Chloromethane [1]	74-87-3
2-Chlorotoluene	95-49-8
4-Chlorotoluene	106-43-4
Dibromochloromethane	124-48-1
1,2-Dibromo-3-chloropropane [1]	96-12-8
1,2-Dibromoethane	106-93-4
Dibromomethane	74-95-3
1,2-Dichlorobenzene	95-50-1
1,3-Dichlorobenzene	541-73-1
1,4-Dichlorobenzene	106-46-7
Dichlorodifluoromethane [1]	75-71-8

Target Compound	CAS Registry No.
1,1-Dichloroethane	75-34-3
1,2-Dichloroethane	107-06-2
1,1-Dichloroethene	75-35-4
cis-1,2-Dichloroethene	156-59-2
trans-1,2-Dichloroethene	156-60-5
1,2-Dichloropropane	78-87-5
1,3-Dichloropropane	142-28-9
2,2-Dichloropropane	594-20-7
1,1-Dichloropropene	563-58-6
cis-1,3-Dichloropropene	10061-01-5
trans-1,3-Dichloropropene	10061-02-6
Ethyl Benzene	100-41-4
Hexachlorobutadiene	87-68-3
2-Hexanone [1]	591-78-6
Iodomethane	74-88-4
Isoproplybenzene (Cumene)	98-82-8
p-Isoproplytoluene (p-Cumene)	99-87-6
Methylene chloride	75-09-2
4-Methyl-2-pentanone [1]	108-10-1
Naphthalene	91-20-3
n-Propylbenzene	103-65-1
Styrene	100-42-5
1,1,1,2-Tetrachloroethane	630-20-6
1,1,2,2-Tetrachloroethane	79-34-5
Tetrachloroethene	127-18-4
Toluene	108-88-3
1,2,3-Trichlorobenzene	87-61-6
1,2,4-Trichlorobenzene	120-82-1
1,1,1-Trichloroethane	71-55-6
1,1,2-Trichloroethane	

Target Compound	CAS Registry No.
	79-00-5
Trichloroethene (trichloroethylene)	79-01-6
Trichlorofluoromethane [1]	75-69-4
1,2,3-Trichloropropane	96-18-4
1,2,4-Trimethylbenzene	95-63-6
1,3,5-Trimethylbenzene	108-67-8
Vinyl chloride [1,2]	75-01-4
o-Xylene	95-47-6
m-Xylene	108-38-3
p-Xylene	106-42-3

[1] Denotes poor purging efficiency or poor response
[2] Gaseous target compound

TABLE 4-5A
TARGET COMPOUND LIST FOR METHOD 8270 FOR BASE/NEUTRAL FRACTION COMPOUNDS

Target Compound	CAS Registry No.
Acenaphthene	83-32-9
Acenaphthylene	208-96-8
Acetophenone	98-86-2
Aniline [1]	62-53-3
Anthracene	120-12-7
Benzidine [1]	92-87-5
Benzo(a)anthracene	56-55-3
Benzo(b)fluoranthene	205-99-2
Benzo(k)fluoranthene	207-08-9
Benzo(g,h,i)perylene	191-24-2
Benzo(a)pyrene	50-32-8
Benzyl alcohol [1]	100-51-6
4-Bromophenyl phenyl ether	101-55-3
Butyl benzyl phthalate	85-68-7
4-Chloroaniline [1]	106-47-8
bis(2-Chloroethoxy)methane	111-91-1
bis(2-Chloroethyl) ether	111-44-4
bis(2-Chloroisopropyl) ether	108-60-1
2-Chloronaphthalene	91-58-7
4-Chlorophenyl phenyl ether	7005-72-3
Chrysene	218-01-9
Dibenz(a,h)anthracene	53-70-3
Dibenzofuran	132-64-9
Di-n-butyl phthalate	84-74-2
1,2-Dichlorobenzene	95-50-1
1,3-Dichlorobenzene	541-73-1
1,4-Dichlorobenzene	106-46-7

Target Compound	CAS Registry No.
3,3'-Dichlorobenzidine	91-94-1
Diethyl phthalate [1]	84-66-2
Dimethyl phthalate	131-11-3
2,4-Dinitrotoluene	121-14-2
2,6-Dinitrotoluene	606-20-2
Di-n-octyl phthalate	117-84-0
Diphenyl amine	122-39-4
1,2-Diphenylhydrazine	122-66-7
bis(2-Ethylhexyl) phthalate	117-81-7
Fluoranthene	206-44-0
Fluorene	86-73-7
Hexachlorobenzene	118-74-1
Hexachlorobutadiene	87-68-3
Hexachlorocyclopentadiene [1]	77-47-4
Hexachloroethane	67-72-1
Hexachloropropene	1888-71-7
Indeno(1,2,3-cd)pyrene	193-39-5
Isophorone	78-59-1
2-Methylnaphthalene	91-57-6
Naphthalene	91-20-3
2-Naphthylamine	91-59-8
2-Nitroaniline [1]	88-74-4
3-Nitroaniline [1]	99-09-2
4-Nitroaniline [1]	100-01-6
Nitrobenzene	98-95-3
N-Nitroso-dimethylamine [1]	62-75-9
N-Nitrosodiphenylamine [1,2]	86-30-6
N-Nitroso-di-n-propylamine	621-64-7
N-Nitrosopyrrolidine	930-55-2

Target Compound	CAS Registry No.
Phenanthrene	85-01-8
Pyrene	129-00-0
Pyridine	110-86-1
1,2,4,5-tetrachlorobenzene	95-94-3
1,2,4-Trichlorobenzene	120-82-1

[1] Denotes poor extraction efficiency, tendency to decompose, or poor chromatographic behavior

[2] N-Nitrosodiphenylamine co-elutes with, and cannot be differentiated from diphenylamine

TABLE 4-5B
TARGET COMPOUND LIST FOR METHOD 8270 FOR ACID FRACTION COMPOUNDS

Target Compound	CAS Registry No.
Benzoic Acid [1]	65-85-0
4-Chloro-3-methylphenol [1]	59-50-7
2-Chlorophenol	95-57-8
2,4-Dichlorophenol	120-83-2
2,6-Dichlorophenol	87-65-0
2,4-Dimethylphenol [1]	105-67-9
4,6-Dinitro-2-methylphenol [1]	534-52-1
2,4-Dinitrophenol [1]	51-28-5
2-Methylphenol [1] (o-cresol)	95-48-7
3-Methylphenol [1,2] (m-cresol) & 4-Methylphenol [1,2] (p-cresol)	108-39-4 & 106-44-5
2-Nitrophenol [1]	88-75-5
4-Nitrophenol [1]	100-02-7
Pentachlorophenol [1]	87-86-5
Phenol [1]	108-95-2
2,4,5-Trichlorophenol	95-95-4
2,4,6-Trichlorophenol	88-06-2

[1] Denotes poor extraction efficiency, tendency to decompose, or poor chromatographic behavior
[2] 3-Methylphenol (m-cresol) co-elutes with 4-Methylphenol (p-cresol). Therefore, both are reported as isomeric pairs.

TABLE 4-6
TARGET COMPOUND LIST FOR METHOD 8330 EXPLOSIVES

Target Compound	CAS Registry No.
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4
1,3,5-Trinitrobenzene (1,3,5-TNB)	99-35-4
1,3-Dinitrobenzene (1,3-DNB)	99-65-0
Methyl-2,4,6-trinitrophenylnitramine (Tetryl)	479-45-8
Nitrobenzene (NB)	98-95-3

2,4,6-Trinitrotoluene (2,4,6-TNT)	118-96-7
4-Amino-2,6-dinitrotoluene (4-Am-DNT)	1946-51-0
2-Amino-4,6-dinitrotoluene (2-Am-DNT)	355-72-78-2
2,4-Dinitrotoluene (2,4-DNT)	121-14-2
2,6-Dinitrotoluene (2,6-DNT)	606-20-2
2-Nitrotoluene (2-NT)	88-72-2
3-Nitrotoluene (3-NT)	99-08-1
4-Nitrotoluene (4-NT)	99-99-0

TABLE 4-7
SUMMARY OF METHOD QUALITY OBJECTIVES FOR METHOD ~~6010~~ 6020 ICP METALS

Quality Control Element	Description of Element	Frequency of Implementation	Acceptance Criteria
Initial Calibration (4.9.2.1.1)	Option 1- 1 std and blank, and a low-level check standard at PQL Option 2- 3 stds and blank	Daily	Option 1- Low-level check standard ± 20% Option 2- r > 0.995
Instrumental Precision (4.9.2.1.1)	%RSD 3 integrations (exposures)	Each calibration and calibration verification standards (ICV/CCV)	%RSD < 5%
Initial Calibration Verification (ICV) (4.9.3)	Mid-level (2nd source) verification	After initial calibration	%Recovery ± 10%
Initial Calibration Blank (ICB) (4.9.4)	Interference-free matrix to assess analysis contamination	After initial calibration	Analytes < MDL Check Sample (~2X MDL)
Interelement Check Standards (ICS) (4.8.1)	ICS-A - interferents only ICS-B - interferents and target analytes	Beginning of analytical sequence	%Recovery ± 20% for target analytes
Continuing Calibration Blank (CCB) (4.9.4)	Interference-free matrix to assess analysis contamination	Every 10 samples and at end of analytical sequence	Analytes < MDL Check Sample (~2X MDL)
Continuing Calibration Verification (CCV) (4.9.5 / 4.9.5.1)	Mid-level verification	Every 10 samples and at end of analytical sequence	%Recovery ± 10%
Method Blank (MB) (5.2.1.7.4.1)	Interference-free matrix to assess overall method	1 per sample batch	Analytes < MDL Check Sample (~2X MDL)

Quality Control Element	Description of Element	Frequency of Implementation	Acceptance Criteria
	contamination		
Laboratory Control Sample (LCS) (5.2.1.7.4.2)	Interference-free matrix containing all target analytes	1 per sample batch	%Rec = 80% - 120%
Matrix Spike (MS) (5.2.1.7.4.3)	Sample matrix spiked with all/subset of target analytes prior to digestion	1 per sample batch	%Rec = 75% - 125%
Matrix Duplicate (MD) or Matrix Spike Duplicate (MSD) (5.2.1.7.4.4)	Refer to text for MD or MS.	1 per sample batch	RPD < 25%
Post Digestion Spike (PDS) (5.2.1.7.4.7.1)	Sample digestate spiked with all/subset of target analytes	As needed to confirm matrix effects	%Rec = 75% - 125%
Serial Dilution (SD) (5.2.1.7.4.7.2)	1:4 dilution analyzed to assess matrix effects	As needed to assess new and unusual matrices	Agreement between undiluted and diluted results ± 10%
Method of Standard Addition (MSA) (5.2.4.1.6.4.2.1)	Method of quantitation	As needed for samples with suspected or confirmed matrix effects	r > 0.995

[1] The number of Sporadic Marginal Failure (SMF) allowances depend upon the number of target analytes reported from the analysis. For instance, if between seven (7) to fifteen (15) metals are reported from the ICP analysis, one (1) SMF is allowed to the expanded criteria presented. If greater than 15 metals are reported from the ICP analysis, two (2) SMFs are allowed. Refer to Section 9.3 for additional information on the application of sporadic marginal failures.

TABLE 4-8
SUMMARY OF METHOD QUALITY OBJECTIVES FOR METHOD 7000 SERIES GFAA/CVAA METALS

Quality Control Element	Description of Element	Frequency of Implementation	Acceptance Criteria
Initial Calibration (4.9.2.1.2)	3 stds and blank	Daily	r > 0.995
Instrumental Precision (4.9.2.1.2)	RPD of 2 injections	All standards, and ICV/CCV	RPD ± 10%
Initial Calibration Verification (ICV) (4.9.3)	Mid-level (2nd source) verification	After initial calibration	%Rec ± 10%
Initial Calibration Blank (ICB) (4.9.4)	Interference-free matrix to assess analysis contamination	After initial calibration	Analytes < MDL Check Sample (~2X MDL)
Continuing Calibration Blank (CCB) (4.9.4)	Interference-free matrix to assess analysis contamination	Every 10 samples and at end of analytical sequence	Analytes < MDL Check Sample (~2X MDL)
Continuing Calibration Verification (CCV) (4.9.5 / 4.9.5.1)	Mid-level verification	Every 10 samples and at end of analytical sequence	%Rec ± 20%
Method Blank (MB) (5.2.1.7.4.1)	Interference-free matrix to assess overall method contamination	1 per sample batch	Analytes < MDL Check Sample (~2X MDL)
Laboratory Control Sample (LCS) (5.2.1.7.4.2)	Interference-free matrix containing target analytes	1 per sample batch	%Rec = 80% - 120%
Matrix Spike (MS) (5.2.1.7.4.3)	Sample matrix spiked with target analytes prior to digestion	1 per sample batch	%Rec = 80% - 120%
Matrix Duplicate (MD) or Matrix Spike Duplicate (MSD) (5.2.1.7.4.4)	Refer to text for MD or MS.	1 per sample batch	RPD < 20%
Post Digestion Spike (PDS) (5.2.1.7.4.7.1)	Sample digestate spiked with target analytes	As needed to confirm matrix effects	%Rec = 85% - 115%
Serial Dilution (SD) (5.2.1.7.4.7.2)	1:4 dilution analyzed to assess matrix effects	As needed to assess new and unusual matrices	Agreement between undiluted and diluted results ± 10%
Method of Standard	Method of quantitation	As needed for samples	r > 0.995

Quality Control Element	Description of Element	Frequency of Implementation	Acceptance Criteria
Addition (MSA) (5.2.4.1.6.4.2.1)		with suspected or confirmed matrix effects	

TABLE 4-9
SUMMARY OF METHOD QUALITY OBJECTIVES FOR METHOD 8021
VOLATILE ORGANIC COMPOUNDS

QC Element	Target Compound / Surrogate Acceptance Criteria
Initial Calibration (4.9.2.2.1)	Primary Evaluation: r = 0.995, %RSD < 20%, r^2 <0.990 Alternative Evaluation: Mean %RSD for all target Compounds < 20% Maximum allowable %RSD for each target compounds < 40%
ICV (4.9.3)	%Rec = 85% - 115%
CCV (4.9.5 / 4.9.5.2 / 4.9.5.2.1)	Primary Evaluation: %Drift < 15%, %D < 15% Alternative Evaluation: Mean %Drift/%D for all target analytes < 15% Maximum allowable %Drift/%D for each target compounds < 30%
MB (5.2.1.7.4.1)	Target Compounds: Compound < MDL Check Sample (~2X MDL) or ½ PQL Common Lab Contaminant Compounds < PQLs
LCS (5.2.1.7.4.2)	Water: %Rec = 80% - 120% Solids: %Rec = 75% - 125%
MS (5.2.1.7.4.3)	%Rec = 70% - 130%
MSD/MD (5.2.1.7.4.4)	Water: RPD < 30% Solids: RPD < 40%
Surrogates (5.2.1.7.4.5)	LCS: Water: %Rec = 80% - 120% Solids: %Rec = 75% - 125% Project Sample Matrix: %Rec = 70% - 130%
Target Compound Confirmation (5.2.3.4)	RPD < 40%

TABLE 4-10
SUMMARY OF METHOD QUALITY OBJECTIVES FOR METHOD 8081
ORGANOCHLORINE PESTICIDES

QC Element	Target Compound/Surrogate
DDT/Endrin	DDT & Endrin %Breakdown

%Breakdown (4.8.2)	< 15% each
Initial Calibration (4.9.2.2.2)	Primary Evaluation: r = 0.995, %RSD < 20%, r^2 <0.990 Alternative Evaluation: Mean %RSD for all target Compound < 20% Maximum allowable %RSD for each target compound < 40%
ICV (4.9.3 / 4.9.3.1)	%Rec = 85% - 115%
CCV (4.9.5 / 4.9.5.2 / 4.9.5.2.2)	Primary Evaluation: %Drift < 15%, %D < 15% Alternative Evaluation: Mean %Drift/%D for all target compound < 15% Maximum allowable %Drift/%D for each target compound < 30%
MB (5.2.1.7.4.1)	Compounds < MDL Check Sample (~2X MDL) or ½ PQL
LCS (5.2.1.7.4.2)	Water: %Rec = 50% - 130% Solids: %Rec = 50% - 130%
MS (5.2.1.7.4.3)	%Rec = 40% - 140%
MSD/MD (5.2.1.4.4)	RPD < 35%
Surrogates (5.2.1.4.5)	LCS: Water: %Rec = 50% - 130% Solids: %Rec = 50% - 130% Project Sample Matrix: %Rec = 40% - 140%
Target Compound Confirmation (5.2.3.4)	RPD < 40%

TABLE 4-11
SUMMARY OF METHOD QUALITY OBJECTIVES FOR METHOD 8082 PCBS

QC Element	Target Compound/Surrogate
Initial Calibration (4.9.2.2.3)	r > 0.995, %RSD < 20%, r^2 >0.990
ICV (4.9.3 / 9.3.2)	%Rec = 85% - 115%
CCV (9.5 / 9.5.2)	%Drift < 15%, %D < 15%
MB (5.2.1.7.4.1)	Analytes < MDL Check Sample (~2X MDL) or ½ PQL
	Water: %Rec = 50% - 130%

LCS (5.2.1.7.4.2)	Solids: %Rec = 50% - 130%
MS (5.2.1.7.4.3)	%Rec = 40% - 140%
MSD/MD (5.2.1.7.4.4)	RPD = 35%
Surrogates (5.2.1.7.4.5)	LCS: Water: %Rec = 50% - 130% Solids: %Rec = 50% - 130% Project Sample Matrix: %Rec = 40% - 140%
Target Analyte Confirmation (5.2.3.4)	RPD < 40%

TABLE 4-12
SUMMARY OF METHOD QUALITY OBJECTIVES FOR METHOD 8260
VOLATILE ORGANIC COMPOUNDS

QC Element	Target Compound / Surrogate
Initial Calibration (4.9.2.2.4)	Instrument Evaluation: SPCCs: minimum RF values per method requirements CCCs: verify %RSD < 30% Primary Evaluation: r = 0.995, %RSD < 20%, r^2 <0.990 Alternative Evaluation: Mean %RSD for all target Analytes < 15% Maximum allowable %RSD for each target analyte < 30%
ICV (4.9.3)	%Rec = 80% - 120%
CCV (4.9.5 /4.9.5.2 / 4.9.5.2.4)	Instrument Evaluation: SPCCs: minimum RF values per method requirements CCCs: verify %D < 30% Primary Evaluation (CCCs): %Drift < 20%, %D < 20% Qualitative, see text
MB (5.2.1.7.4.1)	Target Compounds: Compounds < MDL Check Sample (~2X MDL) or ½ PQL Common Lab Contaminant Compounds < PQLs
LCS (5.2.1.7.4.2)	Water: %Rec = 80% - 120% Solids: %Rec = 75% - 125%
MS (5.2.1.7.4.3)	%Rec = 70% - 130%
MSD/MD	Water: RPD < 25%

(5.2.1.7.4.4)	Solids: RPD < 35%
Surrogates (5.2.1.7.4.5)	LCS: Water: %Rec = 80% - 120% Solids: %Rec = 75% - 125% Project Sample Matrix: %Rec = 70% - 130%

TABLE 4-13
SUMMARY OF METHOD QUALITY OBJECTIVES FOR METHOD 8270
SEMIVOLATILE ORGANIC COMPOUNDS

QC Element	Target Compound/Surrogate
Initial Calibration (4.9.2.2.5)	Instrument Evaluation: SPCCs: minimum RF values per method requirements CCCs: verify %RSD < 30% Primary Evaluation (all target analytes) : r = 0.995, %RSD < 15%, r^2 <0.990 Alternative Evaluation: Mean %RSD for all target compounds < 15% Maximum allowable %RSD for each target compounds < 40%
ICV (4.9.3)	%Rec = 70% - 130%
CCV (4.9.5 / 4.9.5.2 / 4.9.5.2.4)	Instrument Evaluation: SPCCs: minimum RF values per method requirements CCCs: verify %D < 30% Primary Evaluation (CCCs): %Drift < 20%, %D < 20% Qualitative, see text
MB (5.2.1.7.4.1)	Target Compounds: Compounds < MDL Check Sample (~2X MDL) or ½ PQL Common Lab Contaminant Compounds < PQLs
LCS (5.2.1.7.4.2) Assuming Full List Spike	Water: %Rec = 60% - 120% (~20 compounds) = 45% - 135% (~30 compounds) = 20% - 150% (~45 compounds) Solids: %Rec = 60% - 120% (~20 compounds) = 45% - 135% (~30 compounds) = 30% - 150% (~45 compounds)
MS (5.2.1.7.4.3)	Water: %Rec = 45% - 135% Solids:

QC Element	Target Compound/Surrogate
	%Rec = 45% - 135%
MSD/MD (5.2.1.7.4.4)	Water: RPD < 35% Solids: RPD < 40%
Surrogates (5.2.1.7.4.5)	LCS: Water: %Rec = 60% - 120% B/N cmpds %Rec = 45% - 135% A cmpds Solids: %Rec = 60% - 120% B/N cmpds %Rec = 45% - 135% A cmpds Project Sample Matrix: Water: %Rec = 45% - 135% B/N cmpds %Rec = 35% - 140% A cmpds Solids: %Rec = 45% - 135% B/N cmpds %Rec = 35% - 140% A cmpds

[1] B = Base, N = Neutral, and A = Acid compounds (cmpds).

TABLE 4-14
SUMMARY OF METHOD QUALITY OBJECTIVES FOR METHOD 8330 EXPLOSIVES

QC Element	Target Compounds/Surrogate
Initial Calibration (4.9.2.2.6)	Primary Evaluation: r = 0.995, %RSD < 20%, r^2 <0.990 Alternative Evaluation: Mean %RSD for all target Compounds < 20% Maximum allowable %RSD for each target compounds < 40%
ICV (4.9.3)	%Rec = 85% - 115%
CCV (4.9.5 /4.9.5.2)	Primary Evaluation: %Drift < 15%, %D < 15% Alternative Evaluation: Mean %Drift/%D for all target compounds < 15% Maximum allowable %Drift/%D for each target compounds < 30%
MB (5.2.1.7.4.1)	Target Compounds: Compounds < MDL Check Sample (~2X MDL)
LCS (5.2.1.7.4.2)	Water: %Rec = 60% - 120%[2] Solids:%Rec = 60% - 120%[2]
MS (5.2.1.7.4.3)	%Rec = 50% - 140%[2]
MSD/MD (5.2.1.7.4.4)	RPD < 50%
Surrogates (5.2.1.7.4.5)	LCS: Water: %Rec = 60% - 140%

	Solids: %Rec = 50% - 150% Project Sample Matrix: %Rec = 50% - 150%
Target Compound Confirmation (5.2.3.4)	RPD < 40%

5.0 CHEMICAL DATA QUALITY MANAGEMENT PLAN

The CDQMP is intended to be an installation-wide document. The CDQMP covers both field and analytical requirements from a comprehensive perspective. It shall address the topics outlined in this section.

A. The Contractor shall submit a draft CDQMP for review and comment by the USACE Contracting Officer (CO). The plan shall be composed of a Field Sampling Plan and a Quality Assurance Project Plan. The CDQMP shall be prepared following the requirements of these specifications. The references listed in paragraph 2.1 and 2.2 will serve as useful adjuncts to these specifications. The format for the QAPP is taken directly from EPA QA/R-5. USACE EM 200-1-3 will be a useful reference for preparation of the FSP as well as providing material on implementation of three-phase control as applicable to sampling and analytical activities that must be described in the QAPP and FSP.

Note: While these references are provided as useful adjuncts to the requirements of this contract the requirements for document content that are described in these references may conflict. Only the requirements of this contract shall be operative with respect to document content and execution of aspects of work related to CDQM.

B. The CDQMP shall delineate the methods the Contractor intends to use to accomplish the chemical quality control items as indicated in these specifications to assure accurate, precise, representative, complete, legally defensible and comparable data. Qualifications and certification of the laboratory facilities projected for use on this contract shall be described in the CDQMP. The CDQMP shall represent the Contractor's corporate standards and procedures for execution of work related to sampling and analysis. As such, procedures applicable to sub-contractors associated with drilling, well installation, and laboratory analysis shall be explicitly and completely described in the text of the CDQMP. Please note that since the text of the CDQMP must represent the Contractor's corporate standards for execution of work inclusion of or reference to a laboratory QA manual or other subcontractor SOP's will be unacceptable to fulfill the requirements of these specifications as described below. The required material must be incorporated directly in the text of the CDQMP or a project specific SAP as applicable. The intent of these specifications is that the majority of the procedures that will be applicable for delivery orders for this contract will be described once at a high level of detail in the CDQMP. The CDQMP will also describe the format and type of project specific information to be included in delivery order-specific Sampling and Analysis Plans (SAPs). SAPs for this contract may reference specific paragraphs of the final CDQMP as applicable to describe procedures that are relevant for execution of delivery order tasks. Field and laboratory procedures not included in the CDQMP must be described in project-specific SAPs at the level of detail required for the original submittal of the CDQMP.

C. The CDQMP shall contain a statement of sampling procedures to include specifications of equipment and sample types. The plan shall address all levels of the investigation and all transportation and custody procedures. A level of detail shall be incorporated such that the document may be used as an audit guide for field and laboratory work.

D. While a certain degree of duplication between the FSP and the QAPP is inevitable the intent of these specifications is to minimize this duplication. In general, the QAPP shall be the definitive document with respect to quality control procedures for field, laboratory, and general operations, analytical procedures, and reports to management. The FSP shall provide a comprehensive description of all aspects of field procedures to include sampling procedures and sample handling procedures. The Contractor will submit a draft CDQMP for USACE review and comment. After incorporation of all comments approved by the USACE CO the Contractor shall submit a

revised text for USACE acceptance. Subsequent re-submittals may be required if comments are not resolved to the satisfaction of the USACE CO. All revisions of the text required to complete satisfactory incorporation of comments will be performed at no additional cost to the Government. No sampling or analysis shall be performed without the acceptance of the CDQMP and project-specific SAPs by the CO. Additionally, in response to written comments from the Contracting Officer the final CDQMP shall be revised by the Contractor at annual intervals during the life of this contract. The CDQMP shall be prepared according to the following outline:

CHEMICAL DATA QUALITY MANAGEMENT PLAN/SAP (Section 5.0)

I. Title and Signature Page
II. Table of Contents
III. Executive Summary

QUALITY ASSURANCE PROJECT PLAN (Section 5.2)

Title Page
Table of Contents
1.0 PROGRAM MANAGEMENT
- 1.1 Program/Project Organization
- 1.2 Problem Definition/Background
- 1.3 Project Description
- 1.4 Data Quality Objectives
- 1.5 Documentation and Records

2.0 MEASUREMENT AND DATA ACQUISITION
- 2.1 Sampling Process Design
- 2.2 Sampling Methods Requirements
- 2.3 Sample Handling and Custody Requirements
- 2.4 Analytical Methods Requirements
- 2.5 Analytical Quality Control Requirements
- 2.6 Instrument Calibration and Frequency
- 2.7 Data Acquisition Requirements (Non-direct Measurements)

3.0 ASSESSMENT AND OVERSIGHT
- 3.1 Contractor Quality Control
- 3.1 Assessments and Response Actions
- 3.2 Reports to Management

4.0 DATA VALIDATION AND USABILITY
- 4.1 Data Review, Validation, and Verification Requirements
- 4.2 Validation and Verification Methods
- 4.3 Reconciliation with Data Quality Objectives

FIELD SAMPLING PLAN (Section 5.3)

Title Page
Table of Contents
1.0 Site Background
~~1.0~~2.0 Sampling Objectives
3.0 Sample Types
~~3.0~~4.0 Sample Location and Frequency
5.0 Field Documentation
6.0 Sampling Equipment and Procedures
7.0 Sample Handling Procedures
~~7.0~~8.0 Investigative Derived Waste
~~7.0~~9.0 Quality Control for Field Operations

E. A Sampling and Analysis Plan (SAP) shall be prepared for review and comment by the Contracting Officer for each delivery order authorized under this contract involving acquisition

and analysis of environmental samples (soil, sediment, water, product, etc.). The site-specific SAP shall address project specific requirements for execution of a delivery order and may reference specific sections of the CDQMP for descriptions of field and laboratory procedures. Field or laboratory procedures not described in the CDQMP will be described in the site-specific SAP at a level of detail comparable to the CDQMP. The CDQMP shall describe the preparation of site-specific SAPs and shall include a discussion of all information required to be present in the site-specific SAP. The site-specific SAP shall be prepared according to the outline presented below:

SITE-SPECIFIC SAMPLING AND ANALYSIS PLAN (Section 5.4)

Title and Signature Page
Table of Contents
Executive Summary
1.0 Problem Definition and Background
2.0 Project Description
3.0 Project Organization
4.0 Data Quality Objectives
5.0 Sampling Process Design
6.0 Sampling Methods Requirements
7.0 Analytical Methods Summary
8.0 Investigation Derived Wastes
9.0 Quality Control
10.0 References

To provide a complete document for regulatory review for project specific submittal inclusion of referenced sections of the CDQMP as appendices to the SAP may be required.

5.1 SAMPLING AND ANALYSIS PLAN

The CDQMP/SAP is considered a general guidance for the overall contract or for use during all base-wide or installation-wide activities. Site-specific activity requirements and data quality objectives will be outlined in subsequent project-specific SAPs. For long-term projects (>2 years) the QAPP portion of the SAP shall be revised on an annual basis.

5.1.1 Title & Signature Page

The title page shall identify the contract, project name; site location; applicable program; office locations; Contract Laboratory; and the Government QA Laboratory needs to be specified in the SAP. The title page will be followed by a signature page, which shall include the signatures of principal personnel involved in development and execution of the CDQMP (Contractor Program Manager, Contractor Project Manager, Contractor Technical Professionals, and Contract Laboratory Director).

5.1.2 Table of Contents

The table of content will include a breakdown of each major section and appendices or attachments.

5.1.3 Executive Summary

The executive summary shall be composed of a brief description of the context of contract or project work, the goal of the proposed work, a general description of the work to be performed, and a brief statement describing the relevance of the work to be performed to the goal of the program, as applicable.

5.2 QUALITY ASSURANCE PROJECT PLAN

The QAPP is intended to outline the specific requirements for the analytical procedures.

5.2.1 Title Page and Table of Contents

The title page will include the title of the document, contract number, who the document was prepared for, the location of the base or project, designation regarding draft or final, the date published, and who

prepared the document. The table of content will include a breakdown of each major section and appendices or attachments, list of tables, list of figures, list of acronyms, and list of references.

5.2.2 Program Management

This section discusses the organizational structure for the program/project management, which includes the responsibilities of each project management team member, problem definition, and background, project description, data quality objectives, and documentation and record requirements.

5.2.2.1 Program and Project Organization

Program Organization. The CDQMP shall address all organizational items that are general for the contract but must include the overall QC organization and lines of authority to management. The CDQMP must address not only the prime Contractor, but also any subcontractor and Contractor-subcontractor interactions known to be applicable. Key personnel must be identified along with their function and qualifications. The text shall include a chart showing lines of authority and communication among all program participants. The organization chart shall be realistic and practical and shall reflect only the actual lines of authority and communication for the program.

5.2.2.1.1 Quality Assurance Officer

Government employees acting as a QA Officer (QAO) on behalf of the USACE will direct the project during the initial planning stages of investigation and throughout its lifetime to help ensure the DQO requirements established in the CDQMP are met. Part of the QAO's responsibility is to review QAPPs, FSPs, revisions and addenda. The QAO and government project managers will be identified clearly in the organization chart and their responsibilities described in Section 1.0 of the QAPP. The QAO's signature block will be clearly indicated on the approval page of the document.

Comments provided by the USACE and regulatory agency QAO for QAPPs and FSP will be provided to the USACE and regulatory project managers. All responses to comments will likewise be exchanged to ensure all comments are satisfactorily addressed.

Once a QAPP, FSP, revision or addendum are approved by the USACE, government project managers may assist the DOD and regulatory QAO in the implementation of the approved documents by transferring custodial oversight responsibility to them. Under the direction and oversight of the QAO, project managers are fully responsible for understanding and ensuring that the work performed in the field and laboratory meet the DQOs set forth in the QAPP, FSP, and any revisions or addendum thereof. Regulatory and USACE QAOs retain all and full QA authority over the program within their respective agencies. The extent to which the custodial oversight responsibilities are transferred to the project manager will be documented in the corresponding QAPP.

Once a plan, revision, or addendum is approved and custodial oversight transferred, the project managers are responsible for providing oversight to ensure the success, or failure, of the project. Project managers are at the forefront of the activities occurring in the field and laboratories and are the parties most knowledgeable about the day-to-day activities and out of control events. They are the immediate and active deterrent to prevent deviation from QAPPs and FSPs. Because limited authority is provided to project managers, they must seek approval from the QAO on issues arising in the field and laboratory which potentially impact data quality. Where selection of a laboratory is a primary contractor's responsibility, the Primary contractor is responsible for ensuring that the laboratory can perform the data quality technical requirements identified in the QAPP or FSP. The primary contractor will also provide a copy of the QAPP or FSP to the laboratory to ensure that it has the necessary documentation to follow and reference. Both the primary contractor and laboratory will be responsible for ensuring that all data quality requirements are met as stipulated in the contract. This does not relieve project managers from the regulatory and USACE from performing their custodial oversight responsibilities to ensure that data is collected and analyzed as specified in the QAPP or FSP and that the overall work performed meets the DQO requirements of the project. It is suggested that project managers work closely with a chemist from their respective agencies to assist in the oversight of the laboratory, if necessary.

5.2.2.1.2 Program Chemist - As part of the project organization, the Contractor shall appoint a Program Chemist for sampling and analytical activities who is responsible to a senior company officer. The Program Chemist should have general knowledge of remedial process chemistry, fate and transport of organic compounds and inorganic analytes, knowledge of chemical quality control, experience in the sampling and analysis of toxic/hazardous chemicals and radiological contamination in environmental matrices. The Program Chemist will be required to have advanced expertise (senior level) in chemical data quality management of environmental analytical data. The Program Chemist will be appointed by senior corporate or project management to be principally responsible for oversight of all quality control operations for field and laboratory activities related to sampling and analysis.

The Program Chemist shall have, as a minimum, the following qualifications:

a. A 4-year college degree in Chemistry from an accredited post-secondary institution.
b. A minimum of 10 years of professional experience in Chemistry of which a minimum of seven years must be directly related to environmental investigations and/or remedial actions as a part of a Contractor management team (i.e. not primarily employed at a laboratory).
c. A minimum of two (2) years experience at the level of a commercial environmental analytical laboratory with expertise in standard analytical chemistry methods common for analyzing soil, water, air and other materials for chemical contamination assessment.

The Program Chemist will be expected to have a lead role in management of project tasks associated with sampling and analysis including preparation of the CDQMP, preparation of Sampling and Analysis Plans, instruction of field personnel in sampling and preservation requirements, general oversight of field personnel involved in sampling activities, coordination with the analytical laboratory to insure readiness to implement project specific requirements, participation in on site inspections of the Contract Laboratory, review of analytical data as it becomes available to insure conformance with quality standards, implementation of corrective actions in accordance with these specifications when review of data uncovers deficiencies, and serve as a general point of contact for the USACE CO for issues related to environmental chemistry. <u>The Program Chemist shall be employed or subcontracted by the Contractor and shall not be employed by a laboratory performing analyses for this contract.</u>

The program and project chemists will be proposed by the contractor and are subject to approval by the USACE District Chemist. Any proposed changes in chemistry staff shall be approved (prior to the change) by the District Chemist.

Project Organization. This section in the SAP shall address the specific personnel that will be responsible for execution of a delivery order. The SAP must address not only the prime Contractor, but any subcontractor and Contractor-subcontractor interactions applicable for a delivery order. Key personnel must be identified along with their function and qualifications. The text shall include a chart showing lines of authority and communication among all project participants. Include other data users who are outside of the organization generating data, but for whom the data are nevertheless intended; e.g. modelers, risk assessors, design engineers, toxicologists, etc. Where direct contact between project managers and data users does not occur, the organization chart should show the route by which information is exchanged. The organization chart shall be realistic and practical and shall reflect only the actual lines of authority and communication for the project described.

5.2.2.1.3 Project Chemist - As part of the project organization, the Contractor shall appoint a Project Chemist. The Project Chemist must have knowledge of environmental analytical chemistry methodologies as described in EPA SW-846, and quality control procedures as applicable to environmental analytical chemistry.

The Project Chemist shall have, as a minimum, the following qualifications:

a. A minimum of a 4-year college degree in Chemistry from an accredited post-secondary institution.

b. A minimum of four years of combined professional experience at the level of a commercial environmental analytical laboratory or working as a part of a Contractor project management team of which a minimum of 1-2 years must be directly related to environmental investigations and/or remedial actions as a part of a Contractor management team (i.e. not primarily employed at a laboratory).

The Project Chemist will be expected to have a "hands on" role in management of project tasks associated with sampling and analysis including preparation of the CDQMP, preparation of Sampling and Analysis Plans, instruction of field personnel in sampling and preservation requirements, general oversight of field personnel involved in sampling activities, coordination with the analytical laboratory to insure readiness to implement project specific requirements, review of analytical data as it becomes available to insure conformance with quality standards, implementation of corrective actions in accordance with these specifications when review of data uncovers deficiencies, and serve as a point of contact for the USACE CO for issues related to environmental chemistry. The Chemist shall conduct or oversee all onsite analytical testing including field-screening tests. The Project Chemist shall coordinate Government Quality Assurance testing that verifies the Contractor chemical data. The Chemist shall review and verify all chemical data for hazardous waste manifests. The Chemist shall also prepare all data validation reports or review for accuracy all data validation reports prepared by subcontractors. The Project Chemist will perform an inspection of the Contract Laboratory at or near the beginning of sample analyses for each delivery order to insure laboratory capability to implement method and contract specified aspects of work. Method specific checklists presented in USACE EM 200-1-1 or equivalent in conjunction with the contract specifications and the final CDQMP shall be used as the basis for this inspection. Findings of this inspection shall be delivered by memorandum to the USACE CO within 15 days of completion. Inspection checklists shall be included as an attachment to the memorandum of findings. This review of the Contract Laboratory may be conducted concurrently with a project kickoff meeting, preparatory, or initial inspection. The Project Chemist shall be employed or subcontracted by the Contractor and shall not be employed by a laboratory performing analyses for this contract.

The project chemist must be fully integrated into the project team from planning, work plan document writing, field execution, laboratory management and final report writing.

Note: If the same laboratory is used for multiple delivery orders a complete technical systems review will not be required for concurrent delivery orders. However, if new analyses are performed for which the Program or Project Chemist has not performed an assessment of laboratory capability to execute the requirements of the CDQMP a technical systems review will be required for those analyses. At a minimum a technical audit of the laboratory will be performed on an annual basis and whenever required as a function of deficiencies in laboratory performance.

5.2.2.2 Problem Definition and Background

The CDQMP will describe specific details that will be included in project-specific SAPs as described below. The SAP will include a project-specific discussion of all items that are described below.

A narrative describing the project shall be included that shall state the specific problem to be solved or the decision to be made. The goal of the investigation shall be clearly stated. The Contractor shall describe the work site including an area map, location map, and site map, site history as it relates to the current work, and any unusual conditions. The text shall include diagrams detailing areas to be sampled as relevant to the definition of the investigation goals. These sections shall also contain a summary of site geology/hydrogeology as known prepared to a level of detail such as to provide a comprehensive description of the site. The discussion must include enough information about the problem, the past history, any previous work or data, the regulatory or legal context, and any relevant ARAR's to present a clear description of the project objectives. The Contractor shall be responsible for researching all necessary references to accomplish this task and shall not rely upon the USACE Contracting Officer to provide relevant information regarding problem definition/background.

5.2.2.3 Project Description

The CDQMP will describe specific details that will be included in project specific SAPs, as described below. The SAP will include a project specific discussion of all items that are described below.

The text shall provide a description of the work to be performed. This discussion may not be lengthy or overly detailed but it shall give an overall picture of how the project will resolve the problem or questions described in the definition and background of the problem. A general description of the sampling to be carried out for this project shall be included. Anticipated project start and completion dates shall be included. Describe in general terms:

- Measurements that are expected during the course of the project and the approach that will be used.
- Applicable technical, regulatory, or program specific quality standards, criteria or objectives.
- Any special personnel and equipment requirements that may indicate the complexity of the project.
- Assessment tools that will be employed for the project (program technical reviews, peer reviews, surveillances, technical audits, etc.)
- Project schedule or a sequence of milestones and their expected duration. If individual-sampling plans will be developed for, discrete project phases include their preparation schedule.

5.2.2.4 Data Quality Objectives

The CDQMP will describe specific details that will be included in project-specific SAPs as described below. The SAP will include a project specific discussion of all items that are described below.

The text shall describe the general scope of work and background information as it relates to the acquisition of geological, geophysical, hydrogeological, and chemical data. The text shall explicitly describe the data that are needed to meet the objectives of the project, how that data will be used, and discuss implementation of control mechanisms and standards that shall be used to obtain data of sufficient quality to meet or exceed all project objectives. The discussion of Data Quality Objectives (DQOs) shall follow the guidance contained in the EPA document "EPA Guidance for the Data Quality Objectives Process", EPA/600/R-96/055, Final, September 1994, EM 200-1-2, Technical Project Planning Guidance for HTRW Data Quality Design, and the requirements of these documents are included by reference.

Work performed by an on-site laboratory will be required to meet the same standards as a fixed site laboratory as described in this scope of work. The section on DQOs will address the following topics in the specified order:

(1) Statement of the Problem. Summarize the problem that requires environmental data acquisition and identify the resources available to resolve the problem.
(2) Identification of Decisions. Identify the decision that requires acquisition of environmental data to address the problem. Identify the intended uses of data projected to be acquired. Data uses shall be prioritized.
(3) Identify Inputs to Decisions. Identify the information needed to support the decision and specify the inputs requiring environmental measurements.
(4) Definition of Study Boundaries. Specify the spatial and temporal aspects of the environmental media that the data must represent to support the decision.
(5) Development of Decision Rules. Develop a logical statement that defines the conditions that would cause the decision-maker to choose among alternative actions.
(6) Specification of Limits on Decision Errors. Specify the decision-maker's acceptable limits on decision errors, which are used to establish appropriate performance goals for limiting uncertainty in environmental data.
(7) Optimization of Investigation Design for Obtaining Data. Identify the most resource effective sampling and analysis design for generating data that are expected to satisfy project DQOs.

Statements of the problem shall be defined quantitatively if possible. For example:

> UV Treatment of Contaminated Groundwater. "The purpose of this project is to demonstrate that the residual trichloroethylene concentration in the treated water is less than 0.5 ug/L at a confidence level of 95%."

Identification of decisions and descriptions of data use shall be described with text and supported with tables and lists that describe:

- Data needed. Measurement parameters, compounds, and sample matrices.
- The action levels or standards upon which decisions will be made, including the detection limits and data-reporting units for relevant parameters.
- The summary statistic(s), e.g., mean maximum, range, etc., which specify the form the data will be in when compared against action levels or standards.
- The acceptable level of confidence in the data needed for the stated purposes; or the acceptable amount of uncertainty.

The text shall describe in quantitative terms the sensitivity, precision, accuracy, and completeness goals for each major measurement parameter and for each matrix to be sampled. The QAPP may need to define different types of sensitivity (e.g. quantitative, qualitative, screening) for each major measurement parameter as applicable. A qualitative discussion shall be presented regarding representativeness and comparability.

To generate data that will meet the project-specific requirements, it is necessary to define the types of decisions that will be made and to identify the purpose of the data. DQOs are an integrated set of specifications that define data quality requirements based on the intended use of the data. Project-specific DQOs are established to encompass both the field and laboratory operations. The DQO process leads to the specification of the following at a minimum: (1) sample handling procedures, (2) preparatory (extraction/digestion), cleanup, and determinative methods, (3) target analytes, (4) method quantitation or reporting limits, (5) field and laboratory quality control samples, (6) method quality objectives (QC acceptance limits) and data quality indicators (formerly PARCC parameters) performance objectives, (7) required corrective actions, and

(8) Data assessment procedures necessary to meet the intended use of the data. Special considerations that may also apply include: internal laboratory sample chain-of-custody, data confidentiality, data archival, or data retention requirements beyond those stated herein.

A. Assessment of Data Needs. As presented in EM 200-1-2, data needs are determined for the project based upon the decisions, which need to be made. At the same time, a determination of the data quality required for each piece of data (data need) must also be defined by the eventual data user. This information, whether given as a maximum allowable quantitative uncertainty or a qualitative statement of requirements, will help other technical planners (data implementors) to identify applicable sampling and analytical protocols to generate the required data. In order to accomplish this, all data needs should be compiled and grouped by location, matrix, and parameter. Once the grouping is completed, the data quality requirements of these needs are assessed by analytical parameter (per matrix, per area). It is possible to have more than one data user requesting the same analytical parameter for a particular area's media. In those cases, the most stringent data user requirements are applied to ensure the suitability of these data by all requesting parties. This information is then used to decide the type of data necessary (screening or definitive), and the appropriate sampling and analytical methods to be proposed for collecting and generating the required data.

B. Assessment of Data Collection Options. Initially, the applicability of field analytical methods to the objectives of the project should be investigated. These may be used in conjunction with or without more rigorous analytical methods, which the analytical error has been determined (i.e., definitive data). Field analytical methods include (1) qualitative or semi-quantitative field screening techniques *(e.g.,*

photoionization detector/flame ionization detector (PID/FID), immunoassay, colorimetric, etc.), and (2) quantitative onsite techniques whose preparatory process and/or QC elements are typically less rigorous than those established for definitive data *(e.g., x-ray fluorescence (XRF), gas chromatography (GC), gas chromatography/mass spectrometry (GC/MS), etc.)*.

Standard analytical methods producing definitive data must also be reviewed for applicability to the project. Input necessary to determine applicable screening or definitive analytical techniques include at a minimum defining the (1) contaminants of concern, (2) the concentration range of interest, (3) sensitivity requirements for detection, and quantitation limits, (4) method quality objectives for precision, bias, and completeness, (5) the need and type of confirmation necessary, and (6) whether any physical, chemical, or logistical constraints are germane. The method may also be dictated by the data user (e.g., outlined by regulatory authority or ROD).

5.2.2.5 Documentation and Records

The text shall itemize the information and records, which will be included in a data report package for each delivery order, and specify the reporting format. Content of items such as well completion reports, boring logs, and data packages shall be described in detail. Examples of well completion reports and finished boring logs as relevant shall be included in appendices to the QAPP for USACE comment regarding content of these materials. Specifics regarding the QAPP content with respect to chemical data are included below.

- Data Reduction, Validation, and Documentation: The Contractor shall provide in the QAPP for each analytical method and major measurement parameter the following:
- Calculations: The QAPP shall provide, for each analytical method, details regarding the data analysis scheme including units and equations required to calculate concentrations or the value of the measured parameter.
- Procedures to Ensure Data Integrity: The QAPP shall identify the principal criteria used to assure data integrity during collection and reporting. The means of establishing these criteria must be identified as well as procedures implemented to provide corrective action when data or instrumentation that do not meet these criteria. Possible matrix interferences for laboratory analyses attributable to site characteristics shall be identified and methods for compensating for expected or unexpected interferences shall be detailed in the QAPP.
- Treatment of Outliers: The QAPP shall describe the specific mechanisms employed when outlier data are identified. Limits of data acceptability shall not be exceeded. Details provided should include a description of the phase of the analytical process where these systems are employed, and the process by which subsequent decisions regarding the disposition of the data in question are made. Information justifying the poor recovery or precision shall be documented when limits are exceeded. The CO will then decide what further action, if any, need be taken. Personnel responsible for initiating and executing a corrective action shall be indicated in the protocol.
- Data Management: The Contractor shall provide detailed information regarding the handling of data, including the types and mechanisms of review processes and the qualifications of the various individuals involved in this activity.
- Data Archive: The QAPP shall describe the specific procedures employed to archive data, including a description of any hardware involved (computers, etc.). Handling and storage procedures for all raw data shall also be described. Since the ultimate use of the data is not known, the Contract Laboratory shall preserve all information regarding sample analyses (calibration records, etc.) such that the analytical process can be reconstructed at some future time. The Contract Laboratory shall maintain all data associated with delivery orders for this contract for a period of ten years following submission of the certificate of analysis including all relevant electronic media used for data storage.
- Format for Comprehensive Certificates of Analysis: The Contract Laboratory shall address the requirements in preparing comprehensive certificates of analysis outlined in Section 5.5.

Unless otherwise specified in delivery order specific scopes of work the comprehensive certificate of analysis shall be prepared for each group of samples submitted to the Contract Laboratory and shall be received by the CO no later than 21 days after sample acquisition in the field. This submittal is subject to review and comment by the CO. The Contractor will be directed to resubmit the comprehensive certificate of analysis at no additional charge to the Government if the conditions of these specifications are not executed by the Contractor.

Draft certificates of analysis containing analytical results and preliminary QC data only shall be submitted to the CO as soon as they are available (approximately 10 working days after sample shipment to the Contract Laboratory for each shipment of samples, not to be interpreted as a requirement for 10 day turn-around). Draft certificates of analysis do not have to satisfy all of the requirements of this section but should contain basic QC information such as MS/MSD analyses, LCS analyses, method blank results, chain of custody forms, and cooler receipt forms. The Contractor is encouraged to select a laboratory that has the capability for electronic transmission of data, as this will greatly facilitate delivery of draft certificates of analysis.

5.2.3 Measurement and Data Acquisition

The following sections describe the requirements for sampling process design, sampling method requirements, sample handling and custody requirements, analytical method requirements, and analytical, statistical, and control parameters.

5.2.3.1Sampling Process Design

The CDQMP will describe the items to be contained in the SAP as described below. The SAP for each delivery order will provide a detailed project specific discussion of the requirements presented below.

Outline specifically the experimental design of the project including the sampling network design, types of samples required, sampling frequencies, sample matrices, and measurement parameters of interest. The rationale for the design shall be clearly stated. The rationale for the design shall be described for all sites where samples shall be obtained and will be supported with figures describing the specific points where samples shall be obtained. Measurement parameters to be described shall include geological, geophysical, hydrogeological, and chemical parameters as applicable.

If cone penetrometer locations, hydropunch locations, or monitoring well locations are to be chosen on the basis of field observations the text shall clearly state the evaluation criteria that shall be used in the field for these determinations. Monitoring well design criteria (if applicable) shall be clearly described to include a description of field determinations for appropriate filter packs and well screens.

5.2.3.2 Sampling Methods Requirements

The CDQMP will describe the items to be contained in the SAP as described below. The SAP for each delivery order will provide a detailed project specific discussion of the requirements presented below.

Provide a general description of sample collection procedures. Detailed specific descriptions of these procedures shall be described in the FSP and the SAP shall reference the specific paragraphs applicable from the FSP. For each sampling method, identify any support facilities needed. The discussion shall focus on Contractor procedures for addressing failures in the sampling system and responsibilities for corrective action. The text shall include a table that describes bottle requirements, preservation, and holding times to extraction and/or analysis for all analytical parameters and matrices.

5.2.3.3 Sample Handling and Custody Requirements

Provide a general description of provisions for sample handling taking into account the nature of the samples and the maximum allowable holding time. Specific sample handling procedures will be described in the FSP. The text of the QAPP should focus on quality control for sample handling and custody procedures and discuss Contractor procedures for controlling common problems such as labeling errors, chain-of-custody errors, transcription errors, preservation failures, etc.

5.2.3.4 Analytical Methods Requirements

Section 4.0 of this specification outlines the requirements for specific methods. The following sections describe the requirements for screening and definitive level data. Screening level data are data generated by rapid, less precise methods of analysis with less rigorous sample preparation methods. Screening data provide analyte identification and quantification, although quantification may be relatively imprecise. At least 10 percent of the screening data must be confirmed using definitive data in order for the screening data to be of known quality. Definitive level data are data generated at the site or off site in analytical laboratories using rigorous analytical methods, such as approved EPA reference methods. Data are analyte-specific, with confirmation of analyte identity and concentration, and analytical error or total error is determined.

A. Screening Level Data. The results of the analyses detailed in the approved CDQMP will provide the final determination as to the presence and extent of contamination (as verified by the appropriate QA/QC procedures); however, the Contractor may wish to investigate the availability and/or utility of colorimetric, immunoassay or other "field" analytical methods (screening level data). If appropriate, such methods could be used to provide a preliminary indication of contamination at sampling locations. The use of such a method is subject to review and approval by the CO, and must meet the requirements for a Contract Laboratory as outlined elsewhere in this document. In particular, work performed by a mobile laboratory or a temporary field unit mobilized to the site will be required to meet all of the requirements of the text of this specification as they relate to sample analysis performed by a fixed site laboratory. All field-screening methods shall be detailed in the QAPP or the SAP (as applicable) to the level of detail required for fixed site laboratory analyses described in these specifications.

B. Definitive Level Data. The Contractor is responsible for the quality of all data produced by the Contract Laboratory. All samples shall be prepared/analyzed per the referenced analytical methods specified in the approved CDQMP. Alternate or additional procedures must be pre-approved by the CO. The QAPP shall contain a brief description of each laboratory analytical method to be used for acquisition of chemical data. The text shall be specific including relevant aspects of laboratory procedures (general extraction method, analytical detector, instrumentation, etc.). The text must include a discussion of instrument preventive maintenance programs, specific instrument calibration procedures and frequency, method-specific data quality objectives, laboratory quality control criteria, laboratory corrective action, data reduction, and data validation. Corrective action descriptions shall be specific for each controlled parameter for each analytical method. Tabular presentation of Contract Laboratory quality control criteria and corrective action procedures is acceptable. Submission of Contract Laboratory SOPs, Contract Laboratory QA Manual, incorporation of SW-846 requirements by reference, or inclusion of excerpted sections of SW-846 and other standard analytical methods is <u>unacceptable</u> to fulfill the requirements of this specification.

5.2.3.4.1 Analytical/Statistical/Control Parameters

Measurement criteria shall be defined for the critical indicator parameters of data quality – which are precision, accuracy, representativeness, completeness, and comparability (PARCC) – and the detection and quantitation limits. PARCC criteria will be specified for both screening and definitive level data. Measurement objectives for these indicator parameters will be developed based on the analytical methods, screening techniques, and the data quality objectives of the project.

As previously noted, QC procedures are employed during chemical analysis to support and document the attainment of established method quality objectives. Whether these QC procedures support an assessment of general batch control or matrix-specific application, documentation includes calculating data quality indicators to verify data usability and contract compliance. Data quality indicators were formerly referred to as the PARCC parameters and sensitivity. All laboratories conducting analytical work for the USACE must be aware of, and be in agreement with, the project DQOs, including the stated data quality indicators - method quality objectives. *To avoid any misunderstandings concerning the level of quality required for the project chemical analyses, the SAP must very clearly delineate all method quality objectives for the method QC checks and data quality indicators (precision, bias, representativeness, comparability, completeness, and sensitivity) for each method applied.* Tables 4-7 through 4-14 summarize the method quality

objectives for eight (8) SW-846 methods. *These tables may be applied directly to a project, or modified accordingly to define the method quality objectives for laboratory data quality indicators (precision (P) and bias (B)) of the LCS, MS, MD/MSD, etc.*

However, project requirements must still be defined for the remaining applicable data quality indicators within appropriate project documents (e.g., SOW, SAP). For example: (1) data quality indicator performance objectives of field QC samples (precision objective for field replicates, bias objective for field blanks, bias objective of double-blind PE samples, etc.); (2) data quality indicator performance objectives for matrix-specific sensitivity (per requisite methods); (3) data quality indicator performance objectives for project completeness (note whether field and lab completeness are assessed separately or combined); and (4) qualitative data quality indicator (representativeness, comparability).

5.2.3.4.1.1 Precision

Precision shall be evaluated through the collection and analysis of field and laboratory duplicate samples. Field duplicates (QC samples) shall be collected at a frequency of one duplicate for each ten samples of a given matrix. The identity of QC samples shall be held blind to the Contract Laboratory until after analyses have been completed.

The relative percent difference for field and laboratory duplicates shall be calculated and used as a measure of precision; however only laboratory duplicates will be included in the quantitative assessment of completeness. Results of field duplicates will be described in qualitative assessment of completeness.

Laboratory duplicates are defined as two aliquots obtained from the same sample, which are extracted and analyzed for determining matrix specific precision. Laboratory duplicates shall be performed for all metals analyses at a rate of one in twenty (one for each batch up to a maximum of twenty). Precision for organic analyses may be determined by the analysis of matrix spike/matrix spike duplicate samples.

Contract Laboratory quality control criteria for RPD for field and laboratory duplicates shall be specified in the QAPP. Laboratory duplicate samples not meeting quality control criteria shall be re-extracted/reanalyzed once.

(For organic analyses failure of different matrix spike compounds to meet QC criteria on successive runs shall constitute failure and satisfy the requirement for reanalysis.) Quality control criteria are subject to approval by the CO. Failure of the Contract Laboratory to present QC criteria for precision (including corrective action) that are acceptable to USACE will result in directing of the Contractor by the CO to retain another laboratory for contract services.

A. Bias. Bias refers to the systematic or persistent distortion of a measurement process, which causes errors in one direction (above or below the true value or mean). Bias may be affected by errors made in field or laboratory handling procedures. For example, procedural deviations in sample acquisition, or incomplete homogenization prior to subsampling, or incomplete extraction of contaminants from the matrix intensify bias. Bias is a term, which is related to but is not interchangeable with accuracy. *Bias assessments are typically based upon the analysis of spiked reference materials or spiked samples (i.e., LCS, MS, MSD, surrogates).* When the sample matrix is spiked, the result allows an assessment of the effect of the sample matrix on recoveries. The sources of error contributing to the bias of a measurement can be difficult to determine for an entire sample collection/analysis activity. Sources of error may include the loss (or addition) of contaminants from the sampling and analysis process (i.e., sample handling, field cross-contamination, improper sample preservation, sample manipulation during preparation and analysis), interferences present within the sample matrix, and measurement error (i.e., calibration error or drift). Bias values for the LCS represent quantitative limits beyond which data are unacceptable. Bias values are commonly expressed as percent recovery.

5.2.3.4.1.2 Accuracy

A. Organic Analyses. Accuracy shall be evaluated through the collection and analysis of matrix spike, matrix spike duplicate (MS/MSD) samples, laboratory control samples (LCS), and by spiking all samples with surrogate compounds where applicable. Only samples from this project

will be used for MS/MSD procedures. Trip blanks and rinsate samples will not knowingly be used for MS/MSD analyses.

B. Matrix Spike and Matrix Spike Duplicate. For each shipment of samples that is sent to the Contract Laboratory one sample shall be provided in sufficient quantity such that a matrix spike and a matrix spike duplicate can be generated in addition to an aliquot reserved for actual sample analysis. (If more than 20 samples are shipped at any time one sample will be provided in quantities sufficient to generate a MS/MSD for each 20 samples.) This sample will include sufficient volume such that one re-extraction/reanalysis of the MS/MSD pair may be performed if necessary. Alternatively, with the concurrence of the USACE CO, the Contractor may coordinate with the Contract Laboratory such that the laboratory is continually aware of sample collection and delivery such that batch size may be maximized and alleviate the otherwise necessary requirements for collection of samples for MS/MSD procedures for each shipment. The sample that is chosen for matrix spiking purposes shall be representative of the other samples in the batch. For large investigations where samples are being collected at multiple sites, to the extent that it is practical, sample batching and matrix spiking should reflect the sampling at specific investigation sites. In this case, the Contractor should select the sample to be used for matrix spiking and the samples that it should be batched with.

The matrix spike and matrix spike duplicate samples shall be fortified with a series of method target compounds, while a third; aliquot of the sample shall be analyzed unfortified. Accuracy shall be measured in terms of percent recovery of each of the fortified components. MS/MSD analyses not meeting the laboratory quality control criteria specified in the QAPP shall be re-extracted/reanalyzed once at no additional cost to the government. Both the MS and the MSD must be compliant for both accuracy and precision for all spiked compounds for the MS/MSD pair to be considered acceptable. Both the MS and the MSD must be re-extracted/reanalyzed in the event of failure. Failure of different spike compounds on successive runs for methods with multiple spike compounds will be considered a reanalysis failure and will satisfy the requirement for reanalysis. (Note: This provision is meant to apply for a single analytical method.

This language shall not be construed to indicate that failing QC results for one analytical method are applicable to another.) Failure of MS/MSD analyses to meet QC criteria shall initiate a review of the data for the corresponding analytical batch. A determination should be made as to whether the failing matrix spike result is representative of the sample that was spiked or is representative of the entire batch. Reanalysis and/or re-extraction and reanalysis of the batch may be required if trend analysis of the batch data indicates that the analytical system is out of control.

C Surrogate Standards. Analyses exhibiting out of control surrogate recoveries shall be re-extracted/reanalyzed once at no additional cost to the government. For GC/MS analyses of volatile and semivolatile organic compounds the SW-846 QC acceptance criteria for surrogate recoveries shall be employed.

D. LCS. LCS analyses are matrix spikes on a blank matrix (DI water, reagent sand) to assess Contract Laboratory accuracy independent of matrix effects. Use of sodium sulfate and/or other approved matrices may be used with the prior approval of the USACE CO. Failure of the LCS to meet QC criteria will result in re-analysis of the LCS sample to determine if the failing result is representative of a transient instrumental condition. (Failing LCS samples for extractable parameters will not be re-extracted in an attempt to validate the results from initial extraction. If the laboratory employs a routine system of running dual LCS samples, both results must be acceptable for the batch to pass.) A second failure will result in mandatory re-extraction/reanalysis of the entire analytical batch. Upon failure, initial reanalysis of the LCS must occur in real time with respect to sample analyses, otherwise reanalysis (at a minimum) of the batch will be mandatory. In the event of batch re-analyses for GC/MS analyses all SPCC and CCC criteria must be met for the reanalysis to be valid.

The QAPP shall detail matrix, method, and compound-specific procedures and quality control criteria for all sample analyses used to determine Contract Laboratory accuracy. Laboratory generated criteria for accuracy may be utilized with the provision that they must comply with the guidelines specified below. If laboratory generated QC criteria do not fall within the specified ranges the criteria described below will be utilized by default. If the laboratory generated QC criteria exceed the requirements of these specifications, the laboratory generated QC criteria shall be utilized. QC criteria for this project will not exceed the ranges described in these specifications.

E. GC/MS. QC criteria for GC/MS analyses shall conform to SW-846 criteria for surrogate recoveries and use full standard list of compounds to be spiked for MS/MSD analyses and QC criteria. LCS criteria for GC/MS analyses shall utilize the 65-135% criteria for MS/MSD analyses as a minimum standard. QC criteria for LCS recoveries should generally be more stringent relative to MS/MSD criteria. Laboratory methods used to generate QC criteria must include analyses that discard outlier data. Use of all historical data is discouraged as this may result in QC ranges that may exceed the limits of acceptability.

F. Other Organic Methods. QC criteria for GC, HPLC, and TRPH (~~418.1 & 413.2~~1664) analyses (surrogate recoveries, LCS recoveries, and MS/MSD recoveries as applicable) shall fall within a 65-135% range.

Quality control criteria are subject to approval by the CO. Failure of the Contract Laboratory to present QC criteria (including corrective action) that are acceptable to USACE will result in direction of the Contractor by the CO to retain another laboratory for contract services.

Under certain limited circumstances, such as the occurrence of gross chromatographic interference, it is reasonable to infer that reanalysis or re-extraction/reanalysis would produce the same result. Under these circumstances, re-extraction and reanalysis as described in these specifications would not be required.

However, if this argument is proposed by the laboratory the data package submitted must include chromatographs (and any other raw data necessary), presented at an attenuation where aspects of the chromatography are clearly visible, to substantiate assertions of this type. This language shall not be interpreted to indicate that not all appropriate sample cleanups are required or that failure to execute appropriate sample cleanups prior to concluding that matrix effects are operative will be acceptable to USACE. The final determination of the acceptability of the laboratories actions in deviating from the basic requirements of these specifications will be made by the USACE CO.

Note: Contract Laboratories are cautioned not to attempt to use the provisions of this paragraph in an effort to evade the basic requirements for re-extraction and/or reanalysis as described in this specification. Data found to be associated with laboratory failure to execute the basic requirements of this contract for re-extraction and reanalysis, in the absence of a bona fide explanation for not executing these requirements, will be rejected by the USACE CO. The Contractor/Contract Laboratory is encouraged to contact the USACE CO or their designated representatives at any time if there is a question regarding the appropriate course of action to take in the event of QC failures for obvious causes not related to laboratory performance.

G. Inorganic and General Chemistry Analyses. Accuracy for inorganic analyses shall be evaluated through the collection and analysis of matrix spike samples and laboratory control samples (LCS). For each shipment of samples that is sent to the Contract Laboratory one sample shall be provided in sufficient quantity such that a matrix spike can be generated in addition to an aliquot reserved for actual sample analysis. (If more than 20 samples are shipped at any time one sample will be provided in quantities sufficient to generate a MS for each 20 samples.) This sample will include sufficient volume such that one re-extraction/reanalysis of the MS may be performed if necessary. Alternatively, with the concurrence of the USACE CO, the Contractor may coordinate with the Contract Laboratory such that the laboratory is continually aware of sample collection and delivery such that batch size may be maximized and alleviate the otherwise necessary requirements for collection of samples for MS procedures for each shipment. The sample that is

chosen for matrix spiking purposes shall be representative of the other samples in the batch. For large investigations where samples are being collected at multiple sites, to the extent that it is practical, sample batching and matrix spiking should reflect the sampling at specific investigation sites. In this case, the Contractor should select the sample to be used for matrix spiking and the samples that it should be batched with.

The matrix spike samples shall be fortified with the method target compounds, while an aliquot of the sample shall be analyzed unfortified. The matrix spike for inorganic analyses shall be an analytical spike, i.e. a spike of the solution being extracted prior to the extraction procedure. Accuracy shall be measured in terms of percent recovery of each of the fortified components. MS analyses not meeting the laboratory quality control criteria specified in the QAPP shall be re-prepared/reanalyzed once at no additional cost to the government. QC criteria for matrix spike analyses shall fall within a range of 75-125% for inorganic and general chemistry analyses.

LCS analyses are matrix spikes on a blank matrix (DI water, reagent sand) to assess Contract Laboratory accuracy independent of matrix effects. LCS analyses shall be performed for each batch of samples up to a maximum of 20. Failure of LCS analyses shall result in re-extraction and reanalysis of the corresponding analytical batch for the specific analyte failing QC criteria. QC criteria for LCS analyses shall fall within a range of 80-120% for inorganic and general chemistry analyses.

Failure of MS analyses to meet QC criteria shall initiate a review of the data for the corresponding analytical batch. If review indicates out-of-control data due to laboratory error, the Contract Laboratory shall perform re-extraction/reanalysis of the batch to correct the out-of-control condition at no additional cost to the Government.

The interference tests specified by paragraph 8.5 of SW-846 Method ~~6010B~~ 6020B and by paragraph 8.6 of SW-846 Method 7000A shall be performed on one "representative" sample from each analytical batch. The choice of samples for performance of interference tests shall be conservative such that the sample displaying characteristics most likely to result in interference shall be selected for the procedure. No corrective action is specified by Method ~~6010~~6020A however the results of the interference tests shall be documented in the narrative if they result in out of control results. The specific corrective action described by Method 7000A shall be executed by the laboratory on failure of interference tests for 7000 series methods. The laboratory may propose alternatives to the standard procedures described in SW-846 for 7000 series methods such as post digestion spikes for all samples. In this case corrective action for failing post digestion spikes should be consistent with the corrective action described in Method 7000A. Alternatives to the standard procedures specified by Method 7000A that may be proposed by the Contract Laboratory must be approved by the USACE CO.

The QAPP shall detail matrix, method, and analyte- or compound-specific procedures and quality control criteria for all sample analyses used to determine Contract Laboratory accuracy. QC criteria for metals analyses shall conform to standards specified by SW-846 and CLP (matrix spike recovery, duplicate RPD). Quality control criteria are subject to approval by the CO. Failure of the Contract Laboratory to present QC criteria (including corrective action) that are acceptable to USACE will result in directing of the Contractor by the CO to retain another laboratory for contract services.

5.2.3.4.1.3 Representativeness

A. Field Procedures. For field sample collection, it is the responsibility of the Contractor to conduct the sampling activities such that primary samples, blind QC duplicates, and QA splits are representative of field conditions. All duplicate samples (QA and QC splits) for nonvolatile analyses shall be homogenized in the field prior to packaging. Errors in sampling and packaging that result in non-representative samples or rejection of data by regulatory elements will result in direction by the CO to resample at the Contractor's expense. The Contractor is cautioned to interact closely with the Contract Laboratory during shipment of samples to insure that requirements for preservation have been met. All sample results associated with out of control preservation conditions will be rejected with re-sampling and reanalysis at the Contractor's expense. Alternatively, the USACE CO may determine that re-sampling will not be required. In

this the Government will receive credit for all costs of sampling and analytical work for sample results associated with out of control preservation conditions. Specific Contractor procedures to ensure representativeness shall be detailed in the QAPP.

B. Laboratory Procedures. Laboratory procedures must be established to ensure that aliquots used for sample analysis are representative of the whole sample. Similarly, any such procedures employed at the laboratory level shall not interfere with the concentration or composition of the analytes in the sample. All non-VOC samples shall be homogenized prior to extracting an aliquot for sample analysis. Contract Laboratory procedures to ensure representativeness shall be detailed in the QAPP.

5.2.3.4.1.4 Completeness

Completeness shall be evaluated qualitatively and quantitatively. The qualitative evaluation of completeness shall be determined as a function of all events contributing to the sampling event including items such as correct handling of chain of custody forms, etc. The quantitative description of completeness shall be defined as the percentage of Contract Laboratory controlled QC parameters that are acceptable.

QC parameters that shall be assessed for quantitative determinations of completeness shall include initial calibrations, continuing calibrations, surrogate percent recovery for organic analyses, analysis of laboratory duplicates for Relative Percent Difference (RPD), analysis of matrix spike/matrix spike duplicate analyses for percent recovery and RPD, and analysis of LCS for percent recovery, and holding times. The requirement for the quantitative assessment of completeness shall be 90%.

The 90% standard shall be applied to the entire list of parameters described above such that a minimum of 90% of the data for each analytical method is associated with acceptable quality control criteria as described above and in other sections of this document. The quantitative assessment of completeness shall be calculated for each analytical method as the ratio of acceptable sample results to all sample results. For multi-compound or analyte methods (organic analyses) each analysis of the aggregate of compounds or analyte shall be considered a single sample result.

The requirement for holding times shall be 100%. If any sample exceeds the holding time specified by EPA SW-846 (or other guidance documents for other analyses) that sample shall be re-sampled and reanalyzed at the expense of the Contractor.

Data shall be screened for contract compliance by the CO. Failure of the analytical data to meet the standards for completeness will result in rejection of data with re-sampling and re-extraction/reanalysis performed at the expense of the Contractor. Completeness requirements shall be applied to data for each Quality Control Summary Report, however this requirement shall also be applicable to individual data packages associated with a single chain of custody.

Non-conforming data as a result of well-substantiated matrix effects shall not be considered in assessing Contractor compliance with respect to completeness. In the event of significant occurrence of non-conforming data, the Contractor will present a summary of data to substantiate an argument for matrix effects to the CO. This data will be reviewed by USACE. <u>The USACE CO will determine the validity of an argument for matrix effects and instruct the Contractor as to the necessity of re-sampling/re-extraction/reanalysis</u>.

5.2.3.4.1.5 Comparability

A. Contract Laboratory Procedures. The Contract Laboratory shall make the necessary provisions to ensure the comparability of all data. These procedures include, but are not limited to, the use of standard approved methodologies, the use of standard units and report format, the use of calculations as referenced in the methodology for quantitation, and the use of standard measures of accuracy and precision for quality control samples. All provisions to ensure data comparability shall be detailed in the QAPP.

B. Comparison to QA Lab Results. Analysis of QA samples by an independent laboratory is considered an instrument of contract administration by USACE. Significant deviations between

QA lab and Contract Laboratory results will result in direction from the CO to the Contractor/Contract Laboratory to investigate the suspect data as detailed in Section 5.9. If investigation reveals errors in sampling or analytical procedures by the Contract Laboratory, re-sampling/re-extraction/reanalysis at the expense of the Contractor will be directed by the CO.

5.2.3.4.1.6 Sensitivity
The term sensitivity is used broadly here to describe the contract method detection, quantitation, and reporting limits established to meet the DQOs; and not limited to the definition which describes the capability of a method or instrument to discriminate between measurement responses. Several limits have been established to describe sensitivity requirements (i.e., IDL, MDL, SQL, PQL, CRDL, CRQL, etc.). Normally, instrument detection limits (IDLs), and method detection limits (MDLs) reported are typically based upon a reagent water matrix or purified solid and ignore sample matrix interferences and the resulting effects on the limits. For this reason, published MDLs or IDLs are presumably not achievable for environmental samples. The CRDLs and CRQLs published within CLP methodologies are contractually based levels and may have nothing to do with what is instrumentally possible. Because of these inconsistencies, and to promote the generation of comparable data, the definitions described below shall be used if not superseded by project-specific requirements. *Contract requirements for sensitivity should be achievable for the batch QC samples within a reagent water/purified solid matrix (method blanks, LCSs) and compliance should be verified.*

5.2.3.4.1.7 Method Detection Limit. The method detection limit (MDL) shall be as defined in 40 CFR 136 App. B. The practical quantitation limit (PQL) or method quantitation limit (MQL) will be set as a multiple of the MDL. Subject to laboratory and instrument capability MDLs shall be consistent with those specified by EPA SW-846. PQLs for TPH by EPA Method 8015B (purgeable and extractable, LUFT manual, etc.) shall be consistent with the recommendations of the Tri-Regional Board Recommendations (1990) or those specified during the DQO process and local regulations. MDLs and PQLs for all analyses and all analytes shall be detailed in the QAPP in tabular format for soil and water matrices. MDLs presented in the QAPP should represent the laboratories most recent MDL studies. MDLs are instrument specific. For the purpose of providing documentation for the QAPP, it will be acceptable to provide MDL representing the least sensitive instrument (highest MDLs). However, PQLs are subject to the approval of the USACE CO and the PQL in the final approved QAPP will be considered Contract Required Quantitation Limits (CRQLs).

The MDL is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte. The laboratory shall perform MDL studies during initial method setup and whenever the basic chemistry of the procedures are changed. Since it is not practical to establish an MDL for each specific matrix received at any given laboratory, MDLs shall be estimated in an interference-free matrix, typically reagent water for water methods and a purified solid matrix (e.g., sand) for soil/sediment methods. Method detection limits shall be estimated for each target analyte using the procedures presented in 40 CFR, Part 136, Appendix B. The MDLs shall be extraction/digestion method-specific and shall include any clean-up methods used. To ensure that reasonable MDL values are determined, the laboratory shall analyze an MDL check sample by spiking an interference free matrix with all method target analytes at about two times the determined MDL and taking this sample through the same process used initially to establish the MDL values. If any of the target analytes are not recovered, then the MDL study shall be repeated for the failed target analytes. The laboratory established MDL values shall be verified quarterly by analyzing the MDL check sample. When multiple instruments are used for the same method, separate MDL studies may not be needed. However, laboratories must demonstrate equivalent sensitivity through the analysis of the MDL check sample. This check would also apply to confirmation columns. The acceptance criteria to be applied to this check sample are to verify that all target analytes are detectable. If any of the target analytes are not reliably detected, then the MDL study must be repeated. The determination of method detection limits in site-specific matrices may be required for certain projects. The analysis of the MDL check sample may not be required if the lowest calibration standard is significantly higher than the estimated MDL values.

5.2.3.4.1.8 Practical Quantitation Limit. The PQL is the lowest calibration standard and should be no lower than ten times the standard deviation as determined from the MDL study. For MDLs established using the seven replicates as defined in 40 CFR, the corresponding PQLs are approximately three times the MDLs. The highest PQL may be used when multiple instruments and sample preparation procedures are available in a laboratory. In the absence of project-specific requirements, the lowest calibration standard used for initial calibration shall be set at or between three to ten times the MDL (at or slightly above the PQL) for each target analyte. The low standard shall not be set at a value that is lower than the PQL. For projects where the action levels are significantly above the PQL or where high native concentrations are expected, the low standard could be set at a value greater than ten times the MDL. Analyte values reported below the PQL (low standard concentration) must be flagged as an estimated quantity (i.e., J flagged).

5.2.3.4.1.9 Method Reporting Limit. The method reporting limit (MRL) is a threshold value below which the laboratory reports a result as "<" the reporting limit value. If the reporting limit is elevated due to dilution or other analytical requirements, this will be noted on the associated sample analytical result page. It may be based on a project-specific reporting limit, a regulatory action level, or two times the laboratory's MDL. The definition of MRLs used the laboratory shall be declared in each data package. MRLs would be adjusted based on the sample matrix and any necessary sample dilutions. The highest value that can be reported for a MRL must be less than any project specified action levels or concentrations of concern.

The lowest value that can be reported by a laboratory as a non-detect (or '<' value) shall be no lower than the value of the corresponding MDL check sample (2 times the MDL). This is the point where the laboratory has demonstrated their ability to reliably detect target analytes. However, the laboratory shall not claim to reliably quantitate values below the low standard. Therefore, analyte values reported between the MDL and PQL (low standard concentration) must be flagged as an estimated quantity (i.e., J flagged). If dilution to bring the reported concentration of a single compound of interest results in non detect values for any other analytes with detected concentrations in the initial analysis the results of the original run and the dilution will be reported with the appropriate notations in the narrative.

PQLs are subject to approval by the CO. Failure of the Contract Laboratory to present PQLs that are acceptable to USACE will result in directing of the Contractor by the CO to retain another laboratory for contract services. Failure of the Contract Laboratory to achieve PQLs/CRQLs specified in the QAPP will result in rejection of data with re-sampling/reanalysis at the Contractor's expense.

Matrix effects (i.e. highly contaminated samples requiring dilution for analysis, dilution to bring detected levels within the range of calibration, and matrix interference requiring elevation of detection limits) will be considered in assessing Contractor compliance with the requirements for sensitivity. A detailed analysis of all failures to meet requirements for sensitivity will be included in the narrative section of the certificate of analysis detailed in Section 5.4.

5.2.3.5 Target Analyte Identification, Quantitation, and Confirmation.

5.2.3.5.1 Target Analyte Identification. Employ procedures presented within the individual determinative methods for determining presence and identification of target analytes within samples. *For GC/MS analyses and any samples containing extraneous peaks not associated with the calibration standards, a scan against a mass spectral library (typically ~75,000 compounds) may be performed for the purposes of tentative identification if warranted by project DQOs*. Based upon the degree of match, evidence of similar pattern, and analyst professional judgement, compounds may be reported as Tentatively Identified Compounds (TICs) and the analytical values estimated. *The necessity to perform this will depend on project specific requirements. Recommend the use of TIC searches only in the early stages of site characterization on samples speculated as contaminated. Significant detections identified through TIC searches, should require the inclusion of these compounds as project-specific target analytes. Future analyses shall require that calibration standards include these target analytes for more accurate quantitative determination of their result.*

For TPH analyses the laboratory shall use the following hydrocarbon ranges as default identification ranges: gasoline C6-C12, diesel C10-C28, motor oil C20-C36, and JP4 C8-C13. The QAPP shall define the specific ranges used for identification and quantitation for each fuel determined and reference any State requirements or methods used for analysis, as applicable. The QAPP must clearly define the hydrocarbon ranges and standards used for quantitation. Use of clean up procedures, analytical methods, and supplemental analyses must also be clearly described in the QAPP. The quality control and data verification procedures must be clearly defined in the QAPP for natural attenuation and bioremediation parameters. Interpretation of pattern matching for petroleum hydrocarbons and forensic geochemistry for hydrocarbon fuel fingerprinting and age dating must be established in the laboratory standard operating procedures.

Pattern matching includes fuel type, ownership, and age. Historical information (process history, blending trends, and legislative records) will be used as tools for pattern matching. Other analytical tools include infrared spectrometer, X-ray fluoresence spectrometer (used for metals determination in fresh or used lube oil), ICP, atomic absorption spectrometer, and thin lay chromatography. GC resolution for the components of the TPH is essential to accurate identification and quantitation of fuel type. The laboratory shall maintain a library of chromatograms for typical fuels including (but not limited to) kerosene, thinner (stoddard solvent), diesel fuel, bunker fuel or heavy fuel oil, motor oil, gasoline, aviation gasoline, and jet fuel.

The laboratory shall also be capable of analysis for oxygenates (ethers-MTBE, TAME, DIPE, and ETBE and alcohols-methanol, ethanol, and TBA).

Forensic environmental geochemistry is defined as a scientific methodology developed for identifying petroleum-related and other potentially hazardous environmental contaminants and for determining their sources and time of release. As a result of physical process, hydrocarbon fuel in the subsurface environment is distributed among the following major phases: fuel vapors as a component of soil gas, fuel sorbed to soil particles, liquid fuel in pore spaces of the soil particles, liquid fuel floating on the groundwater table, and fuel dissolved in groundwater. The following analytical techniques may be used for forsenic characterization of petroleum products: gaseous hydrocarbons (C1-C5) by ASTM Method D2820, TPH-GRO by EPA Method 8015B, BTEX by EPA Method 8021, alkyl lead speciation and lead scavengers by modified EPA Method 8081, oxygenated blending agents (ethers and alcohols) by ASTM Method D4815, dye additives by thin layer chromatography, total lead, organic lead, and trace metals (especially vanadium and nickel) by EPA Method ~~6010B~~6020B, simulated distillation by ASTM Method D2887, n-alkanes in the C8-C35 range, along with branched-chain alkanes by ASTM Method D3328, alkylbenzenes, alkylcyclohexanes, polynuclear aromatic hydrocarbons (PAHs), and polycyclic saturated hydrocarbons (steranes and terpanes-biomarkers) by EPA Method 8270, and stable isotope ratios for carbon (13C/12C), hydrogen (D/H), and sulfur (34S/32S) by dual collecting isotope ratio mass spectrometry.

5.2.3.5.2 Target Analyte Quantitation. All samples shall be quantitated using the initial calibration curve, following procedures outlined within the determinative methods. Sample results that exceed the range of the initial calibration high standard must be diluted and reanalyzed, and sample analyte values reported below the PQL must be flagged as estimated quantities (i.e., J-flag). All dilutions must be applied to the sample results and reported accordingly. Solid samples are to be determined on a dry-weight basis. Sample target analyte values should be reported to three significant figures.

5.2.3.5.2.1 Inorganic Analyses. Quantitative results are calculated using the mean value from the set of duplicate injections for Method 7000 or the mean value from multiple exposures for Method ~~6010~~6020. Also, recommend the laboratory review the RPDs for duplicate injections/multiple exposures of samples exhibiting quantifiable concentrations. If the %RPD/% RSD is consistently > 20% and highly variable for concentrations greater than the low-level calibration standard, corrective action should be taken. When matrix interference is suspected/confirmed, the use of Method of Standard Additions (MSA) must be used to calculate the sample result. The laboratory shall at a minimum use a series of three standard additions containing 50%, 100%, and 150% of the expected concentration. As outlined within the method, plot the absorbance of each solution at the concentration of the known standards. The concentration of the sample is then obtained from extrapolating the resulting line back to zero absorbance.

5.2.3.5.2.2 Organic Analyses. The laboratory should make a reasonable attempt to correct for any matrix interference encountered. Dilutions should not be routinely used in preference to cleanup methods to address matrix interference. When matrix interference is present, samples should be processed using at least one clean up method as outlined by the determinative method. Refer to Section 6.8.2.2 for information on recommended cleanup methods. *If the cleanup and reanalysis do not reduce the matrix interference, discuss the impact on the data within the case narrative.*

5.2.3.5.2.2.1 Method 8081. In general, multiple-component analytes are quantitated (via external calibrations) by comparing the areas (or heights) for the characteristic peaks to the areas (or heights) for the corresponding calibration peaks of the same retention time and shape. Quantitation may be performed using a number (i.e., three to five) major peaks or the total peak area of the appropriate pattern as described in the method. For Chlordane, quantitate the peaks of alpha-Chlordane, gamma-Chlordane, and Heptachlor separately against the initial 3-point calibration curves and report the individual results. When the GC pattern of the residue resembles that of technical Chlordane, quantitate for this. Since commercial BHC (which consists of a mixture of six chemically distinct isomers and one or more heptachlorocyclohexanes and octachlorocyclohexanes) may exhibit a wide variance in the percentage of the individual isomers present, quantitate and report the alpha, beta, gamma, and delta-BHC isomers separately.

For DDT, the 4,4'-isomers of DDT, DDE and DDD are the predominate pesticides in the environment and are the isomers normally regulated by USEPA. Therefore quantitate separately and report the pure 4,4'-isomers of DDT.

5.2.3.5.2.2.2 Method 8290. The laboratory must comply with the specifications in the method. MS/MSD samples are required for this analysis.

5.2.3.5.2.2.3 Method 8330. Due to the lack of resolution between 2,4-DNT and 2,6-DNT, and between 2-Am-DNT and 4-Am-DNT, quantitation of these compounds may be expressed as 'isomeric pairs'.

5.2.3.5.3 Target Analyte Confirmation. Chromatography is a technique that relies upon the comparison of retention times between standards and unknown peaks for qualitative identification. Unless mass spectrometry is used as the detector, tentative identification is based solely on the retention time of an unknown peak falling within the prescribed retention time window of a known standard. *In the absence of project-specific criteria, to minimize the possibility of incorrect identification (or false positives), confirmation shall be required for all chromatographic methods involving the analysis of single component target analytes.* Quantitative confirmation of results above the PQL is required for samples analyzed by GC or HPLC and shall be completed within the method-required holding times. Confirmation may be required for multi-component analytes even though identification is primarily achieved through pattern recognition (i.e., PCBs, gasoline, etc.). When available, it is recommended that confirmation techniques involve the use of (1) another analytical technique (i.e., GC/MS), or (2) a second dissimilar column. When the laboratory is using the second dissimilar column, it shall be calibrated in the same manner as the primary column. After the target analyte has been identified, compare the primary and confirmatory results for agreement according to a method-prescribed criterion. Analytical results would normally be reported from the primary column unless interferences were noted. If quantitative results are reported from the confirmation column, the documentation from the analysis of all appropriate QC samples on the confirmation column shall also be required within the data package. Section 5.2.3.6.4.8 also provides requirements for confirmation analyses. Designation of which column is considered primary and which considered confirmation must be documented in the laboratory method-specific SOPs for each appropriate analysis. Once column designation has been established, the laboratory analysts will apply this designation consistently for all samples.

5.2.3.6 Contract Laboratory Internal Quality Control Checks.
The basic unit for application of laboratory quality control is the batch. Samples shall be prepared, analyzed, and reported in batches and be traceable to their respective batches. Batch sizes are normally limited to twenty field samples of a similar matrix but can exceed this by incorporating additional QC

samples. Each batch shall be uniquely identified within the laboratory. Samples prepared together would normally be analyzed together on a single instrument. Samples taken from the same site would normally be grouped together for batching purposes within the constraints imposed by the method holding times. However, laboratories may find it necessary to group multiple clients' samples into a single batch. Under these circumstances, additional batch QC samples may be needed that evaluate the effect of the matrix from each site on method performance. Field QC samples, i.e., trip blanks, rinsates, etc., shall not knowingly be used for batch QC purposes.

5.2.3.6.1 Preparation Batch. The preparation batch shall be defined as samples of the same or similar matrix that is prepared together by the same person, or group of people within the same time period or within limited continuous time periods, which follow the same method, using the same type of equipment and same lots of reagents. The laboratory shall have sufficient quantities of extraction / digestion labware to meet these requirements. Each preparation batch shall contain the requisite number and type of calibration solutions, blanks, quality control samples, and regular analytical samples as defined by the analytical method. These requirements shall be completely defined in the laboratory SOPs and are summarized in part in the following sections.

The use of clean-up methods would be included as part of the preparation batch. All field and batch specific QC samples within the batch should be subjected to all preparatory and clean-up procedures employed.

5.2.3.6.2 Analysis Sequence. The analysis sequence or instrument run sequence shall be defined as samples that are analyzed together within the same time period or in continuous time periods on one instrument under the control of one continuing calibration verification. Analysis sequences would be bracketed by the appropriate continuing calibration verification standards and other QC samples as defined by the analytical method. In general, if an instrument is not used for periods of time or shut down (e.g., overnight, etc.), then a new analysis sequence shall be initiated. Each analysis sequence shall contain the requisite number and type of calibration solutions, quality control samples, and regular analytical samples as defined by the analytical method. These requirements shall be completely defined in the laboratories SOPs and are summarized in part in the following sections.

For samples that are purged and then analyzed immediately, the preparation batch and analysis sequences are combined. For this situation, the batch would normally be defined by the loading of samples into the various purge tubes. This definition has been interpreted differently however. For instance, the loading of purge tubes may be performed all at one time, or may continue throughout the day. In order to ensure ambient environmental conditions throughout the potential loading process, USACE requires a minimum of an MB run every four (4) hours, or twice a day when samples are loaded throughout the day.

5.2.3.6.3 Analytical Batch. The analytical batch is defined as a preparation batch. The analytical batch will not exceed 20 samples and is defined as a set of samples that are extracted/analyzed concurrently or sequentially. Significant gaps (greater than two hours) in the analytical sequence will result in the termination of the previous sequence and the initiation of a new analytical sequence. <u>The analytical batch shall be analyzed sequentially on a single instrument</u>. The practice of "holding a batch open" and performing a single set of batch QC samples for all analyses performed during that period is unacceptable relative to the requirements of these specifications. Data reported by the Contract Laboratory that is found to be associated with batch QC samples that were not extracted concurrently or were not analyzed in the same sequence on the same instrument relative to the primary sample results shall be rejected. If the batch size is found to exceed 20 samples the data will be rejected. Once the analysis of a batch has started, all batch samples must be analyzed concurrently within 16 hours.

5.2.3.6.4 Batch QC Samples. The Contract Laboratory shall, as a minimum, analyze internal QC samples at the frequency specified by the method and in these specifications for all analytical methods. These QC samples for each analytical batch shall include method blanks (MB), MS/MSD analyses (laboratory duplicates and MS for inorganic analyses), and laboratory control samples (LCS). Definitions for the QC samples described are provided in Chapter One, Update I to EPA SW-846. The matrix used for LCS analyses shall be reagent grade water for aqueous analyses and reagent sand for soil/sediment

matrices. Failure to include either matrix spikes or LCS samples with each analytical batch will result in credit to the government for one-third of the cost of the associated analyses. Failure to incorporate both a matrix spike and a LCS sample will result in rejection of data. Failure to incorporate a method blank with each analytical batch will result in rejection of data. A summary of the minimum required QC samples for each preparation batch are presented in the following subsections.. All calibrations and QC samples analyzed shall be uniquely identified and traceable to that unique sample preparation batch. Additional QC samples may be required for other batch types based upon project-DQOs.

A. QC Checks of Known Composition Samples. General batch QC may be viewed as those QC procedures applied to an interference-free matrix or a matrix of known composition (i.e., blanks, laboratory control samples, PE samples, standard reference materials (SRM), calibration verification standards, etc.). They ensure the analytical method is being performed in an in-control mode of operation. These QC checks provide no information on how well the method is performing with respect to the project sample matrix, however.

Document clearly within the case narrative the QC checks that exceed method quality objectives along with corrective actions taken. *It is recommended that contract nonpayment clauses be limited to QC sample results of interference-free or known composition matrices only. An example of a contract nonpayment clause which may be included within project contract documents is given below:*

> "The Contractor shall perform chemical analyses in accordance with the requirements established within the specified method and this document. When QC checks of interference-free or known compositions do not meet these standards/requirements, corrective action must be taken through proper application of the inspection and services clause. Corrective action may include resampling, repreparation, and/or reanalyses of the affected samples at no additional cost to the government. If the Contractor fails to promptly perform the required corrective actions, or when the failure cannot be corrected by reperformance, the Government may reduce the contract price or fee payable under the contract to reflect the reduced value of services performed. Continued failure to perform chemical analyses in accordance with these standards/requirements may result in termination of the contract for default."

B. QC Checks of Matrix-Specific Samples. Matrix-specific (matrix-sensitive) QC procedures should be incorporated into the laboratory analysis to provide information on the precision and bias of the analyses on project samples. These procedures include analyses of field samples in association with surrogate compounds, matrix spikes (MS), matrix spike duplicates (MSD), or matrix duplicates (MD). *Matrix-specific procedures performed on other field samples at the laboratory not associated with the project samples are of limited value, for they do not provide information on the matrix under observation*. It should be noted that MS/MSD/MD analyses may require the submittal of an additional replicate sample to enable the laboratory to perform the requisite analysis. *For this reason, the project requirements of minimum sample volumes necessary to accommodate the matrix-specific QC samples must be addressed very clearly within the SAP.*

Exceedances of method quality objective for these types of QC checks may be problematic due to matrix effect (signal enhancement or suppression) on the analysis and should not be viewed as an indicator of poor laboratory performance. For this reason, *contract nonpayment clauses should not be associated with matrix-specific QC samples.* However, the laboratory should not use this as an 'excuse' to avoid employing proper analytical techniques. The laboratory should make a reasonable effort to overcome matrix interference as noted below. Necessary corrective actions will vary depending on the type of interference, and are subject to analyst professional judgment. *When these excursions indicate a potential for false negatives, lack of sensitivity, or an inability to accurately detect the target analytes, communication between the laboratory and data user should be pursued to identify alternatives available.* For instance, procedures to decrease the matrix effect may include implementing cleanup procedures, dilution techniques, smaller sample size processed, etc. However, consequences to the data (i.e., higher detection limits, less representative aliquot, etc.) should also be assessed against project objectives.

5.2.3.6.4.1 Method Blank Samples. One method blank sample shall be analyzed for each analytical batch (one every 12 hours for GC/MS analyses). Contamination in method blanks (as well as reagent blanks, instrument blanks, extraction blanks for elutriations, initial calibration blanks, and continuing calibration blanks) above the MDL will not be allowed. Data found to be associated with blanks containing target analytes at or above the MDL may be rejected with re-sampling and/or re-extraction and reanalysis at the expense of the Contractor. The USACE will evaluate the data based on the level detected in the associated samples. Chronic systematic method blank contamination will not be accepted.

Method blanks are analyzed to assess background interference or contamination that exists in the analytical system that might lead to the reporting of elevated concentration levels or false positive data. The method blank is defined as an interference-free blank matrix similar to the sample matrix to which all reagents are added in the same volumes or proportions as used in sample preparation and carried through the complete sample preparation, cleanup, and determinative procedures. For aqueous analyses, analyte-free reagent water would typically be used. For soil analyses, a purified solid matrix (e.g., sand) would typically be used, except for metals analyses. The results of the method blank analysis are evaluated, in conjunction with other QC information, to determine the acceptability of the data generated for that batch of samples. Refer to Sections 5.2.3.11 and 5.2.3.8.1 for method quality objectives/corrective action scenarios for the method blank. Sample results shall not be corrected for blank contamination.

5.2.3.6.4.2 Laboratory Control Sample. The LCS is analyzed to assess general method performance by the ability of the laboratory to successfully recover the target analytes from a control matrix. The LCS is similar in composition to the method blank. For aqueous analyses use analyte-free reagent water. For soil analyses, a purified solid matrix (e.g., Ottawa sand, sodium sulfate, or other purified solid) would typically be used. However, due to the difficulty in obtaining a solid matrix, which is metals-free, analyte-free reagent water is taken through the appropriate digestion procedures for metals analyses. The LCS is spiked with all single-component target analytes (the complete target compound or analyte list) before it is carried through the preparation, cleanup, and determinative procedures. The laboratory will perform corrective action based on failure of any analyte in the spiking list. *A subset of the (single-component) target analytes containing the specific analytes of interest can be substituted for the full list of target analytes if specified in project-specific contracts or work plans. When multi-component target analytes are reported, a separate LCS may be necessary if specified by project documents. For Method 8082, the LCS must be spiked with at least one PCB (e.g., 1016/1260 mixture), any project-specified PCBs, or all congeners to support the LCS evaluation.* The use of solid standard reference materials (SRMs) as the LCS is discouraged for they do not typically include all target analytes, and the acceptance limits associated with them are wide -- due to the heterogeneity of the spiked matrix. Suggest instead the use of an interference-free matrix (e.g., purified solid, or sodium sulfate). When samples are not subjected to a separate preparatory procedure (i.e., purge and trap VOC analyses, or aqueous Hg analysis), the CCV may be used as the LCS, provided the CCV acceptance limits are used for evaluation. *The spiking levels for the LCS would normally be set at the project-specific action limits assuming that the low standard used for the initial calibration was below this limit. If the low standard used was at this limit or if the site action levels were unknown, then the spiking levels would be set between the low and mid-level standards.* The results of the LCS are evaluated, in conjunction with other QC information, to determine the acceptability of the data generated for that batch of samples. Refer to Section 5.2.3.11 for method quality objectives/corrective action scenarios for the LCS. The laboratory shall also maintain control charts, or tables for these samples to monitor the precision and bias for the method as outlined in Section 5.2.3.8.1 and 5.2.3.11. The precision may be evaluated by comparing the results of the LCS from batch to batch or by duplicate LCSs. Duplicate LCSs within the same batch are not required, but recommended by the USACE.

5.2.3.6.4.3 Matrix Spikes. The matrix spike (MS) is used to assess the performance of the method as applied to a particular project matrix. A MS is an environmental sample to which known concentrations of certain target analytes have been added before sample manipulation from the preparation, cleanup, and determinative procedures have been implemented. *Reference project-specific documents for the contaminants of concern, guidance presented below, or the preparatory and determinative methods to determine target analytes to include within the MS spiking solution.* If no information is available, the entire target analyte list will be spiked within the MS. The laboratory will perform corrective action based on failure of any analyte in the spiking list. The spike concentrations of the target analytes would normally

be set at the same level as the LCS. *If target analytes were known to be present in samples from a given site, then the spiking level should be adjusted to a concentration that is approximately two to four times the concentrations of the original target analytes.* For solid samples, care should be taken to ensure that the original field sample is properly divided into homogeneous fractions when allowed by the method. *Aqueous samples require the submittal of an additional sample for several chemical parameters, especially organic analyses. Therefore, the sample to be used for the MS should be based on project-specific DQOs and specified in the field to ensure that sufficient sample is available to perform the test.* From the laboratory perspective, preparation batches require MS frequency at one per preparation batch. The merging of these MS frequencies is often difficult for the laboratory to implement.

For instance, batches consisting of samples from multiple sites may require additional MSs to meet project requirements of evaluating the samples within the batch. For a MS from one site cannot be used to evaluate the matrix effects on samples from other sites. *Projects must consider the method(s) employed, previous knowledge of the matrix, and other matrix-specific QC samples to help decide an appropriate frequency for MSs for a given project. Consequently, a MS may not be included with each shipment of samples submitted to the laboratory. Communication between project and laboratory personnel is essential.* The results of the MS are evaluated, in conjunction with other QC information, to determine the effect of the matrix on the bias of the analysis. Refer to Section 5.2.3.11 and 5.2.3.6 for method quality objectives/corrective action scenarios for the MS. *When critical decisions are based on the MS sample recoveries, control charts could be maintained for these samples to monitor the bias of the method for each particular matrix*. Sample results shall not be corrected for MS QC excursions.

5.2.3.6.4.3.1 Method ~~6010~~6020. *Unless superseded by project DQOs, it is not necessary to perform matrix spikes for Na, K, Ca, and Mg for aqueous samples; or Na, K, Ca, Mg, Fe, Mn, and Al for soil samples.* The native concentrations of these low-toxicity metals are usually relatively high.

5.2.3.6.4.3.2 Method 8081. The MS should be prepared all single-component pesticides. *Multi-component pesticides need not be included within the MS, unless required by project DQOs.*

5.2.3.6.4.4 Matrix Duplicates or Matrix Spike Duplicates. The matrix duplicate (MD) or matrix spike duplicate (MSD) is used to assess the performance of the method as applied to a particular matrix and to provide information on the homogeneity of the matrix. A MSD is a duplicate of the MS as previously described. A MD is an environmental sample that either is divided into two separate aliquots by the laboratory, or requires the submittal of an additional sample. When applicable, care should be taken to ensure that the sample is properly divided into homogeneous fractions. Both the MD and MSD are carried through the complete sample preparation, cleanup, and determinative procedures. *The requirements for the frequency of MDs or MSDs would normally be specified in the project-specific DQOs.* The normal use of these QC samples would follow the same requirements as described for the MS. *In the absence of project-specific DQOs, a MD would normally be included with each preparation batch of samples processed where target analytes were expected to be present (e.g., inorganic methods). An MSD would normally be included with each preparation batch of samples processed where target analytes were not expected to be present (e.g., organic methods).* The results of the MD or MSD are evaluated, in conjunction with other QC information, to determine the effect of the matrix on the precision of the analysis. Refer to Section 5.2.3.9.3.4 and 5.2.4.1.2B for method quality objectives/corrective action scenarios for the MD or MSD. Control charts can be maintained for these samples to monitor the precision of the method for each particular matrix if required by the project.

5.2.3.6.4.5 Surrogates Standards. Surrogates are analyzed to assess the ability of the method to successfully recover these specific non-target compounds from an actual matrix. Surrogates are organic compounds that are similar to the compounds of interest in chemical behavior, but are not normally found in environmental samples. Surrogates to use are identified within the determinative methods. Other compounds may be chosen and used as surrogates, depending on the analysis requirements, whether they are representative of the compounds being analyzed, and whether they cover the chromatographic range of interest. These compounds should be spiked into all samples and accompanying QC samples requiring GC, LC, or GC/MS analysis prior to any sample manipulation. As a result, the surrogates are used in much the same way that MSs are used, but cannot replace the function of the MS. The results of the surrogates are

evaluated, in conjunction with other QC information, to determine the effect of the matrix on the bias of the individual sample determinations. Refer to Section 5.2.3.11 for method quality objectives/corrective action scenarios for surrogates. Control charts, or tables, shall be maintained for surrogates contained within the LCS or MB to monitor the accuracy of the method for each particular matrix. Sample results shall not be corrected for surrogate excursions. Explosives analysis by Method 8330 is an exception, in that the surrogate used is actually a target compound. Care should be exercised by the laboratory with the choice of surrogate used, for the potential remains for co-elution with target analytes present within the samples. If 3,4-DNT is used as the surrogate, it must not co-elute with TNT. If it is not possible to obtain adequate resolution between 3,4-DNT and TNT, another surrogate should be chosen (e.g., 1,2-DNB).

5.2.3.6.4.6 Standard Reference Materials. The laboratory is encouraged to analyze additional natural matrix standard reference materials (SRMs) and participate in external performance evaluation (PE) programs. Sections 5.2.3.5.4 and 5.2.4.3.1 describe the requirements for PE samples.

5.2.3.6.4.7 Analysis Sequence QC Samples. Certain inorganic analyses (metals by ICP and GFAA) incorporate the following additional QC samples to assess method performance without the influence of the preparatory procedures.

5.2.3.6.4.7.1 Post Digestion Spikes (PDS). PDSs are incorporated into an analytical sequence to assess matrix effects based upon (1) the occurrence of new and unusual matrices included within the batch, or (2) contingency analysis based upon serial dilution (SD) or matrix spike (MS) failures. Duplicate injections of each environmental sample may be avoided if a post-digestion spike (PDS) is performed for each sample. PDSs are prepared by the addition of the primary source standard to the digestate for the same metals and at approximately the same concentration as is used for the MS. Refer to Section 5.2.3.11 for method quality objectives / corrective action scenarios for PDSs.

5.2.3.6.4.7.2 Serial Dilutions (SD). A 5X (1:4) serial dilution test may be performed for an analyte to evaluate matrix interference if the analyte concentration in the original (undiluted) sample is at least 50 times the MDL. SD - Matrix effects are suspected if the RPD between the undiluted and diluted result > 10%. If this criterion is not met, further confirmation of the interference via implementation of PDS is necessary when matrix interference is suspected, and the calculation of the result with MSA when matrix interference is suspected/confirmed.

NOTE: When serial dilutions are used to address matrix interference, only “best” diluted results (i.e., the lowest dilution which yielded acceptable results) need be reported. However, the reported result must be qualified (i.e., D-flag) and the dilution factor specified. The associated PQLs or MRLs must also be adjusted based on the dilution factor.

5.2.3.6.4.8 Second Column Confirmation. Second column confirmation for all GC sample analyses involving identification of discrete peaks with detected concentrations will be required at no additional charge to the government. Second column confirmation is not required for concentrations reported between the MDL and the PQL. Section 5.2.4.1.6.4.2 presents more detailed information regarding compound confirmation requirements.

5.2.3.7 Instrument Calibration and Frequency

The text shall identify all tools, gauges, instruments, and other sampling, measuring, and test equipment used for data collection activities affecting quality that must be controlled and, at specified periods, calibrated to maintain accuracy within specified limits. The text shall discuss how calibration shall be conducted using certified equipment and/or standards with known valid relationships to nationally recognized performance standards. If no such nationally recognized standards exist, document the basis for the calibration. Identify the certified equipment and/or standards used for calibration. Indicate how documentation of calibration shall be maintained and be traceable to the instrument for both field and laboratory procedures. A list of field and laboratory instrumentation (include details on manufacturer, models, accessories, etc.) procedures used for calibration and frequency of checks shall be required in the QAPP. The instrumentation and calibrations shall be consistent with the requirements of the contract and EPA-approved analytical method requirements. For laboratory methods, the text shall present for each

analytical method a tabular summary describing calibration procedures, the acceptance standard, and the required corrective action on failure.

Field instruments shall be calibrated daily or immediately before use. Failure to meet method or contract specified requirements for initial or continuing calibrations will result in rejection of data. Once a compound has been designated as linear or nonlinear by the laboratory analyst, the designation must be specified in the method SOP. All analysts must apply this standard consistently for the analyses.

Additional information regarding calibration requirements are provided in Section 4.9.2.2.

5.2.3.7.1 GC Analyses. For GC analyses the initial response factors for all calibration levels shall exhibit a relative standard deviation less than or equal to 20%. Additionally, a continuing calibration check must be performed at the beginning of a run of analyses and again after every ten analyses or at the end of the run if the run consists of fewer than ten analyses. (Please note that this requirement applies to every ten analyses not to include initial/continuing calibration checks or instrument blanks.) All analytes in the calibration check samples (ICV and CCV) must meet a standard of +/- 15% from the initial calibration. All samples must be bracketed by passing calibration check samples. Continuing calibration check samples will be compared to the response from the initial calibration and not to the response from the first calibration check of the day and must meet a standard of +/- 15%. Failure to bracket all samples with acceptable calibration checks will result in the reanalysis of affected samples. Analytical results not bracketed with passing calibration checks for all compounds will be rejected with re-sampling and reanalysis at the expense of the Contractor.

5.2.3.7.2 GC/MS Analyses. The initial calibration requirements for GC/MS analyses are well described by the methods in SW-846. Initial calibration requirements for GC/MS methods must be met for all CCCs and SPCCs. Data found to be associated with out of control calibrations will be rejected. Quantitation for GC/MS analyses (VOCs and semivolatiles) will be performed using the average response factor from the initial calibration. The continuing calibration check will only be used for comparison to the initial calibration curve. Sample results quantitated from the continuing calibration check will be rejected. Failure to bracket all samples with acceptable calibration checks will result in the reanalysis of affected samples.

5.2.3.7.3 Inorganic and General Chemistry Analyses. Calibration procedures for ICP analyses shall follow the specific protocols described in SW-846 (Update I) Method ~~6010A~~6020A. Calibration procedures for Method 7000 series analyses shall conform to the requirements of Method 7000A with the exception that both initial and continuing calibration checks shall meet a standard of +/- 10%. Initial calibrations for inorganic and general chemistry analyses must demonstrate a correlation coefficient of 0.995. The analytical run sequence for general chemistry analyses shall generally follow the same procedures as metals analyses with an initial calibration check followed by a continuing calibration blank and continuing calibration checks. All sample results must be bracketed by passing continuing calibration checks. Data found not to be in conformance with these standards will be rejected.

5.2.3.8 Quality Control Requirements

For laboratory specific procedures the text shall present for each analytical method and matrix detailed tabular summaries of all controlled QC parameters, the acceptance limit, and the appropriate corrective action to be followed on exceedance of control limits. The text shall describe the procedures to be used to calculate each of the QC statistics, including the QC checks described in the preceding paragraph as well as precision and accuracy (bias). Copies of the formulas are acceptable as long as the accompanying narrative or explanation specifies clearly how the calculations will address difficult situations such as missing data values and "less than" or "greater than" values. The text will also include a description of completeness requirements as described in Section 5.2.3.4.1.4.

5.2.3.8.1 Control Limits and Acceptance Criteria. Appropriate mechanisms, including the definition of laboratory control limits for each of these elements, shall be established to ensure that control is maintained. A specific system detailing the protocols to be followed (corrective action) in the event that any internal QC check sample does not meet laboratory acceptance criteria shall be implemented.

The QAPP shall detail specific corrective action for each controlled QC parameter (i.e., failure of surrogate recoveries for sample analyses, failure of method blanks, failure of MS/MSD or LCS for recoveries or RPD) for each analytical method and matrix. This system shall include the mechanism by which corrective action taken in the event of any non-conformance event is documented and assurance provided that the system in question remains in control. The details of this system shall be described in the QAPP.

Quality control criteria (including corrective action) are subject to approval by the CO. Failure of the Contract Laboratory to present QC criteria that are acceptable to USACE will result in directing of the Contractor by the CO to retain another laboratory for contract services.

5.2.3.8.2 Preventative Maintenance. A preventive maintenance program for all facilities and instrumentation used by the Contractor for sampling and analyses shall be presented in the QAPP. Specific details of preventive maintenance for analytical methods used for this project shall be included in the QAPP.

5.2.3.8.3 Record-Keeping. The Contract Laboratory shall maintain a bound logbook for each analytical instrument. This book serves as a permanent record documenting any routine preventive maintenance performed, as well as any service performed by external individuals such as manufacturer's service representatives. In any case, any maintenance activities must be performed by individuals qualified to perform the particular task involved. All records shall be made available for the CO's inspection upon request.

5.2.3.8.4 Performance Evaluation Samples. In addition to any performance audit samples submitted by the CO during this project, the Contract Laboratory shall be a participant in performance evaluation programs offered through agencies such as the EPA on the federal level, and other such programs offered or mandated at the state level. Performance evaluation program participation shall be detailed in the QAPP. Additionally, for each delivery order at the option of the USACE CO, blind PE samples for each matrix and analysis (PE sample to be provided by USACE) may be inserted into the sample stream. The Contractor will be required to furnish sample containers identical to those used for the field samples for this activity.

PESs are used to assess routine performance levels of laboratories. PES will be used in routine QA oversight as well as in the investigation of laboratory fraud. The use of PES sends a message to a laboratory that the client wants to assess the performance of the laboratory. The strongest message will be communicated through the use of double blind PES. The value of the incorporation of PES in the sampling effort will be determined based on DQOs during the planning stages of the project. Use of PES will be designated in the SAP based on DQOs.

A double blind PES is a sample submitted to evaluate the performance of a laboratory to perform analysis on a sample of known concentration and identity (i.e., known only to the parties submitting the PES to the laboratory). The concentration and identity of the double blind PES will not be known by the laboratory. Double blind PES labeling, packaging and chemical composition will mimic those of the routine samples to mask the identity of the sample to the laboratory. Double blind PES submitted concurrently with site samples are useful in increasing the overall level of confidence in the defensibility of data when the results submitted by laboratories fall within acceptance ranges.

The PES supplier will have a documented quality system, such as that required by ISO 9001 or equivalent. If appropriate PES is not commercially available, prepared PES will be validated with a reliable reference laboratory. Successful completion of a PES can build confidence in the use of a particular laboratory. Continuing success assures the data users of the reliability of the laboratory. Conversely, a laboratory's repeated failure with more than one contaminant and with more than one type of PES, brings into question the reliability of the laboratory. Repeated poor PES results may be a good reason for awarding the analytical contact to another laboratory when the existing contract ends.

5.2.3.9 Data Acquisition Requirements (Non-Direct Measurements)

Identify the type of data acquired from non-measurement sources such as computer databases, spreadsheets, and programs, and literature files. Define acceptance criteria for the use of the data in this project. Discuss any limitations on the use of the data based on uncertainty in the quality of the data and discuss the nature of that uncertainty.

5.2.3.10 Laboratory Quality Control Procedures

Laboratory overall method performance shall be monitored by the inclusion of various internal quality control checks which allow an evaluation of method control (batch QC), and the effect of the sample matrix on the data being generated (matrix-specific QC). Batch QC is based on the analysis of a laboratory control sample to generate accuracy (precision and bias) data and method blank data to assess the potential for cross contamination. Matrix-specific QC shall be based on the use of an actual environmental sample for precision and bias determinations from the analysis of matrix spikes, matrix spike duplicates, matrix duplicates, and surrogate spikes, etc. Site-specific PE samples could also be used, if available. The overall quality objectives are to implement procedures for laboratory analysis and reporting of data that are indicative of the degree of quality consistent with their intended use. *Method quality objectives, given as QC sample acceptance limits and ranges may be default values established within this guidance, or may be based upon project DQOs.* Laboratory generated control ranges are also used for an internal evaluation of method performance and control. *Variances from any of these target ranges, would result in the implementation of appropriate corrective measures and an assessment of the impact on the usability of the data in the decision making process.*

5.2.3.11 Method Quality Objectives and Corrective Actions

When errors, deficiencies, or out-of-control situations exist, the laboratory's QA program shall include a system of QC activities that measure the system performance to verify that they meet stated requirements and objectives. When the analytical system performance does not meet defined standards, the laboratory shall employ systematic procedures, called 'corrective actions', to resolve problems and restore proper functioning to the analytical system(s). Laboratory personnel are alerted that corrective actions are necessary when: (1) QC data are outside the method quality objectives for precision and bias; (2) blanks or laboratory control samples contain contaminants above acceptable levels; (3) undesirable trends are detected in spike recoveries or RPD between duplicates; (4) there are unusual changes in method detection limits; (5) deficiencies are detected by the QA department during internal or external audits or from the results of PE samples; or (6) inquiries concerning data quality are received from a project manager. Corrective actions are often handled at the bench level by the analyst, who reviews the sample preparation procedures for possible errors, checks the instrument calibration, spike, and calibration mixes, instrument sensitivity, and so on. If the problem persists or cannot be identified, the matter is referred to the laboratory supervisor, manager, or QA department for further investigation. *Poor performance by the laboratory may result in payment penalties or work being repeated at the contractor's expense. Once resolved, full documentation of the corrective action procedure shall be filed with the project-specific records.* The following identifies method quality objectives and the corrective actions necessary. When qualification of data is necessary (e.g., flagging), refer to Section 5.2.5 for details on flagging conventions. The following shall be required in the absence of project-specific requirements:

5.2.3.11.1 Incoming Samples. Problems noted during sample receipt shall be documented on an appropriate form (the 'Cooler Receipt Form'). *The project manager or appropriate technical personnel shall be contacted immediately for problem resolution. Minor temperature nonconformances may be allowed for samples transported short distances (less than 4 hours) from the project site to the laboratory. These criteria will be stipulated in the project QAPP.*

5.2.3.11.1.1 Sample Holding Times. *If samples cannot be prepared or analyzed within the method required holding times, the project manager or appropriate technical personnel, shall be immediately notified, such that an appropriate corrective action plan can be generated If holding times are exceeded and results reported, the resulting data shall be flagged, and a discussion of the impact included within the case narrative.*

5.2.3.11.2 Instrument Calibration. Sample analysis shall not be allowed until all initial calibrations, initial calibration verifications, and instrument blanks meet the appropriate requirements. All continuing

calibration verifications that do not meet method requirements shall result in a review of the calibration, rerun of the appropriate calibration standard for the failed analytes, and, if necessary, reanalysis of all samples affected back to the previous acceptable continuing calibration verification check for the target analytes that failed. Continued failure of the CCV shall result in the construction of a new initial calibration curve followed by the reanalysis of all samples affected. *If results are reported when a calibration criterion has been exceeded, then all results reported shall be flagged, and a discussion of the impact included within the case narrative.* Instrument blanks should be implemented as outlined in the prescribed method.

5.2.3.11.3 Method QC Samples. Each preparatory batch and analysis sequence must include the appropriate batch and matrix-specific QC samples and standards: i.e., method blanks, laboratory control samples, matrix spikes, matrix duplicates, matrix spike duplicates, surrogate spikes, and other method specified QC. *All QC shall meet the appropriate project-specific method quality objectives and associated corrective actions.* In the absence of such criteria or actions, the corrective actions as described below shall be required. Failure of method QC shall result in the review of all affected data. If no errors can be noted, the affected sample(s) may need to be reanalyzed or re-prepared and reanalyzed within method holding times, if possible. *All re-preparation and reanalysis necessary due to method failure shall be performed at no cost to the government. If the situation is not corrected, and results reported, then the corresponding data shall be flagged, and a discussion of the impact included within the case narrative. The project manager or appropriate technical personnel shall be notified as soon as possible to discuss possible corrective actions should unusually difficult sample matrices are encountered.*

5.2.3.11.3.1 Method Blanks. The following criteria shall be used to evaluate the acceptability of the method blank data if project DQOs do not specify otherwise: The concentration of all target analytes shall be below the MDL check sample (approximately two times MDL) concentration for each target analyte, or less than 5 percent of the sample result for the same analyte, whichever is greater for the MB to be acceptable. When this criterion is exceeded, corrective action should be taken to find/reduce/eliminate the source of this contamination in the method blank. However, sample corrective action may be limited to qualification for blank contamination (i.e., B-flag). When the concentrations of any target analytes within the MB are above the MDL check sample for the majority of target analytes or above the PQL for target analytes known to be common laboratory contaminants, assess the effect this may have had on the samples. If an analyte is found only in the method blank, but not in any batch samples, any further corrective action may not be necessary. Steps shall be taken to find/reduce/eliminate the source of this contamination in the method blank. The case narrative should also discuss the situation. If an analyte is found in the method blank and some, or all, of the other batch samples, additional corrective action is required to reanalyze the method blank, and any samples containing the same contaminant. If the contamination remains, the contaminated samples of the batch would be re-prepared and reanalyzed with a new method blank and batch specific QC samples. Sporadic cases of contamination may be difficult to control; however, daily contamination would not be acceptable.

5.2.3.11.3.2 Laboratory Control Samples. *The LCS is evaluated by comparing the percent recovery for all of the target analytes to the recovery method quality objectives as determined by project-specific DQOs, or the default ranges established in this guidance.* If target analytes are outside the acceptance windows, corrective action is required. Project DQOS will dictate the corrective actions necessary. Initially, the effect the QC failure has on the samples should be evaluated. Regardless of this assessment, steps shall be taken to find the source of the problem and correct it. The case narrative shall discuss the corrective action taken and any other information. Typically, the LCS would be reanalyzed for the failed analytes only. If the second analysis fails, then the LCS, method blank, and all associated samples of the batch would be re-prepared and reanalyzed for the failed analytes only.

If sufficient sample is not available for re-preparation and reanalysis or if the corrective action is ineffective, the sample results reported within that batch shall be flagged accordingly (R-flag), and a discussion of the impact included within the case narrative. When there are multiple (>5) target analytes reported, the acceptance criteria might allow for the sporadic marginal failure of a few target analytes included within the LCS without requiring reanalysis of the entire batch. Reference Section 4.9.3 and

Tables 4-7 through 4-14 for information on the number of sporadic failures allowed and the method-specific marginally-expanded acceptance criteria to be applied.

5.2.3.11.3.3 Matrix Spike Samples. *The MS is evaluated by comparing the recovery for target analytes to the recovery windows established within project documents, or those established in Tables 4-7 through 4-14.* MS data evaluation is more complex than method blank or LCS data evaluation since MSs measure matrix effects in addition to sample preparation and analysis errors. The heterogeneity of soil, grab samples, and sequentially collected water samples further complicate the evaluation since matrix-specific bias assumes that the native concentrations in the duplicate analyses are constant. In addition, concentrations of the target analytes in the sample can also far exceed the spike amounts added, lending the resulting recoveries invalid. MSs that fail to meet the appropriate acceptance criteria would indicate that a potential matrix effect is present. If the native concentration of target analytes in the sample chosen for spiking is high relative to the spiking concentration, the differences in the native concentration between the unspiked sample and the spiked samples may not be significant, making the bias measures unrepresentative of the true method and matrix performance. *For this reason, if the native concentration is two or more times the spiking level, corrective actions would be based on project DQOS.* Regardless, steps should be taken to find the cause failure and corrective actions taken to remedy it. If possible, respike the sample as outlined below at a higher level (e.g., at two to four times the sample concentration), then reanalyze the sample based on project-specific requirements. A review of the MSD result, if available, may confirm the matrix effect, if it is the same direction and same order of magnitude. If the native concentration is low, and the MS/MSD recoveries confirm matrix interference, reanalyze the MS/MSD sample/extract after employing cleanup procedures (organic analyses) or dilution techniques to minimize matrix interference. *If the matrix effect cannot be resolved, discuss the impact on the data within the case narrative.*

5.2.3.11.3.3.1 Inorganic Analyses. Corrective action for unacceptable MS recoveries for ICP and GFAA analyses shall include implementation of a PDS from the same sample that the MS was prepared. In that way, information is obtained to identify whether matrix interference is occurring during the digestion or analytical procedures. Refer to Section X for guidance on the evaluation of MS in conjunction with the PDS.

5.2.3.11.3.3.2 Organic Analyses. When there are multiple (>5) target analytes reported, the acceptance criteria may allow for the sporadic marginal failure of a few target analytes included within the MS without requiring reanalysis. When only a subset of target analytes is included in the MS, allow only one (1) sporadic marginal failure. Reference Section 4.9.3 and Tables 4-7 through 4-14 for information on the number of sporadic failures allowed and the expanded acceptance criteria to be applied.

5.2.3.11.3.4 Matrix Duplicate and Matrix Spike Duplicate Samples. The MSD is evaluated using the same bias criteria as described for the MS. *The MD or MSD is evaluated by comparing the precision for all target analytes to the windows as determined by project-specific DQOs, or as stated herein.* These criteria should only be applied to concentrations of target analytes that are above each analyte's PQL. MDs or MSDs that fail to meet the appropriate acceptance criteria would indicate that a potential matrix effect is present. Corrective actions shall be performed as described for the MS.

5.2.3.11.3.5 Surrogates Standards. *A surrogate is evaluated by comparing its recovery in each sample to the windows as determined by project-specific DQOs, or as stated within Tables 4-9 through 4-14.* Surrogate spikes in matrix-specific samples that fail to meet the appropriate acceptance criteria would indicate that a potential matrix effect is present. If significant non-target interference occurs, corrective action shall include implementing additional cleanup procedures, and re-analyses. *If this does not reduce the interference, discuss the impact on the data within the case narrative. Recommendations to the client may include method modifications, such as re-preparation and reanalysis with smaller sample aliquots to reduce the effects of the matrix.* The consequences to detection limits must also be considered in this instance. Surrogate failures in method blanks or laboratory control samples are indicative of a general method failure and should be thoroughly investigated as noted in Sections 5.2.3.9.3.5 and 5.2.4.1.2C, respectively.

5.2.3.11.3.6 Post Digestion Spike Samples. Default recovery control limits for the PDS is noted on Tables 4-7 through 4-8. Similar to the MS, if historic data or information on native sample concentrations is available, the MS or PDS should be spiked at a concentration at least twice the native sample concentration for the following evaluation to be considered valid. Professional judgment should be used to determine the corrective action necessary when the MS recovery for as analyte fails but the PDS recovery passes. *For instance, when the MS recovery fails because it falls below the lower control limit but the PDS recovery passes, confirmatory re-digestion and reanalysis may not be required if allowed by project DQOs.* When both the MS and PDS indicate matrix interference is present, the laboratory must attempt to correct for the interference by the use of method of standard additions, an internal standard technique for ICP (e.g., with yttrium), use of a different matrix modifier for GFAA, or different digestion or analytical procedure to achieve a representative result, before qualifying the sample for matrix interference. This does not apply to sporadic failures but rather to target analytes exhibiting out of control recoveries on consecutive batches. Also, verify overall batch control for the analysis by evaluation of the LCS.

5.2.3.11.4 Calculation Errors. Reports shall be reissued if calculation or reporting errors are noted with any given data package. The case narrative shall clearly state the reason(s) for re-issuance of the report.

5.2.3.11.5 On-site Audits. A corrective actions report shall be required that addresses any deficiencies noted during audits conducted. *If corrective actions are needed for major deficiencies that would affect data quality, the laboratory should notify the USACE of other projects that may be affected.*

5.2.4 Assessment and Oversight

The following sections describe the assessment and oversight requirements for USACE HTRW projects.

5.2.4.1 Contractor Quality Control. The text shall address the responsibilities of <u>all</u> project personnel as they relate to the quality management function and describe the integration of the corporate quality assurance program into the execution of quality control operations for project asks related to sampling and analysis. Key personnel must be identified along with their function and qualifications. The text shall address specific Contractor procedures for control of the quality of work of subcontractors utilized for drilling, well installation, geophysics, etc. In particular, the text should address Contractor control mechanisms in relation to the quality of work performed by the Contract Laboratory. The text shall acknowledge and describe implementation of the three-phase control system for all aspects of the work specified as applicable to sampling and analysis. (Appendix H of EM 200-1-3 contains a discussion of the implementation of the three-phase control system for environmental sampling and analytical projects.) The discussion of Quality Control in the SAP should focus on field procedures while the discussion presented in the QAPP should focus on field, laboratory, and general CQC. The QAPP shall describe QC procedures that should be associated with each sampling, analysis, or measurement technique. At a minimum for field procedures, the text shall include the checklists detailing quality control procedures associated with the three-phase control system. Applicable checklists for laboratory and field audit procedures shall be incorporated directly into the SAP in Contractor QC section. Examples of this type of checklist can be found in Appendix H of EM 200-1-3. <u>If the discussion of CQC in the CDQMP references sections presented in the general CQC Plan the relevance to activities related to sampling and analysis presented in the general plan must be clear and unambiguous</u>. The sections describing Contractor Quality Control (CQC) procedures shall address the following topics:

A description of the quality control organization including acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a Program Chemist who shall report to the overall contract manager, Program Contractor Quality Control Systems Manager, or someone higher in the Contractor's organization. Contract manager in this context shall mean the individual with responsibility for the overall management of this contract including quality and production. Delivery order specific Sampling and Analysis Plans should include the designation of the Project Quality Control Systems Manager, Project Chemist, and all other personnel involved in the quality control organization as implemented for work on specific delivery orders.

Note: In aspects of work related to sampling the Project Chemist shall have equal responsibilities for the quality assurance function relative to the Project QC Systems Manager. In aspects of work related to sample analyses the Project Chemist shall have lead responsibility for the quality assurance function. The Program Chemist shall provide quality assurance oversight on the work of the Project Chemist as well as having overall responsibility for implementation of the chemical data quality management program for this contract.

The name, qualifications, duties, responsibilities, and authorities of each person assigned a CQC function related to sampling and analysis. The text shall include resumes for all non-laboratory Contractor personnel to include the Contractor Program Manager, Contractor Project Manager, Contractor Quality Control Systems Manager, Contractor Program Chemist, Contractor Project Chemist, and Contractor Technical Professionals directly involved in execution of work for this project. If staff changes are necessary during the execution of this work resumes shall be submitted for, new personnel as well as a description of their responsibilities in a technical memorandum to the USACE CO. Changes in the responsibilities of existing staff (if any) will also be described in technical memoranda prepared for this purpose.

A copy of the letter to the Program Chemist for activities related to sampling and analysis signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the Program Chemist, including authority to stop work related to sampling and analysis which is not in compliance with the contract will be included in the text of the CDQMP. For specific delivery orders the Program Chemist shall issue letters of direction to the Project Chemist(s), including authority to stop work related to sampling and analysis which is not in compliance with the contract. Copies of these letters shall be included in the CDQMP and SAP as applicable.

Procedures for scheduling, reviewing, certifying, and managing submittals. Submittals in this context refers to all project specific work plans, sampling and analysis plans, final investigation reports, data submittals, quality control summary reports, etc. The text of the CDQMP shall describe the organization and documentation required by the Contractors internal quality control review process. At any time, the USACE CO may request copies of documentation (internal review comments as well as the review ladder) of the Contractors internal quality control review process for project specific submittals.

Procedures for tracking preparatory, initial, and follow-up control phases and control verification.

Procedures for tracking field and laboratory deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.

A list of the definable features of work shall be provided. A definable feature of work is a task, which is separate and distinct from other tasks and has separate control requirements. It could be identified by different trades or disciplines, or it could be work by the same trade in a different environment. The three-phase quality control system shall be implemented for each definable feature of work.

5.2.4.2 Three-Phase Quality Control. The three-phase control system, and all attendant reports will be implemented by the Contractor and by major sub-contractors <u>including the Contract Laboratory</u>. Minutes of preparatory, initial, and follow up inspections and meetings held at the Contract Laboratory will be delivered to the USACE CO as well as minutes of meetings held at field sites.

The minutes of initial, preparatory, and follow up inspections will be signed by all participating personnel. The Project Chemist and other Contractor personnel may participate in meetings held at the Contract Laboratory by teleconferencing. The Project Chemist is required to participate in preparatory and initial meetings at the Contract Laboratory. Follow-up inspections may be conducted by Contract Laboratory personnel with involvement of Contractor personnel as required. This requirement will be acknowledged in the QAPP and in the SAP.

5.2.4.2.1 Preparatory Phase. This phase shall be performed prior to beginning work on each definable feature of work and shall include:

a. A review of each paragraph of applicable specifications from the contract specifications, FSP, QAPP, and SAP.
b. A review of the site diagrams detailing locations where samples are expected to be obtained.
c. A check to assure that all materials and/or equipment are acceptable for use.
d. A check to assure that provisions have been made to provide required control inspection and testing.
e. Examination of the work area to assure that any required preliminary work has been completed and is in compliance with the SOW.
f. A review of the appropriate activity hazard analysis or Site Specific Health and Safety Plan to assure safety requirements are met.
g. Discussion of procedures for execution of work including repetitive deficiencies. Document performance standards for that phase of work.
h. The Government shall be notified at least 72 hours in advance of beginning any of the required action of the preparatory phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the Project Chemist, Project Manager, and other CQC personnel (as applicable). The results of the preparatory phase actions shall be documented by separate minutes prepared by the QC System Manager and attached to the Daily Quality Control Report. The Contractor shall instruct applicable workers as to the acceptable level of performance required in order to meet the requirements of the contract specifications.

These requirements will be detailed in the QAPP and in the SAP in Section 5.4.11, as applicable to sampling and analysis operations. This information must be reviewed by each new field crew on site during execution of the work.

5.2.4.2.2 Initial Phase. This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

a. A check of preliminary work to ensure that it is in compliance with SOW, FSP, and QAPP requirements. Review minutes of the preparatory meeting.
b. Verification of full contract compliance. Verify required control inspection and testing.
c. Establish levels of performance and verify compliance with minimum acceptable performance standards.
d. Resolve all differences.
e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
f. The Government shall be notified at least 72 hours in advance of beginning any of the required action of the initial phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the Project Chemist, Project Manager, and other CQC personnel (as applicable). The results of the initial phase actions shall be documented by separate minutes prepared by the QC System Manager and attached to the Daily Quality Control Report. The Contractor shall instruct applicable workers as to the acceptable level of performance required in order to meet the requirements of the contract specifications.
g. The initial phase should be repeated for each new crew to work on-site, any time acceptable specified quality standards are not being met, or when modifications to the SOW impact existing Contractor procedures.

These requirements will be detailed in the QAPP and in the SAP in Section 5.4.11 as applicable to sampling and analysis operations.

5.2.4.2.3 Follow-up Phase. Daily checks shall be performed to assure continuing compliance with contract requirements until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work, which may be affected by the deficient work.

These requirements will be detailed in the QAPP and in the SAP in Section 5.4.11 as applicable to sampling and analysis operations.

5.2.4.2.4 Additional Preparatory and Initial Phases. As determined by the Government, additional preparatory and initial phases may be required at no additional expense to the government on the same definable features of work if the quality of on-going work is unacceptable, if there are changes in the applicable CQC staff, on-site supervision or work crew, if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

These requirements will be detailed in the QAPP and in the SAP in Section 5.4.11, Contractor Quality Control, as applicable to sampling and analysis operations.

5.2.4.3 Monitoring Laboratory Performance Over time Using Follow-up Audits
After passing the pre-award on-site audit the project, laboratories must be managed by the Primary Contractor. If laboratory work is subcontracted by the primary contractor for the project, the Contract Laboratory subcontract specifications will be developed that explicitly include the execution of primary contractor quality control oversight activities.

If the pre-award on-site audit revealed significant laboratory deficiencies, follow-up audits will be performed at the discretion of USACE and the Primary Contractor to ensure that corrective measures have taken place to sufficiently address the deficiencies and to ensure data quality requirements are being met. Follow-up audits will focus heavily on project specific data. They will incorporate the review and tracking of raw data from the original measurements through the generation of a final report. Audits normally will require some regeneration of raw data from electronic files to verify the integrity of this process. If significant problems are found through periodic audits, a stop work order or contract cancellation could result.

5.2.4.3.1 Use of Phased Audits for Monitoring Laboratory Performance
The implementation of a two-phase audit and check system is a method for oversight of contract laboratory operations. A two-phase check involves a system of pre-award on-site audit and follow-up inspections with attendant documentation for control over data quality and processes relevant to contract requirements. Audits planned for project activities shall be addressed in the project-specific SAP. MRD validation and agency audits do not preclude the need for project-specific audits.

5.2.4.3.1.1 Pre-Award On-Site Audit
These audits include review of project initiation systems, laboratory sample handling and tracking procedure, sample analysis procedures, routine quality control checks, data handling and reduction, data and report review systems, data storage, electronic data handling, reporting, and storage, personnel qualifications and training, corrective action systems, standards control, document control, waste handling and disposal, and the laboratory ethics training.

Highly specific project requirements, such as calibration criteria, sensitivity check samples, matrix spiking levels, data validation criteria, and PE sample acceptance criteria will be in place prior to the start of the project these criteria shall be documented in the project-specific SAP.

A thorough systems audit will be performed covering project specific analyses, prior to the approval of the laboratory service agreement. In a thorough audit there will normally be some areas identified that need improvement. If pervasive problems are found during a pre-award audit, the laboratory will not be awarded a project until their systems have been brought up to the standards required by the lead agency or primary contractor. Professional judgment has been applied when determining whether the laboratory will be contracted using historical information. Laboratory performance history, age, source of information, and analyses performed have been considered when using existing reports. The existing reports and pre-screening information reviewed will be documented and provided in the CDQMP.

5.2.4.3.1.2 Audit Reports

A report summarizing audit findings will be generated by the Primary Contractor following each audit. Laboratories will be expected to respond promptly to all audit findings (less than four weeks). The audit reports shall contain audit criteria, areas evaluated, and specific findings. The laboratory's audit response shall contain the audit findings, their response to the audit finding, schedule implementation (as necessary), and backup information (as necessary). The audit process from site visit to final resolution should not be allowed to progress over an extensive period of time. In addition, the contractor shall provide a schedule for follow up to verify resolution and determine the laboratory's capability to meet the project requirements to the USACE.

5.2.4.3.1.3 Using Follow-up Audits

After passing the pre-award on-site audit the project, laboratories must be managed by Primary Contractor. If laboratory work is subcontracted by a primary contractor for the USACE, the laboratory subcontract specifications will be developed that explicitly include the execution of primary contractor quality control oversight activities.

If the pre-award on-site audit revealed significant laboratory deficiencies, follow-up audits will be performed at the discretion of USACE and the Primary Contractor to ensure that corrective measures have taken place to sufficiently address the deficiencies and to ensure data quality requirements are being met. Follow-up audits will focus heavily on project specific data. They will incorporate the review and tracking of raw data from the original measurements through the generation of a final report. Audits normally will require some regeneration of raw data from electronic files to verify the integrity of this process. If significant problems are found through periodic audits, a stop work order or contract cancellation could result.

5.2.4.4 Assessments and Response Actions.

The text of the QAPP shall identify the number, frequency, and type of assessment activities to be executed for this project. Assessments to be conducted by the Contractor during the execution of delivery orders shall include but are not limited to surveillance, peer review, management systems review, readiness review, technical systems audit, performance evaluation, audit of data quality, and data quality assessment. The text shall discuss the information expected from the assessment and success criteria (i.e., goals, performance objectives, acceptance criteria specifications, etc.) for each type of assessment required. For each assessment, list the approximate schedule of activities, and discuss the information expected from the assessment and the criteria for success. For any planned self assessments (utilizing personnel from within the project groups), identify the participants and their exact relationship within the project organization. For independent assessments, identify the organization and person(s) that will perform the assessments. Discuss how and to whom the results of the assessments will be reported. Define the authorities of the assessors. For example, if the assessors should order a work suspension upon finding a significant condition, this section delineates clearly their authority to do so. Define explicitly the unsatisfactory conditions under which the assessors are authorized to act. Recognizing that assessments may be needed at any time during the project, provide a schedule for the assessments to be performed.

Discuss how response actions to non-conforming conditions will be addressed and by whom. Identify who is responsible for implementing the response action. Describe how response actions will be verified, validated, and documented.

5.2.4.5 Electronic Data and Table Audits

Data tracking audits will be preformed by the contractor on a routine basis, specified in the CDQMP. These audits focus on project-specific data. They incorporate the review and tracking of raw data from the original measurements through the generation of a final report. Regeneration of raw data from electronic files is required to verify the integrity of this process. If significant problems are found through periodic audits, a stop work order or contract cancellation could result.

5.2.4.5.1 Laboratory Internal Tape Audits

Project laboratories periodically audit their electronic data to verify that the procedures are being followed. In cases where problems are indicated from other quality assurance measures, such as systems audits or PES, electronic data audits will target the areas of concern. The audit will result in a report that includes

description of the tapes inspected, the date of the audit, the person performing the audit, any findings or problems observed, recommended corrective actions, and recommended frequency of future audits ("Good Automated Laboratory Practices"). Any findings that may affect data quality or data integrity will be reported to the laboratory management. Any findings that are verified to affect data quality or data integrity will be reported to USACE and the Primary Contractor.

5.2.4.5.2 Independent On-site Audits

During any pre-award or follow-up audit, an independent on-site audit will be performed. While it cannot be as detailed as either an internal audit program or an off-site external audit program, it is important as a QA tool to verify that the laboratory's internal program is effective.

As a first step, laboratory auditors will review the information from the internal electronic data audit program. Once this is complete, the auditor will choose some data packages and enlist the laboratory's assistance in finding the associated logbooks. The logbooks will be reviewed to see if any files were documented to require manual changes to the original results. If so, these files will be reviewed to verify that the manual changes were based on technically sound judgment, and that the results in the electronic file are the same as the results on the hard copy report or the hard copy files. A number of files that are not documented as requiring manual changes will also be inspected. The laboratory personnel will be asked to regenerate the original data. It will be inspected for manual changes, and be compared to the hard copy report or files.

This kind of on-site audit cannot verify fraud, nor would it detect certain types of inappropriate data manipulation, but it can only help to assess the effectiveness of the laboratory's internal electronic data audit program. Significant discrepancies found during this process would indicate that either the laboratory's program is weak or that there may be a more pervasive data integrity problem. In a pre-award audit, either conclusion will be sufficient to eliminate the laboratory from further consideration, and in a follow-up audit, it could result in a stop work order or contract cancellation.

This type of on-site audit will also encourage the development of strong internal audit programs throughout the laboratory industry. If the ability to acquire work is dependent upon an effective internal electronic audit program, then these programs will become a priority for laboratory managers.

5.2.4.5.3 Independent Off-Site Electronic Data Audits

Off-Site electronic audits will be performed whenever other measures indicate the need based on laboratories practices. Independent off-site electronic data audits are by far the most rigorous form of electronic data audits. These audits can be a definitive tool in identifying gas chromatography (GC) and gas chromatography/mass spectrometry computer fraud. These have been the most frequently detected categories of laboratory data fraud.

Off-site electronic data audits have been the tool of choice to definitively identify computer data fraud, and have been crucial as evidence in convicting laboratories of computer fraud. They have been used to detect fraudulent reporting of DFTPP and BFB tuning compound results, calibrations, surrogate recoveries, internal standard areas, and under reporting of target compound concentrations where the laboratory was required to dilute and re-analyze highly contaminated samples. While these audits require considerable expertise on the part of the auditor, they can detect a wide variety of inappropriate data manipulations. When data fraud is suspected, electronic data audits will be required to determine the extent to which the data fraud affected data quality. In doing this, the electronic data audits can salvage critical environmental data.

An independent off-site electronic data audit program can help to deter computer fraud. Laboratory managers who are aware that their data is likely to undergo this level of scrutiny will be more likely to institute effective internal data handling procedures and an internal audit program. However, any questionable practices revealed through this type of audit have already affected some quantity of environmental data. The laboratory internal audits and the on-site pre-award audits can detect the potential for data fraud before a contract has been signed and before any samples have been collected. It is

important, therefore, to use all three of these tools in conjunction with each other. A laboratory will not be put under contract unless it has an internal program that is verified to be effective through an on-site audit. The independent off-site audits may be used as a periodic oversight tool and in cases where inappropriate data handling is suspected.

5.2.4.6 Reports to Management
The text of the QAPP shall identify the frequency, content, and distribution of reports issued to inform management of the status of the project, results of performance evaluations and system audits, results of periodic data quality assessments, and significant quality assurance problems and recommended solutions. The text shall identify the responsible persons that will prepare the reports and the recipients of the reports. Reports to management required by these specifications include but shall not be limited to minutes of preparatory, initial, and follow up inspection reports associated with three phase control, reports of assessment activities described in 5.2.4.6, Daily Quality Assurance Reports, Quality Control Summary Reports, Non-Routine Occurrences Reports, and the Data Report to the QA Lab.

5.2.5 Data Validation and Usability
The data validation strategy must be established at the beginning of the project and documented in the QAPP, and be consistent with project DQOs. The criteria for data validation must be specified for analytical parameters including screening level data, natural attenuation parameters and bioremediation parameters. Twenty percent (10% of primary and all QA data) will be validated by an independent third party, i.e., someone unassociated and without any interest with the laboratory. Data validation is a systematic process for reviewing a body of data against a pre-established set of quality control "acceptance" criteria to determine whether it is within the criteria windows to determine the quality of the data. Where data do not meet the "acceptance" criteria, they are flagged with a qualifier identifying the associated problem. Data validation will occur as soon as the data is received by the Primary Contractor. The most critical analyses have been scheduled for accelerated turn-around-time from the laboratory. This will allow for corrective actions to take place early in the analytical process. After validation, the data is assessed to determine if it is adequate for its intended purpose and the data user will have data of known quality. Data Validation is covered in Section 5.2.5.2. The flagging conventions are presented in Tables 5-1 through 5-4.

5.2.5.1 Data Review, Validation, and Verification Requirements
In all cases field and laboratory data shall be reviewed for quality, accuracy, and completeness. As applicable to the circumstance and as in specified in specific delivery orders varying levels of data review/validation may be required. The minimum level of data review/validation for analytical chemistry data that will be required in all cases is described in Section 5.8. Requirements for more comprehensive review and validation of data may be described in individual delivery orders. This may include preparation of CLP type data validation reports.

The Contractor shall be prepared to execute all data review and validation requirements necessary within this range and shall describe capabilities and applicable procedures consistent with the requirements of these specifications to accomplish this activity in the CDQMP. For specific delivery orders the Contractor may be required to sub-contract data review/validation such that this activity is performed independently relative to the organization that is generating the data. The text of the QAPP shall describe the criteria used to review and validate data in an objective and consistent manner. The text shall present criteria applicable to field and laboratory data. Examples of any forms or checklists to be used by the Contractor for this purpose shall be included. The text shall describe any calculations that will be needed to prove or disprove the project objectives.

Note: If data review/validation is sub-contracted the name and qualifications of the selected sub-contractor shall be submitted to the USACE Contracting Officer for approval. At any time, the CO may direct the Contractor to select an alternate sub-contractor if the initial designee is found to be unacceptable. No additional cost over the amounts negotiated in the delivery order will be paid by the Government if the initially selected sub-contractor is rejected due to performance failure.

5.2.5.2 Validation and Verification Methods

The text shall describe the process to be used for validating and verifying data, including the chain of custody for data throughout the life cycle of the project or task. Methods for validation of field and laboratory data shall be included and shall be consistent with the National Functional Guidelines for Organic and Inorganic Data Review as applicable to SW-846 analyses. These methods shall be presented as tabular summaries providing explicit descriptions of the data validation criteria, methods, qualifier flags to be used (J, R, etc.), and bias designation. The text shall also provide an explicit description of the processes used for verification of information contained in boring logs, field notes, and field sampling records as applicable. Discuss how issues shall be resolved and the authorities for resolving such issues. The text shall describe how the results are conveyed to data users. At a minimum the review of field data shall include checks of the following as applicable: transcription errors, transmittal errors, QC data, detection limits, instrument calibration, accuracy of sampling records such as groundwater sampling field data sheets, performance evaluations, technical systems audits, contract compliance issues (e.g., holding times), and statistical data treatments such as tests for outliers.

It is important to note the following flagging conventions: 1) data is not qualified for QC failures when the spiking standards are diluted out of the sample to quantitate detectable concentrations, 2) if the PQL check standard fails to meet the 20% criteria, the reporting limit for the associated samples should be evaluated and whether the DQOs were achieved should also be evaluated. Analytical bias must also be discussed in the data validation reports.

5.2.5.3 Reconciliation with Data Quality Objectives:
The QAPP shall describe how the results obtained from the project or task will be reconciled with the Data Quality Objectives. The text shall describe how issues will be resolved and provide a discussion as to how limitations on the use of the data will be reported to decision-makers. The text shall identify the specific mechanism by which that will be used to convey assessments of precision, accuracy, and completeness for the project data.

5.3 FIELD SAMPLING PLAN

The FSP shall contain detailed comprehensive information regarding program field activities and sampling methods and requirements for the contract. The FSP will serve as a tool for reference in the site-specific SAPs.

5.3.1 Title Page and Table of Contents

Refer to Section 5.1.1 and 5.1.2.

5.3.2 Site Background

Refer to Section 5.2.2.2 and 5.2.2.3.

5.3.3 Sampling Objectives

Using the guidance referenced in Section 2.0 and the DQOs (Section 5.2.2.4), the contractor will specifically outline the various objectives in detail for this program and provide guidance for the site-specific SAPs.

5.3.4 Sample Location and Frequency

The contractor will describe the sample locations and frequency in general for the program. The requirements for collection of QA/QC and PE samples will be specified. The site-specific SAPs will present details regarding the site-specific sampling locations and frequency.

5.3.4.1 Sample Types
The FSP will contain a description of the types and purpose of the sample types described below.

5.3.4.1.1 Trip Blanks. Trip blanks are composed of purged DI water added to a clean preserved VOA vial. The trip blank accompanies sample containers from the laboratory to the field and back again to the laboratory. Trip blanks shall be prepared and submitted to the Contract Laboratory (and the QA laboratory) for each shipment of environmental samples for VOC analyses (every cooler containing VOC samples shall

contain a trip blank that shall be analyzed by the Contract Laboratory). Trip blanks shall be analyzed for all VOC analyses (including 8015B as gasoline) specified for samples in the corresponding cooler with the exception that if samples are to be analyzed for multiple VOC analyses covering the same analyte list the trip blanks shall be analyzed only for the method incorporating the lowest PQL.

5.3.4.1.2 Quality Control (QC) Samples. Quality Control samples (duplicates, rinsates, source water, etc.) are submitted to the Contract Laboratory for the purpose of assessing Contract Laboratory precision. QC field duplicate samples will be collected as 10% of the total sampling effort. Generally QC duplicates shall be collected for the first sample and every tenth sample thereafter. If information regarding areas of particular interest at a site is available (i.e. highly contaminated areas) the distribution of QC samples may be placed at the discretion of field personnel with the concurrence of the USACE CO. QC duplicate samples shall be analyzed for the same parameters as the corresponding primary sample. Other QC samples shall be collected at a frequency based on the field sampling procedures and DQOs for the project. The frequency will be stipulated in the CDQMP and site-specific SAPs.

5.3.4.1.3 Quality Assurance (QA) Samples. QA samples are co-located split samples that are submitted to a designated QA laboratory. The QA Laboratory is a government laboratory. Results of these analyses compared to Contract Laboratory data shall be used in preparation of the Chemical Quality Assurance Report by the SPK District. QA split samples shall be generally collected as 10% of the total sampling effort. Generally, QA samples shall be collected for the first sample and every tenth sample thereafter. If information regarding areas of particular interest at a site is available (i.e. highly contaminated areas) the distribution of QA samples may be placed at the discretion of field personnel with the concurrence of the USACE CO. QA duplicate samples shall be analyzed for the same parameters as the corresponding primary sample. The specific rate of QA samples and the laboratories that QA samples shall be sent to will be directed in individual delivery orders and shall be stipulated in the site-specific SAP. Sections 5.3.2.6 and 5.2.4.1.3 describe requirements for QA samples.

5.3.4.1.4 Rinsate Samples. One rinsate sample shall be collected for each day of sampling and for each crew performing groundwater sampling during field operations. Rinsate samples shall be analyzed for all analytical methods that the primary samples are analyzed. Rinsate samples shall be performed daily for groundwater sampling activities if reusable bailers are used. If disposable bailers are utilized for sampling rinsate samples will not be required. For soil, sampling the Consultant shall propose a minimum rate of rinsate sampling. Daily rinsate samples for soil sampling will not be required for this investigation.

5.3.4.1.5 Source Water and Field Blank Samples. One source water sample shall be obtained for each lot (5 gallon container, lot #, etc.) of water that is used for rinsing. If source water is obtained from an on-site source water outlet, the frequency will be generally be once per field effort. For estimating purposes, this will be assumed to be one per day of field activities involving sampling. Field blanks shall only be performed for groundwater sampling activities involving VOC analyses. When disposable bailers are used, a bailer blank sample will be collected for each lot of bailers used.

5.3.4.1.6 External QA/QC Samples. QA/QC samples are field splits and duplicates. Duplicate/split samples to be analyzed by both the Contract Laboratory and the QA Laboratory. These samples are generally collected at a frequency of 10 percent for each matrix. The QA splits and field duplicate samples will not be performed on IDW samples. The frequency of these samples and analyses required shall be stipulated in the site-specific SAP. The Consultant shall be responsible for the collection, labeling, packing, and shipping of QA samples to the QA Laboratory. Assignment of a District QA laboratory will be arranged through the project USACE TM. The Consultant shall notify the Environmental Group Coordinator at the assigned QA Laboratory by telephone at least two weeks in advance of sample shipment (for large numbers of samples, greater than 20) and again on the day that samples are forwarded to the QA Lab. QA samples that are obtained on Friday or during the weekend shall be held in the field under appropriate preservation until delivery for the next business day can be arranged.

Samples arriving at the QA Laboratory without appropriate preservation or packaging will be rejected with re-sampling cost at the expense of the Consultant. Additionally the Consultant will be required to resample the corresponding primary sample(s) and resubmit to the Contract Laboratory.

5.3.5 Field Documentation
All field documentation shall be maintained in bound sequentially paginated notebooks. Loose leaf forms must be not be used without being bound or added to the field notebooks, as described below. Indelible ink must be used for all field documentation. Errors shall be crossed out (so as not to obliterate the original entry) with the initials and date of the person making the correction. If computer printouts or loose-leaf forms are used, the pages are taped into the logbook, taped with clear permanent tape, initialed and dated by the person responsible for the entry.

5.3.5.1 Sample Information Documentation. All information pertinent to the environmental samples, including specific field collection data, names of sampling personnel, and laboratory observations shall be recorded in permanently bound notebooks. Sample identifications shall be linked to the site where the sample originated. The Contract Laboratory shall also employ a specific information management system to assist in tracking the progress of each sample through the analytical process. The FSP shall detail procedures for documentation of field and laboratory information that are consistent with the requirements of these specifications.

A sample collection tracking table shall be generated by the contractor which contains at a minimum of the following information: field sample identification, sample type, date of collection, laboratory SDG (as available), analyses requested, laboratory, date received by laboratory, date the data packages are due, and date the data packages are received (as available). These tracking tables shall be updated daily and provided to the USACE Project Chemist in a timely manner (daily or weekly, as necessary based on the project schedule).

5.3.5.2 Preparation of Field Logbooks. The field logbook shall be bound with serially numbered pages, and assigned to a specific person who is responsible for entry of information into the logbook. The logbook will be signed and dated by this person prior to initiation of field work. All entries into the logbook will be executed by this designated person. If it is necessary to transfer the logbook to alternative personnel during the course of fieldwork the person relinquishing the logbook will sign and date the logbook at the time the logbook is transferred and the person receiving the logbook will do likewise. Corrections to erroneous data shall be made by crossing a line through the entry and entering the correct information. The correction shall be initialed and dated by the person making the entry. Unused portions of logbook pages will be crossed out, signed, and dated at the end of each workday. Logbook entries must be dated, legible, in ink, and contain accurate documentation. Language used shall be objective, factual, and free of personal opinions. Hypotheses for observed phenomena may be recorded, however, they must be clearly indicated as such and only relate to the subject observation. Field logs will become part of the project records and will be delivered to the USACE CO at the end of the project.

5.3.5.3 Photographs. When samples are being collected, photographs shall be taken to support the written description of sampling activities. In all cases when a photograph is taken the date, time, weather conditions (if applicable), subject, purpose for photographs being taken, number of photograph and identifying number from roll, and the name of the person taking the photograph shall be recorded. When photographs are developed the information in the field logbook will be transferred to the back of the photograph. All photographs will become part of the project file and subject to all standard document controls. All photographs will be delivered to the USACE CO at the end of the project. The compass orientation shall be documented on the photograph.

5.3.6 Sampling Equipment and Procedures:
All sampling activities shall be performed according to protocols, specific to each parameter of interest, promulgated by the U.S. Environmental Protection Agency (EPA) and by USACE. Where such protocols have not been established by the EPA or the USACE, protocols established by some other recognized authority (ASTM, Cal EPA) should be utilized. At a minimum, the FSP shall fully describe the following procedures related to sample acquisition:

Hollow stem auger drilling procedures
Mud Rotary drilling procedures

Air Rotary drilling procedures
Sonic drilling procedures
CPT drilling and sampling procedures (soil)
Drilling equipment decontamination
Lithologic logging
Borehole abandonment
Monitoring well construction methods
Filter pack and well screen slot size determinations (in-field procedure)
Monitoring well development procedures
Monitoring well abandonment procedures
Temporary well installation procedures (shallow)
Volatile Organic Sampling Procedures for water and soil (SW-5035)
Split spoon sampling procedures
Wire-line coring sampling system (soil and rock)
Shallow hand auger sampling procedures
Grab sampling procedures
Stockpile sampling procedures
Groundwater sampling procedures (monitoring well)
Hydropunch groundwater sampling procedures
Low Flow sampling procedures
Soil vapor sample collection procedures
Surface water sampling procedures
Drum sampling procedures (concentrated waste - multiple phases)
Field analytical procedures (pH, conductivity, temperature, organic vapor, water levels, turbidity)
Composite sampling procedures

5.3.6.1 Sampling Procedures. The FSP shall detail all information relative to the sampling process, including equipment to be used, sample volume, and sampling technique. The sampling procedures presented in the following sections will form the basis of the sampling procedures that will be executed by the Contractor during execution of work for this contract. Sampling procedures presented in the FSP shall be consistent with the procedures described in these specifications as applicable. All sampling equipment will be made of Teflon ®, or stainless steel, which has been decontaminated. Materials such as polyvinyl chloride and other plastics will not be used. All sampling procedures are subject to the approval of the CO.

The FSP shall contain sufficient detail to understand the sampling area, sampling grid placement, sampling points, and well placement (i.e., up gradient, down gradient, confined, unconfined, etc.). The Contractor shall use EPA, USACE, and industry guidance to establish minimum standards and explain field-sampling requirements based on the DQOs. EPA and ASTM methods must be referenced in the appropriate SOPs. Precision and accuracy requirements must also be stipulated for each method. Groundwater and split spoon sampling procedures are outlined in these specifications below as examples of the requirements for field samples for USACE projects. The level of detail for the SOPs must include similar information, sufficient detail, and are subject to approval by the USACE.

5.3.6.1.1 Groundwater Sampling Procedures

Prior to groundwater sampling operations, the sampling team shall examine each well for signs of tampering or well deterioration. Any observations will be noted in the field notebook. After the well has been opened the air in the well head area will be tested for organic vapors with the PID and for explosive atmospheres with the oxygen/combustible gas indicator. Results of these observations shall be recorded in the field notebook. A plastic sheet shall be placed around the well head beneath all sampling equipment to prevent contamination of surficial soils during purging and sampling. The depth to standing water in each of the wells, the presence and thickness of floating product (if any), and total depth of the well to the bottom of the screened interval shall then be determined using an oil/water interface detector and recorded in the field notebook. This information is required to calculate the volume of stagnant water in the well and to provide a check on the integrity of the well. The top of the casing shall serve as a permanent reference point from which water level measurements shall be taken.

Using information on the diameter, total depth, and depth to water for the well, three casing and filter pack volumes shall be calculated and that amount of water shall be purged from the well. The pH, temperature, conductivity, dissolved oxygen, redox potential, and turbidity of the water will be monitored as well. The meters will be calibrated prior to use at each well using ASTM traceable standards rather than "auto-calibrated". The calibration will be checked after measurements for all samples have been completed to insure that the field instruments have remained in calibration throughout the process. Results of calibrations and final calibration checks will be recorded in the field notebook. If after three well volumes these three parameters have stabilized, the well will be sampled. Stabilization criteria shall be three consecutive measurements for which the pH is within +/- 0.1 units, temperature is within +/- 0.5 degrees, conductivity is within 10%, dissolved oxygen is within 10%, turbidity is within 10% (0.10 NTU), and redox potential is between –400 mV and +800mV. Modifications to these criteria must be stipulated in the FSP and are subject to approval by the USACE Technical Manager and Geologist. At least six measurements will be obtained (one for each half-casing volume). Measurements for well parameters will also be obtained after sampling is completed with the results recorded in the field notes. If these three parameters have not stabilized after three volumes, the purging will continue to a maximum of five volumes before sampling commences. Turbidity will be monitored with results recorded in the field notes may not be used as a stabilization parameter depending on the site. If purging is accomplished using a submersible pump the pump will be set just below water level so that all standing water is removed from the well. Placement of the pump for purging should take into consideration the anticipated depth to which water will be drawn down during pumping. The volume of water purged and the withdrawal rates will be recorded. Purge rates will be sustainable and executed at a rate such that drawdown is minimized to prevent cascading of water into the well. Alternatively, the wells may be purged by bailing. During the evacuation period, the appearance of the discharge water will be noted and periodic entries will be made in the sampling notebook. Use of a well purging data sheet for recording the information described above is acceptable.

A complete set of sampling pre-preserved containers and associated trip blank samples will be prepared for each sample in advance of the sampling event. Containers will be labeled with the date, sample number, project name, samplers name or initials, parameters for analysis (method numbers where possible), and preservation. All samples will be collected within the screened interval in each well to ensure that the sample is representative of formation water. The bailer will be carefully lowered beneath the top of the screened interval after purging of the well. A water sample is collected. The water from the bailer is then carefully transferred to sample containers using a bottom valve-discharging device. Pouring from the top of the bailer will not be allowed. Volatile water samples will be taken with a bottom valve-emptying device so that no air passes through the sample (to prevent volatile organic compounds from being stripped from the samples); the bottles will be filled by inserting the spout from the bailer to the bottom of the VOA vial with discharge of the bailer contents into the vial such that the tip of the spout is kept beneath the surface of the liquid in the vial as it is filled until there is a convex meniscus over the neck of the bottle. The Teflon side of septum (in cap) will be positioned against the meniscus, and the cap screwed on tightly; the sample will be inverted, and the bottle tapped lightly. The absence of an air bubble indicates a successful seal; if a bubble is evident, the sample will be discarded. Refilling of VOA vials will not be allowed.

All sample bottles and equipment will be kept away from fuels and solvents. Gasoline (used in generators) shall be transported in a different vehicle from bailers, sample bottles, purging pumps, etc. If possible, one person should be designated to handle samples, and another person should work generators and the gas truck. Disposable gloves will be worn for each separate activity and then disposed of. Care will be taken not to spill any fuels on clothing.

To collect VOCs samples using the Encore ® sample collection system for low level (>1 ug/kg) analyses of soils, the contractor shall follow the procedure outlined below. Remover the sampler and cap from package and attach T-handle to sampler body. The technician quickly pushes the sampler into a freshly exposed surface of soil until the sampler is full. A paper towel is used to quickly wipe the sampler head so that the cap can be tightly attached. Three five-gram samples are necessary for each sample point (primary sample, backup, and percent moisture determination). An additional 25-gram sample should be collected for screening and or high level analysis. The containers must be shipped to the laboratory within 24-hours of sample collection. The contractor SOP must contain details regarding acid preservation sampling for low

level analyses, testing for effervescing capacity of soils, testing buffering capacity of soils, Encore ® sampling for high level (>200 ug/kg) analyses, and methanol preservation. Documentation, collection of QA/QC samples, and holding time requirements must also be addressed in the SOP.

5.3.6.1.2 Split-Spoon Soil Sampling Procedures

Split-spoon sampling procedures shall be executed in accordance with ASTM D 1586-84, Standard Method for Penetration Test and Split-Barrel Sampling of Soils. The sampler will be fitted with three stainless steel sleeves. The sampler will be driven 18" or to refusal with a 140 lb. hammer dropping 30" repeatedly. The number of blows required to drive the sampler each six inches will be recorded. Refusal shall be defined as requiring 50 blows with the hammer to advance the sampler six inches or less. All equipment that is exposed to the soil shall be fully decontaminated in accordance with paragraph Equipment Decontamination Procedures prior to the boring.

As the sample tubes are disassembled an organic vapor monitor (PID or FID) probe will be inserted into the gap between two sample liners and the liner exhibiting the highest reading will be selected for analysis. In general, the middle liner will be collected for laboratory analysis. In addition, 10% of the bottom liners will be collected for QA/QC testing. One half of the soil in the top liner will be placed into a re-sealable plastic bag and left in the sun for approximately fifteen (15) minutes to allow any VOCs to volatilize. The soil vapor in the plastic bag will then be monitored by taking a reading of the headspace. Background VOCs in the bag will be determined by monitoring the air in an empty bag. Results of the organic vapor monitoring shall be recorded on the boring logs. Soils in the sample sleeves should be logged before they are sealed if VOCs are not contaminants of concern. Small portions of soil at the ends of the sleeves can be scraped off for classification.

The sleeves collected for laboratory analysis will be covered at both ends with Teflon sheets, capped, and taped with Teflon tape. Use of adhesive tape will not be allowed. Labels shall be affixed to the liners bearing job designation, time, boring number, sample depth interval, sample number, date sampled, and the initials of the sampler. The samples will then be enclosed in a plastic bag and stored in a cooler maintained at 4 degrees Celsius prior to shipment.

Each drilling rig that is operating in the field will be continuously inspected by a Geologist with a minimum of three years experience in environmental drilling and sampling. Continuous inspection is essential to insure that the intent of the drilling program is being followed and to provide knowledgeable direction to the field crew when conditions dictate variance from the original plan. Boring logs will be prepared using USACE Engineering Form 1836R. At a minimum boring logs will contain lithologic descriptions of soil strata, depth to groundwater, sample ID's, blow counts, and PID readings for headspace analyses. All drilling operations and/or well installation work for this project will be conducted under the supervision of a Registered Geologist. All boring and well installation logs will be signed by the field Geologist and by the supervising Registered Geologist.

5.3.6.1.3Equipment Decontamination Procedures.

During sampling activities, appropriate decontamination measures shall be taken to minimize sample contamination from sources such as sampling equipment or sample containers. These procedures shall consistent with those outlined in "Test Methods for Evaluating Solid Waste-Physical/Chemical Methods" (U.S. EPA SW-846, 3rd ed.). Steam cleaning will be acceptable for drill rigs and drilling rods. The decontamination procedure for sampling equipment shall incorporate a non-phosphate detergent wash, tap water rinse, rinse with pesticide grade methanol, rinse with de-ionized water, and a final rinse with type II reagent grade water with verified no detectable concentrations of the site chemicals of concern above the project specified PQLs. As an alternative to use of reagent grade water the Contractor may submit analytical data to indicate that de-ionized water to be used for the final rinse is free of the contaminants of concern for this project above the level of detection for the relevant analyses. <u>If this option is chosen by the Contractor this data must be submitted prior to the initiation of fieldwork to the USACE CO</u>. The sampling program established for this project shall include provisions for generating the appropriate field QA/QC samples to monitor the effectiveness of the specific procedures employed in controlling contamination of samples as a function of field procedures or ambient conditions. The FSP shall detail all measures used to avoid sample contamination.

5.3.7 Sample Handling Procedures

5.3.7.1 Sample Containers. The types of containers and procedures used for cleaning these containers shall consistent with EPA and USACE requirements for the specific parameters of interest. The sample container label must include location, time and date of sampling, grab or composite, analyses to be performed, and sampler's signature. Sample containers planned for use shall be described in the FSP.

5.3.7.2 Sample Preservation. All samples collected shall be preserved according to EPA and/or USACE protocols established for the parameters of interest. Appropriate measures shall be taken to ensure that storage requirements with respect to temperature are maintained in the field, during transport to the laboratory, and during storage at the laboratory. Temperature blanks shall be used for all coolers containing samples requiring preservation at reduced temperature. The CDQMP shall detail sample preservation methods for all analyses to be used for this project.

5.3.7.3 Sample Transportation. Environmental samples shall be transported to the Contract Laboratory and QA laboratory via the most rapid means. Samples shall be packaged and transported according to health and safety requirements covered by the EPA, USACE, and DOT regulations. The FSP shall describe the planned mode of sample transport with detailed packing procedures. SUMMA canisters shall be shipped by express ground transportation and not by airplane.

5.3.7.4 Chain of Custody Procedures. Samples shall be collected, transported, and received under strict chain of custody protocols consistent with procedures established by the EPA for litigation-related materials. On receiving samples at the Contract Laboratory the air, temperature inside the cooler and of the temperature blank shall be measured immediately after the cooler is opened with the results recorded on the Cooler Receipt Form. Water samples requiring acidic or basic preservation will also be checked for pH on arrival at the Contract Laboratory. Contractor and Contract Laboratory chain of custody procedures shall be detailed in the QAPP & FSP. Copies of chain of custody forms shall be provided to the CO whenever samples are shipped from the field site (facsimile transmission). Upon receipt at the laboratory, the laboratory shall provide a specific mechanism through which the disposition and custody of the samples are accurately documented during each phase of the analytical process. Cooler Receipt Forms shall be used to document the condition of samples on arrival at the laboratory. The results of all checks for preservation of samples shall be recorded on the Cooler Receipt Form. Examples of chain of custody forms and cooler receipt forms shall be provided in the CDQMP. An example of an acceptable Cooler Receipt Form can be obtained from the USACE CO.

5.3.8 Investigation Derived Waste
The text of the FSP shall describe the installation-wide provisions that will be made for the proper handling and disposal of wastes generated through the various field operations.

5.3.9 Quality Control for Field Operations
Overall, requirements described in Section 5.2.4 (including subsections) will be addressed. The text of the FSP shall substantially reflect the specific procedures as they apply to three-phase control with specific reference to the execution of field operations related to sampling and analysis. Checklists that are developed for implementation of three-phase control shall be included in the text. Examples of these types of checklists are included in Appendix H of EM 200-1-3.

5.4 GUIDANCE FOR THE PREPARATION OF DELIVERY-ORDER/SITE-SPECIFIC SAMPLING AND ANALYSIS PLANS

5.4.1 Title Page, Signature Page, and Table of Contents
Refer to Section 5.1.1 and 5.1.2.

5.4.2 Executive Summary
The executive summary shall be composed of a brief description of the context of contract or project work, the goal of the proposed investigative work, a general description of the work to be performed, and a brief

statement describing the relevance of the work to be performed to the goal of the investigation as applicable. This information is project specific

5.4.3 Problem Definition and Background

A narrative describing the project shall be included that shall state the specific problem to be solved or the decision to be made. The goal of the investigation shall be clearly stated.

- Describe the work site including an area map, location map, and site map, site history as it relates to the current work, and any unusual conditions. Include diagrams detailing areas to be sampled as relevant to the definition of the investigation goals.
- Summarize the site geology/hydrogeology as known prepared to a level of detail such as to provide a comprehensive description of the site. Include enough information about the problem, the past history, any previous work or data, the regulatory or legal context, and any relevant ARAR's to present a clear description of the project objectives.

The information provided in this section should be detailed enough to provide background information for USACE and other reviews.

5.4.4 Project Description

Describe what work will be performed. Give an overall picture of how the project will resolve the problem or questions described in the Problem Definition/Background Section above. Include the following elements:

- Applicable technical, regulatory, or program specific quality standards, criteria or objectives.
- General description of the sampling approach and measurements to be conducted for the project. Include a table that lists the feature of work and the responsible organization for each (contractor, contract lab, sub-contractor etc.)
- Required special project specific personnel or equipment that may add to the complexity of the project.
- Assessment tools that will be employed for the project (program technical reviews, peer reviews, surveillances, technical audits, etc.)
- Project schedule including start time, milestones and expected completion date. If individual sampling plans will be developed for discrete project phases include their preparation schedule.
- List of deliverables.

5.4.5 Project Organization

This section in the SAP shall address the specific personnel that will be responsible for execution of a delivery order. The SAP must address not only the Contractor personnel but also any subcontractor interactions applicable for a delivery order.

- Specific personnel must be identified along with their function and qualifications.
- Specify lines of authority and communication among all project participants. Include other data users who are outside of the organization generating data, but for whom the data are nevertheless intended; e.g. modelers, risk assessors, design engineers, toxicologists, etc. Where direct contact between project managers and data users does not occur, the organization chart should show the route by which information is exchanged.
- Include subcontractor personnel as appropriate, including the contract laboratory.

5.4.6 Data Quality Objectives

State the general scope of work and explicitly describe the data that are needed to meet the objectives of the project, how that data will be used, and discuss implementation of control mechanisms and standards that shall be used to obtain data of sufficient quality to meet or exceed all project objectives. The discussion of Data Quality Objectives (DQOs) shall follow the guidance contained in the EPA document Guidance for the Data Quality Objectives Process (EPA QA/G4) and the requirements of this document are included by reference. The section on DQOs will address the following topics in the specified order:

- Statement of the Problem. Summarize the problem that requires environmental data acquisition and identify the resources available to resolve the problem.
- Identification of Decisions. Identify the decision that requires acquisition of environmental data to address the problem. Identify the intended uses of data projected to be acquired. Data uses shall be prioritized.
- Identify Inputs to Decisions. Identify the information needed to support the decision and specify the inputs requiring environmental measurements.
- Definition of Study Boundaries. Specify the spatial and temporal aspects of the environmental media that the data must represent to support the decision.
- Development of Decision Rules. Develop a logical statement that defines the conditions that would cause the decision maker to choose among alternative actions.
- Specification of Limits on Decision Errors. Specify the decision maker's acceptable limits on decision errors, which are used to establish appropriate performance goals for limiting uncertainty in environmental data.
- Optimization of Investigation Design for Obtaining Data. Identify the most resource effective sampling and analysis design for generating data that are expected to satisfy project DQOs.

Statements of the problem shall be defined quantitatively if possible. Example:

> UV Treatment of Contaminated Groundwater. "The purpose of this project is to demonstrate that the residual trichloroethylene concentration in the treated water is less than 0.5 ug/L at a confidence level of 95%."

Identification of decisions and descriptions of data use shall be described with text and supported with tables and lists that describe:

- Data needed. Measurement parameters, compounds, and sample matrices.
- The action levels or standards upon which decisions will be made, including the detection limits and data-reporting units for relevant parameters.
- The summary statistic(s), e.g., mean maximum, range, etc., which specify the form the data will be in when compared against action levels or standards.
- The acceptable level of confidence in the data needed for the stated purposes; or the acceptable amount of uncertainty.

Describe in quantitative terms the sensitivity, precision, accuracy, and completeness goals for each major measurement parameter and for each matrix to be sampled. Define different types of sensitivity (e.g. quantitative, qualitative, screening) for each major measurement parameter as applicable. A qualitative discussion shall be presented regarding representativeness and comparability.

5.4.7 Sampling Process Design

Describe the experimental design of the project including:

- Sampling network design
- Sample types and matrices
- Sampling frequencies
- Measurement parameters of interest (compounds, elements or other analytical parameters).

In the sampling design discussion, the rationale for the design shall be clearly stated and described for all sites where samples will be collected. Include figures describing the specific sampling points. Measurement parameters to be described include geological, geophysical, hydrogeological, and chemical parameters as applicable. If cone penetrometer locations, hydropunch locations, or monitoring well locations are to be chosen based on field observations, state the evaluation criteria that will be used in the field for these determinations. Monitoring well design criteria (if applicable) shall be clearly described to include a description of field determinations for appropriate filter packs and well screens.

Provide a table (e.g. the Planned Sample Table) that shows the estimated number of samples by location for:

- Field samples
- QC split samples
- QA split samples
- Field blanks
- Rinsate blanks
- Trip blanks

5.4.8 Sampling Methods Requirements

Provide a general description of sample collection procedures to be used for the project. Cite the CDQMP SOPs if applicable. If SOPs are not available, detailed specific SOPs of these procedures shall be included in the SAP as an appendix. Where SOPs allow for alternate approaches or equipment depending on the sampling task, specify which approaches will be used for the project. Focus on Contractor procedures for addressing failures in the sampling system and responsibilities for corrective action. Provide a project specific table that describes bottle requirements, preservation, and holding times to extraction and/or analysis for all analytical parameters and matrices.

5.4.9 Analytical Methods Summary

Provide tabular summaries of preparation and analytical methods required for each site. Specify analytes and PQLs for each analytical method, especially if analytes are added to standard lists. Specify any method modifications necessary for the project (e.g. 25 ml purge for VOA analysis). Provide or cite laboratory QC requirements unless described in section 9.0, below.

5.4.10 Investigation Derived Waste

The text of the SAP shall describe the provisions that will be made for the proper handling and disposal of wastes generated on site.

5.4.11 Quality Control

Project-specific requirements described in Section 5.2.4 (including subsections) will be addressed. The text of the SAP shall substantially reflect the specific procedures described in the CDQMP as they apply to three-phase control with specific reference to the execution of field operations related to sampling and analysis. Checklists that are developed for implementation of three-phase control shall be included in the text. Examples of these types of checklists are included in Appendix H of EM 200-1-3.

5.4.12 References

All references and guidance documents used to determine the content and format of this document shall be cited with appropriate titles, authors, and dates of publication.

5.5 ANALYTICAL DATA PACKAGE REPORT

The following sections describe the requirements for analytical data packages.

5.5.1 Format for the Comprehensive Certificates of Analysis

A. The "Cooler Receipt Form" shall be completed by the Contract Laboratory documenting sample conditions on arrival at the laboratory. Original copies of cooler receipt forms as well as original copies of chain of custody forms shall be provided with certificates of analysis. Examples of both forms shall be provided in the QAPP.

B. For each analytical method the Contract Laboratory shall report all analytes as a detected concentration or as less than the PQL. All samples with out of control spike recoveries being attributed to matrix interference will be designated as such. All soil samples will be reported on a dry weight basis with the percent moisture reported for each sample. Dilution factors, date of extraction, date of analysis, and practical quantitation limits shall be reported for each analyte and method.

C. Reports of method blanks shall include all analytes for each analytical method. Analytical results for each sample shall be clearly associated with a particular method blank. Any

detected concentration found in method blanks shall be reported. Reports of concentrations below the PQL are necessary to evaluate low-level determinations of target compounds in samples.

D. Surrogate spike recoveries shall be reported for all applicable methods. The report shall also specify the control limits for surrogate recoveries. Any out-of-control recoveries shall result in the sample being rerun once. If subsequent analyses result in out of control recoveries both results shall be reported and the data flagged.

E. MS/MSD recoveries shall be reported for all analyses. All sample results shall be designated as corresponding to a particular set of MS/MSD analyses. MS/MSD analyses not meeting quality control criteria specified in the QAPP shall be rerun once. If subsequent analyses result in out of control recoveries both results shall be reported and the data flagged. Only samples from this project shall be used for MS/MSD analyses. (The Contract Laboratory shall not use samples from other projects for MS/MSD analyses.) The report shall also specify control limits for spike recoveries and RPD for each spiked analyte.

F. Results for laboratory duplicates shall be reported with RPD limits for duplicate analyses.

G. LCS results shall be reported with control limits for LCS analyses. Analytical results for each sample shall be clearly associated with a particular LCS sample.

H. Results of initial and continuing calibration analyses for all analyses shall be included in the data package. Continuing calibration results shall be organized such that sample results shall be clearly correlated with the calibration check samples that bracket the sample results. Injection records for all sample analyses shall be included with the calibration data. Summaries of calibration data should be provided as a CLP Form VI and VII or equivalent for organic analyses and Form II modified for SW-846 analyses for inorganic analyses. (Note: Copied pages of handwritten laboratory notebooks will be unacceptable to fulfill the requirements of these specifications.)

I. The Contract Laboratory shall prepare a summary of all samples with detected concentrations of target compounds indexed by method and by sample ID.

J. The Contract Laboratory shall prepare a summary of all surrogate recoveries for organic analyses for each applicable method with the acceptable recovery range clearly indicated. This summary shall be performed for all samples for each analytical method involving surrogate spikes.

K. The Contract Laboratory shall prepare a summary of all Matrix Spike/Matrix Spike Duplicate analyses for each applicable method indicating acceptable recovery ranges and QC acceptance criteria for RPD.

L. The Contract Laboratory shall prepare a summary of all laboratory and field duplicates with QC acceptance criteria for RPD clearly indicated.

M. The Contractor/Contract Laboratory shall prepare a table identifying all QA samples and the corresponding primary samples for use by the QA Lab in preparation of the Chemical Quality Assurance Report (CQAR). This summary shall be delivered to the QA laboratory as described in Section 5.10.

N. The comprehensive certificate of analysis shall contain a narrative section identifying samples not meeting quality control criteria and any other out of control condition. The narrative shall describe the corrective action taken. If "matrix effects" are invoked as a cause for out of control recoveries, a subsection of the narrative shall present a detailed justification for this assertion to include a summary of all relevant quality control data.

O. Chromatographs for all fuels analyses (detects and non-detects) presented at an attenuation where features of the chromatography are clearly visible shall be submitted for all projects involving fuels analyses by gas chromatography. Chromatographs of standards used for identification of fuels must also be included in the data package.

P. All data for analyses during the period covered by the comprehensive certificate of analysis shall be included as an appendix to the comprehensive report. This data shall be presented on numbered pages with an index or table of contents describing the contents of the appendix.

5.5.2 RAW DATA PACKAGES

Requirements for submittal: Raw data packages shall be submitted to USACE for 10% of all samples analyzed by the Contract Laboratory. The Contractor shall select samples for raw data packages to include all analyses and matrices, to provide temporal representation, to provide data in particular areas of interest, and to provide data at periods of maximum loading of the Contract Laboratory. The Contractor should notify the USACE CO of the samples that have been selected for submittal as raw data packages and the CO will have the option of directing the Contractor to select specific samples (other than those proposed by the Contractor) for reporting in this manner. The Contract Laboratory shall not be notified of the samples for which raw data packages will be required until after the analytical process has been initiated. Raw data packages shall be delivered in place of the Comprehensive Certificate of Analysis. Raw data packages shall be delivered to the CO within 28 days of the time of sample acquisition in the field.

5.5.2.1 Organic Analyses

The raw data package for organic analyses shall consist of a case narrative, chain-of-custody documentation, summary of results for environmental samples, summary of QA/QC results, and the raw data. Detailed descriptions of the requirements for each component of an organic raw data package are provided in the following sections.

5.5.2.1.1 Case Narrative. The case narrative shall be written on laboratory letterhead and the laboratory manager or his/her designee shall authorize the release of data. Items to be included in the case narrative are the field sample ID with the corresponding laboratory ID, parameters analyzed for in each sample and the methodology used (EPA method numbers or other citation), a statement on the status of samples analyzed with respect to holding times (met or exceeded), detailed description of all problems encountered, discussion of possible reasons for out of control QA/QC criteria, and observations regarding any occurrences which may effect sample integrity or data quality.

5.5.2.1.2 Chain-of-Custody Documentation. Legible copies of Chain-of-Custody forms for each sample shall be maintained in the data package. Cooler log-in sheets shall be associated with the corresponding Chain-of-Custody form. Any internal laboratory-tracking document shall be included.

5.5.2.1.3 Summary of Environmental Results. For each environmental sample analysis this summary should include field ID and corresponding laboratory ID, sample matrix, date of sample extraction (if applicable), date and time of analysis, identification of the instrument used for analysis, GC column and detector specifications (if applicable), weight or volume of sample used for analysis/extraction, dilution or concentration factor used for the sample extract, percentage of moisture in the sample, method detection limit or sample quantitation limit, definitions of any data qualifiers used, and analytical results.

5.5.2.1.4 Summary of QA/QC Results. The following QA/QC results shall be presented in summary form. Details specified in Section 5.5.2.1 (Organic Analysis) shall also be included for the summary of QA/QC results. Acceptance limits for all categories of QC criteria shall be provided with the data. <u>All summaries will be presented on standard forms. Use of CLP standard forms is not necessary, however submission of standard instrument output alone is unacceptable to satisfy the requirements for raw data packages</u>.

A. Initial Calibration. The concentrations of the standards used for analysis and the date and time of analysis. The response factor, percent relative standard deviation (%RSD), and retention time for each compound (as applicable, GC and GC/MS analyses) shall be included in initial calibration summaries. A statement should also be made regarding the samples or dates for which a single initial calibration applies.

B. Daily Calibration and Mid-level Standard: The concentration of the calibration standard used for daily calibration and/or the mid-level calibration check shall be reported. The response factor, percent difference, and retention time for each compound shall be reported (GC and GC/MS). Daily calibration information shall be linked to sample analyses by summary or by daily injection or analysis logs. Tuning information for GC/MS shall also be included with the calibration.

C. Method Blank Analyses: The concentrations of any compounds found in method blanks shall be reported. The environmental samples and QA/QC analyses associated with each method blank shall be stated.

D. Surrogate Standard Recovery: The name and concentration of each surrogate compound added shall be detailed. The percent recovery of each surrogate compound in the samples, method blanks, matrix spike / matrix spike duplicates and other QA/QC analyses shall be summarized with sample ID's such that the information can be linked to sample and QA/QC analyses.

E. Internal Standard Recovery: The name and concentration of each internal compound added shall be detailed (retention time and area counts). The percent recovery of each internal compound in the samples, method blanks, matrix spike/matrix spike duplicates and other QA/QC analyses shall be summarized with sample ID's such that the information can be linked to sample and QA/QC analyses.

F Precision and Accuracy: For matrix spike / matrix spike duplicate analyses the sample results, spiked sample results, percent recovery, and RPD with the associated control limits shall be detailed. For laboratory, duplicate analyses the RPD between duplicate analyses shall be reported as applicable. For laboratory, QC Check and/or LCS analyses the percent recovery and acceptable control limits for each analyte shall be reported. <u>All batch QC information shall be linked to the corresponding sample groups</u>.

G Retention Time Windows (GC, GC/MS): The retention time window for each compound for both primary and confirmation analyses shall be reported. Retention time windows are to be updated daily per EPA SW-846.

H Compound Identification (GC, GC/MS): the retention times and the concentrations of each compound detected in environmental and QA/QC samples shall be reported for both primary and confirmation analyses.

I Method Detection Limits: Results of the most current detection limit study shall be provided in the raw data package.

J Injection Record: Injection logs for all instruments used for analysis of project samples shall be provided indicating the date and time of analysis of project samples and the associated laboratory QA/QC samples (initial calibration, continuing calibration check, method blank, matrix spikes, etc.).

5.5.2.1.5 Raw Data. Legible copies of all raw data shall be organized systematically on numbered pages. The raw data for compound identification and quantitation must be sufficient to support all results presented in other sections of the raw data package. <u>All raw data will be presented on standard forms and accompanied by the instrument output. Use of CLP standard forms is not necessary, however submission of standard instrument output alone is unacceptable to satisfy the requirements for raw data packages</u>.

A. GC Analyses: This section of the data package shall include legible copies of the raw data for environmental samples (arranged in increasing order of field ID, primary and confirmation analyses), instrument calibrations, QA/QC analyses, sample extraction and cleanup logs, instrument analysis logs (injection record) for each instrument used, and GC/MS confirmations if applicable. The raw data for each analysis shall include chromatograms (preferably with target compound, internal standard and surrogate compounds labeled by name) with a quantitation report and/or areas print out.

B. GC/MS Analyses: This section of the data package shall include legible copies of the raw data for environmental samples (arranged in increasing order of field ID, spectrometer tuning and mass calibration reports, initial and continuing instrument calibrations, QC analyses, sample extraction logs, and instrument analysis logs (injection record) for each instrument used. The raw data for each analysis shall include chromatograms (preferably with target compound, internal standard, and surrogate compounds labeled by name) and enhanced spectra of target compounds and/or tentatively identified compounds with the associated best matched spectra. Quantitation reports for all analyses shall be included in the data package.

5.5.2.2 Inorganic Analyses. The raw data package for inorganic analyses shall consist of a case narrative, chain-of-custody documentation, summary of results for environmental samples, summary of QA/QC

results, and the raw data. Detailed descriptions of the requirements for each component of an inorganic analyses raw data package are provided in the following sections.

5.5.2.2.1 Case Narrative. The case narrative shall be written on laboratory letterhead and the laboratory manager or his/her designee shall authorize the release of data. Items to be included in the case narrative are the field sample ID with the corresponding laboratory ID, parameters analyzed for in each sample and the methodology used (EPA method numbers or other citation), a statement on the status of samples analyzed with respect to holding times (met or exceeded), detailed description of all problems encountered, discussion of possible reasons for out of control QA/QC criteria, and observations regarding any occurrences which may effect sample integrity or data quality. The case narrative shall be sufficiently detailed such that the process of analysis can be reconstructed (i.e. if samples are diluted to bring results into the linear dynamic range, or re-extracted for QC failures the course of analysis shall be detailed in the case narrative.)

5.5.2.2.2 Chain-of-Custody Documentation. Legible copies of Chain-of-Custody forms for each sample shall be maintained in the data package. The date of receipt must be described on the Cooler log-in sheets shall be associated with the corresponding Chain-of-Custody form. Any internal laboratory-tracking document shall be included.

5.5.2.2.3 Summary of Environmental Results. For each environmental sample analysis the raw data package should include field identification and corresponding laboratory identification number, sample matrix, date of sample digestion (as applicable), date and time of analysis, identification of the instrument used for analysis, instrument specifications, weight or volume of sample used for analysis/digestion, dilution or concentration factor used for the sample extract, percentage of moisture in the sample, method detection limit or sample quantitation limit, definitions of any data qualifiers used, and analytical results.

5.5.2.2.4 Summary of QA/QC Results. The following QA/QC results shall be presented in summary form. Details specified in Section 5.10 (Inorganic Analysis) shall also be included for the summary of QA/QC results. <u>All summaries will be presented on standard forms. Use of CLP standard forms is not necessary, however submission of standard instrument output alone is unacceptable to satisfy the requirements for raw data packages</u>.

A. Instrument Calibration: The order of reporting of calibrations for each analyte must follow the temporal order in which standards were analyzed.
B. Initial Calibration: The source of the calibration standards, true value concentrations, found concentrations, the percent recovery for each element analyzed, and the date and time of analysis shall be reported.
C. Continuing Calibration Verification: The source of the calibration standards, true value concentrations, found concentrations, the percent recovery for each element analyzed, and the date and time of analysis shall be reported.
D. Method Blank Analyses: The concentrations of any analytes found in initial calibration blanks, continuing calibration blank, and in the preparation blank shall be reported. The date and time of analysis shall also be reported.
F. Interference Check Sample: The source of the interference check sample, true value concentrations, found concentrations, the percent recovery for each element analyzed, and the date and time of analysis shall be reported.
G. Precision and Accuracy - Matrix Spikes and Duplicates: For matrix spike analyses the sample results, spiked sample results, percent recovery, the spiking solution used, and the control range for each element shall be detailed. For post digestion spikes the concentration of the spiked sample, the sample result, the spiking solution added, percent recovery and control limits shall be detailed. For laboratory duplicates the original concentration, duplicate concentration, relative percent difference, and control limits shall be detailed. Date and time for all analyses shall be recorded.
H. Precision and Accuracy - Laboratory Control Samples: The source of the laboratory control sample, true value concentrations, found concentrations, the percent recovery for each element analyzed, and the date and time of analysis shall be reported.

I. Method of Standard Additions (MSA): This summary must be included when MSA analyses are required. The absorbance values and the corresponding concentration values, the final analyte concentrations, and correlation coefficients shall be reported for all analyses. Date and time of analysis shall be recorded for all analyses.

J. ICP Serial Dilution: The initial and serial dilution results with percent difference shall be reported.

K. ICP Linear Ranges: For each instrument and wavelength used the date on which the linear range was established, the integration time, and the upper limit concentration shall be reported.

L. ICP Inter-element Correction Factors: For each instrument and wavelength used the date on which correction factors were determined shall be detailed. Specific correction factors for Al, Ca, Fe, Mg, and any other element and the analytes to which they are applied shall be detailed. These elements must be quantitated accurately (within the quantitation range) to apply the correction factor for each sample, regardless of whether these are specified analytes required for analysis.

M. Instrument Detection Limits: Results of the most current detection limit study shall be provided in the raw data package.

N. Analysis Record: Analysis logs for all instruments used for analysis of project samples shall be provided indicating the date and time of analysis of project samples and the associated laboratory QA/QC samples (initial calibration, continuing calibration check, method blank, matrix spikes, etc.).

5.5.2.2.5 Raw Data. Legible copies of all raw data shall be organized systematically on numbered pages. The raw data for compound identification and quantitation must be sufficient to support all results presented in other sections of the raw data package. This section of the data package shall include legible copies of the raw data for environmental samples (arranged in increasing order of field ID), instrument calibrations, QA/QC analyses, sample extraction and cleanup logs, instrument analysis logs for each instrument used. Instrument analysis logs are particularly important since they provide the basic link between all sample analyses and QC information. (calibration standards, matrix spike, etc.) Instrument analysis logs for all instruments used for sample analyses for this project shall be provided for all days on which analysis was performed. The raw data for each analysis shall include measurement print outs and quantitation reports for each instrument used. Records of absorbance, titrimetric, or other measurements for wet chemical analysis shall be recorded. <u>All raw data will be presented on standard forms and accompanied by the instrument output. Use of CLP standard forms is not necessary, however submission of standard instrument output alone is unacceptable to satisfy the requirements for raw data packages</u>.

5.5.3 Electronic Data Deliverables and Electronic Data Validation

Use of electronic data deliverables and electronic data validation, will promote objectivity, substantially reduce costs, and facilitate data exchange. This will also allow data validators to focus and spend more time on inspection of raw data. The electronic data deliverables requirements and electronic data validation procedures will be specified in the CDQMP. The laboratory is encouraged to perform a QC check of the electronic data file for accuracy. The laboratory has not met its obligation of submission of the EDDs if errors are identified. The required turnaround time is for complete and accurate EDD deliverables.

5.6 DATA VALIDATION REPORTS

Unless directed by the CO, an independent data review specialist will review 100% of the data generated for the program. Approximately, 10% of the data will be validated to equivalent of EPA Level 4 (raw data packages) and 90% will be validated to equivalent of EPA Level 3 (definitive data with QC summaries). The CDQMP will specify the data validation procedures. For each sample delivery group, a data validation report shall be generated. The content and format shall confirm to the specifications outlined in this section.

5.6.1 Project Scope Summary

This section shall reference the guidance documents used to review the data, USACE contract number, the site(s), the sampling event or field program, he contractors responsible for the work (i.e., the primary

contractor, the laboratory, and data validator), review date, sample delivery group identification, sample numbers, matrix, and collection date (s).

5.6.2 Data Validation Requirements
This section shall reference the data validation requirements, documents used for validation, criteria used, and parameters reviewed for EPA Level 3 and 4 equivalent data packages.

5.6.3 Data Validation Qualifiers and Codes
This section shall consist of a table with the data validation qualifier flags and any explanation codes (i.e., "-" negative bias due to low surrogate recoveries). The data validation report must provide definitions for the explanation codes.

5.6.4 Summary of Qualified Data
This section shall consist of a brief summary of the data validation findings for each analysis by method and matrix. Each criteria reviewed will be outlined, the data validation results will be presented, and the potential impact on data quality will be discussed. A summary table will be provided which presents all data generated with qualification flags presented with explanation codes provided. In addition, each nonconformance will be designated whether it is a contract compliance issue.

5.7 DAILY QUALITY CONTROL REPORTS (DQCR's):
The Contractor shall prepare a DQCR for each day of the project. Information contained in this report shall include, as a minimum:

- location of work;
- weather conditions;
- work performed;
- results of any inspections performed;
- problems identified and associated corrective actions taken,
- any instructions received from government personnel for retesting;
- types of tests performed, the individuals performing the tests and test results;
- general comments;
- calibration procedures; and
- the Contractor's certification.

The Contract Laboratory shall perform DQCR's for each day of laboratory activities associated with this project summarizing daily quality control activities. The laboratory DQCR's may be limited to out-of-control data events and corrective action taken to resolve them. The QAPP shall specify the content of field and laboratory DQCR's. DQCR's shall be submitted to the CO on a weekly basis. The QAPP shall acknowledge the requirement for these reports and describe the content of them as reflected in these specifications.

5.8 QUALITY CONTROL SUMMARY REPORT (QCSR)
A Quality Control Summary Report shall be prepared for each delivery order for this contract. Issues covered in this report shall include the quality control practices employed in execution of the contract and a discussion of all data points, which may have been compromised, and their impact on the Data Quality Objectives or remedial decisions. Normally the QCSR would be prepared at the end of a project. For delivery orders incorporating fieldwork involving sampling and analysis extending beyond thirty calendar days one QCSR shall be prepared for each thirty-day period. The QCSR shall be received by the CO within 65 calendar days of the initiation of fieldwork involving sampling and analysis and again at thirty-day intervals thereafter. The QAPP shall acknowledge this requirement and describe the content of this report as detailed in these specifications. If the QCSR is unacceptable relative to the requirements of these specifications the Contractor shall revise the document to the satisfaction of the Government within 15 days of receipt of comments from the USACE CO. The QCSR shall be prepared by compiling information relative to the project according to the following outline:

5.8.1 Project Scope
This section will address the sampling and field event covered by the QCSR.

5.8.2 Project Description
This section shall describe the site background and investigation strategy.

5.8.3 Sampling Procedures
This section shall focus on deviations from planned activities and any fieldwork variances to be listed in an Appendix.

5.8.4 Quality Control Activities
The following information will be provided: numbers and types of QC samples collected, discussion of QC problems encountered, and discussion field and laboratory quality control activities. This section should focus on the rationale and documentation for any deviations from planned activities. The Contractor shall include summaries of field and laboratory oversight activities, provide a discussion of the reliability of the data, discuss QC problems encountered, and a summary of the evaluation of data quality for each analysis and matrix as indicated by the laboratory QC data and any other relevant findings.

5.8.5 Analytical Procedures
The analytical and preparation procedures used will be briefly described.

5.8.6 Chemical Data Quality Assessment

A. Summary Data Quality Assessment (assessment of data based on project DQOs)
Field Duplicate Result Table (with difference factors and acceptability result)
Detected Analyte Table (hits Only with qualifiers)
Results Summary Table (all analytical results with qualifiers)
Rejected Results Table (with explanation codes and contract compliance indication)

Results for field duplicates shall be discussed in the qualitative description of completeness. The field duplicate data will be compared with the criteria stipulated in the CDQMP. This criteria will be consistent with the Shell Guidance and the USACE, CRREL Special Report No. 96, Comparison Criteria for Environmental Chemical Analyses of Split Samples Sent to Different Laboratories – Corps of Engineers Archived Data, Grant, C.G., Jenkins, T.F., and Mudambi, A.R., USACE Cold Regions & Environmental Research Laboratory, Hanover NH, May, 1996.

Only validated data will be presented in the QCSR and final reports. This section will include a presentation and evaluation of the data to include an overall assessment of the quality of the data for each method and matrix. Any nonconformances, which were identified during data validation, are discussed and impact on the data quality and data usability is discussed. The discussion should include qualitative and quantitative assessments of completeness as described in this document. QC failure should be presented by graphical representations, which include histograms, and pie charts regarding the data quality, nonconformances identified during data validation, and completeness results.

The Contractor shall describe statistical procedures used in the assessment of data. The Contractor shall discuss any results reflecting significant deviations.

B. Completeness Summary (analytical, contract compliance, technical, and field sampling completeness)

The contract specification requires the calculation of acceptable sample results to all sample results. This does not account for estimated results that may still be useable for project decision-making. The four calculations of completeness are required.

$$\text{Contract Completeness} = \frac{\text{\# contract compliant results}}{\text{\# results reported}} \times 100$$

$$\text{Analytical Completeness} = \frac{\text{\# unqualified results}}{\text{\# results reported}} \times 100$$

$$\text{Technical Completeness} = \frac{\text{\# useable results}^{\dagger}}{\text{\# results reported}} \times 100$$

$$\text{Field Sampling Completeness} = \frac{\text{\# samples collected}}{\text{\# samples planned}} \times 100$$

† Estimated results considered as useable for project decision making

The minimum goals for completeness are as follows: 1) Contract = 100%, 2) Analytical = 90% or greater, 3) Technical = 95% or greater, and 4) Field = 100%. The goal for holding times is 100%. Estimated results are treated as usable results for technical completeness. These are considered minimum goals; however, if based on DQOs different goals are established they will be presented in the site-specific SAP. Completeness calculations include QC samples (QA splits, field duplicates, etc.)

A completeness summary will be provided in tabular and graphical format presenting the relevant analyses, the total number of samples analyzed for each method, the number of samples qualified for any reason, the number of samples associated with contract compliance failure, the determination of "analytical completeness" (determined relative to the number of samples qualified for any reason), and "contract compliance completeness" (determined relative to the number of samples qualified for contract compliance failure). Routinely, the value reported for “contract compliance completeness” should be at or near 100% while the value reported for “analytical completeness” may be less than that as a function of matrix effects. Each metal and organic compound is considered a separate analytical parameter rather than considering all of the analytes or compounds in a single analytical category for calculating completeness. A single number for completeness in each category for each analysis will be presented to describe the overall data quality. A complete sample will be considered a sample for which all QC parameters are within acceptable limits. Contractual QC elements include: holding time, calibration, laboratory blanks, LCS, MS/MSD, surrogates, etc.). Analytical QC elements include the contractual QC elements and the defined elements that were reviewed and qualified, as defined in the QAPP. There will be overlap between the contractual and analytical QC elements.

5.8.7 Conclusions and Recommendations
Qualified Results Summary Chart and Completeness Summary Chart. A summary of field or analytical procedures that should be changed or modified to better characterize chemical contamination in future work efforts at sites covered by the contract.

5.8.8 References
This section will provide those references (project and guidance) used to review the data.

Appendices-Data Validation Report, Data Qualifier Definitions, and Field Work Variance

All internal QC data (splits, duplicates, etc.) generated during the course of the project must be included in the QCSR. The QC data presentation shall include tabular summaries correlating sample identifiers with all blank results, matrix spike results (MS/MSD or MS as appropriate), surrogate results, duplicate results (MS/MSD or S/SD as appropriate), LCS results, and batch identifiers. Calibration data shall be included in this summary whenever the results exceed the limits of acceptability. The quantitative description of completeness will be performed by considering aspects related to data quality and to contract compliance.

Where sample results are negatively impacted by adverse quality control criteria the QCSR shall contain a list of the affected sample results for each analyte (indexed by method and matrix) including the appropriate data qualifier flag (J, UJ, R, etc.) Data flags and conventions for flagging of data shall be consistent with those described in the CDQMP. In order to compile this summary all quality control data,

including calibration results, must be reviewed following the conventions specified in tables to be included in the CDQMP. Content requirements for these tables of data validation conventions and qualifiers are described in Sections 5.6 and 5.2.5, respectively.

5.9 NON-ROUTINE OCCURRENCES REPORTS

The Contractor shall send written reports of all significant non-routine occurrence events to the CO within 48 hours of occurrence of non-routine events for field and laboratory work.

5.9.1 Project Scope

This section will address the sampling and field event covered by the Non-Routine Occurrences Report. This section shall also briefly describe the site background and investigation strategy.

5.9.2 Problems Identified, Corrective Actions Taken, Instructions from USACE Contracting Officer.

These reports shall identify the problem, corrective action, and verbal/written instructions from the USACE CO to Contractor personnel regarding sampling or reanalysis. Significant events are occurrences impacting on cost of work, schedule of work, quality of work, and quality of environmental analytical data.

5.10 DATA REPORT FOR THE CHEMICAL QUALITY ASSURANCE REPORT

It is the responsibility of the USACE PM to report any significant discrepancies between the primary and QA split results to the Contract Laboratory. In the event of such an occurrence, the Contract Laboratory must initiate an investigation into possible reasons for the discrepancy, and submit a plan to resolve the problem. All such activities shall be considered as non-conformance events, and be supported by the appropriate documentation. Such investigation and correction activities shall be performed at no additional cost to the Government. These requirements shall be acknowledged in the QAPP.

5.10.1 Final Certificates of Analysis

The Consultant shall provide the USACE PM with a copy of the final comprehensive certificate of analysis and a copy of the final SAP for use in preparation of the Chemical Quality Assurance Report (CQAR) by Sacramento District.

5.10.2 Final Sampling and Analysis Plan

The final SAP shall be provided to the QA Lab directly by the Consultant immediately after its approval by the USACE PM.

5.10.3 QA Split and Primary Sample Cross Reference Analytical Summary

The Data Report shall include a summary, which identifies the sample(s), which were split for QA testing, and the corresponding primary sample(s). Table 5-6 presents the QA comparison criteria for USACE projects.

5.10.4 CHEMICAL QUALITY ASSURANCE REPORT

The CQAR may be incorporated into the final Project Report at the discretion of the USACE technical team.

TABLE 5-1
DATA FLAGGING CONVENTION FOR METALS ANALYSES

QUALITY CONTROL ITEM	EVALUATION	DATA QUALIFIER FLAG			SAMPLE(S) QUALIFIED
		Detects		Nondetects	
		Non Biased	Biased		
HOLDING TIMES	1) Holding time exceeded by 2 times or less	J	J-	UJ	Sample
	2) Holding time exceeded by greater than 2 times	J	J-	R	
INITIAL CALIBRATION	1) r < 0.995	J	J	UJ	All samples associated with initial calibration (Run Batch)
INITIAL CALIBRATION VERIFICATION (ICV)	1) % Recovery > 110% but ≤ 125% (Hg, % Recovery > 120% but ≤ 135%)	J	J+	No qual.	All samples associated with initial calibration verification (Run Batch)
	2) % Recovery > 125% (Hg, % Recovery > 135%)	R	R	No qual.	
	3) % Recovery < 90% but ≥75% (Hg, % Recovery < 80% but ≥ 65%)	J	J-	UJ	
	4) % Recovery < 75% (Hg, % Recovery < 65%)	J	J-	R	
CALIBRATION VERIFICATION	1) % Recovery > 110% but ≤ 125% (Hg, % Recovery > 120% but ≤ 135%)	J	J+	No qual.	All samples associated with continuing calibration (Analysis Batch)
	2) % Recovery > 125% (Hg, % Recovery > 135%)	R	R	No qual.	
	3) % Recovery < 90% but ≥ 75% (Hg, % Recovery < 80% but ≥ 65%)	J	J-	UJ	
	4) % Recovery < 75% (Hg, % Recovery < 65%)	J	J-	R	

QUALITY CONTROL ITEM	EVALUATION	DATA QUALIFIER FLAG			SAMPLE(S) QUALIFIED
		Detects		Nondetects	
		Non Biased	Biased		
METHOD BLANK CONTAMINATION	Sample results less than or equal to 5 times the blank contamination	U	U	No qual.	All samples in the same Preparation Batch
MATRIX SPIKE RECOVERY	1) % Recovery < CL but ≥ 30%	J	J-	UJ	All samples in the same Method Batch
	2) % Recovery <30%	J	J-	R	
	3) % Recovery > CL	J	J+	No qual.	
	4) RPD > CL	J	J	UJ	
LABORATORY CONTROL SAMPLE RECOVERY	1) % Recovery < CL but ≥ 50%	J	J-	UJ	All samples in the same Preparation Batch
	2) % Recovery <50%	J	J-	R	
	3) % Recovery > CL	J	J+	No qual.	
	4) RPD > CL	J	J	UJ	
REPORTING LIMITS	1) Reporting limits not matching the project specified limits	No qual.	No qual.	No qual.	Sample (noted in outlier report)
	2) Reported result less than the project reporting detection limit.	J	J	No qual.	Sample
FIELD DUPLICATES	RPD > CL	No qual.	No qual.	No qual.	Non-compliant results listed in the ADR outlier report
FIELD BLANKS EQUIPMENT BLANKS	Sample results within 5 times blank contamination	U	U	No qual.	All samples in the same sampling event

TABLE 5-2
DATA FLAGGING CONVENTION FOR ION CHROMATOGRAPHY AND WET CHEMISTRY ANALYSES

QUALITY CONTROL ITEM	EVALUATION	DATA QUALIFIER FLAG			SAMPLE(S) QUALIFIED
		Detects		Nondetects	
		Non Biased	Biased		
HOLDING TIMES	1) Holding time exceeded by 2 times or less	J	J-	UJ	Sample
	2) Holding time exceeded by greater than 2 times	J	J-	R	
COOLER TEMPERATURE	1) > 6 degrees Centigrade	No qual.	No qual.	No qual	Noted on outlier report for samples shipped in affected cooler, if the associated method has temperature requirements.
	2) < 2 degrees Centigrade	No qual.	No qual.	No qual	
INITIAL CALIBRATION	1) %RSD > 20%	J	J	UJ	All samples associated with initial calibration (Run Batch)
	2) r < 0.995	J	J	UJ	
INITIAL CALIBRATION VERIFICATION (ICV)	1) % Recovery = 90-110%	J	J+	No qual.	All samples associated with initial calibration verification (Run Batch)
	2) % Recovery = 90 - 50%	J	J-	UJ	
	3) % Recovery < 50%	J	J-	R	
CALIBRATION VERIFICATION	1) % Recovery = 90-110%	J	J+	No qual	All samples associated with continuing calibration (Analysis Batch)
	2) % Recovery = 90-50%	J	J-	UJ	
	3) % Recovery < 50%	J	J-	R	
METHOD BLANK CONTAMINATION	Sample results less than or equal to 5 times the blank contamination	U	U	No qual.	All samples in the same Preparation Batch

QUALITY CONTROL ITEM	EVALUATION	DATA QUALIFIER FLAG			SAMPLE(S) QUALIFIED
		Detects			
		Non Biased	Biased	Nondetects	
MATRIX SPIKE RECOVERY	1) % Recovery < CL but ≥ 30%	J	J-	UJ	All samples in the same Method Batch
	2) % Recovery <30%	J	J-	R	
	3) % Recovery > CL	J	J+	No qual.	
	4) RPD > CL	J	J	UJ	
LABORATORY CONTROL SAMPLE RECOVERY	1) % Recovery < CL but ≥ 50%	J	J-	UJ	All samples in the same Preparation Batch
	2) % Recovery <50%	J	J-	R	
	3) % Recovery > CL	J	J+	No qual.	
	4) RPD > CL	J	J	UJ	
REPORTING LIMITS	1) Reporting limits not matching the project specified limits	No qual.	No qual.	No qual.	Sample (noted in outlier report)
	2) Reported result less than the project reporting detection limit.	J	J		Sample
FIELD DUPLICATES	1) RPD > CL	No qual.	No qual.	No qual.	Non-compliant results listed in the ADR outlier report
FIELD BLANKS EQUIPMENT BLANKS	Sample results within 5 times blank contamination	U	U	No qual.	All samples in the same sampling event

TABLE 5-3
DATA FLAGGING CONVENTION FOR GC ANALYSES

QUALITY CONTROL ITEM	EVALUATION	DATA QUALIFIER FLAG			SAMPLE(S) QUALIFIED
		Detects		Nondetects	
		Non Biased	Biased		
HOLDING TIMES (Extraction/Analysis)	1) Holding time exceeded by 2 times or less	J	J-	UJ	Sample
	2) Holding time exceeded by greater than 2 times	J	J-	R	
COOLER TEMPERATURE	1) > 6 and ≤10 degrees Centigrade	J	J-	UJ	All samples shipped in the affected cooler. (Shipping Batch)
	2) >10 degrees Centigrade	J	J-	R	
	3) < 2 degrees Centigrade	No qual.	No qual.	No qual.	
INITIAL CALIBRATION	1) %RSD > 20%	J	J	UJ	All samples associated with initial calibration (Run Batch)
	2) r < 0.995	J	J	UJ	
INITIAL CALIBRATION VERIFICATION (ICV)	1) % Difference > +25%	J	J+	No qual.	All samples associated with initial calibration verification (Run Batch)
	2) % Difference < -25% and ≥ -50%	J	J-	UJ	
	3) % Difference < -50%	J	J-	R	
CONTINUING CALIBRATION (CCV)	1) % Difference > +15%	J	J+	No qual.	All samples associated with continuing calibration (Analysis Batch)
	2) % Difference < -15% and ≥ -50%	J	J-	UJ	
	3)% Difference < -50%	J	J-	R	
METHOD BLANK CONTAMINATION	1) Common lab contaminant results less than or equal to 10 times the blank contamination	U	U	No qual.	All samples in the same Preparation Batch
	2) Other compound results less than or equal to 5 times the blank contamination	U	U	No qual.	

QUALITY CONTROL ITEM	EVALUATION	DATA QUALIFIER FLAG			SAMPLE(S) QUALIFIED
		Detects		Nondetects	
		Non Biased	Biased		
SURROGATE RECOVERY	1) % Recovery < CL but ≥ 10%	J	J-	UJ	Sample
	2) % Recovery <10%	J	J-	R	
	3) % Recovery > CL	J	J+	No qual.	
MATRIX SPIKE RECOVERY	1) % Recovery < CL but ≥ 10%	J	J-	UJ	Parent Sample
	2) % Recovery <10%	J	J-	R	
	3) % Recovery > CL	J	J+	No qual.	
	4) RPD > CL	J	J	UJ	
LABORATORY CONTROL SAMPLE RECOVERY	1) % Recovery < CL but ≥ 10%	J	J-	UJ	All samples in the same Preparation Batch
	2) % Recovery <10%	J	J-	R	
	3) % Recovery > CL	J	J+	No qual.	
	4) RPD > CL	J	J	UJ	
REPORTING LIMITS	1) Reporting limits not matching the project specified limits.	No qual.	No qual.	No qual.	Sample (noted in outlier report)
	2) Results reported below the project reporting detection limit.	J	J	No qual.	Sample
FIELD DUPLICATES	1) RPD > CL	No qual.	No qual.	no qual.	Non-compliant results listed in the ADR outlier report
FIELD BLANKS EQUIPMENT BLANKS	1) Common lab contaminant results within 10 times blank contamination	U	U	No qual.	All samples in the same sampling event
	2) Other lab contaminant results within 5 times blank contamination	U	U	No qual.	

QUALITY CONTROL ITEM	EVALUATION	DATA QUALIFIER FLAG			SAMPLE(S) QUALIFIED
		Detects		Nondetects	
		Non Biased	Biased		
TRIP BLANKS	1) Common lab contaminant results within 10 times blank contamination	U	U	No qual.	All samples in the same Shipping Batch
	2) Other lab contaminant results within 5 times blank contamination	U	U	No qual.	

TABLE 5-4
DATA FLAGGING CONVENTION FOR GC/MS ANALYSES

QUALITY CONTROL ITEM	EVALUATION	DATA QUALIFIER FLAG			SAMPLE(S) QUALIFIED
		Detects		Nondetects	
		Non Biased	Biased		
HOLDING TIMES (Extraction/Analysis)	1) Holding time exceeded by 2 times or less	J	J-	UJ	Sample
	2) Holding time exceeded by greater than 2 times	J	J-	R	
COOLER TEMPERATURE	1) > 6 and ≤10 degrees Centigrade	J	J-	UJ	All samples shipped in the affected cooler (Shipping Batch)
	2) >10 degrees Centigrade	J	J-	R	
	3) < 2 degrees Centigrade	No qual.	No qual.	No qual.	
INSTRUMENT TUNING	1) Ion abundance criteria not met	JN	JN	R	All samples associated to an initial calibration (Run Batch), if tune is associated to an initial calibration. All samples associated to a continuing calibration (Analysis Batch), if tune is associated to a continuing calibration.
INITIAL CALIBRATION	1) Average RRF < 0.05	J	J	R	All samples associated to the initial calibration (Run Batch)
	2) %RSD > 30%	J	J	UJ	
	3) r < 0.995	J	J	UJ	

QUALITY CONTROL ITEM	EVALUATION	DATA QUALIFIER FLAG			SAMPLE(S) QUALIFIED
		Detects		Nondetects	
		Non Biased	Biased		
INITIAL CALIBRATION VERIFICATION (ICV)	1) Average RRF < 0.05	J	J	R	All samples associated to the ICV (Run Batch)
	2) % Difference > +25%	J	J+	no qual.	
	3) % Difference < -25% and ≥ -50%	J	J-	UJ	
	4) % Difference < -50%	J	J-	R	
CONTINUING CALIBRATION VERIFICATION (CCV)	1) Average RRF < 0.05	J	J	R	All samples associated to the CCV (Analysis Batch)
	2) % Difference > +25%	J	J+	no qual.	
	3) % Difference < -25% and ≥ -50%	J	J-	UJ	
	4) % Difference < -50%	J	J-	R	
METHOD BLANK CONTAMINATION	1) Common lab contaminant and tentatively identified compound (TIC) results less than or equal to 10 times blank contamination	U	U	No qual.	All samples in the same Preparation Batch as the method blank
	2) Other compound results less than or equal to 5 times blank contamination	U	U	No qual.	
INTERNAL STANDARDS	1) Area counts must not vary by more than a factor of 2 (+/-50%)	JN	JN	UJ	Sample (use of professional judgment is recommended based on evaluation of mass spectra).
	2) The retention time must no vary more than +/- 30 seconds from the retention time of the associated 12 hour calibration standard	JN	JN	UJ	
SURROGATE RECOVERY	1) % Recovery < CL but ≥ 10%	J	J-	UJ	Sample
	2) % Recovery <10%	J	J-	R	Note: For semivolatile analysis, two or more surrogates in a fraction must be out of criteria for qualification unless recovery < 10%.
	3) % Recovery > CL	J	J+	no qual.	

QUALITY CONTROL ITEM	EVALUATION	DATA QUALIFIER FLAG			SAMPLE(S) QUALIFIED
		Detects		Nondetects	
		Non Biased	Biased		
MATRIX SPIKE RECOVERY	1) % Recovery < CL but ≥ 10% 2) % Recovery <10% 3) % Recovery > CL 4) RPD > CL	J J J J	J- J- J+ J	UJ R no qual. UJ	Parent Sample
LABORATORY CONTROL SAMPLE RECOVERY	1) % Recovery < CL but ≥ 10% 2) % Recovery <10% 3) % Recovery > CL 4) RPD > CL	J J J J	J- J- J+ J	UJ R no qual. UJ	All samples in the same Preparation Batch as the LCS
REPORTING LIMITS	1) Reporting limits not matching the project specified limits 2) Results reported below the project reporting detection limit.	No qual. J	No qual. J	No qual. No qual.	Sample (noted on outlier report)
FIELD DUPLICATES	1) RPD > CL	No qual.	No qual.	no qual.	Noted in outlier report
FIELD BLANKS EQUIPMENT BLANKS	1) Common lab contaminants and tentatively identified compound (TIC) results within 10 times blank contamination 2) Other lab contaminant results within 5 times blank contamination	U U	U U	No qual. No qual.	All samples in the same sampling event
TRIP BLANKS	1) Common lab contaminant and tentatively identified compound (TIC) results within 10 times blank contamination 2) Other lab contaminant results within 5 times blank contamination	U U	U U	No qual. No qual.	All samples in the same Shipping Batch as the trip blank

TABLE 5-5
DATA FLAGGING CONVENTION FOR HPLC ANALYSES

QUALITY CONTROL ITEM	EVALUATION	DATA QUALIFIER FLAG			SAMPLE(S) QUALIFIED
		Detects		Nondetects	
		Non Biased	Biased		
HOLDING TIMES (Extraction/Analysis)	1) Holding time exceeded by 2 times or less	J	J-	UJ	Sample
	2) Holding time exceeded by greater than 2 times	J	J-	R	
COOLER TEMPERATURE	1) > 6 and ≤10 degrees Centigrade	J	J-	UJ	All samples shipped in the affected cooler. (Shipping Batch)
	2) >10 degrees Centigrade	J	J-	R	
	3) < 2 degrees Centigrade	No qual.	No qual.	No qual.	
INITIAL CALIBRATION	1) %RSD > 20%	J	J	UJ	All samples associated with initial calibration (Run Batch)
	2) r < 0.995	J	J	UJ	
INITIAL CALIBRATION VERIFICATION (ICV)	1) % Difference > +15%	J	J+	No qual.	All samples associated with initial calibration verification (Run Batch)
	2) % Difference < -15% and ≥ -50%	J	J-	UJ	
	3) % Difference < -50%	J	J-	R	
CONTINUING CALIBRATION (CV)	1) % Difference > +15%	J	J+	No qual.	All samples associated with continuing calibration (Analysis Batch)
	2) % Difference < -15% and ≥ -50%	J	J-	UJ	
	3) % Difference < -50%	J	J-	R	
METHOD BLANK CONTAMINATION	1) Sample results less than or equal to 5 times the blank contamination.	U	U	No qual.	All samples in the same Preparation Batch
SURROGATE RECOVERY	1) % Recovery < CL but ≥ 10%	J	J-	UJ	Sample
	2) % Recovery <10%	J	J-	R	
	3) % Recovery > CL	J	J+	No qual.	

QUALITY CONTROL ITEM	EVALUATION	DATA QUALIFIER FLAG			SAMPLE(S) QUALIFIED
		Detects		Nondetects	
		Non Biased	Biased		
MATRIX SPIKE RECOVERY	1) % Recovery < CL but ≥ 10%	J	J-	UJ	Parent Sample
	2) % Recovery <10%	J	J-	R	
	3) % Recovery > CL	J	J+	No qual.	
	4) RPD > CL	J	J	UJ	
LABORATORY CONTROL SAMPLE RECOVERY	1) % Recovery < CL but ≥ 10%	J	J-	UJ	All samples in the same Preparation Batch
	2) % Recovery <10%	J	J-	R	
	3) % Recovery > CL	J	J+	No qual.	
	4) RPD > CL	J	J	UJ	
REPORTING LIMITS	3) Reporting limits not matching the project specified limits.	No qual.	No qual.	No qual.	Sample (noted in outlier report)
	4) Results reported below the project reporting detection limit.	J	J	No qual.	Sample
FIELD DUPLICATES	1) RPD > CL	No qual.	No qual.	No qual.	Non-compliant results listed in the ADR outlier report
FIELD BLANKS EQUIPMENT BLANKS	1) Common lab contaminant results within 10 times blank contamination	U	U	No qual.	All samples in the same sampling event
	2) Other lab contaminant results within 5 times blank contamination	U	U	No qual.	
TRIP BLANKS	1) Common lab contaminant results within 10 times blank contamination	U	U	No qual.	All samples in the same Shipping Batch
	2) Other lab contaminant results within 5 times blank contamination	U	U	No qual.	

TABLE 5-6
QUALITY ASSURANCE SPLIT RESULTS COMPARISON CRITERIA

Matrix	Parameter	Disagreement	Major Disagreement
All	All	>5X difference when one result is <DL	>10X difference when one result is <DL
All	All	>3X difference when one results is <RL	>5X difference when one results is <RL
Water	All except TPH	>2X difference	>3X the difference
Soil	All except metals, VOCs, BTEX, and TPH	>4X difference	>5X difference
Soil	Metals	>2X difference	>3X difference
Water and Soil	TPH	Arbitrary (suggest >3X difference)	Arbitrary (suggest >5X difference)
Soil	VOCs and BTEX	Arbitrary (suggest >5X difference)	Arbitrary (suggest >10X difference)

Reference: USACE, 1996
BTEX: benzene, toluene, ethylbenzene, and total xylenes
DL: detection limit
RL: reporting limit
TPH: total petroleum hydrocarbons
VOCs: volatile organic compounds

6.0 GENERAL CONTRACT SPECIFICATIONS

6.1 CONTRACT LABORATORY VALIDATION

Prior to collection or analysis of any environmental samples, the Contract Laboratory shall be validated by the USACE HTRW Center of Expertise (HTRW-CX) in accordance with the requirements of USACE EM 200-1-1 as well as the State where delivery order tasks will be executed (California, Utah, Nevada, and Arizona). Laboratories are validated for each environmental matrix and each specific analytical method to be employed. If the prime Contractor selects a laboratory, which has a current (within eighteen months) validation for all analytes and matrices specific to its project, additional evaluation will not be necessary. The CO shall be contacted to verify the status of the contract laboratory. If the prime Contractor selects a laboratory which does not have a current validation, the laboratory shall be validated prior to approval of the project specific SAP. Commercial laboratory validation procedures can be obtained from the CO (Note: certification by HTRW-CX may take as long as three months). Samples will not be subcontracted to another laboratory without knowledge and approval of the CO and the second laboratory must be validated for the parameters concerned. The Contractor (or Contract Laboratory, as applicable) shall be responsible for the following:

6.1.1 Selecting a Lab

Laboratories performing analyses for this program will be selected based on their ability to maintain USACE validation, and State certification, their past performance as well as technical and management practices relevant to the attainment of project-specific DQOs. Laboratory certification and validation documentation shall be included in the project-specific SAP. The project laboratories shall agree to the method performance, deliverables, and documentation specifications in this specification and the site-specific SAP. It will be the responsibility of the Primary Contractor to assure compliance with is agreement to provide documentation of nonconformances and actions taken to correct deficiencies.

6.1.2 Laboratory Fraud

Laboratory fraud is defined as the deliberate falsification of analytical and quality assurance results, where failed method and contractual requirements are made to appear acceptable during reporting. Since the early 1990's several major fraud cases have come to light. The U.S. Environmental Protection Agency (US EPA) Office of Inspector General (OIG) reported in its draft audit report of nine Superfund sites in three US EPA regions dated October 28, 1996, that 11 million plus dollars were spent on rejected analyses, re-sampling, and associated costs that could have been avoided through the use of effective quality assurance oversight systems. Repercussions include the compounded losses in time, resources and monies spent to pursue damages and reassess decisions made with fraudulent data is an enormous vulnerability that regulators, decision makers, and laboratory users cannot afford.

In response to these findings, DOD and EPA combined their efforts to develop strategies to eliminate laboratory fraud. The Army has placed a high priority of fraud detection and deterrence for the investigative efforts at Camp Ono due to the sensitivity and potential impact of investigative efforts undertaken in PRP cases. USACE has incorporated measures for fraud deterrence and detection based on the document “Detection and Deterrence of Laboratory Fraud” published by the California Military Environmental Coordination Committee (CMECC). The measures incorporated into this project include the following:

- Development of Data Quality Objectives (Section 5.2.2.4)
- Identification of Quality Assurance and Quality Control Requirements (as a result of the specifications in Section 5.2.2.4)
- Laboratory Selection and Use of Phased Audits (Sections 6.1 and 5.2.4.2)
- PE Samples (Section 5.2.3.5.3)
- QA Split Sample Analysis (Section 5.3.2.3)
- Laboratory Performance Histories (Section 6.1.1)
- Data Validation (Section 5.2.5.2)
- Electronic Data and Tape Audits (Section 5.2.4.4)
- Quality Assurance Officer (Section 5.2.4.5)

- Electronic Data Deliverables (Section 5.5)

6.2 FACILITIES AND PERSONNEL

Provide all laboratory facilities and qualified personnel for sample analyses, and provide access to work, as required.

6.3 STATEMENT OF WORK AND ETHICAL CONDUCT

The Statement of Work for laboratories will include the following:

A) All laboratories will have a company ethics policy read and signed by employees. The laboratory shall have arrangements to ensure that its personnel are free from any commercial, financial, and other pressures, which might adversely affect the quality of their work (ISO Guide 25, and NELAC Quality System Standard).

B) Training will be provided to laboratory staff on the ethics of generating analytical data and for meeting the technical requirements established in the method. Training files on the analyst will be maintained by the laboratory. These files will contain signatures of the analyst certifying that they have received the training. The ethics training received or to be received by the staff will be documented in an approved QAPP or FSP. Certificates of completion will be signed annually.

C) Specific SOPs will be drafted for each method to be performed by the laboratory. These SOPs will identify the specific corrective measures to be performed will problems occur with the analyses. These measures will be strictly adhered to; no deviations will be allowed without documentation. To ensure consistency in performing a method, which may permit different options, the SOP must document the specific activities the analyst will perform.

D) The laboratory's quality system must include "arrangements for ensuring that the laboratory review all new work to ensure that it has the appropriate facilities and resources before commencing such work" (ISO Guide 25, 5.2.I).

E) The laboratory management must provide adequate resources and assign sufficient authority and independence to line management and to staff to enable them to plan, implement, assess, and improve the laboratory's quality system effectively (ANSI/ASQC E-4, 2.1.1).

6.4 USE OF MORE THAN ONE LABORATORY

Several contract laboratories may be used for the program. For each effort, USACE will contract with an independent quality assurance laboratory in order to confirm the performance of the contractor's laboratory. Although submitting samples to more than one laboratory does not prevent fraud from occurring, this practice can detect problems that otherwise may not be apparent. If different laboratories repeatedly provide divergent results in the absence of mitigating factors, further investigation will be initiated by the Primary Contractor. A well-designed split-sample strategy can be used to ensure decisions are supported by more than one laboratory, and are recommended especially in cases where critical decisions are being made. Different laboratories that provide similar results build confidence for the data users that the data are reliable.

6.5 SAMPLE HANDLING

Furnish labor, equipment and facilities to obtain and handle samples at the project site, to facilitate inspections and analyses, and to provide storage, preservation (including refrigeration) and cooling of the samples, as necessary.

6.6 SAMPLE CUSTODY

Provide for and ensure that transportation, chain of custody, and ultimate disposal of samples takes place in accordance with USACE/EPA procedures.

6.7 DATA MANAGEMENT

Data management takes place at varied levels throughout the range of the project. The CDQMP shall identify the individuals responsible for data management, the activities involved with data management, and the minimum required credentials associated with these tasks. The CDQMP shall provide for documentation and data management of the analytical results. A plan for data management will be established for each project handling large amount of data (as defined in the CDQMP).

The CDQMP shall set the minimum standards for electronic data management. At a minimum, the field and laboratory data to be captured electronically will be specified. For example, the data management plan shall include the formulas used, the computer programs used, which data transfers are electronic or manual, and validation steps. All computer programs, spreadsheets, and databases will be validated as to the accuracy of data management before being used on project work. All data acquired electronically will be transferred electronically to reduce errors inherent in manual data manipulation. Data entered, transferred, or calculated by hand will be spot-checked for the accuracy of the transfer and the calculations, preferably by someone who did not perform the original entries or calculations. These checks will be documented.

The CDQMP shall specify the design, implementation, and maintenance of program and project databases. The electronic data deliverable file requirements for the laboratories (i.e., fields, structure, definitions, valid values, format, etc.) shall be provided in the CDQMP. The data to be entered into the database includes (at a minimum): sample locations, field drilling data, well construction details, groundwater elevation surveys, product recovery data, chemical analyses data, and field and laboratory quality control sample results. The hardware and software necessary for the program will be specified in the CDQMP. The database platform, structure, and software applications will be evaluated and appropriate programming applications will be designed or modified for the specific uses. This information will be specified in the CDQMP.

6.8 INSPECTIONS, SAMPLING, AND ANALYSIS
Comply with specified standards and ascertain compliance of materials with requirements of the Contract Documents.

6.9 CALIBRATIONS
Provide for calibration of equipment.

6.10 QUALITY ASSURANCE SAMPLE
Provide for laboratory QA samples including splits and duplicates.

6.11 SAMPLE CONTAINERS
Provide for clean sample containers and sample preservation.

6.12 RECORD KEEPING
Maintain internal Record keeping in accordance with good laboratory practices and the provisions of these specifications.

6.13 ACCESS TO DATA
USACE shall have direct access to all data produced by the Contract Laboratory at all times. At any time, USACE representatives shall be granted access to data that is currently available at the laboratory for sample analyses for USACE projects with or without the prior consent of the Contractor. If the Contract Laboratory has an electronic system for delivery or early review of data USACE shall be allowed electronic access to data with or without the consent of the Contractor. The Contractor shall instruct the Contract Laboratory in writing prior to initiation of sampling and analysis that USACE representatives shall have unrestricted access to data and the USACE CO shall be provided with a copy of this communication.

6.14 LATE DELIVERY OF DATA
Late delivery of data will result in a reduction in payment for services related to sample analysis. Data packages are due within 21 days of the time of sampling and will be delivered to the Contractor and the USACE CO concurrently. If analytical data packages are not received in the Sacramento District offices at

the specified time 5% of the total contract amount related to sample analyses (for the corresponding sample delivery groups) will be credited to the Government. At the end of the first week and for each week thereafter an additional 10% of the total contract amount related to sample analyses will be credited to the Government up to a maximum of 35% of the total delivery order amount related to sample analyses.

6.15 REJECTION OF DATA

Data will be screened for contract compliance. Failure to execute specific actions related to sampling or analysis required by this contract will result in rejection of data for the corresponding samples. At a minimum, the Government will be credited for the cost of sampling and/or analytical work that is rejected for contract compliance failure. Alternatively, the USACE CO can require re-sampling and re-analysis or re-issuance of deliverables at no additional cost to the Government for sampling or analytical work that is rejected for contract compliance failure.

~~Appendix A~~Attachment D - Work Plan (WP)

~~Work Plan (WP)~~

~~APPENDIX A~~ATTACHMENT D
WORK PLAN (WP)

For each task order, the Contractor will be required to prepare and submit a WP. The WP describes the Contractor's detailed approach for the performance of the task order. The WP will be based upon the Government's Statement of Work for the Task Order, which is a general description of work that the Contractor will be required to perform in the field and/or in the office.

WP Development. The development of a WP will be phased process. The draft WP is based upon the Government's Statement of Work for the task order. The draft WP will be submitted within 21 days of receipt of the task order or within the time period identified in the individual task order. The WP will be reviewed by the Contracting Officer (or designee) and error and omissions will be identified. The Government may also include questions and comments concerning the WP. The Contractor shall submit a final WP within fourteen (14) days of receipt of USACE's comments or as specified in the task order.

WP Acceptance. Except as otherwise provided in individual task orders, approval of the WP is required prior to start of field activities. No change in the approved plan shall be implemented without written concurrence of the Contracting Officer. The Government reserves the right to require the Contractor to make changes in his WP and operations as necessary to obtain the quality specified.

Contents. A comprehensive work plan for each task order shall be developed and submitted as specified above or in accordance with the submittal schedule in the task order. The WP shall include a detailed discussion of the technical approach to be used (equipment, methods, and procedures). All personnel shall be identified and work schedules formulated. The project organization for the prime Contractor and any subcontractors shall be clearly defined. Key individuals shall be identified along with a description of their duties and responsibilities (Quality Control Supervisor, Project Supervisor, Certified Industrial Hygienist, Project Chemist, Site Safety Officer, etc.) Five (5) copies of the draft and four copies of the final shall be provided to the Government. Acceptance of the final WP is required prior to the commencement of fieldwork. Unless specified otherwise in the individual task orders, the WP shall include the following components:

- The Contractor shall briefly describe the work to be performed according to the task order including a site description and contaminant history, if applicable.
- A schedule that presents the length of the individual tasks within the overall task, the interrelationship between tasks, and other key milestones. If Critical Path Analysis is required, the Contracting Officer will direct the requirements of the analysis.
- Permits, licenses, and certificates, identification number, and location of the disposal facility, as necessary;
- Key personnel to be used on the project and their responsibilities.
- Logs, reports, and record keeping to be utilized;
- Studies, investigations, designs and deliverables that will be performed by the Contractor under the Task Order.
- Identification and evaluation of all applicable and relevant laws, regulations, and requirements (ARARs) concerning this task.

Site Specific Submittals. Some of the following documents may be required in the WP or as Supplemental Reports, as detailed in this Scope of Work or in the individual Task Order

- Sampling and Analysis Plan (SAP). The Sampling and Analysis Plan shall be prepared in accordance with the requirements of ~~Appendix D~~Attachment C, ~~Chemical~~ Environmental Data Quality Management Program Specifications, Paragraph ~~XX~~5.0, The SAP shall make specific reference to procedures discussed in the CDQMP as required. Any changes from procedures identified in the CDQMP shall be discussed in the SAP at the same level of detail that is required for the CDQMP and must be approved by the Contracting Officer

- Site Specific Safety and Health Plan (SSHP). The requirements for the SSHP are clearly detailed in Appendix B of ER 385-1-92 and this Scope of Work, Appendix C.
- Site Specific Environmental Protection Plan (EPP). The Contractor shall prepare an environmental protection plan that outlines how work will be carried out to protect the environment, including any special mitigation efforts identified in the Task Order. The plan shall include, but not be limited to, run-on/run-off controls, protection of existing vegetation, protection of existing animal habitats, noise and dust mitigation, refuse control, regulatory contacts, etc.
- Site Specific Spill and Discharge Plan (SDP) The Spill and Discharge Plan shall address the procedures, equipment, and personnel to be employed in the event of an accidental spill of hazardous material. The names and phone numbers of the emergency response personnel as well as their lines of authority and responsibilities shall be clearly defined.
- Site Specific Materials Handling Plan (MHP). The MHP shall discuss the transportation and handling of investigative derived wastes, as well as, wastes generated by the work defined in the delivery order. The MHP will outline the procedures for handling and disposal of wastes throughout their arrival at a licensed Treatment, Storage, and Disposal (TSD) Facility. The MHP will provide evidence of certification of all material haulers and TSDs to be used on the project.
- Site Security Plan. The Site Security Plan shall consist of measures to ensure the security of the site and to keep unauthorized persons out of the site. The plan shall address fencing requirements, gates, locks, signage, lighting, barricades, and security guards, if required.
- Daily Quality Control Reports
- Daily Chemical Quality Control Reports
- Certificates of Analysis
- Quality Control Summary Reports
- Survey Summaries
- Hazardous Waste Disposal Plan
- Completed Manifest Package. ~~See Appendix F~~
- Certificates of Destruction
- QC Reports of Geotechnical and Materials Testing
- Safety Reports

~~Appendix B~~Attachment E - General Management Plan

~~General Management Plan~~

~~Appendix~~ Attachment E~~B~~

General Management Plan

The Contractor shall prepare and submit a draft General Management Plan within 15 days following the issuance of the first Task Order. Written comments on the draft GMP will be returned to the Contractor. The Contractor shall have 30 days to incorporate comments into the final GMP. The Contractor shall resubmit the final GMP with corrections until it is accepted by the Contracting Officer (KO). Eight (8) copies of the draft and six (6) copies of the final shall be provided to the KO. Acceptance of the final GMP by the KO is required prior to beginning work under the first task order. The GMP shall explain in detail Contractor capabilities, as well as, the quality assurance (QA) and quality control (QC) practices to be employed in execution of task orders. Items to be addressed in the GMP shall include, but not be limited to:

1. Contractor Capabilities (Personnel, Equipment, Licenses, Permit, etc.)

~~1.~~2. List of Sub-Contractors Planned for Use.

~~1.~~3. Organizational Lines of Responsibility and Authority

~~1.~~4. POC's for coordination with USACE and Lead Regulatory Agencies.

~~1.~~5. Permit Acquisition Management

~~1.~~6. Contract Laboratory Validation

The GMP shall explain procedures to be used to ensure work is conducted in an environmentally acceptable manner, conforming to existing Federal, State, and local regulations. For each task order, the Contractor shall prepare an addendum to the GMP describing site-specific application of the policies set forth here. Addenda will also describe any changes in subcontractor utilization or corporate organization since approval of the original GMP.

~~Appendix C~~Attachment F – Safety, Health and Emergency Response Program

~~Safety and Health Program~~

Attachment F
Safety, Health and Emergency Response

A critical contractor performance evaluation factor throughout contract activities is the safety and health of affected on-site personnel, potential off-site receptors, and the protection of the environment. This attachment describes, in general terms, the minimum safety, health and emergency response requirements for activities, which involve employee exposure, or the reasonable possibility for exposure to safety and health hazards. This attachment identifies the safety and occupational health documents and procedures that the contractor shall develop and implement for executing hazardous, toxic and radioactive waste (HTRW) response actions and high-risk construction activities, to include Civil Works projects. Response actions include investigation, design, pilot studies, construction, treatment process operations and maintenance (O&M), and other related activities. The safety and health practices and procedures shall provide proper control of and protection against the unique safety, chemical, physical, radiological and biological hazards.

Accident Prevention Plan (APP)

The contractor shall develop and execute an ongoing APP in accordance with Appendix A of EM 385-1-1 to include Activity Hazard Analyses (AHAs) with a Site Safety and Health Plan (SSHP) appendix for HTRW site operations. Some contracts, based upon the work to be performed (i.e., asbestos abatement, lead hazard control), require additional special safety and health plans to be made part of and appended to the APP. The APP shall comply with the most current USACE, OSHA, state, and regulatory agency laws, regulations, and guidance. The APP shall be job-specific and shall address any unusual or unique aspects of the project or activity for which it is written. The APP shall interface with the contractor's overall Safety and Health Program (SHP). Any portions of the Contractor's overall SHP referenced in the APP shall be included in the applicable APP element and made site-specific. The Government considers the Prime Contractor to be the "controlling authority" for site safety and health of subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one subcontractor from interfering with or creating hazardous working conditions for other subcontractors, and inspecting subcontractor operations to ensure that accident prevention responsibilities are carried out. The contractor, Project Manager (PM), Health and Safety Manager (HSM), on-site Project Supervisor, and Site Safety and Health Officer (SSHO), shall sign the APP.

The contractor shall submit the APP to the Contracting Officer (CO) for review (meets the requirements of the contract provisions) and acceptance. Work cannot proceed without an accepted APP. Once accepted, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping work, at the discretion of the CO, until the matter has been rectified.

Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the CO, HSM, Project Supervisor, SSHO and Quality Control Manager. Should any unforeseen hazard become evident during the performance of work, the Project Supervisor shall inform the CO, both verbally and in writing, for resolution as soon as possible. In the interim, the contractor shall take necessary action to restore and maintain safe working conditions.

Copies of the accepted APP shall be maintained at the job site. The APP shall be continuously reviewed and amended, as necessary, throughout the life of the contract. Unusual or high-hazard activities not identified in the original APP shall be incorporated in the plan as they are discovered.

Development and Implementation of the APP

The contractor shall utilize the services of qualified personnel, as defined in Appendix B of ER 385-1-92 and this attachment, Chapter 20 of EP 1110-1-18 for Military Munitions (MM) and regulatory requirements for asbestos and lead-based paint (LBP) to oversee the development and implementation of required safety and health documents.

EM 385-1-1 Contents

The following elements of Appendix A of EM 385-1-1 shall be addressed in the APP:

a. Signature sheet
b. Background information
c. Statement of safety and health policy
d. Responsibilities and lines of authorities:
    1. Names and qualifications (resumes including education, training, experience and certifications) of all safety and health personnel designated to perform work on this project to include the HSM, SSHO, Project Supervisor, and other competent and qualified personnel to be used. The duties of each position shall be specified.
    2. Qualifications of competent and of qualified persons. As applicable, competent persons shall be designated and qualifications submitted for the following major areas: scaffolding; fall protection; hazardous energy; health hazard recognition, evaluation and control of chemical, physical and biological agents; personal protective equipment and clothing to include selection, use and maintenance; asbestos abatement; lead hazard control; confined spaces; and excavations.
e. Subcontractors and suppliers
f. Training
g. Safety and health inspections
h. Safety and health expectations, incentive programs and compliance
i. Accident reporting
j. Medical support
k. Personal protective equipment
l. Plans (programs, procedures) required by the safety manual
m. Contractor information
n. Site-specific hazards and controls

In addition to the above elements, the following is required when applicable:

a. Confined Space Entry Plan. If required, develop a confined space entry plan in accordance with 29 CFR 1910.146 and EM 385-1-1. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedures for rescue by contractor personnel and the coordination with emergency responders.
b. Health Hazard Control Program. The contractor shall designate a competent and qualified person to establish and oversee a Health Hazard Control Program in accordance with Section 6 of EM 385-1-1. The program shall ensure that employees, on-site Government representatives, and others, are not adversely exposed to chemical, physical and biological agents and that necessary controls and protective actions are instituted to ensure health.
c. Crane Critical Lift Plan. Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a barge mounted

mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operations, sensitive equipment, or unusual safety risks.

d. Alcohol and Drug Abuse Plan.

e. Fall Protection and Prevention (FP&P) Plan. The plan shall be site specific and address all fall hazards in the work place and during different phases of construction. It shall address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 1.8 m (6 feet). A qualified person shall prepare and sign the plan. The plan shall include fall protection and prevention systems, equipment and methods employed for every phase of work, responsibilities, rescue and escape equipment and operations, training requirements, and monitoring methods. FP&P Plan shall be revised reflecting any changes during the course of construction due to changes in personnel, equipment, systems or work habits. The accepted FP&P Plan shall be kept and maintained at the job site for the duration of the project.

f. Training Records and Requirements. List of mandatory training and certifications which are applicable to the project (e.g., explosive actuated tools, confined space entry, fall protection, crane operations, vehicle operator, forklifts operators, personal protective equipment); list of requirements for periodic retraining/certification; outline requirements for supervisory and employee safety meetings.

g. Lead Hazard Control Plan.

h. Asbestos Hazard Abatement Plan.

i. PCB Plan. .

j. Site Demolition Plan.

k. Training Records and Requirements. List of mandatory training and certifications which are applicable to the project (e.g. explosive actuated tools, confined space entry, fall protection, crane operation, vehicle operator, forklift operators, personal protective equipment, asbestos, lead); list of requirements for periodic retraining/certification; outline requirements for supervisory and employee safety meetings.

Activity Hazard Analyses

The contractor shall develop an AHA for every operation involving site activities presenting hazards not experienced in previous project operations or where a new work crew or subcontractor will perform work. The AHAs format shall be in accordance with Figure 1-2 of EM 385-1-1. Subsequent AHAs shall be submitted as amendments to the APP. The analysis must identify and evaluate hazards and outline the proposed methods and techniques for the safe completion of each phase of work. At a minimum, define activity being performed, sequence of work, specific safety and health hazards anticipated, control measures (to include personal protective equipment) to eliminate or reduce each hazard to acceptable levels, equipment to be used, inspection requirements, training requirements for all involved, and the competent person in charge of that phase of work. For work with fall hazards, including fall hazards associated with scaffold erection and removal, identify the appropriate fall arrest systems. For work with materials handling equipment, address safeguarding measures related to materials handling equipment. An activity requiring an AHA shall not proceed until the CO has accepted the AHA and a meeting conducted by the contractor to discuss its contents with everyone engaged in the activity, including on-site Government representatives.

Activity hazard analyses shall be updated as necessary to provide an effective response to changing work conditions and activities. The Project Supervisor, HSM, SSHO, and competent persons used to develop the AHAs, including updates, shall sign and date the AHAs before they are implemented.

Display of Safety Information

The following information shall be displayed on the safety bulletin board in clear view of the on-site personnel:

a. Map denoting the route to the nearest emergency care facility

b. Emergency phone numbers

c. Copy of the most up-to-date APP

d. AHA(s)

e. OSHA 300A Form
f. Applicable permits
g. A sign indicating the number of hours worked since last lost workday accident
h. OSHA Safety and Health Protection-On-The-Job Poster
i. Safety and Health Warning Posters

References

a. United States Army Corps of Engineers (USACE), *Safety and Health Requirements Manual*, EM 385-1-1, 3 November 2003
b. USACE, *Safety and Occupational Health Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities*, ER 385-1-92, 1 July 2003
c. USACE, *Safety and Health Requirements for Ordnance and Explosives (OE) Operations*, ER 385-1-95, 16 June 2003
d. USACE, *Unexploded Ordnance (UXO) Support During Hazardous, Toxic, and Radioactive Waste (HTRW) and Construction Activities*, EP 75-1-2, 20 November 2000
e. USACE, *Ordnance and Explosives Response*, EP 1110-1-18, 24 April 2000
f. USACE, *Basic Safety Concepts and Considerations for Ordnance and Explosives Operations*, EP 385-1-95a, 29 June 2001
g. USACE, *Ordnance and Explosives Response*, ER 1110-1-8153, 14 May 1999
h. Occupational Safety and Health Administration (OSHA) Standards 29 CFR 1910, Occupational Safety and Health Standards
i. OSHA, Standards 29 CFR 1926, Safety and Health Regulations for Construction
j. OSHA, 29 CFR 1910.120/29 CFR 1926.65, Hazardous Waste Operations and Emergency Response
k. OSHA, In addition to the Hazardous Waste Operations and Emergency Response regulation, there are other ancillary safety and health regulations governing certain aspects for this contract, to include but not limited to, Respiratory Protection (29 CFR 1910.134), Occupational Noise Exposure (29 CFR 1910.95), Hazard Communication (29 CFR 1910.1200/29 CFR 1926.59), Permit-Required Confined Spaces (29 CFR 1910.146), The Control of Hazardous Energy (Lockout/Tagout) (29 CFR 1910.147), Scaffolds (29 CFR 1926 Subpart L), Fall Protection (29 CFR 1926 Subpart M), Excavations (29 CFR 1926 Subpart P), Lead (29 CFR 1926.62), Asbestos (29 CFR 1926.1101), etc.
l. Federal Acquisition Regulation, FAR Clause 52.236-13: Accident Prevention
m. Nuclear Regulatory Commission Standards (NRC), 10 CFR 20, Standards for Protection Against Radiation
n. NIOSH/OSHA/USCG/EPA, *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, October 1985
o. EPA, *Standard Operating Safety Guides*, July 1988
p. American Conference of Governmental Industrial Hygienists (ACGIH®), *TLVs® and BELs®, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices*, 2004
q. Other State, local, and regional safety and health requirements

Definitions

a. Accident Prevention Plan. A written plan which describes work to be performed and measures to be taken to control hazards associated with materials, services, or equipment. The SSHP may serve as the APP provided it addresses all content requirements of Appendix A of EM 385-1-1.
b. HTRW Activities. HTRW activities include those activities undertaken for the Defense Environmental Restoration Program (DERP), including Formerly Used Defense Sites (FUDS) and Installation Restoration Program sites at active DOD facilities, Formerly Utilized Sites Remedial Action Program (FUSRAP), Environmental Protection Agency's (EPA) Superfund program, the, HTRW actions associated with Civil Works projects, and any other work performed at HTRW sites. HTRW site activities includes those conducted at "containerized" HTRW sites, such as leaking Polychlorinated Biphenyls (PCB) transformers, leaking or suspected leaking Underground Storage Tanks (USTs), that contain hazardous substances, hazardous wastes, or hazardous materials.
c. Safety and Health Program (SHP). A written safety and health program, which describes general occupational safety and health requirements.

Safety and Health Program (SHP)

The contractor is required by regulation to develop and maintain a written SHP in compliance with the 29 CFR 1920.120(b)/29 CFR 1926.65(b). The contractor shall have this program available for review if requested by the CO. General occupational safety and health program, plans, and standard operating procedures (SOPs) may include, but not limited to the following elements:

a. An organizational structure

b. Safety and health training program

c. Medical surveillance program

d. Rules regarding access to employee exposure and medical records

e. Employee emergency plans and fire prevention plans

f. Respiratory protection program

g. Personal protection equipment program

h. Hazard communication program

i. Lockout-tagout program

j. Excavation and trenching procedures

k. Drilling

l. Hot work permits

m. Blood borne pathogens exposure control plan

n. Hearing conservation program

o. Heat/cold stress program

p. Permit-required confined space program

q. Emergency response plan

r. Decontamination procedures

s. Spill containment program

t. Underground storage tank removal

u. Radiological health protection program

v. UXO avoidance/clearance SOP

w. Range safety

x. Medical waste

y. Drum/container handling procedures

z. Guarding of machinery and equipment program

aa. Fall protection procedures

bb. Illumination

cc. Sanitation

dd. Process safety management program

ee. Safety and health signs and labels

ff. Asbestos hazard abatement plan

gg. LBP compliance plan

hh. Air monitoring program (personal, area, ambient air)

ii. HTRW policy statement

jj. Alcohol and drug abuse program

kk. PCB management program

ll. Chemical hygiene plan (laboratory

mm. Cleanup of bird excrement and amplified fungal growth

nn. Ergonomic program.

Site Safety and Health Plan (SSHP) Appendix to the APP

The Contractor shall develop and implement a SSHP that shall be attached to the APP as an appendix. The SSHP shall address all occupational safety and health hazards (traditional construction as well as contaminant related hazards) associated with HTRW activities. The SSHP shall cover each SSHP element in Appendix C of ER 385-1-92. There are overlapping elements in Appendix C of ER 385-1-92 and Appendix A of EM 385-1-1. SSHP appendix elements that overlap with APP elements need not be duplicated in the SSHP, provided each safety and occupational health issue is adequately documented in the APP. The SSHP shall be developed under the direct supervision of a qualified Health and Safety Manager (HSM). A qualified Site Safety and Health Officer (SSHO) shall implement and enforce the APP/SSHP. The SSHP shall be designed to identify, evaluate, and control safety, health, biological, and radiological hazards, and provide for emergency response. The SSHP shall comply with all Federal, state, regional and local health and safety requirements. Matters of interpretation of standards shall be submitted to the appropriate administrative agency for resolution. Some requirements of this appendix are not intended to dictate site operations and procedures for safety and health, but to specify what information pertaining to the contractor's safety and health program is required to be presented in the submittal. Daily safety and health inspections shall be conducted to determine if site operations are conducted in accordance with the approved APP/SSHP, OSHA, USACE, and contract requirements.

Safety and occupational health requirements for military munitions, explosive media or chemical agent contaminated medial (CACM) are covered in ER 385-1-95. HTRW projects with potential for containing MM, explosive media and CACM shall incorporate the additional requirements specified by ER 385-1-95. Projects involving explosive medial which are contaminated with explosives but do not present an explosion hazard are covered by the requirements of ER 385-1-92.

Acceptance and Modification

The APP/SSHP shall be submitted to the Contracting Officer (CO) for review prior to on-site activities. The CO will review the SSHP to determine if it meets the intent of the safety and health requirements specified. Deficiencies will be brought to the attention of the contractor, and the contractor shall revise the APP/SSHP to correct the deficiencies. The contractor shall not perform any on-site work until the CO has accepted the APP/SSHP, and the contractor is in full compliance with its terms. Changes and modifications to the APP/SSHP shall be made by the Contractor's HSM with the concurrence of the CO. All hazardous waste operations shall be performed according to the accepted APP/SSHP. Any violations of the provisions of the APP/SSHP shall be cause for stopping all affected work until the matter has been corrected.

Site Safety and Health Plan Elements

The contractor shall prepare a written SSHP appendix to the APP. At a minimum, the SSHP shall contain the following elements in Appendix C of ER 385-1-92 and as amplified in this appendix.

Site Description and Contamination Characterization

a. Describe the site location, topography, approximate size, and the past uses of the site.

b. Compile a complete list of the contaminants found (or thought to be found) or known to be present in site areas on which work will be done. Compilation of this listing shall be based on results of previous studies; or, if not available, select the likely contaminants based on site history and prior site uses and activities. Include, as applicable, the chemical names, radioisotopes, concentration ranges

(and strength of radiation fields and levels of radioactive contamination if appropriate), media in which found, locations on site, and estimated quantities/volumes to be affected by site work.

c.

Hazard/Risk Analysis

Develop an AHA per EM 385-1-1 requirements for each task or operation to be performed. Identify the safety, chemical, physical, radiological, biological, and Ordnance and Explosives (OE) hazards/risks presented by each task and operation. The tasks and hazard/risk analyses shall be modified as needed to address changing work conditions. The Hazard/Risk analysis shall address the following:

a. Safety. Evaluate the potential for injury from all site conditions and activities (e.g., confined space entry, excavations, slips, trips and falls, electricity, equipment, and machinery, etc.). Use EM 385-1-1 as a resource to define potential safety hazards on the project.
b. Chemical. List the chemical hazards that may be encountered during site activities and evaluate their chemical, physical, and toxicological properties. Describe the sources and pathways of employee exposure. Address Federal, state and local regulations or recommended exposure standards (NIOSH Recommended Exposure Limits [REL], ACGIH® Threshold Limit Values [TLV®]). Address hazards associated with treatment process chemicals used in HTRW treatment O&M activities and other hazardous substances brought on site for the execution of site activities.
c. Physical. Evaluate the potential for injury from physical agents such as noise, heat and cold stress, vibration, etc., that may be present.
d. Radiological. Evaluate the risk to human health caused by radioactive materials or ionizing radiation fields in the area where work is to be done. Consider the presence of radioactive isotopes and the type of ionizing radiation they emit. Describe the sources and pathways of employee internal exposure, and anticipated on- and off-site internal and external levels. Address Federal, state and local regulations or recommended exposure standards.
e. Biological. Evaluate the potential for illness or injury attributable to biological agents (e.g., poisonous plants, animals, insects, microorganisms).
f. Ordnance and Explosives (OE). Evaluate the probability of encountering OE while doing on-site work.

Occupational Exposure Action Levels

Establish action levels for the following project-specific actions:

a. Implementation of engineering controls and work practices.
b. Upgrades/downgrades in levels of personal protective equipment.
c. Work stoppage or emergency evacuation of on-site personnel.
d. Prevention or minimization of public exposures to hazards created by site activities.

Staff Organization, Qualifications, and Responsibilities

Develop an organizational structure that establishes a Safety and Occupational Health (SOH) chain of command for the project and SOH responsibilities for all project personnel. Address roles and responsibilities for each of the following personnel and any other professional staff with responsibilities that directly affect project SOH procedures:

a. Health and Safety Manager (HSM). The following qualifications shall be met for the HSM unless specifically indicated otherwise in the individual task order. The Contractor shall utilize the services of an Industrial Hygienist certified by the American Board of Industrial Hygiene (ABIH) to develop and implement the contractor's APP/SSHP and oversee all safety and health related aspects of this contract. The HSM shall perform initial site-specific training, direct air monitoring and assist the contractor's superintendent and SSHO in implementing and ensuring safety and health requirements are complied with. The HSM shall have the following experience and qualifications unless specifically indicated otherwise in the individual task order:
    - A minimum of two (2) years comprehensive experience in planning and overseeing hazardous waste activities.
    - Demonstratable expertise in air monitoring techniques and in development of respirator protection and personal protective equipment programs for working in potentially toxic atmospheres
    - Working knowledge of applicable Federal, state, and local occupational safety and health regulations.

- Qualified as a competent person for lead in accordance with OSHA and other regulatory agencies.
- Qualified as a competent person for asbestos in accordance with OSHA and other regulatory agencies.

b. Site Safety and Health Officer (SSHO). The following qualifications shall be met for the SSHO unless specifically indicated otherwise in the individual task order. The contractor shall utilize a trained, experienced SSHO to ensure that all elements of the approved SSHP are implemented and enforced on-site. The SSHO or a qualified designated representative shall be on-site full time for the duration of the field activities. The minimum qualifications of the SSHO shall include:

- A minimum of two (2) years working experience in implementing safety and health programs at hazardous waste sites where EPA Level C personal protective equipment was required.
- Documented experience in construction techniques and construction safety procedures.
- Specialized training in personal and respiratory protective equipment, program implementation, and in proper use of air monitoring instruments, air sampling methods, and interpretation of results.
- Current training in First Aid and CPR by a recognized organization such as the American Red Cross.
- Working knowledge of applicable Federal, state, and local occupational safety and health laws, regulations, and guidance.
- If the project includes lead hazard control activities, qualified as a competent person for lead in accordance with OSHA and other regulatory agencies.
- If the project includes asbestos abatement, qualified as a competent person for asbestos in accordance with OSHA and other regulatory agencies.

c. Safety and Health Technicians (if required). Fully trained and experienced technicians, responsible to the contractor and the SSHO, may be delegated to implement monitoring and calibration of instruments, and assist the SSHO in enforcing the SSHP.

d. Project Superintendent. Contractor's full-time on-site project superintendent who is qualified to be a competent person through training in accordance with 29 CFR 1926.32 and 29 CFR 191.120/29 CFR 1926.65.

e. Site Workers.

f. Subcontractors.

g. At least two persons currently certified in First Aid/CPR by the American Red Cross or equivalent agency, according to EM 385-1-1, shall be present on-site at all times during operations

h. Independent Asbestos Consultant. The need for the independent asbestos consultant will be indicated in individual task orders. An independent asbestos consultant shall prepare the Contractor's Asbestos Hazard Abatement Plan (AHAP), perform training, direct air monitoring and assist the Contractor's HSM, superintendent and SSHO in implementing the AHAP and ensuring safety and health requirements are complied with during the performance of all work. The HSM cannot serve as the independent asbestos consultant. The Independent Asbestos Consultant shall have the following experience and qualifications unless specifically indicated otherwise in the individual task order:

- A minimum of 2 years of comprehensive experience in planning and overseeing asbestos abatement activities.
- Qualified as a competent person for asbestos activities in accordance with OSHA and other Federal and State regulatory agencies.
- Completed an AHERA accredited Asbestos Supervisor course and subsequent required refresher training.
- Certified by applicable state and/or Federal agency for asbestos supervisory activities.

i. Independent Lead Consultant. The need for the independent lead consultant will be indicated in individual task orders and be based upon the presence of LBP in residential or public buildings. An independent lead consultant shall prepare the Contractor's Lead Hazard Control Plan (LHCP), perform training, direct air monitoring and assist the Contractor's HSM, superintendent and SSHO in implementing the LHCP and ensuring safety and health requirements are complied with during the performance of all work. The HSM cannot serve as the independent lead consultant. The

Independent Lead Consultant shall have the following experience and qualifications unless specifically indicated otherwise in the individual task order:

- A minimum of 2 years of comprehensive experience in planning and overseeing lead hazard control activities.
- Qualified as a competent person for lead activities in accordance with OSHA and other Federal and State regulatory agencies.
- Completed an accredited Lead Supervisor course and subsequent required refresher training.
- Certified by applicable state and/or Federal agency for lead supervisory activities.

Training

All personnel doing on-site work that will expose them to contaminant-related health and safety hazards must comply with training requirements in 29 CFR 1910.120/29 CFR 1926.65 and the following. Personnel or contractors who will not be exposed to contaminant-related hazards need not comply with this requirement.

a. Off-site Training.
   1. 40 hours HTRW health and safety training prior to on-site deployment.
   2. Three days of actual field experience under the direct supervision of a trained experienced supervisor.
   3. Eight hours of refresher training annually.
   4. Supervisors shall complete the above requirements and an additional 8-hour supervisor's course covering at least the following topics:
      a. The employer's safety and health program.
      b. Personal protective equipment program.
      c. Spill containment program.
      d. Health hazard monitoring techniques.

b. On-site Training.
   1. Training specific to OSHA standards in 29 CFR 1926 and 29 CFR 1910 that are applicable to site work and operations.
   2. Site- and facility-specific training covering all elements in the SSHP. Site-specific training shall be updated as site circumstances warrant.
   3. Radiation safety training per 10 CFR 20 requirements, if applicable. 10 CFR 20 requires that employees working with radiation receive training to the extent that they can safely perform their jobs. Training shall also comply with applicable OSHA, DOE, and Agreement State requirements (which may be more stringent). Employee shall be instructed in the following.
      a. Site-specific procedures for handling and storing radioactive materials.
      b. Health and Safety hazards associated with exposure to the radioactive material that will be cleaned up or otherwise handled and the purpose and function of protective devices and precautions used to minimize exposure.
      c. Elements of the SSHP and company-specific procedures intended to provide protection from radiation exposure.
      d. Worker responsibility to report any unsafe acts or procedures that might result in exposure to ionizing radiation.
      e. Appropriate worker response procedures to on-site events and occurrences that may result in worker exposure.
      f. Worker rights and responsibilities with respect to ionizing radiation exposure.

c. Documentation. All safety and health training, including names of employees, duration, contents, and dates of training, shall be appended to the SSHP must be documented.

Personal Protective Equipment

a. A written Personal Protective Equipment (PPE) program in accordance with 29 CFR 1910.132, 29 CFR 1910.120(g)(5)/29 CFR 1926.65(g)(5) and the respiratory protection requirements of 29 CFR

1910.134 is required. When working with radioactive material, the respiratory protection requirements of 10 CFR 20 must be met.

b. Provide a detailed description of the minimum PPE and specific materials from which the PPE components are constructed for each site-specific task to be performed, based upon the hazard/risk analysis performed above. Levels of protection must be relevant to site-specific conditions, including potential heat stress and associated PPE safety hazards. The plan shall establish and justify upgrade/downgrade/evacuation criteria based upon the action levels established. Site workers must have a current medical "fit-for-duty" clearance to use respiratory and other PPE.

c. Provide site-specific procedures to determine PPE program effectiveness and for on-site fit testing of respirators, proper cleaning, maintenance, inspection, and storage of all PPE.

Medical Surveillance

a. All personnel and contractors performing on-site work that will expose them to contaminant-related health and safety hazards must be enrolled in a medical surveillance program meeting OSHA's requirements in 29 CFR 1910.120(f)/29 CFR 1926.65(f), ANSI Z-88.2 and 10 CFR 20 and the following. Contractors who will not be exposed to contaminant-related hazards need not comply with these requirements.

b. In consultation with the Occupational Physician, determine the minimum content and frequencies of necessary medical examinations and tests. This determination shall be based upon probable site conditions, chemical-specific OSHA standards, potential occupational exposures, and required protective equipment.

c. Examinations shall be performed by or under the supervision of a licensed physician, preferably one knowledgeable in occupational medicine. The Occupational Physician shall review examination/test results.

d. Certification of employees' participation in the medical surveillance program shall be appended to the SSHP. This certification shall include the employee's name, the date of last examination, and name of reviewing occupational physician.

e. The written opinion from the occupational physician required by 29 CFR 1910.120(f)(7)/29 CFR 1926.65(f)(7) shall be made available upon request to the CO or approving authority for any site employee.

f. All personnel medical monitoring records shall be maintained in accordance with 29 CFR 1910.1020.

Radiation Dosimetry

a. All employees working within a radiologically restricted area shall receive appropriate dosimetry monitoring for radiation exposure.

b. An individual holding current personnel dosimetry accreditation from the National Voluntary Laboratory Accreditation Program (NVLAP) shall evaluate radiation dosimetry. Electronic dosimetry may be used to assign external dose if approved by the Qualified Health Physics personnel.

c. All contractors shall document employee exposure to external radiation. To do this, the contractor shall review each employee's radiation exposure history as per 10 CFR 20.2104 for compliance with exposure standards prior to allowing the employee access to a restricted area. If the employee has no exposure history, the employee shall provide a signed written statement to that effect.

d. When there exists the possibility of internal radioactive contamination, employers shall estimate exposure with a bioassay program. The bioassay program will provide sampling of employee nasal passages, urine, or feces, or whole body counting, as appropriate to evaluate the suspected radionuclides. Air monitoring will be used to estimate inhalation exposure to suspected radionuclides.

e. Reports of Exposure to Ionizing Radiation shall be furnished to each employee:

- Annually.
- Upon termination.
- Within 30 days of any personal request.
- To the Radiation Safety Officer (RSO) as soon as available.

Exposure Monitoring/Air Sampling Program

a. Where it has been determined that there may be potential employee exposures to hazardous concentrations of airborne substances, appropriate direct-reading (real-time) air monitoring and time-integrated (time-weighted average [TWA]) air sampling shall be conducted in accordance with applicable regulations (OSHA, EPA, NRC, State). Air monitoring and air sampling must accurately represent concentrations of airborne contaminants encountered on the site. When appropriate, air sampling shall be conducted to identify the radioactive isotopes and corresponding radiation (alpha, beta, gamma) in the workplace atmosphere. A record of exposure monitoring results shall be maintained by the SSHO and reviewed by the SHM for the duration of cleanup related activities.
b. Real-time screening for ionizing radiation and radioactive materials shall be conducted prior to and during on-site activities where ionizing radiation or radioactive materials may be encountered. When possible, determine the radiation (alpha, beta, gamma) and the exposure rate for each source of radiation.
c. Sampling and analytical methods following NIOSH criteria for on-site personnel and good practices as per 10 CFR 20 Subparts C and F for airborne radioactive isotope sampling shall be appropriately used.
d. Personal exposure samples shall be taken if necessary to monitor employee exposure and to comply with chemical specific OSHA standards. Exposure samples shall be analyzed by an American Industrial Hygiene Association (AIHA) accredited laboratory.
e. Noise monitoring shall be conducted as needed, depending on the hazard/risk analysis.
f. All monitoring/sampling results shall be evaluated and appropriate actions implemented based upon "action levels".
g. Exposure monitoring results shall be documented and the records maintained in accordance with 29 CFR 1910.1020.
h.

Heat/Cold Stress Monitoring and Management

a. A site-specific heat/cold stress monitoring procedure shall be developed. See Section 6 of EM 385-1-1.
b. Body fluids lost through sweating in hot work environments shall be replaced by drinking plain cool water.
c. In situations where heat stress may impact worker safety and health, worker acclimatization shall be assessed and work-rest regimens shall be established and monitored.

Standard Operating Safety Procedures, Engineering Controls and Work Practices

a. Site rules/ prohibitions (buddy system, eating/drinking/smoking restrictions, etc.);
b. Works permit requirements (e.g., radioactive work, excavation, hot work, confined space, etc.);
c. Material handling procedures (soils, liquids, radioactive materials);
d. Drum/container handling procedures and precautions (opening, sampling, overpacking);
e. Confined space entry procedures;
f. Hot work, sources of ignition, fire protection/ prevention, and electrical safety (ground-fault protection, overhead power line avoidance, etc.;
g. Excavation and trench safety;
h. Guarding of machinery and equipment;
i. Lockout/ Tagout;
j. Fall protection;
k. Hazard Communication;
l. Illumination;
m. Sanitation;
n. Engineering controls;
o. Process Safety Management;
p. Signs and labels;
q. Laboratory safety;
r. Hazardous material handling and storage.

Site Control Measures

a. Establish work zones and access points. Work zone delineation (Exclusion Zone, including restricted and regulated areas, Contamination Reduction Zone, support Zone) shall be based upon the complexity of site operations and the hazard/risk analysis performed above.
b. Include a site map delineating the zones established above.
c. On sites where ionizing radiation or radioactive material may be encountered, designate restricted areas (Radiation Areas, High Radiation Areas, and Airborne Radioactive Contamination Areas, as defined in 10 CFR 20).
d. Describe on-site and off-site communication
e. Describe site security (Physical and procedural).
f. Describe general site access.

Personal Hygiene and Decontamination

a. Specify necessary facilities and their locations.
b. Provide detailed standard operating procedures, frequencies, supplies, and materials to decontaminate site personnel.

Equipment Decontamination

a. Specify necessary facilities, equipment, and their location.
b. Provide detailed procedures, frequencies, supplies, materials for decontamination, and methods to determine adequacy of decontamination of equipment used on site. For sites where radioactive contamination is present, include levels of removal and fixed contamination acceptable for release from the exclusion zone.

Emergency Equipment and First Aid Requirements

a. First aid equipment and supplies approved by the consulting physician.
b. Emergency eyewashes/showers (per ANSI Z-358.1).
c. Emergency-use respirators, (i.e., for escape: 5-15 minute emergency escape mask with air bottle; for rescue: positive pressure self-contained breathing apparatus [SCBA])
d. Spill control materials and equipment.
e. Fire extinguishers (specify type, size, locations).

Emergency Response and Contingency Procedures (On-Site and Off-Site)

a. Local fire/police/rescue authorities having jurisdiction and nearby medical facilities that would b utilized for emergency treatment of injured personnel shall be contacted to notify them of upcoming site activities and potential emergency situations, to ascertain their response capabilities, and to obtain a response commitment.
b. An Emergency Response Plan, which complies with 29 CFR 1910.120(l)/29 CFR 1926.65(l), and which, as a minimum, addresses the following elements, shall be developed and implemented:
    1. Pre-emergency planning and procedures for reporting incidents to appropriate government agencies for potential chemical exposures, personal injuries, fires/explosions, environmental spills and releases, and discovery of radioactive materials.
    2. Personnel roles, lines of authority, communications.
    3. Posted instructions and list of emergency contacts: physician/nearby medical facility, fire and police departments, ambulance service, Federal/state/local environmental agencies, HSM, Contracting Officer, or approving authority.
    4. Emergency recognition and prevention.
    5. Site topography, layout, and prevailing weather conditions.
    6. Criteria and procedures for site evacuation (emergency alerting procedures/employee alarm system, emergency PPE and equipment, safe distances, places of refuge, evacuation routes, site security, and control).
    7. Specific procedures for decontamination and medical treatment of injured personnel.
    8. Route maps to nearest pre-notified medical facility.
    9. Criteria for initiating community alert program, contacts, and responsibilities.
    10. Critique of emergency responses and follow-up.

c. If all personnel will be evacuated from the site and not allowed to assist in handling the emergency, the emergency response plan may be replaced by an emergency action plan complying with 29 CFR 1910.38(a).

Accident Prevention

a. Daily safety and health inspections shall be conducted to ensure the effectiveness of the SSHP, and to determine if operations are being conducted in accordance with the SSHP, USACE, and OSHA regulations, and contract requirements.

b. In the event of an accident or incident, the CO shall be notified according to EM 385-1-1. Within two working days of any reportable accident, the contractor shall complete and submit required Accident Reports. If there is an accident involving radiation, the RP) for the USACE Geographic Command or the Radiation Protection Staff Officer (located at HQUSACE, CESO) shall be notified immediately.

Logs, Reports, and Recordkeeping

a. The following logs, reports and records shall be de3veloped, retained, and submitted to the CO:

1. Training logs (site-specific and visitor), and records of radiological instructions and notices to workers.
2. Daily safety inspection logs (may be part of the Daily QC Reports).
3. Equipment maintenance logs.
4. Employee/visitor register.
5. Environmental and personal exposure monitoring and sampling results.

b. For work involving exposure to radiation, the following additional logs, reports, and records shall be developed, retained, and submitted to the CO:

1. Records of radiation surveys, monitoring and disposal as per 10 CFR 20 Subpart L.
2. Reports of loss of licensed material as per 10 CFR 20.402.
3. Notification of incidents as per 10 CFR 20 Subpart M Reports.
4. Reports of overexposure and excessive levels and concentrations as per 10 CFR 20.405.
5. Notification and reports to individuals as per 10 CFR 20.409.

~~Appendix C~~
~~Safety and Health Program~~

~~1. Safety and Health. This subsection describes, in general terms, the minimum Contractor safety, health and emergency response requirements for non-intrusive investigations at hazardous waste sites. Site activities and site risks warrant precautionary safety and health practices. The Contractor shall rely on site evacuation if confronted with unanticipated safety and health hazards. Services may include preliminary assessment surveys, environmental assessments, risk assessments, graphical and geographic information systems (GIS), asbestos and lead-based paint investigations, air quality (Title V) inventories, community relation's plans, Installation Restoration Advisory Board Workshops, general database management, and administrative record keeping. The Contractor responsible for the tasks defined by this Contract shall review all information provided and develop the necessary documents which contain the health and safety criteria, procedures, and practices sufficient to protect on-site personnel, the environment, and potential off-site receptors from chemical, physical, radiological, and biological hazards. This section provides additional requirements for implementing the accident prevention articles in FAR Clause 52.236-13, "Accident Prevention;" and USACE Safety and Health Requirements Manual EM 385-1-1. This subsection applies to all site work performed under this contract. All activities shall be addressed in the Site Safety and Health Plan (SSHP). The Contractor shall utilize the services of qualified personnel, as defined in Appendix B of ER 385-1-92, to oversee the development implementation of required safety and health documents. The Contractor shall ensure that their sub-Contractors, suppliers, and support personnel follow all safety and health provisions.~~

~~1.1 References. The following listed regulations and publications from a part of this Statement of Work where conflicts arise between regulatory requirements; the most restrictive requirements shall be followed.~~

~~a. United States Army Corps of Engineers (USACE), Safety and Health Requirements Manual, EM 385-1-1, October 1992~~
~~b. USACE, Appendix B, Safety and Occupational Health Document Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities, ER 385-1-92.~~
~~c. Occupational Safety and Health Administration (OSHA) Standards 29 CFR 1910, Occupational Safety and Health Standards~~
~~d. Occupational Safety and Health Administration (OSHA) Standards 29 CFR 1926, Safety and Health Regulations for Construction~~
~~e. Occupational Safety and Health Administration (OSHA) 29 CFR 1926.65, Hazardous Waste Operations and Emergency Response~~
~~f. Occupational Safety and Health Administration (OSHA) 29 CFR 1926.62, Lead~~
~~g. Occupational Safety and Health Administration (OSHA) 29 CFR 1926.1101, Asbestos~~
~~h. Environmental Protection Agency (EPA) 40 CFR 763 Asbestos-Containing Materials in Schools~~
~~i. Housing and Urban Development (HUD), Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (June 1995)~~
~~j. Federal Acquisition Regulation, FAR Clause 52.236-13, "Accident Prevention"~~
~~k. Nuclear Regulatory Commission Standards (NRC), 10 CFR 19—171~~
~~l. NIOSH/OSHA/USCG/EPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, October 1985~~
~~m. EPA, "Standard Operating Safety Guides," July 1988~~
~~n. American Conference of Governmental Industrial Hygienists (ACGIH), "Threshold Limit Values and Biological Exposure Indices" for (1995-1996)~~
~~o. CAL-OSHA, 8 CCR Chapter 4, Subchapter 7, General Safety Orders~~
~~p. CAL-OSHA, 8 CCR Chapter 4, Subchapter 4, Construction Safety Orders~~
~~q. CAL-OSHA, 8 CCR §1529 Asbestos~~
~~r. CAL-OSHA, 8 CCR §1532.1 Lead~~

~~1.2 Submittals~~

~~1.2.1. Safety and Health Program (SHP) Certification. The Contractor and subcontractors performing on-site hazardous waste activities are required to develop and implement a written Safety and Health Program (general safety and health program elements), in compliance with the requirements of OSHA standard 29 CFR 1926.65 (b)(1) through (b)(4). The Contractor shall certify, in writing to the Contracting Officer, prior to initiating on-site activities, that the SHP has been developed and shall be implemented for this contract. Any portions of the general SHP that are referenced in the Site Safety and Health Plan (SOPs, Program and Plans) shall be included as appendices to and become part of the SSHP.~~

~~1.2.2. Site Safety and Health Plan(s) (SSHP). The Contractor shall prepare the site-specific safety and health plan(s) as described in this section. A separate SSHP shall be prepared for each facility. Site safety and health information for additional Scopes of Work at a facility shall be submitted as an addendum to the facility SSHP. The SSHP shall be designed to identify, evaluate, control safety and health hazards, and provide emergency response. All subcontractors shall comply with the Contractor's SSHP. The SSHP shall be developed, approved and implemented by a Certified Industrial Hygienist (CIH) and shall comply with all Federal, state, regional and local health and safety requirements. Matters of interpretation of standards shall be submitted to the appropriate administrative agency for resolution. The SSHP shall be kept on-site and incorporate the elements contained in Appendix B of ER 385-1-92 and as amplified in this section. Some requirements of this section are not intended to dictate site operations and procedures for safety and health, but to specify what information pertaining to the Contractor's safety and health program is required to be presented in the submittal. Where a specific element is not applicable, the Contractor shall make negative declaration in the plan to establish that adequate consideration was given the topic, and a brief justification for its omission. The CIH, Site Superintendent/Competent Person, Project Manager, and Site Safety Officer shall sign and date the SSHP. Safety and health inspections shall be conducted to determine if site operations are conducted in accordance with the approved SSHP, OSHA, USACE, and contract requirements. The Contractor shall correct deficiencies. The SSHP shall address the safety and health hazards of each phase of site operation. Details about some activities may not be available when the initial SSHP is prepared and submitted. Therefore, the SSHP shall address, in as much detail as possible, all anticipated tasks, their related hazards and anticipated control measures. Further details shall be included in the activity hazard analyses.~~

~~1.2.2.1. Acceptance and Modification. The SSHP shall be submitted to the Contracting Officer (CONTRACTING OFFICER) for review prior to in-site activities. The Contracting Officer will review the SSHP to determine if it meets the intent of the safety and health requirements specified. Deficiencies will be brought to the attention of the Contractor, and the Contractor shall revise the SSHP to correct the deficiencies. The Contractor shall not perform any on-site work until the Contracting Officer has accepted the SSHP, and the Contractor is in full compliance with its terms. Changes and modifications to the SSHP shall be made by the Contractor's CIH with the concurrence of the Contracting Officer. All hazardous waste operations shall be performed according to the approved SSHP. Any violations of the provisions of the SSHP shall be cause for stopping all affected work until the matter has been corrected.~~

~~1.2.2.2. Site Safety and Health Plan Elements. As a minimum, the SSHP shall contain the following elements of ER 385-1-92 and as amplified in this subsection.~~

~~1.2.2.2.1. Site Description and Contamination Characterization~~

~~1.2.2.2.2. Hazard Assessment and Risk Analysis. The Contractor shall provide a complete description of the work to be performed. The Contractor shall identify the chemical, physical, biological, radiological, and safety hazards that may be encountered for each task. Each task is to be discussed separately. A table showing chemical hazards anticipated on-site along with chemical names, concentration ranges, media in which found, locations on-site, estimated quantities/volumes, the applicable OSHA regulatory standards (PEL's – TWA, STEL, and ceiling concentrations, and skin designation), the most current American Conference of Governmental Industrial Hygienist (ACGIH) Threshold Limit Values (TLV's) and NIOSH recommended exposure levels (REL's), ionization potential, cancer designation (e.g., Prop 65 identification), routes and sources of exposure, and physical and toxicological properties shall be provided. Selection of chemicals as indicators of~~

~~hazard shall be based on media concentrations, toxicity, volatility, or potential for air entrainment at hazardous levels, and frequency of detection. The Contractor shall specify and justify action levels based upon airborne exposure concentrations and direct skin contact potentials for upgrades and/or downgrades in personal protective equipment levels, implementation of engineering controls and work practice controls, for emergency evacuation of on-site personnel, and for the prevention and/or minimization of public exposure to hazards created by on-site activities. The Contractor shall: evaluate exposure to hazardous substances brought on-site for the execution of site activities; the potential for injuries from site conditions and activities (e.g., excavation, slips, trips, and falls, electricity, equipment and machinery, etc.); potential for injury from physical agents (e.g., noise, heat and cold stress, vibration, non-ionizing radiation, solar radiation, etc.); the risk to human health from radioactive materials or ionizing radiation; the potential for illness due to biological agents (e.g., poisonous plants, animals, insects, microorganisms, etc.); the risk of human health and safety from chemical surety and warfare materials (CMS/CWM) and unexploded ordnance (UXO).~~

~~1.2.2.2.3 Staff Organization, Qualification, and Responsibility. Each person assigned specific safety and health responsibilities shall be identified, and their qualifications and experience documented by resume in the SSHP. The organizational structure, with lines of authority and overall responsibilities for safety and health of the Contractor and all subcontractors shall be discussed. An organizational chart showing the line of authority for safety shall be provided.~~

~~1.2.2.2.3.1 Project Superintendent. The Contractor shall provide evidence that the Contractor's full-time on-site project superintendent is designated as, and is qualified to be a competent person through training in accordance with 29 CFR 1926.32 and 29 CFR 1926.65. Additionally, if the Scope of Work includes asbestos or lead survey activities, the Project Superintendent shall be qualified in accordance with 29 CFR 1926.1101 and 29 CFR 1926.62 respectively. The project superintendent shall be experienced in the administration and supervision of hazardous waste projects, including work practices, investigative methods, protective measures for personnel, inspection of work areas, generated waste containment and disposal procedures, decontamination units installation and maintenance requirements, and site safety and health requirements. This designated on-site superintendent shall be responsible for compliance with applicable Federal, state and local requirements, and the Contractor's SSHP. The Contractor shall submit evidence that this person has a minimum of 2-years on-the-job hazardous waste operations supervisory experience.~~

~~1.2.2.2.3.2 Industrial Hygienist. The Contractor shall utilize the services of an Industrial Hygienist certified by the American Board of Industrial Hygiene (ABIH) or board eligible (meets all education and experience requirements as determined and documented by AHIBH). The Hygienist, or board eligible Hygienist is to prepare the Contractor's SSHP, perform initial site-specific training, direct air monitoring and assist the Contractor's superintendent in implementing and ensuring safety and health requirements are complied with during the performance of all work. The IH shall visit the site at least once per month for the duration of activities and be available for emergencies, and on a weekly basis, review results of air monitoring and accident reports. The IH shall have a minimum of 2-years of comprehensive experience in planning and overseeing hazardous waste activities. Additionally, it the Scope of Work includes asbestos or lead surveys, the IH shall have successfully completed an AHERA-certified Asbestos Supervisors course or EPA-certified Lead Construction Supervision/Project Monitoring Course and subsequent required refresher training respectively. The Contractor shall submit evidence of certification or board eligibility.~~

~~1.2.2.2.3.3. Site Safety and Health Officer (SSHO) It is not anticipated that the IH will be on-site continuously throughout the course of the project. Day-to-day industrial hygiene and safety support, including air monitoring, training, daily site safety inspections, shall be provided by a designated SSHO who shall report directly to the IH. The Contractor shall ensure the SSHO has a minimum of 2-years working experience in the chemical industry and/or chemical waste disposal industry where EPA Level C personal protective equipment was required, a sound working knowledge of Federal and state occupational safety and health regulations, and training in air monitoring practices and techniques. The SSHO shall have authority to stop work. The SSHP may perform other duties but must be immediately available.~~

~~1.2.2.2.3.4. Persons Trained in First Air/CPR. The Contractor shall maintain on-site any times hazardous waste operations are conducted at least two persons who are currently trained in first aid and CPR by the American Red Cross or other agency. These persons shall also meet the training requirements specified by the Bloodborne Pathogens standard, 29 CFR 1910.1030. These persons may perform other duties but must be immediately available to render first aid when needed. The names and documentation of training shall be provided.~~

~~1.2.2.2.3.5. Occupational Physician. The Contractor shall utilize the services of a licensed physician who is certified in occupational medicine by the American Board of Preventative Medicine, or who, by necessary training and experience is Board eligible to manage the medical surveillance program. The Physician shall have extensive experience in the occupational health area and be familiar with this site's hazards and the scope of this project. The Contractor shall submit, in writing, the medical consultant's name, qualifications, and knowledge of the site's conditions and proposed activities. The Physician shall be responsible for developing and implementing a medical monitoring program in compliance with 29 CFR 1926.65, 29 CFR 1926.62, and 29 CFR 1926.1101.~~

~~1.2.2.2.3.6. Certified Asbestos Consultant. The Contractor shall utilize the services of a Certified Asbestos Consultant certified by Cal-OSHA to conduct all asbestos surveys. The Contractor may utilize the services of a Certified Site Surveillance Technician certified by Cal-OSHA to assist the Certified Asbestos Consultant. The Asbestos Consultant and Site Surveillance Technician shall meet the training criteria of EPA's Model Accreditation Plan 40 CFR Part 763, Subpart E, Appendix C. The Contractor shall submit copies of certification.~~

~~1.2.2.2.3.7. Interim Certified Lead Inspector. The Contractor shall utilize the services of an Interim Certified Lead Inspector certified by California Department of Health Services (DHS) to conduct all lead-based pain surveys. The Lead Inspector shall complete an accredited EPA/DHS Inspection/Risk Assessment course. The Contractor shall submit copies of certification.~~

~~1.2.2.2.3.8. Testing Laboratory. The Contractor shall provide the name, address and telephone number of each testing laboratory selected to perform the occupational sample analyses and report the results. Written verification of the following criteria, signed by the Testing Laboratory principal and the Contractor shall be submitted: (1) the laboratory is proficient to conduct personnel, area, and environmental analysis for organic and inorganic chemicals. The laboratory shall be fully equipped to analyze the required NIOSH, OSHA, and EPA analyses; (2) the laboratory is currently participating in the American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing (PAT) Program and is certified by AIHA.~~

~~Asbestos. Additionally, if the Scope of Work includes asbestos surveys, the Contractor shall provide the name, address and telephone number of each independent testing laboratory selected to perform sample analyses and report results. The testing laboratory shall be completely independent from the Contractor as recognized by Federal, state or local regulations. Written verification of the following criteria, signed by the testing Laboratory principal and the Contractor shall be submitted (1) PCM. The laboratory is proficient in conducting phase contrast microscopy (PCM) of airborne samples using the methods specified by 29 CFR 1926.1101, OSHA method ID-160, the most current version of NIOSH 01 Method 7400, and transmission electron microscopy (TEM) Method 7402. The laboratory is currently certified and judged proficient in counting airborne asbestos sampled by PCM by successful participation within the past year in the American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing (PAT) Program; (2) PLM. The laboratory is fully equipped to conduct polarized light microscopy (PLM) analysis of suspect ACM bulk samples in accordance with CFR 40 Part 763 Appendix A to Subpart F, and OSHA method ID 191. The laboratory is currently accredited by the National Institute for Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) for bulk asbestos analysis and will use analysts with demonstrated proficiency to conduct PLM to include its application to the identification and quantification of asbestos content.~~

~~LBP. Additionally, if the Scope of Work includes lead surveys, the Contractor shall provide the name, address, and telephone number of the independent testing laboratory selected to perform analysis for personal and environmental air samples, lead dust wipes, bulk sample analyses, and TCLP (WET in~~

~~California) analysis. Documentation that the laboratory performing the analysis is an EPA National Lead Laboratory Accreditation Program (NLLAP) accredited laboratory and that it is raged proficient in the NIOSH/EPA Environmental Lead Proficiency Analytical Testing Program (ELPAT). Certification shall include accreditation for heavy metal analysis, list of experience relevant to analysis of lead in air, and a Quality Assurance and Quality Control Program. Currently, the American Association for Laboratory Accreditation (ASLA) and the American Industrial Hygiene Association (AIHA) are the EPA recognized laboratory accreditors. Documentation shall include the date of accreditation or reaccreditation. The name, address and telephone number of the blood lead testing laboratory; the laboratory's listing by OSHA and the U.S. Public Health Service Center for Disease Control (CDC); and documentation that the laboratory certified in the state where the work site is located.~~

~~1.2.2.2.4. Chemical Information and Material Safety Data Sheets. Prior to the commencement of work, all available information concerning the chemical, physical, and toxicologic properties of each substance known or expected to be present on-site shall be made available to the affected employees. This information shall also be included in the SSHP.~~

~~1.2.2.2.5. Accident Prevention. Daily safety and health inspections shall be conducted to determine if site operations are in accordance with the approved SSHP, OSHA, USACE, and contract requirements. In the event of an accident or incident, the Contractor shall immediately notify the Contracting Officer an Accident Report on ENG Form 3394 in accordance with AR 385-40 and USACE Supplements to that regulation.~~

~~1.2.2.2.6. Training. Although OSHA regulations permit varying levels of training based on employee responsibility and exposure potential, the Contractor shall provide training to include: (a) Initial, for all personnel (forty hours of formal off-site hazardous waste activity training, and three days field experience under the direct supervision of a trained experienced supervisor); (b) Supervisory (an additional eight hours supervisory training for supervisory personnel); (c) site specific, and (d) refresher training. Worker courses taken more than one year prior to commencement of work are acceptable if the individual has successfully completed the annual refresher training. All persons entering an exclusion or contamination reduction zone shall be given a pre-entry site safety and health briefing. The content, duration, and frequency, of training required for that person shall be described and verified. The Contractor shall append copies of training certificates for its employees to the SSHP.~~

~~1.2.2.2.7. Personal Protective Equipment. A written Personal Protective Equipment (PPE) Program shall be provided in the SSHP. The program shall address all the elements of 29 CFR 1926.65(g)(5) and 29 CFR 1910.134. When working with radioactive material, asbestos, or lead the respiratory protection requirements of 10 CFR 20, 29 CFR 1926.1101 and 29 CFR 1926.62 respectively must be met. The Contractor shall specify minimum PPE ensembles (including respirators) necessary for each task/operation based on the hazard assessment/risk analysis, including potential heat stress and associated safety hazards. The plan shall include specific types and materials for protective clothing and respiratory protection. The plan shall establish and justify upgrade/downgrade/evacuation criteria based upon the action levels established. Site workers must have a current medical "fit-for-duty" clearance to use respiratory and other PPE.~~

~~1.2.2.2.8. Medical Surveillance. All personnel performing on-site activities shall participate in an ongoing medical surveillance program meeting the requirements of 29 CFR 1926.65, and ANSI Z-88.2. Additionally, all personnel performing activities wherein they may be exposed to radiologic hazards, asbestos, or lead shall participate in a medical surveillance program meeting the requirements of 10 CFR 20, 29 CFR 1926.1101 and 29 CFR 1926.62 respectively. The medical examination protocols and results shall be overseen by a licensed physician who is certified in Occupational Medicine by the American Board of Preventative Medicine, or who by necessary training and experience is board eligible. Minimum specific exam content and frequency based on probable site conditions, potential occupational exposures and required protective equipment shall be provided. Certification of employees' participation in the medical surveillance program and the written opinion from the attending physician shall be appended to the SSHP.~~

~~1.2.2.2.9 Radiation Dosimetry~~

~~1.2.2.2.10 Exposure Monitoring/Air Sampling Program~~
~~1.2.2.2.11 Heat/Cold Stress Monitoring~~
~~1.2.2.2.12 Standard Operating Safety Procedures, Engineering Controls and Work Practices~~
~~1.2.2.2.13 Site Control Measures~~
~~1.2.2.2.14 Personal Hygiene and Decontamination.~~
~~1.2.2.2.15 Equipment Decontamination~~
~~1.2.2.2.16 Emergency Equipment and First Aid Requirements~~
~~1.2.2.2.17 Emergency Response and Contingency Procedures (on-site and off-site)~~
~~1.2.2.2.18 Logs, Reports, and Record keeping~~

~~**1.2.3 Accident Prevention Plan. The SSHP may serve as the Accident Prevention Plan provided it addresses all content requirements of 29 CFR 1926.65, EM 385-1-1 (Table 1-1). The Accident Prevention Plan elements required by EM 385-1-1 but not specifically covered in the SSHP shall be addressed in this section. The Accident Prevention Plan shall be attached to and become part of the SSHP.**~~

~~1.2.4 Activity Hazard Analyses. The Contractor shall prepare an Activity Hazard Analysis for each phase of work. The format shall be in accordance with EM 385-1-1 (Figure 1-1). The analysis shall define the activities to be performed and identify the sequence of work, the specific hazards anticipated, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level. Work shall not proceed on that phase until the activity hazard analysis has been accepted and a preparatory meeting has been conducted by the Contractor to discuss its contents with everyone engaged in the activities, including the Government on-site representatives. The activity hazard analyses shall be continuously reviewed and when appropriate modified to address changing site conditions or operations, with the concurrence of the CIH, the Site Superintendent, and the Contracting Officer. Activity hazard analyses shall be attached to and become a part of the SSHP.~~

~~1.2.5 Emergency Response and Contingency Procedures. Emergency Response and contingency Procedures as required by 29 CFR 1926.65 should be prepared. The following emergency equipment items shall be immediately available for on-site use: (1) First aid equipment and supplies approved by the consulting physician; (2) Emergency eyewashes/showers; (3) Emergency respirators; (4) Spill control materials and equipment; (5) Fire extinguishers. The Contractor shall provide telephone numbers and points of contact for emergency services and the appropriate Governmental representatives. A map showing the route to the hospital that has been contacted and informed of the type of work and potential hazards on the site shall be provided.~~

~~1.2.6 Asbestos Hazard Abatement Plan. A detailed plan on the response actions to be taken (ACM items to be surveyed and method of work task) and the control procedures (techniques to include safety precautions and work procedures) to be used. The plan shall take into consideration all the individual tasks. Such plan shall include, but not limited to: (a) The precise personal protective equipment to be used; (b) The location of asbestos regulated work areas; (c) Decontamination; (d) Initial exposure assessment; (e) Level of supervision; (f) Method of notification of other employers at the Worksite; (g) Type of wetting agent and asbestos encapsulant to be used; (h) Planned air monitoring strategies; (i) Detailed description of the method to be employed in order to control the spread of ACM wastes and airborne fiber concentrations; (j) fire and medical emergency response procedures.~~

~~1.2.7 LBP Plan. The Contractor shall prepare a detailed LBP Plan that identifies the work procedures, health, and safety measures to be used. The plan shall address the various sources of LBP and the methods to be undertaken to survey the lead hazards to include the following key elements: (a) Location of LBP containing components keyed to project drawings; (b) Means for notifying occupants of proposed work schedules; (c) Training requirements as required by Federal, state, and local regulations; (d) Unique problems; (e) Eating, drinking, smoking, and rest room procedures; (f) Personnel protective equipment, respiratory protection program and controls; (g) Engineering controls and safety measures; (h) Worker exposure assessment procedures; (i) Work practice controls; (j) Housekeeping; (k) Hygiene facilities and practice; (l) Medical surveillance, including medical removal protection; (m) Sampling, testing and analytical methods to include personal air sampling requirements of CFR 29 Part 1926 Section 62 and~~

~~when specified or where required, environmental air sampling, dust wipe sampling, soil sampling, toxicity characteristic leaching procedure (TCLP), (Waste Extraction Test – WET – for California) of the waste material in accordance with CFR 40 Part 261.~~

~~1.2.8 Radiation Protection Program. The Contractor shall prepare a detailed Radiation Protection Program whenever the project involves work with, or around, ionizing radiation. The program shall address all issues of health and safety and the following radiological issues: (a) Site description and suspected radiation types, sources, and fields; (b) Required radiation training for each worker; (c) Estimated exposures for all on-site personnel; (d) Dosimetry requirements; (e) Exposure control; (f) Personal protective; (g) Instrumentation; (h) Surveying and monitoring procedures; (h) Radioactive materials procedures; (i) Emergency procedures; (j) Record keeping; (k) Radiation work permits; (l) Post-job evaluation and critique.~~

SECTION H - SPECIAL CONTRACT REQUIREMENTS

The following have been added by full text:
SPECIAL CONTRACT REQUIREMENTS

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Special Contract Requirements
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Section H
Special Contract Requirements

1. INDEFINITE-QUANTITY, INDEFINITE-DELIVERY (IDIQ) MULTIPLE-AWARD CONTRACTS

a. This is an indefinite-quantity, indefinite-delivery (IDIQ) multiple-award contract for Environmental Investigative Services (EEIS), Nation-Wide. This contract is the result of a multiple award solicitation. The maximum amount of each contract from the multiple award solicitation reads $15,000,000 (base period and all option periods); however, the Government will not place a total dollar amount including all task orders written from all of the multiple awards contracts over the maximum amount of $15,000,000 during the life of all of the multiple award contracts. The options periods do not have specified maximum amounts. The maximum amount is based on the life of the contract.

b. In accordance with EFARS 16.504(a)(1)(iii), when a maximum amount is specified for the total life of the contract, the guaranteed minimum amount shall be calculated based on the average amount per period (i.e. maximum amount divided by number of periods). For a multiple award IDIQ procurement, the guaranteed minimum amount shall be based on the average amount per period divided by the number of contracts. Therefore, the basic contract period for each individual contract has a guaranteed minimum amount of 2% of the average amount per period ($15,000,000 divided by 5 periods – base and four options = $3,000,000) divided by the number of contracts which is 4. The guaranteed minimum for the base contract period for each contract is $15,000. Each option period for each individual contract has a guaranteed minimum amount of 1% of the average amount per period ($3,000,000) divided by 4 = $7,500. The guaranteed minimum amount for the base period will be funded when the contract is awarded either on the contract or by issuance of the first task order. The guaranteed minimum amount for each option period (if exercised) will be funded on the modification issued exercising the option period or by the first task order occurring in that period.

c. The labor rates, ODC rates, and indirect rates used for the negotiation and award of task orders shall be the labor and ODC rates on the Pricing Schedule and the indirect rates submitted with the Cost/Price Proposal with the dates that correspond to the timing of the task orders' performance periods.

d. Performance shall be authorized only by issuance of Task Orders by the Government Contracting Officer; the procedures are discussed in the Ordering Procedures paragraph below. No work will be performed before a written and signed (by the Contracting Officer) task order. Task orders may be issued by the Contracting Officer via FACSIMILE with the hard copy of the task orders to follow. The effective date of the task order, if FACSIMILE is used, is the date the Government enters the task order into the FACSIMILE machine and receives confirmation that it was transmitted.

e. Except for any limitations stated in FAR 52.216-19 (See Section I), there is no limit on the number or size of task orders that may be issued except that a task order (or multiple task orders) may not be issued over the IDIQ contract capacity. The Government may issue simultaneous task orders requiring performance at multiple locations.

f. Task orders must be issued within the performance period of the IDIQ contract but the performance period of the task order may extend beyond the contract's performance period. The Contractor shall complete all work described in the Scope of Work for each task order within the performance period of each task order.

g. Task orders may be issued as firm, fixed-price task orders or as cost-reimbursement task orders on the contracts awarded to large business contractors. No cost-reimbursement task orders will be issued on the contracts awarded to small business contractors from the set-aside portion of the solicitation and, none of the cost-reimbursement clauses or procedures in this contract will apply to the contracts issued to small business contractors under the set-aside portion of the solicitation. The following provisions and clauses are cost reimbursement provisions and clauses and will not apply to small business contractors (as

stated above) since their contracts will not allow for issuance of cost reimbursement task orders:

Section I:
FAR 52.246-5, Inspection of Services – Cost-Reimbursement
FAR 52.242-15, Alt I, Stop Work Order. This clause with its Alt I is for cost reimbursement contracts; the clause without Alt I is applicable to fixed-price contracts.
FAR 52.216-7, Allowable Cost and Payment
FAR 52.216-8, Fixed Fee
FAR 52.222-2, Payment for Overtime Premiums
FAR 52.228-7, Insurance—Liability to Third Persons
FAR 52.232-20, Limitation of Cost
FAR 52.232-22, Limitation of Funds
FAR 52.233-3, Alt I, Protest After the Award. This clause with its Alt I is for cost reimbursement contracts; the clause without Alt I is applicable to fixed price contracts.
FAR 52.242-1, Notice of Intent to Disallow Costs
FAR 52.242-3, Penalties for Unallowable Costs
FAR 52.242-4, Certification of Final Indirect Costs
FAR 52.243-2, Alt I, Changes—Cost Reimbursement
FAR 52.244-2, Alt I, Subcontracts
FAR 52.249-6, Termination (Cost Reimbursement)
FAR 52.249-14, Excusable Delays
FAR 52.251-1, Government Supply Sources
FAR 52.251-2, Interagency Fleet Management System Vehicles and Related Services
DFARS 252.242-7004, Material Management and Accounting System
DFARS 252.251-7000, Ordering from Government Supply Sources
DFARS 252.251-7002, Use of Interagency Fleet Management System (IFMS) Vehicles and Related Services

Any 52.230, Cost Accounting Standards, provisions or clauses in any Section of the solicitation/contract are not applicable to Small Businesses (whether awarded under the set-aside or the unrestricted competition) because CAS does not apply to small businesses.

h. In the event of any inconsistency between the contract and any task order, the terms and conditions of the contract shall control.

2. ORDERING PROCEDURES

a. As the needs of the Government are determined, the Contracting Officer or his authorized representative will notify the Contractor(s) of an existing requirement (see below for competition requirements on multiple award contracts). A Request for Proposal (RFP) letter (to include the scope of work and any site specific Special Contract Requirements required for submission with the Contractor's proposal documents) will be issued.

b. The Contractor(s) shall then prepare and submit the cost/price proposal for accomplishing the work requested for the task order or modification. The proposal provided by the Contractor(s) will be used to establish the resources required to perform the work and as a basis for negotiation of estimated costs and fees or firm, fixed-price, as appropriate. The proposal(s) shall provide a detailed breakdown of all items and associated costs anticipated during execution of the tasks involved. The proposal(s) shall be divided into Direct Cost, Labor (furnish a detailed breakdown on labor costs to include level of effort and hourly wage for each proposed job title), Direct Cost, Equipment and Material Costs (provide thorough detail and support information), Direct Cost, Travel (provide support documentation and detail), All Other Direct Costs (with detail and support), Overhead, G&A and any other multipliers on all Direct Costs, proposed fee on cost reimbursement task orders and proposed profit on firm, fixed-price task orders. The proposal shall

be coordinated with the contractor's MIS and WBS. The Contractor's proposal must contain the Organizational and Consultant Conflict of Interest certification or disclosure statement as stated in paragraph H.11 below.

c. If the task order is to be cost reimbursement, the proposal(s) will include:

(1) Work Breakdown Structure (WBS)
(2) Estimate, as described above and keyed to the WBS
(3) Milestone Schedule
(4) Narrative Description of Set of Assumptions

d. The time set for the receipt of proposal(s) for each task order or modification will be identified in each Request for Proposal letter.

e. Upon receipt of the Contractor proposal(s), the Government will review the proposal(s) documents for adequacy and completeness. The Government will then negotiate (if necessary) with the Contractor(s) the proposed effort, price, any necessary site specific requirements, estimated cost and fixed fee.

f. Not all task orders will be cost reimbursement task orders. All cost reimbursement task orders will be cost-plus-fixed-fee.

g. Task orders will be issued by the Contracting Officer using a DD Form 1155. Each task order will include the following information as a minimum:

(1) Date of task order.
(2) Contract number and task order number.
(3) Task order estimated cost and fee or firm, fixed-price
(4) Delivery or performance requirements.
(5) Accounting and appropriation data.
(6) Scope of work.
(7) Any other pertinent information.

h. The task order will be signed by the Contracting Officer.

i. The Contracting Officer may at any time, prior to award of the task order, determine that the task order is not in the best interest of the Government and not issue the task order. No liability (except the guaranteed minimum amount identified in the solicitation) will accrue to the Government.

3. TASK ORDER AWARD SELECTION CRITERIA AND PROCEDURES (MULTIPLE AWARDS) (SPK #16-4003) (NOV 2000)

a. More than one contract is being awarded for the same or similar work in this procurement. Selection for task order awards will be made as follows:

(1) In accordance with FAR 16.505 and EFARS 16.505, all awardees will be given a fair opportunity to be considered for each task order in excess of $2,500 except in certain situations described below.

(2) The Government intends to award two unrestricted contracts and two small business set-aside contracts. The Government may choose to compete task orders amongst only the two unrestricted contracts or amongst only the small business contracts or may open up the competition to all four contractors.

(3) In making selection of the awardee to receive a specific task order, the Contracting Officer will consider the firm's technical capabilities; experience of each firm's operational and technical

staff; past performance on earlier task orders under the contract as well as other known contracts to include quality, timeliness and cost control; potential impact on other orders placed with the contractor and the contractor's current capacity to accomplish the task order in the required time; equitable distribution of work among the contractors, minimum order requirements; price/cost; or other factors considered relevant.

b. Oral or written proposals may be required.

c. The Contracting Officer need not contact each awardee before selecting an order awardee if the Contracting Officer has information available to ensure that each awardee is provided a fair opportunity to be considered for each order.

d. Task Orders may be competed among two or more of the contractors. A proposal or pricing schedule may be requested from two or more contractors and award may be given to the proposal which is most advantageous to the Government (price and price related factors considered). Normally the Government will allow 10-14 days for submission of the proposal, however, depending on the complexity and the urgency of the required services, the Government may require the proposal within one workday. Failure to submit a timely proposal may result in elimination of the proposal from consideration for the task order. The Contracting Officer may select other than the lowest priced offer if it is determined to be in the best interest of the Government to do so.

e. Awardees need not be given an opportunity to be considered for a particular order if the Contracting Officer determines that:

(1) the agency need is of such urgency that providing such opportunity would result in unacceptable delays;

(2) only one contractor is capable of providing the services required at the level of quality required because the services ordered are unique or highly specialized;

(3) the order should be issued on a sole-source basis in the interest of economy and efficiency as a logical follow-on to an order already issued under the contract, provided that all awardees were given a fair opportunity to be considered for the original task order;

(4) it is necessary to place an order to satisfy a minimum guarantee; or

(5) the task order will be a cost reimbursement task order. Contracts awarded to small businesses will not include the possibility of cost reimbursement task orders and therefore the small businesses will not be considered when a task order will be written as cost reimbursement.

f. As stated in Federal Acquisition Regulation (FAR) 16.505(8), no protest under FAR Subpart 33.1 is authorized in connection with the issuance or proposed issuance of an order under a task order contract except for a protest on the grounds that the order increases the scope, period, or maximum value of the contract but see Section G, Task Order Contract and Delivery Order Contract Ombudsman.

g. Refer to Section G, Task Order Contract and Delivery Order Contract Ombudsman, for designation of the Task Order Contract Ombudsman responsible for review of complaints to ensure that all contractors are afforded a fair opportunity to be considered, consistent with the procedures set forth herein.

4. COST REIMBURSEMENT TASK ORDERS

This clause outlines Government policies, procedures, practices, and requirements as it relates to cost reimbursement contracting mechanisms. Some task orders issued off of this contract may be cost reimbursement task orders. Cost reimbursement task orders establish a total ceiling price that the

Contractor may not exceed (except at his/her own risk) without approval from the Contracting Officer. The following are additional procedures required on cost reimbursement task orders:

a. The Government is concerned with the control and projection of costs on cost reimbursement task orders since much of the risk associated with cost is borne by the Government. Therefore, the contractor shall exercise adequate cost control policies and procedures.

b. Cost control is important because of the multiple funding sources possible under this contract. These sources may include Department of Defense (DOD), Base Realignment and Closure (BRAC), Defense Environmental Restoration Program (DERP), Environmental Protection Agency (EPA), Department of Commerce, Bureau of Land Management, Department of Energy, and others. As such, work will be obligated and directed not only by task order but by individual project funds. It is imperative that the contractor be capable of estimating, budgeting, accounting, and reporting of costs by individual funding source as well as work item. To the extent practical the Government will attempt to segregate task orders or other work authorizations to a sole funding source for administrative convenience.

c. Fee Arrangement: All cost reimbursement task orders issued will be cost-plus-fixed-fee (completion form) task orders. See Section I, FAR 52-216-8 for a full discussion of fixed fee. For a discussion of "completion form", see FAR 16.306(d). In accordance with FAR 15.404-4(c)(4) and 10 U.S.C. 2306(d) the fixed fee for cost reimbursement task orders issued off of this contract may not exceed 10 percent of the task order's estimated cost, excluding fee.

d. Management Organization, Responsibilities, and Authorities. The objective of cost reimbursement orders is to obtain the specified work or service on time at the least possible cost. As such, the contractor must demonstrate a management team and organization capable of performing its own management and subcontract management effectively and efficiently. Managers identified as key personnel must have the relevant experience and education to perform the possible scope of services. Responsibilities and authorities of key personnel should be clearly identified. Organizational charts are required. The primary Government authority under the contract is the Contracting Officer (CO). Designated representatives identified in writing as an authorized Contracting Officer's Representative (COR) or Administrative Contracting Officer (ACO) also serve as personnel of authority. Only the CO or ACO may cause an increase in the contract obligation amount. Technical direction under a cost reimbursement task order may also be made by the COR.

e. Mobilization. Mobilization is a non-recurring cost unique to individual work sites for a given task order. Costs for mobilization will be reimbursed if incurred after formal execution of the relevant cost reimbursement task order and under the procedures discussed below, WAD System. Mobilization costs prior to formal task order are not reimbursable unless specifically covered in advance agreements. Contractors are encouraged to segregate non-recurring costs such as mobilization when submitting estimated cost proposals.

f. Standard Operating Procedures. After award of the contract, at the direction of the contracting officer or his/her representative, the contractor shall participate in the preparation and implementation of Standard Operating Procedures (SOPs) to identify working procedures between the Government and the contractor. They may address detailed subjects including, but not limited to: document control, voucher procedures, regulatory coordination, manifesting, preparation of WADs/WOs, cost and schedule reporting, and funding control and variations. It is expected the contractor will have in place SOPs to cover its detailed procedures relating to cost reimbursement contracted work with the Government. See Section J for a list of possible Standard Operating Procedures to be negotiated before the first cost reimbursement task order is issued.

g. Management Information System. The contractor's Management Information System (MIS) is considered critical to the success of cost reimbursement task order. The MIS should integrate cost and schedule information to provide at a minimum: tracking of costs incurred; tracking of costs scheduled,

projection of cost and schedules, and time phased budget and spending curves. The schedule portion of this MIS should include a standard network analysis system that can be resource loaded for cost and manpower projections. Automated information should be remotely accessible at the work site and other locations to allow for: cost tracking of all costs including but not limited to actual labor, equipment, purchases, subcontracts, and other commitments, obligations, and expenditures, and evaluation of the impact of changes to the task order cost schedule.

The contractor shall provide MIS procedures anticipated for tracking all phases of cost, from subcontracting, material, labor and overheads, through the phase required to invoice for cost. The daily cost tracking shall be performed in a Work Breakdown Structure (WBS) format, with various defined levels of control. The upper levels of the WBS shall be where the contractor's costs roll-up to levels where the COR will manage costs, schedule, and funding. The MIS and/or accounting system must be capable of recording and tracking costs by separate project funds in addition to work schedule items.

Compliance with Department of Defense Instruction (DODI) 7000.2, Cost Schedule and Control System Criteria is not required; however, the principles of defining and maintaining a performance measurement baseline for comparison against the current estimate at completion and schedule are expected to be incorporated in some fashion in the contractor's MIS. Detailed analysis capability of cost variances for labor, material, equipment, overhead, etc., between the performance measurement baseline and the current estimate at completion is expected. The MIS must be capable of integrating cost and recording progress payments for fixed-priced and or cost reimbursement type subcontracts. The MIS shall include accurate updates of schedule logic, actual dates, and actual budgeting data on the schedule. The MIS shall be capable of simultaneously managing on multiple task orders, the current approved budget and schedule, actual cost and progress incurred, and projected future budget and schedule data.

The MIS shall be placed in operation at the outset of the work (the MIS shall be fully operational by the last day of the phase-in period if there is a phase-in period) or by the date of award of the first cost reimbursement task order.

Network Analysis System refers to a class of project management techniques used for planning and controlling the schedule of tasks (Work Breakdown Structure elements). The NAS provides an estimate of the time needed to complete a project and each task and provides the capability to measure progress and computes project completion.

h. Work Authorization Document (WAD). The Work Authorization Document (WAD) System is designed for joint Corps/Contractor management control of costs under cost-reimbursement contracts. The WAD system is used to authorize (in full or in part) the contractor to proceed with work and authorize the contractor's expenditure of previously obligated contract funds (obligation can be done by the Government Contracting Officer alone). The WAD System will be implemented in the initial phase of the work. WADs are a series of numbered documents directly related to the Work Breakdown Structure (WBS) prepared by the contractor and approved by the Contracting Officer (CO) or the Contracting Officer's Representative (COR). The WADS may be further broken down into Work Orders (WOs)(sub-WADS), or Work Elements (WEs)(sub-sub-WADs), aligned with the Work Breakdown Structure for more detailed control. Each WAD is an Authority to Proceed to proceed with the work and incur costs; the total authorized amount may be up to the amount of money obligated on the contract or task order (never more) but may be less than the obligated amount on the contract or task order. The contractor may not proceed with work or incur costs until the WAD is issued. The contractor may not incur costs beyond the authorized amount.

After the contract/task order is issued, the Government will request the contractor to submit WAD budgets in the Government-specified Work Authorization Document System format. This format will include: 1) an approved Work Breakdown Structure; 2) an estimate keyed to the WBS; 3) a schedule for the task; 4) and a narrative description of the scope of work. The Government will review the submitted WAD/WADs and approve/disapprove as necessary. A meeting of the minds will be reached between the

Corps and the Contractor as to the budgeted and authorized amounts for each WAD. The cumulative budget estimates of costs for work orders submitted for each WAD shall not exceed the total budget estimate for the WAD without prior amendment and approval of the Contracting Officer or COR. The total cumulative costs of the WADs shall not exceed the contract/task order's ceiling cost without an adjustment of the contract amount which can only be done by an official modification issued and signed by the Government Contracting Officer.

If a WAD request includes work that is beyond the scope of work/services, a modification is required under the Changes Clause before issuance. When a modification is necessary, the contractor must revise WAD requests to include this work. Once approval has been obtained, the contractor will submit requests to the Government for the release of budget (authorization of additional funds) for one or more work orders/work elements within each WAD. No work will be performed until this approval has been received and the budget established for the task. The contractor is authorized to expend and/or incur costs under the contract/task order up to the dollar value authorized by the individual WAD/WO/WE. The Government may not reimburse the contractor for costs incurred in excess of authorized amounts on the WAD/WO/WE. Only allowable, allocable and reasonable costs will be considered for payment.

The transfer of funds between WADs/WOs/WE due to overruns/underruns will be strictly controlled by the Government. It is possible that WADs could have more than one funding source. If this is the case, the WBS for that WAD will identify and segregate funding sources into separate work elements for tracking and control.

The Government will not automatically utilize the WAD process on all cost reimbursement task orders. Depending on the size, complexity, dollar value, and duration of a cost reimbursement task order, the Government may elect to control costs while still authorizing the contractor to expend and/or obligate funds up to the full task order estimated cost. In either event, the contractor is expected to utilize its cost control procedures to deliver to the Government at the least possible cost for the duration and work specified.

i. Cost & Schedule Control and Reporting:

The WAD system is to be used as a feeder for the contractor's finance and accounting system and the contractor's Management Information System (see subparagraph f above). The MIS will be used to track and report costs. The contractor will provide monthly cost and schedule reports (actual costs and schedule against budgeted cost and schedule, variances) which will become the joint Corps/Contractor tool for cost management and control. The contractor will maintain backup data in the form of actual cumulative cost incurrence down to the level in the WBS as directed by the Contracting Officer. The monthly Cost & Schedule Report will be furthered defined by Advance Agreements/Standard Operating Procedures issued after award of the contract/task order. The use of a Network Analysis System may be required; the decision to be made by the Contracting Officer on a task order by task order basis. For more complex task orders, the Cost and Schedule Reports may use Earned Value methods. The format for the Cost & Schedule Report will be determined by task order. A simple report format may include:

1. Current budget for each sub-task.
2. Actual costs incurred for activities completed to date at the sub-task level.
3. A variance analysis.
4. A current cost estimated for planned activities.
5. A revised cost estimate for the entire task.

A meeting, normally face to face, will be held monthly between the Government and the Contractor to review and discuss these reports.

j. Change Management System: The Government and the Contractor will establish a procedure to be used that ensures that all changes are reported and tracked throughout the life of all cost reimbursement

task orders. The Change Management procedure will track any change, addition or deletion of a work item that impacts cost or schedule and that was not anticipated when the total estimated cost and schedule of the task order was negotiated. The Contractor will provide prompt, written notification (in the format to be further defined in a Standard Operating Procedure) to the Contracting Officer any time a situation arises that the Contractor considers to constitute a change to the task order. The written notice is required by FAR clauses 52.243-2 and 52.243-7. Subparagraphs (b)(1)-(6) of 52.243-7 contains the format for the written notice including an estimate of the cost and schedule impact of the change. The Change Management System will be used to maintain a current budget baseline for more accurate cost and schedule control.

k. Advance Agreements:

In accordance with Federal Acquisition Regulation (FAR) 31.109, to establish the allowability, reasonableness and allocability of costs under contract, and to avoid possible subsequent disallowance of costs or disputes, the contractor(s) and the Contracting Officer shall negotiate advance agreements on the treatment of special costs and other issues. However, an advance agreement is not an absolute requirement and the absence of an advance agreement on any cost will not, in itself, affect the reasonableness or allocability of that cost. The advance agreements will be in writing, signed by both contracting parties, and incorporated into the contract as attachments. As advance agreements are incorporated into the contract, changes must be negotiated by both contracting parties and a modification, signed by the Contracting Officer, must be issued to make the changes to the advance agreement. Each advance agreement shall contain a statement of its applicability and duration. Advance agreements may be made before or after contract award. Advance agreements shall not be made that supersede, nullify, or contradict any statute or FAR clause nor shall they supersede, nullify, or contradict any portion of the Contractor's Disclosure Statement and/or acceptable standard accounting practices.

The advance agreements are not to be submitted with the original proposals; the successful offeror will be notified of the date for submission of advance agreements after which, negotiation will proceed. See Section J for a list of possible Advance Agreements to be negotiated and incorporated into the contract before the first cost reimbursement task order is issued.

l. Procurement and Subcontracting. Just as the Government clearly defines its procurement policy, the contractor's procurement policy shall be clearly delineated. FAR 52.244-2 (see Section I), as prescribed by 10 U.S.C. 2306(e), requires Advance Notification from the contractor to the Government Contracting Officer of certain subcontracts and in some cases requires that the Contractor get written consent from the Contracting Officer before awarding subcontracts. FAR Part 44 discusses Contractor Purchasing System Reviews; the Contractor’s Purchasing System will be reviewed by the Contracting Officer.. In addition to the FAR clauses in this contract describing the procedures for subcontracting under cost reimbursement contracts/task orders, a Standard Operating Procedure will be developed between the Government and the Contractor to define the details of the Advance Notification/Consent procedures. Adequate staffing to perform subcontract management is required. Detailed contractor procurement procedures and subcontract program plans are critical to the successful completion of projects.

In accordance with FAR 219-9, Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan, the Government will review the contractor's performance on utilization of small, small disadvantaged and women-owned small firms when applicable. Negotiations on current task orders will be influenced by the status and progress made on previous task orders.

m. Audits. Cost Reimbursable Orders: Interim and final payments on cost reimbursement Orders are subject to audit by the cognizant Federal audit agency. Detailed backup to support cost reimbursement payments will be required with each public voucher submitted for payment. The Contractor will work directly with the Contracting Officer/Contract Specialist to determine the support documentation that will be required by the Contracting Officer.

n. Technical Direction, Changes, and Claims. Contract clauses for changes and disputes are included for cost reimbursement task order. A specific technical direction clause is not included but the ability of the Government to supply contractors with details of performance as work progresses is incorporated in the contract clause on oversight. The contractor shall minimize subcontract disputes and effectively and efficiently control and process subcontract changes. Pre-pricing of subcontract changes is preferred, as is a formal system of issuing subcontract changes where obligations are recorded in advance of issuance of drawing changes or orders issued to the contractor.

o. Fee Bearing Changes: A fee-bearing change shall be as defined in FAR 52.243-2, Changes – Cost Reimbursement (see Section I).

p. Vouchers: The Contractor will submit a voucher as allowed by FAR 52.216-17, Allowable Cost and Payment (see Section I); see also Section G. Costs submitted in each voucher must be organized so they can be identified with the tasks in the WBS. The format for voucher and required supporting documentation will be as directed by the Contracting Officer. The vouchers shall contain the Contract number and task order number. The original of the voucher (without support documentation) will be submitted to the address in Block 7 of the DD Form 1155. Two copies of the voucher (with all support documentation) will be submitted to:

Rachel Rosas, Contract Specialist
U.S. Army Corps of Engineers, Sacramento District
Contracting Division
1325 J Street
Sacramento, California 95814

And

Project Manager designated in each Task Order
U.S. Army Corps of Engineers, Sacramento District
PPMD
1325 J Street
Sacramento, California 95814

q. Payments: Payments will be made in accordance with FAR 52.216-17, Allowable Cost and Payment (see Section I & Section G) and in accordance with FAR Part 31.2, Cost Principles. The contractor will be paid for all allowable, allocable and reasonable costs. The contractor will be paid the negotiated fixed-fee in accordance with FAR 52.216-8, Fixed Fee, and an Advance Agreement, Standard Operating Procedure or as defined in the task order itself.

r. Closeout Procedures. All cost reimbursement task orders will require a final audit by the cognizant audit office of the Federal Government. The contractor is expected to demonstrate procedures and processes that facilitate quick subcontract and supplier closeout and resolution of disputes. Closeout Procedures will be further defined in an Advance Agreement.

s. Company Policies and Plans:

The Contractor(s) selected for award shall have in place and available for Government review upon request by the Contracting Officer the following company policies and plans:

(1) Company Personnel Policies or Plans to include:
Recruiting and Hiring Practices (including part-time and temporary hires) that include employee orientation, and termination policies.

Affirmative Action/Equal Employment Opportunity.

Wages/Salaries/Benefits

Insurance Benefits; Vacation/Sick Leave/Leave of Absence/Holidays

Investment/Profit Sharing/Retirement Programs

Employee Morale/Benefit and Incentive Programs

Merit Promotions and Cost of Living Increases; Performance Evaluations and Promotions

Uncompensated Overtime

Travel and Relocation Policy

Timekeeping Procedures and Controls

Educational/Training Program

(2) Company Logistics Management Plans which address at a minimum:
Contractor's Purchasing System:

Policies and procedures for procurement compliant with Federal Acquisition Regulations

Government Property Control Plan

Health and Safety Program and Policy including Company's Training Plan explaining how the Contractor intends to acquire, maintain and expand his employees training on health and safety requirement.

Other policies and procedures may be needed in order to negotiate the Advance Agreements and establish Standard Operating Procedures.

t. Task Order Funding: Cost reimbursement task orders may be fully funded or incrementally funded. See Section I, FAR clauses 52.232-20 and 52.232-22.

5. OPTION TO EXTEND LIMITATION NOTICE

This contract contains two option clauses: (1) Option to Extend Services, FAR 52.217-8, and (2) Option to Extend the Term of the Contract, FAR 52.217-9. These clauses may be exercised by the unilateral right of the Government. The total contract period will not exceed 60 months (five years) (41 U.S.C. 353(d)) unless the Option to Extend Services clause is invoked. The clause entitled "Option to Extend the Term of the Contract" will not be exercised after any exercise of the "Option to Extend Services" clause.

6. SUBCONTRACTING WITH SMALL AND SMALL DISADVANTAGED BUSINESSES

Contractors are cautioned that failure of any Contractor to comply in good faith with the Contract Clauses in Section I titled (1) Utilization of Small Business Concerns and Small Disadvantaged Business Concerns (FAR 52.219-8) or (2) Small Business and Small Disadvantaged Business Subcontracting Plan (FAR 52-219-9), when applicable, will be a material breach of contract. In order to assist contractors in developing a source list of small and/or small disadvantaged business concerns you are encouraged to contact your

minority contractor associates, the local Minority Business Development Agency and the appropriate General Business Service Centers in your Standard Metropolitan Statistical Area, addresses of which may be obtained from:

Write: US Army Engineer District, Sacramento
ATTN: Contracting Division (SADBU)
1325 J Street, 8th Floor
Sacramento, California 95814-2922

Or Contact: Small and Disadvantaged Business Utilization Specialist
Telephone: (916) 557-5206

7. SAFETY AND HEALTH REQUIREMENTS MANUAL

The Contractor shall comply with all provisions of the current edition of the U.S. Army Engineers Safety and Health Requirements Manual, EM 385-1-1. Contractor will find the manual at http://www.hq.usace.army.mil/soh/em385/current/current38511.htm.

8. MINIMUM INSURANCE REQUIRED

The contract clause, FAR 52.228-5, above applies to this contract even if the work or any portion of the work is not performed on a Government installation. In accordance with FAR 52.228 and FAR 28.307-2, the contractor shall procure and thereafter maintain during the entire period of this performance under this contract the following minimum insurance. If there is a parenthesis in the left margin beside the type of insurance, that insurance is not applicable to this contract unless the Government an entered an "X" in the parenthesis.

TYPE	AMOUNT
Worker's Compensation and Employer's Liability	Comply with Federal and State worker's comp and occupational disease statutes. Employer's liability of at least $100,000
General Liability (Comprehensive)	Bodily injury liability of at least $500,000 per occurrence.
Automobile Liability (Comprehensive): Bodily Injury & Property Damage	At least $200,000 per person and $500,000 per occurrence. At least $20,000 per occurrence.

9. SUBSTITUTION OF KEY PERSONNEL AND SUBCONTRACTORS

The Contractor shall be limited to utilizing the key personnel and subcontractors during the performance of this contract that were identified in the Contractor's technical proposal unless prior Contracting Officer approval of the substitutions is obtained. The Contractor shall obtain the Contracting Officer's written consent before making any substitutions for key personnel or subcontractors by submitting in writing to the Contracting Officer the reasons for the substitutions and submit the qualifications of the new persons or subcontractors. Provide the same level of detail on credential and qualifications on the key personnel or subcontractor as was required by the solicitation. The key personnel or subcontractors that are proposed as substitutes must possess equal or greater qualifications than the individuals or subcontractors accepted award the award of the contract. In accordance with DFARS 219-704(a), in those Subcontracting Plans

that specifically identify small, small-disadvantaged, and women-owned small businesses, the prime contractor (if required to submit a Subcontracting Plan) shall notify the Contracting Officer of any substitutions of firms that are not small, small-disadvantaged, or woman-owned small businesses for the firms listed in the Subcontracting Plan. Notifications shall be in writing and shall occur within a reasonable period of time after award of the subcontract. Contractor-specified formats shall be acceptable.

10. SPK 1-4001 UNAUTHORIZED INSTRUCTIONS FROM GOVERNMENT OR OTHER PERSONNEL (MAY 2000)

The Contractor shall not accept instructions issued by any person employed by the U.S. Government or otherwise, other than the Contracting Officer or the Contracting Officer's Representative (COR), acting strictly within the limits of the authority delegated to that representative by the Contracting Officer.

11. SPK 42-4003 SECURITY REQUIREMENTS (MAY 2000)

If employee identification is required for security or other reasons, the Contractor shall be responsible for furnishing to each employee and for requiring each employee engaged on the work to display such identification as may be approved and directed by the Contracting Officer. All prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon the release of any employee. When required by the Contracting Officer, the Contractor shall obtain and submit fingerprints of all persons employed or to be employed on the project.

12. REQUIREMENT FOR BACKGROUND INVESTIGATIONS FOR CONTRACTOR PERSONNEL ASSIGNED TO ADP POSITIONS:

a. References:

DOD 5200.2-R, DOD Personnel Security Program;
AR 380-19, Information Systems Security, para 2-16; and
AR 380-67, Personnel Security Program, para 3-614 and App. K.

b. Any position that includes duties and responsibilities related to the organized collection, processing, transmission, or dissemination of information in accordance with defined procedures by automated means is an ADP position for the purposes of this contract. In accordance with the above references, all ADP positions that involve work on or with Government automated information systems (AISs) must be categorized by the Government by position sensitivity level. The ADP positions that will be utilized in the performance of work on this contract have been classified by the Government as ADP III (Non-Sensitive). The ADP III (Non-Sensitive) category is applicable to all positions involved in computer activities that are not classified at a higher level.

c. All DoD consultant and contractor personnel assigned to ADP positions are required to undergo a personnel security investigation. The type of investigation that is required is determined by the position sensitivity level. The type of investigation that is required for ADP III (Non-Sensitive) positions is as follows: National Agency Check (NAC).

d. The documentation required for the NAC is Standard Form 85, Questionnaire for Non-Sensitive Positions; FD-258, Applicant Fingerprint Chart; and Limited Items on Optional Form 306, Declaration for Federal Employment. The Standard Form 85 and the Optional Form 306 are currently available on line at the following website location: http://hydra.gsa.gov/forms.

e. The contractor is responsible for assuring that all individuals who will be assigned to ADP III positions under this contract properly complete the applicable portions of the SF85 and OF306 in accordance with the guidance provided in U.S. Office of Personnel Management Investigations Service

publication IS-15, "Requesting OPM Personnel Investigations", dated May 2001, which is currently available on-line at the following website: http://www.opm.gov/extra/investigate/IS-15.pdf. The contractor is further responsible for ensuring that within 10 days of contract award all personnel to be assigned to ADP positions under this contract (1) have their completed Standard Form 85s and their completed Optional Form 306s reviewed and accepted by the Sacramento District Security Officer; and (2) be fingerprinted by the Sacramento District Security Officer.

f. The Government will then be responsible for (1) promptly submitting the requests for the background investigations to the U.S. Office of Personnel Management, Investigation Services; (2) paying for any costs associated with the background investigations; and (3) promptly notifying the Contractor of the results of the background investigations.

g. The background investigation must be successfully completed prior to assigning an individual to any ADP III duties under this contract.

h. The Government retains the right to require removal of contractor personnel, regardless of prior clearance or adjudication status, whose actions, while assigned to a contract, clearly conflict with the interests of the Government. The reason for removal must be fully documented in writing by the Contracting Officer.

13. ORGANIZATIONAL AND CONSULTANT CONFLICT OF INTEREST

a. "Organizational conflict of interest" means that because of other activities or relationships with other persons, a person is unable to potentially unable to render impartial assistance or advice to the Government, or the person's objectivity in performing the contract work is or might be otherwise impaired, or a person has an unfair competitive advantage.

b. The Contractor is responsible for screening its own firm, its employees, and its subcontractors for potential conflicts of interest prior to the issuance of each task order. The Contractor shall certify on each task order that: "To the best of (enter name of Contractor)'s knowledge and belief, there are no relevant facts or circumstances which could give rise to an organizational conflict of interest, as defined in FAR Subpart 9.5, or that (enter name of Contractor) has disclosed all such relevant information." The Contractor shall submit this certification along with the proposal for the task order. No task order shall be negotiated and issued without this certification from the Contractor.

c. If the Contractor cannot certify as specified above, it shall provide a disclosure statement in its task order proposal which describes all relevant information concerning any past, present or planned interest bearing on whether it (including its chief, executives, and directors, or any proposed consultant or subcontractors) may have a potential organizational or consultant conflict of interest. The Contractor shall refer to FAR Subpart 9.5 for policies and procedures for avoiding, neutralizing, or mitigating organizational or consultant conflicts of interest. If the Contracting Officer determines that a potential conflict exists, the Contractor shall not be issued the task order unless the conflict can be avoided or otherwise resolved through the inclusion of a special contract clause or other appropriate means. The terms of any special clause are subject to negotiation.

d. The Contractor agrees that if an actual or potential organizational or consultant conflict of interest is discovered after issuance of a task order, the Contractor will immediately make a full disclosure in writing to the Contracting Officer. This disclosure shall include a description of the measures the Contractor has taken or proposes to take after consultation with the Contracting Officer, to avoid, mitigate, or neutralize the actual or potential conflict. The Contractor shall make this disclosure as soon as an actual or potential organizational or consultant conflict of interest occurs or is anticipated to occur. Some situations where an actual or potential organizational or consultant conflict of interest may occur include the following: (1) the Contractor enters into a new contract; (2) the Contractor's personnel assignments are changed; (3) the Contractor performs new work under existing contracts; (4) the Contractor's chain of

command is changed; (5) the Contractor enters into new subcontracts; or (6) the Contracting Officer provides the Contractor with new information on actual or potential organizational or consultant conflicts of interest.

e. In addition to the above, the following provisions with regard to individual personnel performing under this contract shall apply for the duration of the contract. The Contractor shall agree to notify the Contracting Officer of any actual, apparent, or potential conflict of interest with regard to any individual working on or having access to information regarding this contract or its task orders. Notification of any conflict of interest shall include both organizational and consultant conflicts of interest and personal conflicts of interest (defined as the same types of relationship as an organizational or consultant conflict of interest but applicable to an individual).

f. Remedies: The Government may terminate for convenience this contract or any task order in whole or in part if it deems such a termination is necessary to avoid an organizational or consultant conflict of interest. If the Contractor was aware of a potential organizational or consultant conflict of interest prior to the issuance of a task order or discovered an actual or potential conflict after issuance and did not disclose or misrepresented relevant information to the Contracting Officer, the Government may assess penalties associated with false certifications or such provisions provided for by law or regulation.

g. The Contractor further agrees to insert in any subcontract or consultant agreement hereunder provisions which shall conform substantially to the language of FAR Subpart 9.5 including the requirements of this paragraph on Organizational and Consultant Conflicts of Interest. Should a subcontractor have a conflict of interest, the Contractor will be allowed to use a substitute subcontractor. However, the Contracting Officer reserves the right to solely determine if the substitute subcontractor will cure the conflict of interest and/or adequately serve any other contractual interest of the U.S. Government.

14. FACILITIES CAPITAL COST OF MONEY

Section I includes FAR 52.215-17 which will not apply to the contract if the contractor proposed Facilities Capital Cost of Money in their Cost/Price Proposal in accordance with FAR 52.215-16 (see Section L).

15. SPK 04-4003 SECURITY REQUIREMENTS FOR UNCLASSIFIED CONTRACTS

a. All Contractor employees (U.S. citizens and Non- U.S. citizens) working under this contract *(to include grants, cooperative agreements and task orders)* who require access to Automated Information Systems (AIS), (stand alone computers, network computers/systems, e-mail) shall, at a minimum, be designated into an ADP-III position (non-sensitive) in accordance with DoD 5220-22-R, Industrial Security Regulation. The investigative requirements for an ADP-III position are a favorable National Agency Check (NAC), SF-85P, Public Trust Position.

b. The contractor shall have each applicable employee complete a SF-85P and submit to the Sacramento District Security Officer within three (3) working days after award of any contract or task order, and shall be submitted prior to the individual being permitted access to an AIS. Contractors that have a commercial or government entity (CAGE) Code and Facility Security Clearance through the Defense Security Service shall process the NACs and forward visit requests/results of NAC to the Sacramento District Security Officer. For those contractors that do not have a CAGE Code or Facility Security Clearance, the Sacramento District Division Security Office will process the investigation in coordination with the Contractor and contract employees.

c. In accordance with Engineering Regulation, ER 380-1-18, Section 4, foreign nationals who work on Corps of Engineers' contracts or task orders shall be approved by the HQUSACE Foreign Disclosure Officer or higher before beginning work on the contract/task order. This regulation includes subcontractor employees. (NOTE: exceptions to the above requirement include foreign nationals who perform janitorial and/or ground maintenance services.) The contractor shall submit to the Sacramento District Contract Office, the names of all foreign nationals proposed for performance under this contract/task order, along

with documentation to verify that he/she was legally admitted into the United States and has authority to work and/or go to school in the US. Such documentation may include a US passport, Certificate of US citizenship (INS Form N-560 or N-561), Certificate of Naturalization (INS Form N-550 or N-570), foreign passport with I-551 stamp or attached INS Form I-94 indicating employment authorization, Alien Registration Receipt Card with photograph (INS Form I-151 or I-551), Temporary Resident Card (INS Form I-688), Employment Authorization Card (INS Form I-688A), Reentry Permit (INS Form I-327), Refugee Travel Document (INS Form I-571), Employment Authorization Document issued by the INS which contains a photograph (INS Form I-688B).

d. The address and telephone number for the Sacramento District Security Officer is as follows:

U.S. Army Engineer District, Sacramento
Attn: Security Officer (CESPK-DE-S)
1325 J Street
Sacramento, CA 95814-2922
Tel: (916) 557-6920

e. All transmittals of documentation and other information pertaining to this requirement must be marked with the applicable contract, grant, agreement, and/or task order number and the name of the contracting officer. Additionally, the contracting officer must be notified in writing whenever a SF 85P has been submitted to the Security Officer for processing.

SECTION J - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

The following have been added by full text:
DOCUMENTS, ATTACHMENTS, ETC.

SECTION J
LIST OF DOCUMENTS, EXHIBITS
AND OTHER ATTACHMENTS

SECTION J
LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

1. Preaward Survey – See Section L, Paragraph 8f.

2. Sample Subcontracting Plan – See Section L, Paragraph 7 & 8(e), and FAR 52.219-9 (Subcontracting Plan Not Required from Small Businesses) & Army FAR Supplement Worksheets Used by Government to Evaluate the Subcontracting Plan

3. List of Possible Advanced Agreements and Standard Operating Procedures for Cost Reimbursement Task Orders.

4. Cost Proposal Charts. A separate Adobe Acrobat file will be available for download at the Corps of Engineers, Sacramento District website at http://www.spk.usace.army.mil/cespk-ct/ .
   a. Blank Charts 1A, 1B, and Chart 2 with instructions.
   b. Sample Charts 1A, 1B, and Chart 2.

NOTE:
Section A thru J and all attachments listed in J at time of award will comprise the contract.

Section K, as completed by the low bidder/successful offeror, will not be part of the contract but will be retained in the official contract file.

Sections L and M are included in the Solicitation only and will not be made part of the contract.

A Subcontracting plan, if required, is a material part of the contract.

All amendments to the solicitation are made part of the contract by reference

Advanced agreements will be negotiated after contract award. But, before the first cost-reimbursement Task Order is issued and will be incorporated into the contract by Modification.

ATTACHMENT 1

PRE-AWARD SURVEY

ATTACHMENT 1
PRE-AWARD SURVEY

PREAWARD SURVEY OF PROSPECTIVE CONTRACTORS
SERVICE CONTRACTS

1. It is the general policy of the Department of Defense that contracts shall be awarded only to contractors determined to be responsible in accordance with Part 9 of the Federal Acquisition Regulation (FAR).

2. No contract shall be awarded to any person or firm unless the Contracting Officer first makes an affirmative determination that the prospective contractor is responsible within the meaning of the FAR, Part 9.

3. Before making a determination of responsibility, the Contracting Officer shall have in his/her possession or obtain information sufficient to satisfy himself/herself that a prospective contractor currently meets the minimum FAR Part 9 standards.

4. In order to make the required determination and also to expedite the contract award, the following information must be submitted by the Contractor as directed (see Section L, Paragraph 6):

a. Completed Contractor Experience Date Form with Supplemental Schedules A-C (attached)

b. Latest Financial Statements. If the financial statement is more than 60-days old, submit a certificate stating that the firm's financial condition is substantially the same, or, if not the same, state the changes that have taken place.

c. Provide letters from Banks or other financial institutions with which the contractor conducts business. The letters should contain information about your firm's accounts, loans, lines of credit, etc., providing information leading to a determination that your firm is "Responsible" as defined in the Federal Acquisition Regulation, Part 9, "Has the financial resources to perform the contract or the ability to obtain them". The Government is interested in financial stability, timely payments, the length and nature of the relationship between the firm and the financial institution, etc., which reveals the firm's financial ability to perform the contract. The letters should also provide the name and telephone number of the bank representative the Government may contact. **Only required from the Prime Contractor.**

5. Be sure to include in your Preaward Survey, information on any contract you have had with the Sacramento District, Corps of Engineers, within the last 12-months.

THESE DOCUMENTS SHALL BE TREATED BY THE GOVERNMENT AS CONFIDENTIAL.

SERVICE CONTRACTOR DATA – SUMMARY		DATE:
Firm Name and Telephone Number	Main Office Address (Street, City, and State)	
Branch Offices		Services Rendered
Organization ☐ Individual ☐ Joint Venture ☐ Partnership ☐ Corporation	Date Organized	Date Incorporated: State:
Names of Officers and Other Key Personnel		

I – PRESENT PAYROLL PERSONNEL (List Number of Each Category Below)		
Partners: Officers: Other Key:	Remainder: Total:	Subtotal Permanent: Maximum Personnel at Any Time: Date:

II—EQUIPMENT OWNED	**III—FINANCIAL DATA AS OF (DATE):**
Present Value ($)	
	Current Assets:
Acquisition Cost ($)	Current Liabilities:
	Net Worth:

IV—TOTAL VALUE OF WORK IN PAST 3 YEARS EXCLUSIVE OF JOINT VENTURE (LIST MOST RECENT FIRST)		**V—LARGEST JOB EVER CONTRACTED (If Other Than in Past Three Years)**
$	**LARGEST JOB IN PAST 3 YRS**	Contract Amount:
$	Contract Amount:	Date:
$	Date:	Description:
$	Description:	
$		
$		
Avg. Annual Income $	Owner:	Owner:

VI—TYPE OF WORK IN WHICH FIRM SPECIALIZES	
NAME AND POSITION/TITLE OF PERSON SIGNING	**SIGNATURE**

NOTE: Use reverse side for explanations or detailed description of item(s) reported above.

SERVICE CONTRACTOR DATA - EXISTING COMMITMENTS

Provide a list of the service contracts your firm currently has under way and for which you are presently low bidder but have not yet received an award. For each contract or prospective contract listed, provide the following information:

Contract Number:

Amount:

Description of Work:

For Whom Performed

Name Of Organization:
Point of Contact:
Telephone Number for Contact:

SERVICE CONTRACTOR DATA – COMPLETED CONTRACTS

Provide a list of the major contracts your firm has completed within the past three years. For each contract listed, provide the following information:

Contract Number:

Amount:

Description and Location of Work:

Percent Subcontracted:

For Whom Performed
Name of Organization:
Point of Contact:
Telephone Number for Contact:

SERVICE CONTRACTOR DATA – FACILITIES AND EQUIPMENT

Provide a list of the equipment and facilities owned for performing the work and its present status as to whether or not it is committed to existing contracts. For each listed item, provide the following information:

Description:

Quantity:

Condition:

Years of Service:

Present Status:

ATTACHMENT 2

SUBCONTRACTING PLAN

ATTACHMENT 2
SUBCONTRACTING PLAN

- S A M P L E -
SUBCONTRACTING PLAN

Subcontracting plan submitted in accordance with Public Law 95-507 (the following format is established in accordance with FAR 52.219-9(d)(1) through (d)(11) and includes the required statutory elements as described in FAR 19.704. It also includes additional requirements of the DFARS 219.704 and AFARS 5119.704. Evaluation of the subcontracting plan by the Government will be as prescribed in FAR 19.705 (and its supplements).

Do not just address the following issues in short; follow the Guidance of FAR 52.219-9 in its entirety. For example, Paragraph 11 below asks for a discussion of records; the plan should address all records as described in FAR 52.219-9(d)(11)(i) through (vi).

In accordance with FAR 19.704, **if the contract contains options**, the cumulative value of the basic contract and all options is considered in determining whether a subcontracting plan is necessary. Once it has been decided if a plan is necessary, the Subcontracting Plan shall contain separate parts, **one for the basic contact – and one for each option**.

In other words, it is necessary to address planned subcontracting dollars and percentages of total to be awarded to Small, Small Disadvantaged, Hubzone Small, Women-Owned Small, Veteran-Owned Small, Service-Disabled Veteran-Owned Small, Hispanic Servicing Institutions and Tribal Council Universities, HBCU/MI's, and qualified non-profit agencies for the blind and other severely disabled separately for the basic contract period and each option year. Therefore, Paragraphs 1 and 2 below must be prepared separately for the base year and each option year. All other parts of the Subcontracting Plan only need to be addressed once.

If the Subcontracting Plan' proposed subcontracting goals do not meet the Corps of Engineers' subcontracting goals, the Subcontracting Plan must be submitted with a full explanation of the reasons for the lesser goals established by the plan. A Small Disadvantaged Business Goal of less than five percent (5%) must be approved two levels above the Contracting Officer (DFARS 219.705-4).

PROJECT TITLE: _____

RFP/IFB NO.: _____ CONTRACT NO.: _____

CONTRACTOR NAME: _____

DIVISION: _____

INDIVIDUAL COMPLETING THIS PLAN: _____

TELEPHONE NO.: _____

1. Goals, expressed in terms of percentages of total planned subcontracting dollars, for the use of small businesses, small disadvantaged businesses, HUBZone small businesses, women-owned small businesses, veteran-owned small businesses, service-disabled veteran-owned small businesses as subcontractors. The offeror shall include all subcontracts that contribute to contract performance and may include a proportionate share of products and services that are normally allocated as indirect costs.

	Corps of Engineers Subcontracting Subcontracting Contract Goal(s)	Percentage Goals Proposed by Contractor:
Small Business	57.2%	_____%
Small Disadvantaged Business	10.0%	_____%
Women-Owned Small Business	10.0%	_____%
Hubzone Small-Business	3.0%	_____%
Service-Disabled Veteran-Owned Small Business	3.0%	_____%

*Service-Disabled Veteran-Owned Small Business Concerns meet the definition of veteran-owned small business concerns, and offerors may also include them within the subcontracting plan goal for Veteran-Owned Small Business Concerns.

2. Statement of: (i) total dollars planned to be subcontracted, (ii) total dollars planned to be subcontracted to small business; (iii) total dollars planned to be subcontracted to hubzone small business;(iv) total dollars planned to be subcontracted to small disadvantaged business; (v) total dollars planned to be subcontracted to women-owned small business;(vi) total dollars planned to be subcontracted to veteran-owned small business; (vii) total dollars planned to be subcontracted to service-disabled veteran-owned small business; (viii) total dollars planned to be subcontracted to Hispanic Servicing Institutions and Tribal Council Universities; (ix) total dollars planned to be subcontracted to Historically Black Colleges/Universities and/or Minority Institutions; and (x) total dollars planned to be subcontracted to Qualified Nonprofit Agencies for the Blind and Severely Disabled.

Total Cost of Prime Contract:	$_____	
Total Dollars to be Subcontracted	$_____	_____%*
To Small Business	$_____	_____%**
To HUBZone Small Business	$_____	_____%**
To Small Disadvantaged Business	$_____	_____%**
To Women-Owned Small Business	$_____	_____%**
To Veteran-owned Small Business	$_____	_____%**
To Service-Disabled Veteran-Owned Small Business	$_____	_____%**
To Hispanic Servicing Institutions and Tribal Council Universities	$_____	_____%**

To Historically Black Colleges/Universities/ Minority Institutions	$_____	_____%**
To Qualified Nonprofit Agencies for the Blind and Other Severely Disabled	$_____	_____%**

NOTES:
* Calculate percentage of total dollars to be Subcontracted to total cost of Prime contract.
** Calculate subcontracted dollars to each group to total dollars to be subcontracted, not to total cost of Prime contract.

Planned subcontracting includes all planned expenditures. Total estimated cost to subcontractors and goals must be established even if the contract is of the indefinite-delivery type.

Subcontracts awarded to Small Disadvantaged Businesses, Hubzone Small Businesses, Women-Owned Small Businesses, Veteran-Owned Small Businesses, Service-Disabled Veteran-Owned Small Businesses, Hispanic Servicing Institutions, and Tribal Council Universities, HBCU/MIs, and qualified nonprofit agencies for the blind and other severely disabled count toward the overall small business goal HBCU/MIs are counted as a subset of the small disadvantaged goal.

The Corps of Engineers has not been assigned a set goal for Veteran-Owned Small Business, Hispanic Servicing Institutions and Tribal Council Universities, HBCU/MIs, or qualified nonprofit agencies for the blind and other severely disabled.

In accordance with DFARS 219.703, Qualified Nonprofit Agencies for the blind and other severely disabled that have been approved by the Committee for Purchase from People Who are Blind or Severely Disabled under the Javits-Wagner-O'Day (41 U.S.C. 46-48) are eligible to participate in the program as a result of 10 U.S.C. 2410d and Section 9077 of Pub. L. 102-396 and similar sections in subsequent Defense Appropriations Acts. Under this authority subcontracts awarded to such entities may be counted toward the Prime contractor's small business subcontracting goal.

3. A description of the principal types of supplies and services to be subcontracted and an identification of the types planned for subcontracting to (i) small business concerns, (ii) small disadvantaged business concerns, (iii) HUBZone small business concerns, (iv) women-owned small business concerns, (v) veteran-owned small business concerns (vi) service-disabled veteran-owned small business concerns, (vii) Hispanic Servicing Institutions, and Tribal Council Universities, (viii) HBCUs and MIs, (ix) qualified nonprofit agencies for the blind and other severely disabled.

4. A statement of the method used in developing the proposed subcontracting goals for small business concerns, small disadvantaged business concerns, HUBZone small business concerns, women-owned small business concerns, veteran-owned small business concerns, service-disabled veteran-owned small business concerns, Hispanic Servicing Institutions and Tribal Council Universities, HBCUs and MIs, and qualified nonprofit agencies for the blind and other severely disabled.

5. A description of the method used to identify potential sources for solicitation purposes to assure small, small disadvantaged, HUBZone small, women-owned small, veteran-owned small, service-disabled veteran-owned small, Hispanic Servicing Institutions and Tribal Council Universities, HBCU and MI, and qualified nonprofit agencies for the blind and other severely disabled participation (e.g., existing company source lists, the Procurement Marketing and Access Network (PRO-Net) of the Small Business Administration (SBA), the list of certified small disadvantaged business concerns of the SBA, the National Minority Purchasing Council Vendor Information Service, the Research and Information Division of the Minority Business Development Agency in the Department of Commerce, or small, veteran-owned small, HUBZone small, small disadvantaged, women-owned small business, and service-disabled veteran-owned trade associations).

6. A statement as to whether or not the offeror included indirect costs in establishing the subcontracting goals, and if so, a description of the method used to determine the proportionate share of indirect costs to be incurred with: (i) small business concerns, (ii) small disadvantaged business concerns, (iii) HUBZone small business concerns, (iv) women-owned small business concerns, (v) veteran-owned small business concerns, (vi) service-disabled veteran-owned small business concerns, (vii) Hispanic Servicing Institutions and Tribal Council Universities, (viii) HBCUs and MIs, and (ix) qualified nonprofit agencies for the blind and other severely disabled.

7. The name of the individual employed by the offeror who will administer the offeror's subcontracting program and a description of the duties of the individual.

Name: _____

Title and Telephone Number: _____

Address: _____
City, State and Zip Code: _____

Duties (Attachment may be used):

8. Describe the efforts the offeror will make to assure that small business concerns, small disadvantaged business concerns, HUBZone small business concerns, women-owned small business concerns, veteran-owned small business concerns, service-disabled veteran-owned small, business concerns, Hispanic Servicing Institutions and Tribal Council Universities, HBCUs and MIs), and qualified nonprofit agencies for the blind and other severely disabled will have an equitable opportunity to complete for subcontractors under this contract.

9. I do herewith assure that this concern will include the clause at FAR 52.219-8 entitled "Utilization of Small Business Concerns" in all subcontracts which offer further subcontracting opportunities and will require all subcontractors (except small business concerns) who receive subcontracts in excess of $500,000 ($1,000,000 for construction of any public facility) to adopt a plan similar to the plan agreed to by this concern and in consonance with the FAR clause 52.219-9.

10. I also assure that this concern will (i) cooperate in any studies or surveys as may be required, (ii) submit periodic reports in order to allow the Government to determine the extent of compliance by the offeror with the subcontracting plan, and (iii) submit Standard Form (SF) 294, Subcontracting Report for Individual Contracts, and SF 295, Summary Subcontract Report, in accordance with the instructions of the forms, and (iv) ensure that the subcontractors under this contract agree to submit the required SF 294s and 295s. I assure that this concern will submit an SF 295 on Corps of Engineers projects only. The SF 295 shall be completed and distributed in accordance with the Corps of Engineers supplemental instructions. I will not report Corps of Engineers projects through any other agency unless authorized by the Contracting Officer.

11. Provide a description of the types of records the offeror will maintain to demonstrate procedures which have been adopted to comply with the requirements and goals set forth in the plan, including the establishment of source lists; and a description of its efforts to locate small business, small disadvantaged business, HUBZone small business, women-owned small business, veteran-owned small business, service-disabled veteran-owned small business, Hispanic Servicing Institutions and Tribal Council Universities, HBCUs and MIs, and qualified nonprofit agencies for the blind and other severely disabled. The records shall include at least the following (on a plant-wide or company-wide basis, unless otherwise indicated):

a. Source lists (e.g., PASS), guides, and other data that identify small business, small disadvantaged business, HUBZone small business, women-owned small business, veteran-owned small business, service-disabled veteran-owned small business, Hispanic Servicing Institutions and Tribal Council Universities, HBCUs and MIs), and qualified nonprofit agencies for the blind and other severely disabled.

b. Organizations contacted in an attempt to locate sources that are small business, small disadvantaged business, HUBZone small business, women-owned small business, veteran-owned small business, service-disabled veteran-owned small business, Hispanic Servicing Institutions and Tribal Council Universities, HBCUs and MIs), and qualified nonprofit agencies for the blind and other severely disabled.

c. Records on each subcontract solicitation resulting in an award of more than $100,000, indicating (1) whether small business concerns were solicited and if not, why not; (2) whether veteran-owned small business concerns were solicited and if not, why not; (3) whether HUBZone small business concerns were solicited and if not, why not; (4) whether small disadvantaged business concerns were solicited and if not, why not; (5) whether women-owned small business concerns were solicited and if not, why not; (6) whether service-disabled veteran-owned small business concerns were solicited and if not, why not; (7) whether Hispanic Servicing Institutions and Tribal Council Universities concerns were solicited and if not, why not; (8) whether HBCUs and MIs were solicited and if not, why not; (9) whether qualified nonprofit agencies for the blind and other severely disabled were solicited and if not, why not; and (8) if applicable, the reason award was not made to a small business concern.

d. Records of any outreach efforts to contact (A) trade associations, (B) business development organizations, and (C) conferences and trade fairs to locate small business, small disadvantaged business, HUBZone small business, women-owned small business, veteran-owned small business, service-disabled veteran-owned small business, Hispanic Servicing Institutions and Tribal Council Universities, HBCUs and MIs, and qualified nonprofit agencies for the blind and other severely disabled sources.

e. Records of internal guidance and encouragement provided to buyers through (A) workshops, seminars, training, etc., and (B) monitoring performance to evaluate compliance with the programs' requirements.

f. On a contract-by-contract basis, records to support award data submitted by the offeror to the Government, including the name, address, and business size of each subcontractor. Contractors having company or division-wide annual plans need not comply with this requirement.

12. Discuss the extent to which the offeror has historically been successful in complying with the requirements of the clauses at FAR 52.219-8, Utilization of Small Business Concerns, and 52.219-9, Small Business Subcontracting Plan, in establishing realistic yet challenging goals and show evidence of ability to achieve the goals. Information addressing past performance on DoD contracts evidencing achievement of established subcontracting goals will be in the form of Standard Forms 294 and 295 (attach these to this plan). Offerors who have had no prior Department of Defense contracts from which to assess past performance will not be penalized. Those who have had prior DoD contracts must provide the SF 294s and 295s on past DoD contracts.

_____
(Signature)
(Title of Corporate Officer)

EVALUATION OF THE SUBCONTRACTING PLAN

In accordance with AFARS 5119.705-4, Reviewing the Subcontracting Plan, Contracting Officers must: Use the Guide at Appendix DD to evaluate all subcontracting plans, except those for commercial items; and

Require submission of subcontracting plan that cover the required elements to their satisfaction, notwithstanding the score given a plan evaluated in accordance with Appendix DD. Plans are not acceptable if they do not –

> Adequately address the six required statutory elements; or
>
> Provide sufficient information to enable the Contracting Officer to answer affirmatively questions A through H of Appendix DD, Part 2, Number 8.

Carefully consider the acceptability of any plan with a score of 70 or fewer points. Identify those areas where the plan is deficient, and discuss them with the offeror to try to get the deficiencies corrected. After discussions, if plans are still scored at 70 or fewer points and are determined acceptable, include the rationale for that determination in the contract file. Provide a copy of the determination and rationale to the local Small Business Specialist.

AFARS APPENDIX DD, SUBCONTRACTING PLAN EVALUATION GUIDE (JUNE 1, 1996)

Part I – Introduction

DD-100 Purpose. The guide provides a methodology for uniform and consistent evaluation of subcontracting plans within the Army. It is designed to facilitate compliance with the mandates of Public Law to increase opportunities for small and small disadvantaged businesses.

DD-101 Applicability. Except for subcontracting plans for commercial items, use this guide to review all subcontracting plans, including those submitted in response to the conditions described in FAR 19.705-2(d) and DFARS 219-.705-2(d). See 19.708(b)(1) for special notices to be inserted in the solicitation regarding submission of subcontracting plans. A copy of the completed evaluation shall be included in the contract file.

DD-102 Goals. Contracting officers must place special emphasis on negotiating reasonable goals in subcontracting plans. The goals must be realistic, challenging and attainable. The plan must demonstrate a real commitment to, and an active involvement in, providing subcontracting opportunities for small and small disadvantaged businesses.

DD-103 Scoring. Score subcontracting plans in the context of the particular procurement. For instance, in smaller dollar value contracts, it may be impracticable or not cost effective for offerors to take the type of actions that may be appropriate in contracts for larger dollar values. However, in such cases, offerors must still address each element of the guide and discuss what they intend to do regarding each element. Contracting officers shall then assign appropriate point scores.

DD-104 Modification of Guide. The evaluation guide and scoring system shall not be modified without the approval of the PARC. This approval authority may not be delegated.

DD-105 Use of Preaward Surveys. For contract administered by the Defense Contract Management Agency (DCMA), information needed to assess contractor compliance with subcontracting plans in current and previous contracts may be obtained by requesting a preaward survey in accordance with FAR 9.106.

Part 2 – Scoring System

	Point Range	Points Assigned
1. Policy statement or evidence of internal guidance to company buyers recognizing commitment to Pub.L. 99-661, Section 1207, and Pub.L.100-180, Section 806.	0 – 5	_____

0 No written policy statement in the plan.

1-2 Plan includes a general policy but no evidence of recognition of special emphasis being placed on subcontracting with SDBs, HBCUs, and MIs as a result of Pub.L.s

3-5 Definitive corporate and management commitment evidenced in individual plan and master plan by specifically referencing the Pub L.s

	Point Range	Points Assigned
2. Efforts to broaden SB and SDB active vendor base. (FAR 19.704(a), 52.219-9(d), DFARS Subpart 219.5, 219-704(a)(1), 219.705, and 252.219-7003).	0 – 10	_____

0 Description of efforts merely parrots requirements of FAR to maintain listing of vendors

1-2 Contains evidence that effort is directed at increasing subcontracts to SBs and SDBs for non-complex and general housekeeping supplies or services normally awarded to firms already in existing vendor base.

3-10 Addresses efforts to increase the number of SB and SDB sources awarded subcontracts, establishes plans to use competition restricted to SDBs and gives details about how plans to use competition restricted to SDBs will be accomplished (DFARS 219.705-4 and Subpart 219.5).

NOTE: After scoring the plan to this point, if zero points have been assigned for Element 2, proceed to Item 3, Outreach. If one or more points have been assigned for this Element 2, proceed to evaluation of the sub-elements labeled "minus 2" and "minus 3" to determine if points assigned so far must be reduced. Do not reduce points already assigned to less than zero. (No negative points are to be entered under "Points Assigned" for any Element.) These negative scores are additive; if both of the sub-elements apply, then minus five points are assessed to reduce points already assigned under this Element 2.

Minus 2 *includes efforts described above which rate 1-2 or 3-10 points but, when it would be appropriate, does not address effort to involve HBCUs and MIs in performance the contract for which the subcontracting plan is submitted. (DFARS 219-704(a)(1) and 219.705-4(d))*

Minus 3 *includes efforts described above which rate 1-2 or 3-10 points but does not address effort to identify and overcome obstacles which may prohibit award to HBCUs and MI sources currently in vendor base.*

	Point Range	Points Assigned
3. Outreach (ongoing and planned actions (FAR 19.704(a), 19.705-4, 52.219-9(d) and 52.219-9(e), DFARS 219.705).	0 – 10	_____

0 No mention of outreach.

1-4 Describes efforts to work with organizations in FAR 52.219-9(d)(11)(iv) to identify potential sources for items not traditionally awarded to SB or SDB Firms. (FAR 52.219-9(d)(11)(iv) and 52.219-9(e)).

5-10 Indicates intent to conduct reviews to determine the competence, ability, experience and capacity available in SB or SDB firms and to provide technical assistance to SBs and SDBs or explains why such reviews or technical assistance are not appropriate (FAR 19.705-4(c) and 52.219-9(e)).

NOTE. After scoring the plan to this point, if zero points have been assigned for Element 3, proceed to Item 4, Description of supplies and services. If one or more points have been assigned for this Element 3, proceed to evaluation of the sub-element labeled "minus 3" to determine if points assigned so far must be reduced. Do not reduce points already assigned to less than zero. (No negative points are to be entered under "Points Assigned" for any Element.)

Minus 3 *Fails to indicate the extent to which HBCU and MI participation will be considered and facilitated in performing the contract for which the subcontracting plan is submitted, or fails to indicate other efforts to increase HBCU and MI participation in future DoD acquisitions. (DFARS 219-705-4(d)).*

	Point Range	Points Assigned
4. Describes supplies and services to be subcontracted and planned for subcontracting to SBs, SDBs, HBCUs and MIs. (FAR 19.705-4(d), 52.219-9(d)(3), 52.219-9(e) and DFARS 219.705).	0 – 10	_____

0 No mention.

1-3 Generic list of routine supplies and services included in materials listing for the specific contract.

5-7 Indicates intent to review major product/system components and key project elements of R&D, construction, service and spare parts contracts for subcontracting to SBs, SDBs, HBCUs and MIs. (FAR 19.705-4(d)(3) and (4), 52.219-9(e)(1) and (2) and DFARS 219.705).

8-10 Substantive plan actually targets specific SBs, SDBs, HBCUs and MIs for review to determine their competence, ability, experience and capacity and identifies specific components or major potions of the acquisition for consideration of SB, SDB, HBCU, or MI competition. Also, indicates

intent to work with large business subcontractors for major subsystems or key project elements to ensure "flowdown" of this philosophy. (FAR 19.705-4(d) and DFARS 219.705).

	Point Range	Points Assigned
5. Describes specific efforts, based on results of efforts described in Elements No. 3 and No. 4 to ensure that SB, SDB, HBCU and MI concerns have equitable opportunity to participate in acquisitions. (FAR 19.704(a), 19.705-4, 52.219-9(d) and DFARS 219.705).	0 – 10	_____

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0 No mention.

1-4 Description of efforts merely parrots FAR 19.704(a)(3) and (6) and 52.219-9(d)(8).

5-8 Describes how the company intends to evaluate its own SB and SDB award performance and program effectiveness against the established goals, both company-wide and for the individual plan being negotiated. (FAR 19.704(a)(1) and (6) and 52,219-9(d)(11)(v).

9-12 Includes SBs, SDBs, HBCUs and MIs by name as members of original team for producing specific major components or subassemblies, providing a major service or performing a significant portion of the effort. (DFARS 219.705-2(d)).

13-15 Describes special efforts to establish long-range relationships with SBs, SDBs, HBCUs, and MIs, including leader-follower techniques, when appropriate. (FAR 19.705-4(d)(4) and DFARS 219.705-2(d)).

	Point Range	Points Assigned
6. Development of percentage goal is based on planned subcontracting which is challenging, yet realistic. (FAR 19.705-4(d), DFARS 219.704(a)(1) and 219.705.4.	0 – 40	_____

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0 Fails to include a specific goal for subcontracting with SBs, SDBs, HBCUs and MIs or proposes zero percent goal without substantive justification.

1-5 Sets small business goal of less than 10 percent and/or SDB/HBCU/MI goal of two percent or less with no significant justification.

6-10 Sets goals of less than 10 percent (SB) and 2 percent (SDB), but contractor shows evidence of reasonable effort, including use of set-asides, to involve SBs, SDBs, HBCUs or MIs in non-traditional areas.

11-20 Sets goals of over 10 percent (SB) and 2 percent (SDB) and also identifies specific SB, SDB, HBCU, or MI concerns planned to be subcontractors, including the item or service or effort to be subcontracted. Indicates extent to which firms have participated in proposal preparation or otherwise indicates extent to which subcontracting to these firms may reasonably be

assured. Goals are realistic in view of actions stated in other portions of the plan and make-or-buy plan, if applicable.

21-30 Same as for 11-20 points, but proposed percent of goal is reasonable in comparison with prior experience, yet indicates reasonable effort to improve on past experience in terms of dollars, numbers of SDBs, HBCUs, and MIs involved, and movement into area without previous SDB, HBCU or MI involvement.

31-40 Same as 21-30 points, but includes evidence that if SBs, universities, or institutions other than HBCUs or MIs are performing on a major component or subassembly, providing a major service or performing on a key project element, SDBs, HBCUs and MIs will also be given an opportunity to perform. Also, the percentage of the SDB, HBCU, MI goal compares favorably with the percentage of SB goal, consistent with the Government-wide goals of 20 percent to SB with five percent to SDB, or is otherwise explained, and the plan includes a forecast for improvement. (The SB and SDB goals in the subcontracting plan should approximate the ratio between the SB and SDB Government-wide goals.)

_____

	Point Range	Points Assigned
7. Past Performance. Extent to which the company has historically been successful in establishing realistic, yet challenging, goals and achieving them. Consider DCMC comments on Prime contractor's justifications for prior failure to achieve goals. To avoid penalizing the contractor when there has been no previous defense contract, assign 10 points. (FAR 19.705-4(d)(1) and (d)(2)(iii), 19.706 and DFARS 219.706).	0 – 10	_____

_____

TOTAL POINT SCORE _____

8. Other regulatory and statutory requirements.
If any of the following are answered "NO", the plan is not acceptable and must be revised to comply prior to award:

Does the plan have --

A. A separate goal for SB and SDB? (FAR 19.704(a)(1) and FAR 52.219-9(d)(1) and (2))

YES NO

B. A separate goal for the basic contract and, if applicable, each option? (FAR 19.704(c))

YES NO

C. The name of the company employee responsible for administration of plan and employee's duties? (FAR 19.704(a)(2) and 51.219-9(d)(7)

YES NO

D. A statement affirming intent to comply with subcontracting "flowdown" provisions? (FAR 19.704(a)(4) and 52.219-9(d)(10))

YES NO

E. A statement affirming willingness to cooperate in studies and to provide reports? (FAR 19.704(a)(5) and 41.219-9(d)(10)

YES NO

F. A statement that indirect costs are either included or excluded from the proposed goals and, if included, how they will be prorated? (FAR 52.219-9(d)(6))

YES NO

G. A description of efforts to ensure the SBs and SDBs have an equitable opportunity to participate in the acquisition? (FAR 52.219-9(d)(8))

YES NO

H. A recitation of the types of records maintained to demonstrate procedures adopted to comply with the requirements and goal in the plan? (FAR 52.219-9(d)(11))

YES NO

ATTACHMENT 3

POSSIBLE ADVANCE AGREEMENTS AND STANDARD OPERATING PROCEDURES – APPLICABLE TO COST REIMBURSEMENT TASK ORDERS

The following listed possible Advance Agreements and Standard Operating Procedures are not all inclusive and may not all be necessary but are given as samples.

The Advance Agreements will be negotiated after contract award but before the first cost reimbursement task order is issued; they will be incorporated into the contract by modification. Advance Agreements are used to define allowability, allocability and reasonableness of costs for the contract; they are used in conjunction with FAR 31.2 to specifically define reasonableness as agreed to by the Government and the Contractor.

The Standard Operating Procedures will be put into place before the first cost reimbursement task order is issued; they do not become part of the contract and are used to define administrative procedures.

Offerors will NOT submit any Advance Agreements or Standard Operating Procedures with their Cost/Price or Technical Proposal.

ADVANCE AGREEMENTS:

Direct Costs, Labor including Partners' Compensation

Other Direct Costs

Indirect Costs

Escalation – Direct and Indirect Costs

Training Costs – Direct vs. Indirect Cost

Travel/Relocation Costs

Awards/Incentive Programs for Employees

Uncompensated Overtime

Premium Overtime

Purchasing and Subcontracting, Advance Notification and Consent

Government Property and Lease vs. Buy

Fee Bearing Changes

Value Engineering

Warranties

Close-Out

STANDARD OPERATING PROCEDURES:

Cost Estimating Procedures

Authority, Control and Level of Mgmt for Government/Contractor

Proposals, WADS, Work Orders, and ATPs

Adjustment to the Baseline

Change Management

Modification Administrative Procedures

Computing Fixed-Fee Objective

Cost and Schedule Control and Reporting

Billing and Payment Procedures

Voucher Review/Resolution of Questioned Costs

Advance Notification and Consent to Subcontract

Subcontracting Program Review

Government Property

Technical Planning/Regulatory Coordination

ATTACHMENT 4
COST PROPOSAL CHARTS 1A, 1B, AND CHART 2 WITH INSTRUCTIONS AND SAMPLES

A separate Adobe Acrobat file with Blank Cost Charts 1A, 1B, and Chart 2 with instructions, is available for download at the Corps of Engineers, Sacramento District, Contracting Division's website at http://www.spk.usace.army.mil/cespk-ct/ . Go this website to download the charts for use and submission with your proposal.

SECTION L - INSTRUCTIONS, CONDITIONS AND NOTICES TO BIDDERS

The following have been added by full text:
INSTRUCTIONS, CONDITIONS, ETC.

SECTION L
INSTRUCTIONS, CONDITIONS, AND NOTICES TO OFFEROR

SECTION L
INSTRUCTIONS, CONDITIONS, AND NOTICES TO OFFERORS
INDEX

1. Inquiries

2. Directions for Submitting Proposals

3. Preproposal Conference

4. Contractor Responsibility

5. Telegraphic Offers

6. Facsimile Offers

7. Preparation of a Subcontracting Plan (Apr 1994)

8. Proposal Submission Requirements and Instructions

a. Requirement for Separate Cost/Price and Technical Proposals

b. Multiple Award Contracts Based on a Small Business Set-Aside and on an Unrestricted Competition

c. Award Following Discussions

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i. General Instructions

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(1) Number of Sets of the Cost/Price Proposal

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k. Specific Instructions for the Technical Proposal

(1) Number of Sets of the Technical Proposal

(2) Format and Contents of the Technical Proposal and List of Tabs

(3) Detailed Submission Instructions for the Technical Proposal

9. Standard Formats

Proposal Cover Sheet

Resume

Reference Project

Past Performance Questionnaire with Cover Letter and Instructions

10. Provisions Incorporated by Full Text

11. Sample Project. **A separate Adobe Acrobat file with the Sample Project, is available for download at the Corps of Engineers, Sacramento District, Contracting Division's website at http://www.spk.usace.army.mil/cespk-ct/ . Go this website to download the Sample Project for use and submission with your proposal.**

1. INQUIRIES

Perspective offerors should submit inquiries related to this solicitation by writing or calling the following (collect calls will not be accepted):

(a) All questions will be submitted in writing, e-mailed or faxed to:

Department of the Army
U.S. Army Engineer District, Sacramento District Corps of Engineers
ATTN: Contracting Division, Ms. Rachel Rosas
1325 J Street
Sacramento CA 95814-2922
FAX: (916) 557-7854
E-MAIL ADDRESS: Rachel.A.Rosas@usace.army.mil

Please include the solicitation number, project title, and location of project with your questions. Written inquiries must be received by this office not later than 14 calendar days prior to the date set for receipt of offers.

Oral explanations or instructions are not binding. Any information given to an offeror which impacts the solicitation and/or offer will be given in the form of a written amendment to the solicitation.

As this is a competitive negotiation acquisition, there is no public bid opening and no information will be given out as to the number of offerors or the results of the competition until award is made. At award, the Government will give out the name of the awardee and the amount of the award only.

2. DIRECTIONS FOR SUBMITTING PROPOSALS

Offers must be in sealed envelopes/packages, marked and addressed as follows:

MARK PACKAGES:
Solicitation No. W91238-04-R-0001
Offer Closing Date: 14 April 2004
Offer Closing Time: 1:00 P.M. (1300 hours),
(LOCAL CALIFORNIA TIME)

ADDRESS PACKAGES TO:
Department of the Army
U.S. Army Engineer District, Sacramento District Corps of Engineers
ATTN: Contracting Division/Ms. Rachel Rosas
1325 J Street
Sacramento CA 95814-2922

<u>Special Instruction Pertaining to Hand Carried Offers:</u>

Hand-carried offers must be delivered to the building lobby at 1325 J Street, Sacramento, California 95814-2922.

Due to security precautions, all Corps of Engineers visitors are now required to sign-in, leave a Photo-I.D. (such as drivers license), and get a Visitors' Pass at the Security Desk in the building lobby. Offerors may no longer hand-carry their offers directly to Contracting Division without an authorized escort. Offers may NOT be either turned-in at the Security Desk or left unattended elsewhere in the lobby. Additionally, you are advised that there is no longer public parking in the building.

The Contract Specialist will be in the building lobby 20 minutes prior to the closing time to accept hand-carried offers. After announcing that no further offers will be received, the Contract Specialist will have the hand-carried offers x-rayed as a security precaution.

Offers who desire to hand-deliver their offers at an earlier time must notify the Contract Specialist **in advance** in order to be met in the building lobby by Contracting Division personnel. In the event the Contract Specialist cannot be reached, please call the main Contracting Division telephone number, 916/557-5201, in order to request assistance.

Please ensure that all courier and delivery personel are aware of these procedures.

3. PREPROPOSAL CONFERENCE

A Preproposal Conference shall be held on 12 February 2004, at 9:00 a.m. (0900 hours), at the Sacramento District, Army Corps of Engineers building. The building is located at 1325 J Street, Sacramento, California. Public parking is not available in the building however, there is a City of Sacramento parking lot located on 14th and J, directly across from the Sheridan Hotel. All prospective offerors are advised to arrive at least 1/2 –hour early in order to be processed through security. Due to security precautions, all Corps of Engineers visitors are now required to sign-in, leave a Photo-I.D. (such as drivers license), and get a Visitors' Pass at the Security Desk in the building lobby. Offerors may no longer hand-carry their offers directly to Contracting Division without an authorized escort. Upon check-in and processing a Contracting Division representative will escort personnel upstairs.

a. The purpose of the conference will be to familiarize prospective offerors with the extent and nature of the project, as well as the unique features of this solicitation. The conference will begin with a briefing session and during this portion of the conference, questions will not be accepted. All participating firms are strongly encouraged to prepare their written questions/comments well in advance of the Pre-Proposal Conference and submit them to U.S. Army Corps of Engineers, ATTN: CESPK-CT (Ms. Rachel Rosas), 1325 J Street, Sacramento, California 95814-2922. At the end of the briefing session, a 60 minute period will be set aside so that offerors can prepare and submit other questions in writing regarding the project. All questions shall contain the following information:

(1) Names of persons submitting the questions.
(2) Company name.
(3) Company address.
(4) Telephone number.
(5) Questions/Comment.

The questions/comments will be read and answered by the appropriate Government personnel during the Question and Answer period. A written summary of the questions and answers will be mailed to each firm which has received a copy of the RFP and which has not submitted a "No-Responses notice".

b. Prospective offerors who plan to attend the conference shall provide to Ms. Rachel Rosas at (916) 557-7716, at least 7 work days prior to the preproposal conference, a list of the names and titles of the representatives who will attend the conference. Any advance questions pertaining to the solicitation should be submitted with the list so that they may be answered at the conference. The number of the offerors personnel allowed to attend the preproposal conference shall be limited to a maximum of two representatives per firm.

c. IMPORTANT NOTES. (1) Remarks and explanations addressed during the conference shall not qualify or alter the terms and conditions of the solicitation. (2) The terms and conditions of the solicitation to include specifications remain unchanged unless the solicitation is formally amended in writing.

4. CONTRACTOR RESPONSIBILITY

In order to determine a contractor's responsibility for purposes of contract award in accordance with FAR Part 9, the contractor is required to provide information regarding previous experience and past performance in performing comparable work, information related to the business organization, financial resources, and/or plant to be used in performing the work. In order to be determined to be responsible a prospective contractor must:

(a) Have adequate financial resources to perform the contract or the ability to obtain them.

(b) Be able to comply with the required or proposed delivery or performance schedule, taking into consideration all existing commercial and governmental business commitments.

(c) Have a satisfactory performance record. In making the determination of responsibility, the Government Contracting Officer shall consider relevant past performance information. A prospective contractor shall not be determined responsible or nonresponsible solely on the basis of a lack of relevant performance history except when there are special standards set forth in the solicitation which applies to all bidders that must be met in order to receive the award. These special standards may be necessary when unusual expertise or specialized facilities are necessary in the performance of the contract; therefore, in order to be determined to be responsible for that particular contract, the offeror must be able to meet those special standards. A prospective contractor that is or recently has been seriously deficient in contract performance shall be presumed to be nonresponsible unless the Contracting Officer determines that the circumstances were beyond the contractor's control or that the contractor has taken appropriate corrective action. Other responsibility considerations by the Contracting Officer will include past efforts by the contractor to apply sufficient tenacity and perseverance to perform acceptably, to meet quality requirements of contracts, and the contractor's past compliance with subcontracting plans (if required) under recent contracts.

(d) Have a satisfactory record of integrity and business ethics.

(e) Have the necessary organization, experience, accounting and operational controls, and technical skills, or the ability to obtain them (including, as appropriate, such elements as production control procedures, property control systems, quality assurance measures, and safety programs applicable to materials to be produced or services to be performed by the prospective contractor and subcontractors).

(f) Have the necessary production, construction, and technical equipment and facilities, or the ability to obtain them.

(g) Be otherwise qualified and eligible to receive an award under applicable laws and regulations.

If the contractor or subcontractor does not already have sufficient resources demonstrated in the proposal, acceptable evidence of "the ability to obtain" the required, adequate resources (all of the resources discussed in subparagraphs a, e, and f above) normally consists of a commitment or explicit arrangement that will be in existence at the time of contract award to rent, purchase or otherwise acquire the needed facilities, equipment, other resources, or personnel. See also DFARS 252.219-7009 in this Section.

The Government reserves the right to conduct a preaward survey of any firm under consideration to confirm any part of the information furnished by the offeror or to require other evidence of managerial, financial, technical and other capabilities, the positive establishment of which is determined by the Government to be necessary for the determination of responsibility and for the successful performance of the contract.

5. TELEGRAPHIC OFFERS - - TELEGRAPHIC OFFERS ARE NOT ACCEPTABLE.

However, offers may be modified or withdrawn by written or telegraphic notice. Any telegram to modify or withdraw a offer sent to this office must be received in the office designated in the Request for Proposal (RFP) for receipt of offers not later than the exact date and time set for receipt of proposals. A telegraphic modification or withdrawal of a offer received in such office by telephone from the receiving telegraph office not later than the exact date and time set for receipt of proposals shall be considered. However, the telephone message shall be confirmed by the telegraph company by sending a copy of the written telegram that formed the basis for the telephone call. The written telegram shall be sealed in an envelope by a proper official and sent to the office designated in the RFP for receipt of offers. The official shall write on the envelope (1) the date and time of receipt and by whom, and (2) the number of the RFP, and shall sign the envelope. The offeror is responsible to inform the telegraph company of these requirements. No one from this office will be dispatched to the local telegraph office to pick up any telegram for any reason.

6. FACSIMILE OFFERS

Facsimile offers, modifications thereto, or cancellations of offers will not be accepted.

7. PREPARATION OF SUBCONTRACTING PLAN (APR 1994)

(a) See FAR 52.219-9, Section I, of this solicitation. Located in the Attachments, Section J of this solicitation, is a sample Subcontracting Plan which will aid the Contractor in preparing a Subcontracting Plan in accordance with FAR 52.219-9(d)(1) through (d)(11). Subcontracting Plans will be developed considering only the subcontracts actually to be awarded. Subcontracting Plans are required only from large business firms if the contract price is over $500,000; they are not required from small business firms regardless of the contract price.

(b) A Subcontracting Plan will be required from every large business offeror(as the contracts will be over $500,000). If the apparently successful offeror fails to negotiate an acceptable plan within the time limit prescribed by the Contracting Officer, the offeror will be ineligible for award. Review of the Subcontracting Plan by the Government will be in accordance with FAR 19.705-4 and the AFARS Part 19. The AFARS Worksheet is in Section J behind the Sample Subcontracting Plan; it makes it clear how the Government will evaluate the Subcontracting Plan.

(c) A Subcontracting Plan which proposes goals less than the recommended goals below must contain support, in writing, for the lesser goals and discuss the Contractor's good faith effort to meet the recommended goals.

(d) In accordance with FAR 19.704 if the contract contains options, the cumulative value of the basic contract and all options is considered in determining whether a Subcontracting Plan is necessary. If a plan is necessary, the Subcontracting Plan shall contain separate parts, one for the basic contract and one for each option. It is necessary to address planned subcontracting dollars and percentages of total to be awarded to small; small, disadvantaged; women-owned small; hubzone small; veteran-owned small; service disabled veteran-owned small; and HBCU/Mis for the basic period and each option year. All other parts of the Subcontracting Plan only need to be addressed once.

e) Subcontracts awarded to small, disadvantaged businesses; women-owned small businesses; hubzone small; veteran-owned small; service disabled veteran-owned small; and HBCU/MIs count toward the overall small business goal. HBCU/MIs are counted as a subset of the small, disadvantaged goal. The Corps of Engineers has not been assigned a set goal for veteran-owned small or HBCU/MIs. See the goals below for the other categories.

(f) The accepted Subcontracting Plan will be incorporated into and made a material part of the contract.

(g) The Corps of Engineers highly encourages all offerors to meet the recommended subcontracting goals as follows:

Small Businesses	57.2%
Small Disadvantaged Businesses	10.0%
Women-Owned Small Businesses	10.0%
HUBZone Small Businesses	3.0%
Service-Disabled Veteran-Owned Small Businesses	3.0%

The goals are calculated as a percentage of the TOTAL SUBCONTRACTING DOLLARS, NOT THE TOTAL CONTRACT AMOUNT.

8. PROPOSAL SUBMISSION REQUIREMENTS AND INSTRUCTIONS

a. REQUIREMENT FOR SEPARATE COST/PRICE AND TECHNICAL PROPOSALS

(1) Each Offeror must submit both a Cost/Price Proposal and a Technical Proposal. The Cost/Price Proposal and the Technical Proposal must be submitted as separate, physically distinct volumes. Ensure that the outside of each separate volume is clearly marked to indicate its contents; the identity of the offeror; and whether the proposal is being submitted for evaluation only under the Small Business Set-Aside, only under the Unrestricted Competition, or both. Additionally, clearly identify the "original" cost/price proposal and the "original" technical proposal on the outside cover.

(2) Both the Cost/Price Proposal and the Technical Proposal must be received by the closing date and time set for receipt of proposals.

(3) No dollar amounts from the Cost/Price Proposal are to be included in the Technical Proposal, except as expressly required under TAB #5, Socio-Economic Considerations.

(4) All information intended to be evaluated as part of the Technical Proposal must be submitted as part of the Technical Proposal. Do not merely cross-reference similar material in the Cost/Price Proposal, or vice versa. Also, do not include links to websites in lieu of incorporating information into your proposal.

(5) Do not include exceptions to the terms and conditions of the solicitation in either the technical or price proposal. Should the offer include any standard company terms and conditions that conflict with the terms and conditions of the solicitation, the offer may be determined "unacceptable" and thus ineligible for award. Should the offeror have any questions related to specific terms and conditions, these should be resolved prior to submission of the offer. See "Inquiries", located elsewhere in Section L, for points of contact. Notwithstanding the above, the Offeror must clearly describe in the Proposal Cover Sheet submitted with the Price Proposal any exceptions to the contractual and/or technical terms and conditions of the solicitation contained in the Offer.

b. MULTIPLE AWARD CONTRACTS BASED ON A SMALL BUSINESS SET-ASIDE AND ON AN UNRESTRICTED COMPETITION

(1) The Government intends to award four contracts resulting from this solicitation. It is the Government's intent to initially award two contracts to small business concerns under a Small Business Set-Aside and to subsequently award two contracts based on full and open competition (e.g., "Unrestricted" competition). Firms may receive only one prime contract as a result of this solicitation. Notwithstanding the above, the Government reserves the right to award less than four contracts as a result of this solicitation.

(2) Awards made under the Small Business Set-Aside will be subject to FAR 52.219-14, Limitations on
Subcontracting. However, if an award is made to a small business concern under the Unrestricted competition, this clause will not apply.

(3) A Small Business Concern may submit one offer to be considered under the Small Business Set-Aside and a second offer to be considered under the Unrestricted competition; may submit an offer for consideration under the Small Business Set-Aside only; or may submit one offer to be considered for award under both the Small Business Set-Aside and the Unrestricted competition. The Small Business Concern's intent must be clearly conveyed to the Government in accordance with the proposal marking instructions in paragraph 1, above.

(4) All task orders issued against the indefinite delivery contract(s) awarded under the Small Business Set-Aside will be Fixed Price. Task orders issued under the indefinite delivery contract(s) awarded as a result of the Unrestricted competition may be Fixed Price or Cost-Reimbursement. For this reason, the proposal submission requirements for the Small Business Set-Aside and the Unrestricted competition vary in some aspects. A Small Business Concern submitting only one proposal for consideration under both the Small Business Set-Aside and the Unrestricted competition must include in their proposal all information required for the Unrestricted competition. Those items that only apply under the Unrestricted competition will only be evaluated in conjunction with the Unrestricted competition.

c. AWARD FOLLOWING DISCUSSIONS

The Government intends to make award after discussions with offerors determined to be within the competitive range, in accordance with Alternate I to FAR 52.215-1, Instructions to Offerors—Competitive Acquisitions.

d. COST OR PRICING DATA

Offerors are required to submit Information Other Than Cost or Pricing Data with their initial offers; see FAR 52.215-20, and Sections B, J and L.

e. SUBCONTRACTING PLAN

(1) As the requirement for submitting an acceptable subcontracting plan prior to contract award applies only to large business concerns, small business concerns will not be required to submit subcontracting plans under either the Small Business Set-Aside or the Unrestricted competition.

(2). Large businesses are not required to submit subcontracting plans with their initial offers for the Unrestricted competition. However, the Government reserves the right, in accordance with FAR 19.702, to require the submission of subcontracting plans from large businesses at any time subsequent to the receipt of initial offers.

(3) An acceptable subcontracting plan must be negotiated prior to award to a large business under the Unrestricted competition in accordance with FAR 52.219-9, Small Business Subcontracting Plan, which has been included in full text in Section I (Contract Clauses). The format for the subcontracting plan and the worksheet that will be used for evaluating the subcontracting plan has been provided in Section J (Attachments).

f. PRE-AWARD SURVEY

The Pre-award Survey is not required to be submitted with initial offers. However, the Government reserves the right to require the submission of the Pre-award Survey at any time subsequent to the receipt of initial offers under both the Small Business Set-Aside and the Unrestricted competition. The format to be

used by all Offerors for submitting the Pre-award Survey when requested to do so by the Contracting Officer is provided in Section J (Attachments).

g. ADVANCE AGREEMENTS AND STANDARD OPERATING PROCEDURES

Advance Agreements and Standard Operating Procedures are not required in conjunction with the Small Business Set-Aside competition. Advance Agreements and Standard Operating Procedures will be required under the Unrestricted competition, regardless of the size status of the Offeror. However, Offerors submitting proposals under the Unrestricted competition are not required to submit Advance Agreements or Standard Operating Procedures with their initial offers. The Government reserves the right to negotiate Advanced Agreements and Standard Operating Procedures either during discussions or following contract award under the Unrestricted competition. A list of Advance Agreements and Standard Operating Procedures is provided in Section H.

h. ORAL PRESENTATIONS

Oral presentations will not be utilized in conjunction with this solicitation. However, the Government reserves the right to conduct oral discussions as necessary with Offerors determined to be in the competitive range under the Small Business Set-Aside and/or the Unrestricted competition.

i. GENERAL INSTRUCTIONS

(1) Submit only the hard-copy paper documents and the electronic files specifically authorized and/or required elsewhere in this section. Do not submit excess information, to include audio-visual materials, electronic media, etc. Do not include links to information on websites in lieu of incorporating required information into the proposal.

(2) Use only 8 ½ by 11 inch paper for hard copy submissions, unless another paper size is specifically authorized elsewhere in this section for a particular submission. Do not use fold-outs (e.g., 11" x 14" or 11" x 17" sheets) unless specifically authorized in this section for a particular submission. Do not use a font size smaller than 10, an unusual font style such as script, or condensed print for any submission. All page margins must be at least 1 inch wide, but may include headers and footers. Do not justify the right margins.

(3) The preferred method for assembling your proposals is to use three-ring binders; however, the use of pressboard or other report covers with compression or other type fasteners is acceptable. Do not use spring clamps or exceed the recommended capacity of the fastener or binder. Do not use plastic multi-hole/spiral binding systems, heat binding systems, or other systems which do not facilitate the ready insertion of additional pages.

(4) "Confidential" projects cannot be submitted to demonstrate capability unless all of the information required for evaluation as specified herein can nonetheless be provided to the Government as part of the Offeror's technical proposal. Offerors that include in their proposals information that they do not want disclosed to the public for any purpose, or used by the Government except for evaluation purposes, must be clearly marked in accordance with the instructions at FAR 52.215-1 (ALT I), "Instructions to Offeror—Competitive Acquisition", paragraph (e), "Restriction on disclosure and use of data".

(5) In the case of an Offeror that is part of a large, multi-segmented business concern, provide information directly pertaining to the specific segment of the business concern (i.e., the division, group, unit, etc.) that will perform work under the prospective contract with its own workforce. Do not provide information pertaining to the business concern in general or pertaining to other affiliated concerns which will not be self-performing work under the prospective contract with their in-house workforces.

(6) For submissions with page limitations, the pages will be counted as follows: One side of the paper is one page; information on both the back and front of one sheet of paper will be counted as two pages. Where authorized, fold-out pages (11" x 14" or 11" x 17") will count as one page. Pages furnished for organizational purposes only, such as a "Table of Contents" or divider tabs, are not included in the page limitation.

j. SPECIFIC INSTRUCTIONS FOR THE COST/PRICE PROPOSAL

(1) Number of Sets of the Cost/Price Proposal

Submit the ORIGINAL and TWO additional hard copy sets of the Cost/Price Proposal. An electronic copy of Charts 1A, 1B and Chart 2 must also be provided on a Compact Disk (CD) in a format compatible with Microsoft Excel 2000.

(2) Size Restrictions and Page Limits

Use only 8 ½" x 11" pages. There are no page limits set for the cost/price proposal. However, limit your
response to information required by this solicitation. Excess information will not be considered in the Government's evaluation.

(3) Format and Contents of the Cost/Price Proposal and List of Tabs

The Cost/Price Proposal shall be appropriately labeled as such and shall be organized as indicated in the following chart. Note: If the Offeror is not required to submit any information under a listed Tab in accordance with the instructions below, that tab can be omitted. However, do not renumber the subsequent tabs.

TAB	CONTENTS OF THE COST/PRICE PROPOSAL	Required for Small Business Set-Aside Competition	Required for Unrestricted Competition
#1	The Proposal Cover Sheet	Yes	Yes
#2	The SF 33 and Acknowledgement of Amendments	Yes	Yes
#3	Section B, Supplies or Services and Prices/Costs (including all cost charts and cost element information required by Sections B and J for prime and all proposed team/key subcontractors)	Yes	Yes
#4	Representations, Certifications, and Other Statements of Offerors	Yes	Yes
#5	Total Compensation Plan	Yes	Yes
#6	Identification of Uncompensated Overtime & Offeror's Policy Addressing Uncompensated Overtime	Yes	Yes
#7	Audit from Cognizant Federal Audit Agency Evidencing Approval of Offeror's Accounting System	No	Yes
#8	Determination of Adequacy of the Cost Accounting System (CAS) Disclosure Statement	No	Yes – Large Business Offerors Only
#9	Statement of Intent from Small Business Concerns	Yes	Yes – Small Business Offerors Only
#10	JV Agreement, if applicable.	Yes	Yes

(4) Detailed Submission Instructions for the Cost/Price Proposal

TAB 1: The proposal cover sheet is required by FAR 52.215-1(ALT I)(c)(i)-(v) and must be submitted by all offerors under both the Small Business Set-Aside and the Unrestricted competition. This provision, titled "Instructions to Offerors—Competitive Acquisition," has been provided in full text elsewhere in Section L. The format for the proposal cover sheet is furnished elsewhere in this section.

TAB 2:

(a) The SF 33, Solicitation, Offer, and Award, is to be completed by all Offerors and duly executed with an original signature by an official authorized to bind the company in accordance with FAR 4.102, which includes specific instructions pertaining to individuals, partnerships, corporations, joint venture participants, and agents.

(b) Any and all amendments must be acknowledged by all Offerors in accordance with the instructions on the Standard Form 30, Amendment.

TAB 3:

(a) Section B is to be completed in its entirety by all Offerors for both the Small Business Set-Aside and the Unrestricted competition. See Sections B and J for further instructions. In addition to the required hard copies, provide an electronic copy of Charts 1A, 1B and 2 on CD in a format compatible with Microsoft Excel 2000. You are cautioned to check Sections B and J carefully for errors prior to submission. Please note that unit prices must be extended to the actual "dollar and cents" amounts (e.g., do not "round off" the extended totals to the nearest dollar).

(b) The Cost/Price Proposal will be submitted in the form of Section B and Charts 1A, 1B and 2 and the attachments called for by the charts. The cost/price information is required from the section schedule proposed Prime and all proposed Team/Key Subcontractors. For the purpose of submitting the cost/price information, team/key subcontractors are defined as follows:

> A team/key subcontractor is defined as any subcontractor specifically identified in the offer whose proposed prices and technical capabilities (to include qualifications, areas of expertise, experience and/or past performance record) are submitted and evaluated as part of the offeror's proposal (see also Section B, Note 3).

IMPORTANT NOTE: IN ORDER FOR THE PRIME CONTRACTOR TO BE ABLE TO USE A SUBCONTRACTOR AS A TEAM/KEY SUBCONTRACTOR FOR WORK ON THE CONTRACT WITHOUT GETTING PRICE COMPETITION FOR EACH SUBCONTRACT AWARDED, THE TEAM/KEY SUBCONTRACTOR MUST BE IDENTIFIED AS SUCH IN THE COST/PRICE PROPOSAL AND A CHART 1B INCLUDED FOR THAT SUBCONTRACTOR, AND THE SUBCONTRACTOR MUST APPEAR ON CHART 2. ADDITIONALLY, ALL KEY SUBCONTRACTORS IDENTIFIED IN THE COST/PRICE PROPOSAL MUST ALSO BE IDENTIFIED AS TEAM/KEY SUBCONTRACTORS IN THE TECHNICAL PROPOSAL.

(c) In addition to Section B, the required cost/price information is as follows:

(i) Charts 1A and 1B, Direct Cost Breakdown (see Section J for blank charts and a sample). All proposed direct costs (labor and other) will be entered to include the total markup to those direct costs of indirect cost rates and other markups (consistent with the offeror's accounting system, but exclusive of prime's profit or fee). In other words, the direct costs submitted will be fully burdened price (exclusive of prime's profit or fee). The markup included shall represent the total multiplier for each direct cost (exclusive of the prime's profit or fee). A Chart 1A will be completed for the Prime contractor. A Chart

1B will be completed for each Team/Key Subcontractor. The instructions for Chart 1A and 1B (in Section J) list attachments also required to be submitted. Ensure that all required information is included in the Cost/Price Proposal. See Explanations and Notes at the end of Charts 1A and 1B (in Section J) for further details on the completion of the charts.

(ii) Chart 2, Projected Composite Rates, Professional, Executive and Administrative Labor (see Section J for blank chart and a sample). Follow the instructions provided on the chart itself for completion. Only one chart is required; no need for separate charts from Team/Key Subcontractors because the Team/Key Subcontractors' information is to be included on the chart along with the prime's information. The combination of this information allows for calculation of an Adjusted Composite Hourly Rate which will be used for evaluation purposes by the Government. Chart 2, the composite hourly rates, will be used for evaluation purposes. In addition, the direct cost rates (labor and other direct costs), the indirect cost rates and other markup rates added thereto, therefore, the fully burdened rates (as developed on Charts 1A and 1B and used on Chart 2) are the Offeror's proposed rates and if accepted by the Government the contract and will be contract rates. The rates as proposed will be adjusted only by the proposed and Government-accepted escalation for subsequent periods of the contract.

(iii) Hardcopy and electronic copy of Charts 1A, 1B and Chart 2 are to be submitted. The electronic format must be compatible with Microsoft Excel 2000.

TAB 4: All Offerors must complete and return the "Representations, Certifications, and Other Statements of Offerors" which are located at Section K of the solicitation. If the Offeror is a Joint Venture, all participants must separately complete Section K.

TAB 5: The Total Compensation Plan for Professional Employees is to be prepared and submitted by all Offerors in accordance with FAR 52.222-46, Evaluation of Compensation for Professional Employees, which has been included in full text in Section L. The Total Compensation Plan for Professional Employees is only required from the proposed Prime contractor.

TAB 6: Identification of Uncompensated Overtime must be prepared and submitted by all Offerors in accordance with FAR 52.237-10, Identification of Uncompensated Overtime, which had been included in full text elsewhere in Section L. The Cost/Price Proposal cost information must include the identification of any hours against which an uncompensated overtime rate is applied for prime and subcontractors as stated in. Also submit the Offeror's policy addressing uncompensated overtime, to include accounting practices for establishing hourly labor rates relative to uncompensated overtime, under this Tab.

TAB 7: Approval by Cognizant Federal Audit Agency of the Offeror's Accounting System (Required from all
Offerors regardless of business size that are submitting proposals under the Unrestricted competition)

(a) The Offeror is to provide evidence from their cognizant Federal audit agency that the Offeror's accounting system is approved and is adequate for cost-reimbursement contracts. This is in addition to the audit or other documentation required to support the indirect cost rates and ODC rates required in Section J unless one audit provides support of both the indirect cost rates and ODCs rates AND the adequacy of the accounting systsem. If the evidence of approval of the accounting system is not dated within the last year (e.g., a year from the proposal due date), the Offeror must provide a statement that no significant changes have occurred in their accounting system since the audit that formed the basis of the approval of the accounting system. However, in any event, the audit upon which the determination of adequacy is based must be no older than two years (based on proposal due date) in order to be acceptable for meeting this requirement.

(b) In accordance with FAR 16.306(c), 16.404-1, and 16.404-2(c), no cost-plus-fixed-fee, cost-plus-incentive-fee, or cost-plus-award-fee contract may be awarded unless the limitations in FAR 16.301-3 are met; one of the limitations is that the contractor's accounting system must be adequate for determining costs. Therefore, no contract award can be made to an offeror whose accounting system has not been approved as adequate for cost reimbursement contracts. This affects all small business offerors as well who

want to be considered under the Unrestricted portion of this solicitation. In addition, prime contractors intending to award cost reimbursement subcontracts must so state in their Cost/Price Proposal and provide proof that the subcontractors so named have approved accounting systems in the same form as stated here for the prime contractor.

(c) Offerors must also include the following information under this Tab: Identification of their cognizant Federal audit agency office and the address, name, telephone number, and email address (if available) of their auditor.

(d) If the prime contractor plans to award any cost reimbursement subcontracts, those subcontractors must have an approved accounting system or no award of a cost reimbursement subcontract can be made to that subcontractor and if the subcontractor is a Cost Accounting Standards (CAS)-covered large business, the subcontractor must also have a CAS Disclosure Statement which has been determined to be adequate.

TAB 8: Determination of Adequacy of the Offeror's Cost Accounting Standards (CAS) Disclosure Statement (Required only from Large Businesses submitting offers under the Unrestricted Competition; CAS is not applicable to small businesses)

(a) If the Large Business Offeror, considering the offeror's other Government contracts and this contract's capacity, is subject to Cost Accounting Standards (CAS), then the Offeror is to provide written evidence from their Defense Contract Management Agency Administrative Contracting Officer (ACO) that the Offeror's CAS Disclosure Statement has been determined to be adequate (see FAR Part 30, FAR 52.230-3 in Section K, FAR 52.230-1 in Section I and the Cost Accounting Standards Board (CASB) Regulations . If this determination is not available, the Offeror is to provide an explanation.

(b) CASB Regulations 9903.202: If the offeror selected for award of this contract has not submitted a Disclosure Statement previously and is a large business, a completed Disclosure Statement must be submitted by the offeror before award of the contract. The offeror will complete and submit the Disclosure Statement as directed in the CASB Regulations that will begin the process by the Federal Cognizant Administrative Contracting Officer and the Federal Cognizant Audit Agency to determine the Disclousre Statement to be adequate." In this event, a determination of adequacy shall be required as soon as possible after award of the contract.

(c) A Large Business Offeror subject to CAS must also include the following information under this TAB: Identification of their cognizant Defense Contract Management Agency (DCMA) office, and the name, telephone number and email address (if available) of their Administrative Contracting Officer.

(d) If a Large Business Offeror is not subject to CAS, so state in lieu of providing the above information under this Tab.

TAB 9: Small Business Concerns submitting offers are to submit a statement of intent with their offer stating that the offer is being submitted for evaluation under the Small Business Set-Aside, or the Unrestricted competition, or is to be evaluated under both the Small Business Set-Aside and the Unrestricted Competition.

TAB 10: If the Offeror is a Joint Venture, include a copy of the Joint Venture Agreement. If a JV Agreement has not yet been finalized/approved, indicate its status.

k. SPECIFIC INSTRUCTIONS FOR THE TECHNICAL PROPOSAL

(1) Number of Sets of the Technical Proposal

Submit the ORIGINAL and EIGHT additional sets of the written Technical Proposal, with each set separately packaged. **In addition, submit one complete copy of the technical proposal on compact disk (CD) using a "searchable" .pdf file format.**

(2) Format and Contents of the Technical Proposal and List of Tabs

The original and all copies of the technical proposal will be appropriately labeled as such. Each set shall be organized using the tabs specified in the following chart. (If the Offeror is not required to submit information under a listed Tab or sub-tab in accordance with the instructions below, that tab/sub-tab can be omitted. However, do not renumber the subsequent tabs/sub-tabs. Note: The main tabs directly correlate to the evaluation factors identified in Section M.

TAB	CONTENTS OF THE TECHNICAL PROPOSAL	Required for Small Business Set-Aside Competition	Required for Unrestricted Competition
#1	**ORGANIZATIONAL/MANAGEMENT APPROACH**		
1-1	Organization Chart(s)	Yes	Yes
1-2	Management Plan	Yes	Yes
1-3	Teaming Arrangements/Letters of Commitment and Authorization from all Team/Key Subcontractors	Yes	Yes
1-4	Approach to Cost and Schedule Control under Cost Reimbursement Task Orders	No	Yes
#2	**RESUMES OF KEY PERSONNEL** Summary Chart (optional) Resumes	 Yes Yes	 Yes Yes
#3	**CAPABILITY**		
3-1	Resume of Offeror's Environmental Experience	Yes	Yes
3-2	Resume of Offeror's Cost Reimbursement Experience	No	Yes
3-3	Summary Chart for Reference Projects Reference Projects Demonstrating Team Environmental Capability	Yes Yes	Yes Yes

TAB	CONTENTS OF THE TECHNICAL PROPOSAL	Required for Small Business Set-Aside Competition	Required for Unrestricted Competition
#4	**SAMPLE PROJECT** Cover Sheet	Yes	Yes
4-1	Task 1 - Scoping Meeting	Yes	Yes
4-2	Task 2 – Project Organization	Yes	Yes
4-3	Task 3 - Determination of Regulatory Framework	Yes	Yes
4-4	Task 4 – Characterization, Nature and Extent of Contamination at the Site	Yes	Yes
4-5	Task 5 - Assessing Potential Cleanup Criteria	Yes	Yes
4-6	Task 6 - Remedial Design	Yes	Yes
#5	**SOCIO-ECONOMIC CONSIDERATIONS**		
5-1	Proposed Small Business Participation	No	Yes
5-2	Proposed Participation of Historically Black Colleges and Universities and Minority Institutions (HBCU/MIs)	No	Yes
5-3	Participation of SDBs under the Authorized Codes and Regions	No	Yes

(3) Detailed Submission Requirements for the Technical Proposal

The following is a detailed description of the information to be submitted under each TAB.

TAB 1: ORGANIZATIONAL/MANAGEMENT APPROACH

1. KEY PERSONNEL AND KEY SUBCONTRACTORS

a. The offeror is required to propose a specific team including key personnel and team/key subcontractors for evaluation in response to this Request for Proposals.

b. For the purposes of this procurement, a key person is defined as any person who resume is submitted for evaluation as part of the offeror's technical proposal. The individuals occupying the following positions are considered by the Government to be the key personnel for this contract. The minimum qualification criteria for these positions are located in Section C, Statement of Work, under Paragraph 4.1, Staff Organization and Responsibilities, and its subparagraphs, as indicated by the parentheses below.

Project Manager (see Section C, paragraph 4.1.2)

Senior Environmental Engineer (see Section C, paragraph 4.1.3)

Senior Geologist (see Section C, paragraph 4.1.4)

Environmental Specialist (see Section C, paragraph 4.1.5)

Regulatory Specialist (see Section C, paragraph 4.1.6)

Health and Safety Manager (see Section C, paragraph 4.1.7.

Site Safety and Health Officer (see Section C, paragraph ~~4.1.8~~**4.1.10**)

Quality Control (CQC) Manager (see Section C, paragraph ~~4.1.9~~**4.1.11**)

Program Chemist (see Section C, paragraph ~~4.1.10~~**4.1.12**)

Project Chemist (see Section C, paragraph ~~4.1.11~~**4.1.13**)

GIS Specialist (see Section C, paragraph 4.1.~~12~~**14**)

Senior Environmental Planner (see Section C, paragraph 4.1.~~13~~**15**.1)

Senior Biologist or Senior Natural Resources Scientist (see Section C, paragraph 4.1.~~13~~**15**.2)

Senior Archeologist (see Section C, paragraph 4.1.~~13~~**15**.3)

c. For the purpose of this procurement, a team/key subcontractor is defined as any subcontractor specifically identified in the offer whose proposed prices and technical capabilities (to include qualifications, areas of expertise, experience and/or past performance record) are submitted and evaluated as part of the offeror's proposal.

NOTE: EACH TEAM/KEY SUBCONTRACTOR IDENTIFIED IN THE TECHNICAL PROPOSAL MUST ALSO BE IDENTIFIED AS A TEAM/KEY SUBCONTRACTOR IN THE COST/PRICE PROPOSAL. A CHART 1B MUST BE INCLUDED IN THE COST/PRICE PROPOSAL FOR EACH TEAM/KEY SUBCONTRACTOR IDENTIFIED IN THE TECHNICAL PROPOSAL. ADDITIONALLY, ALL TEAM/KEY SUBCONTRACTORS MUST APPEAR ON CHART 2 IN THE COST/PRICE PROPOSAL.

d. The Offeror's attention is directed to the clause in Section H, paragraph H.6~~8~~ entitled "Substitution of Key Personnel and Subcontractors".

2. SUBMISSION REQUIREMENTS:

a. Page, Size, and Format Limitations:

Unless otherwise specified below, the submissions under TAB 1 may include both narrative and charts/graphics. There is not an overall page limitation for the submissions under this tab. However, narrative pages must not exceed 8 ½" x 11". Fold-out pages consisting of charts or graphics must not exceed 11" x 17".

b. Submittals

TAB 1-1: Organizational Chart (s)

Provide organizational chart(s) that graphically illustrate the offeror's proposed team for this project and which clearly identify:

(1) The prime contractor and all proposed key subcontractors;

(2) All proposed key personnel by name, key position, employer, and the person's physical work location; and

(3) Lines of authority.

TAB 1-2: Management Plan

Provide a management plan that clearly indicates which entity has overall authority for the prospective contract; which entity will be managing the contract; and which entity(s) will be responsible for providing project management, engineering/geotechnical services, and other environmental services. Include the following information:

(1) Identification of the types of services to be performed by the prime contractor;

(2) Identification of the types of services to be performed by each key subcontractor and the business name and address for each key subcontractor;

(3) Identification of the authorities granted to all key personnel; and

(4) How the offeror will manage its resources to respond to the variety of environmental efforts required by Section C, Paragraph 3, subsections 3.1 though 3.5. Provide sufficient detail to indicate the capability of the offeror's proposed team as it related to both the diverse technical and geographic requirements of the prospective contract.

TAB 1-3: Teaming Arrangements/Letters of Commitment and Authorization from all Team/Key Subcontractors

(1) Discuss the offeror's teaming arrangements with each proposed team/key subcontractor. Indicate how long and in what capacity the firms have been working together. Include a brief description of the contractual agreements and/or corporate commitments between the prime and the proposed subcontractors that are either proposed or currently in-place.

(2) Submit a letter of commitment and authorization from each proposed team/key subcontractor. The letter must be on the proposed subcontractor's letterhead and must be signed by a principal of the business concern. The letter must state the business concern's intent to work under the prospective contract in the specified capacity if the Offeror is awarded the contract. It should also provide authorization for the Government to discuss the team/key subcontractor's past performance record with the offeror in conjunction with the Government's evaluation of the offeror's proposal.

TAB 1-4: <u>Approach to Cost and Schedule Control under Cost Reimbursement Task Orders</u>
(Unrestricted Competition Only)

(1) Discuss the systems that will be used by the prime contractor to track, accumulate, report and forecast costs under cost reimbursement task orders issued under the prospective contract.

(2) Describe the contents of a Cost & Schedule Control Report and how it will be used by the prime contractor to control cost and schedule throughout the life of the prospective contract.

(3) Discuss the change management systems that will be used by the prime contractor to identify and control changes throughout the life of the contract.

TAB 2: RESUMES OF KEY PERSONNEL

1. The individuals occupying the following positions are considered by the Government to be the key personnel for this contract:

Project Manager (see Section C, paragraph 4.1.2)

Senior Environmental Engineer (see Section C, paragraph 4.1.3)

Senior Geologist (see Section C, paragraph 4.1.4)

Environmental Specialist (see Section C, paragraph 4.1.5)

Regulatory Specialist (see Section C, paragraph 4.1.6)

Health and Safety Manager (see Section C, paragraph 4.1.7.

Site Safety and Health Officer (see Section C, paragraph 4.1.~~8~~**10**)

Quality Control (CQC) Manager (see Section C, paragraph 4.1.~~9~~**11**)

Program Chemist (see Section C, paragraph 4.1.~~10~~**12**)

Project Chemist (see Section C, paragraph 4.1.~~11~~**13**)

GIS Specialist (see Section C, paragraph 4.1.~~12~~**14**)

Senior Environmental Planner (see Section C, paragraph 4.1.~~13~~**15**.1)

Senior Biologist or Senior Natural Resources Scientist (see Section C, paragraph 4.1.~~13~~**15**.2)

Senior Archeologist (see Section C, paragraph 4.1.~~13~~**15**.3)

2. Submittals:

a. Summary Chart (Optional):

Submit a chart (NTE one 11" x 17" page) which summarizes the qualifications of the key personnel for this project. The contents and format of this optional chart are not prescribed by the Government.

b. Resumes

(1) Submit the qualifications of each person proposed for a key position in resume format using the format provided elsewhere in this section.

(2) With the exception of the Site Safety and Health Officer position, do not propose more than one person for any one key position. For the Site Safety and Health Officer position, up to three resumes total may be submitted, if different personnel will be performing the work dependent upon whether or not a prospective task order contains asbestos abatement or lead-based paint abatement. For the Senior Biologist or Senior Natural Resources Scientist key position, the Offeror can propose a person with either title; do not submit a separate resume for each title.

(3) Each resume is limited to five 8 ½" x 11" pages. Begin the information about each key person on a new page. Backup documentation (e.g., course certificates, copies of diplomas, or copies of professional registration/license) is excluded from the page limitation.

(4) The resumes must clearly demonstrate that the proposed person meets all of the minimum qualification criteria established in the RFP for the proposed position (see Statement of Work, Section 4.1, Staff Organization and Responsibilities, and its subordinate paragraphs). ~~Note: The requirements for the independent CIH for work involving asbestos or lead-based paint abatement~~

~~do not apply for the purposes of this submission to the Health and Safety Manager (HSM) key position.~~

(5) If the Offeror's team will include more than one person for any of the key positions, submit the qualifications of the person who will be utilized on task orders for work within the State of California.

TAB 3: CAPABILITY

TAB 3-1: RESUME OF OFFEROR'S ENVIRONMENTAL EXPERIENCE

Provide a general overview of the proposed prime contractor's experience:

(1) in providing the environmental services described in Section C, Statement of Work, Paragraph 3, subsections 3.1 through 3.5; and

(2) with environmental programs such as RCRA, CERCLA, NEPA, and NHPA.

(3) Page Limitation: NTE five 8 ½" x 11" pages.

TAB 3-2: RESUME OF OFFEROR'S COST REIMBURSEMENT EXPERIENCE
(Required under the Unrestricted Competition only.)

(1) Provide specific contract information pertaining to the proposed prime contractor's prior cost-reimbursement experience (e.g., contract numbers, dates of contract awards, duration of contracts, description of work requirements, names of subcontractors, and client points of contact (names and current phone numbers).

(2) Define/discuss the cost and schedule control systems that were used on the cost reimbursement contracts listed above to track, accumulate, report and forecast costs.

(3) Define/discuss the change management systems that were used on the cost reimbursement contracts listed above to identify and control changes during the life of the contracts.

(4) Page Limitation: NTE five 8 ½" x 11" pages.

TAB 3-3: REFERENCE PROJECTS:

(1) Summary Chart for Reference Projects. As a cover page to the referenced projects submitted under this TAB, submit a one page chart (NTE 11" x 17") which cross-references each reference project to the specific paragraphs of Section 3 to which it applies and to the environmental programs that applied to the project and identifies if the referenced project was performed by the proposed prime contractor or a proposed subcontractor. .

Example Only (The Offeror may use an alternate format for presenting the required information):

Project	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Prime's Experience										
Key Subcontractor's Experience										
3.1 Environmental Compliance										
3.2 Pollution Prevention										
3.3 Environmental Planning & Conservation Support										
3.4 Environmental Restoration Program										
3.5 Geographic Information Systems (GIS)										
RCRA										
CERCLA										
NHPA										
NEPA										

(2) Reference Projects Demonstrating Environmental Capability. Provide information and references on **no more than ten projects total** which best demonstrate the capability of the Offeror's proposed project team to successfully provide the environmental services described in the Statement of Work under

Paragraph 3, Environmental Services. For the purpose of the submission requirement for reference projects under this tab, the terms "team" or "team member" refers to either the Offeror/prospective prime contractor and/or to a proposed team/key subcontractor, not to an individual.

(3) The following instructions are provided in order to assist offerors in determining which projects to use as references.

(a) Only submit **recent** projects that were physically completed or accepted by the customer within five ~~three~~ years of the issue date of this solicitation, or which are nearing completion (e.g., are substantially complete).

(b) **Relevant** experience in each of the following areas described under Paragraph 3, Environmental Services, must be demonstrated by at least one reference project: 3.1, Environmental Compliance; 3.2, Pollution Prevention; 3.3, Environmental Planning and Conservation Support; 3.4, Environmental Restoration Program; and 3.5, Geographic Information Systems. Experience with the following four environmental programs (RCRA, CERCLA, NEPA, and NHPA) must each be demonstrated by at least one reference project. Additionally, at least two of the reference projects must demonstrate the experience of the proposed prime contractor.

[NOTE: PROJECTS THAT ARE NOT DETERMINED BY THE GOVERNMENT TO BE BOTH RECENT AND RELEVANT WILL NOT BE EVALAUTED.]

(c) The reference project(s) submitted to demonstrate experience in each area must have been performed by the team member(s) who will be providing similar services under the prospective contract.

(d) The reference projects may have been performed for Government or private clients.

(4) Use the standardized format for submitting reference projects provided elsewhere in this section. Each reference project is limited to five 8 1/2/" x 11" pages. Begin each reference project on a new page.

(5) Provide sufficient detailed, specific information for the Government to determine the relevance of the experience gained under the reference project to the current acquisition.

TAB #4: TECHNICAL APPROACH TO THE SAMPLE PROJECT

a. The offeror shall complete the sample problem which is included elsewhere in Section L.

b. The sample problem is to be completed by personnel proposed to work under the prospective contract. The cover sheet for the submissions under this Tab is to consist of a signed statement identifying which of the proposed key personnel participated in the preparation of the Offeror's response to the sample project.

c. Formatting requirements for the sample project submissions: Paper size for text and tables shall be 8 ½" x 11". Paper size for figures, flow charts, and drawings shall be no larger than 11" x 17". All pages must be single sided. Use Arial 10 point font for all submissions. Use line and one-half (1.5) spacing on all submissions. The page count limitations that apply to the submission for each task under the sample project include text, figures, tables, flow charts and drawings. Excess information will not be considered in the Government's evaluation.

TAB 5: SOCIO-ECONOMIC CONSIDERATIONS

GENERAL INSTRUCTIONS:

1. All Offerors competing under the UNRESTRICTED portion of this solicitation, regardless of business size or status, must address each part. However, Small Business Concerns that are only competing under the Small Business Set-Aside that are not also competing under the unrestricted portion of this solicitation are exempt from this submission requirement.

2. There are three separate parts to this submission requirement; address each part under a separate Tab as indicated below.

3, Do not provide a Small Business Subcontracting Plan, either in lieu of or in addition to the information required below.

TAB 5-1: PART I - PROPOSED SMALL BUSINESS PARTICIPATION

Submittal Instructions for Part I:

Address the proposed participation of Small Business Concerns (SBCs) in the performance of work under the prospective contract. You are limited to a total of three 8 ½" x 11" pages which may consist of narrative and/or charts. Your submission should include the following information:

a. The extent of proposed participation of SBCs in terms of the total value of the contract.

b. Specific identification by name of the proposed SBCs;

c. Extent of Offeror's commitment to use the specifically identified SBCs;

d. The Offeror's teaming arrangement with the specifically identified SBCs (e.g., joint venture participant or subcontractor); and

e. The complexity and variety of the work the specifically identified SBCs will perform.

Important Note: The part addresses the Offeror's proposed utilization of all small business concerns, irrespective of their classification into other subgroups (e.g., veteran-owned SBCs; service-disabled veteran-owned SBCs, HUBZone SBCs, Small Disadvantaged Business concerns; woman-owned SBCs, etc.) and whether or not participation is at the prime or subcontract level.

TAB 5-2: PART II - PROPOSED PARTICIPATION OF HISTORICALLY BLACK COLLEGES AND UNIVERSITIES AND MINORITY INSTITUTIONS (HBCU/MIs)

Submittal Instructions for Part II:

Address the proposed participation of HBCU/MIs in the performance of work under the prospective contract. You are limited to two 8 ½" x 11" pages which may consist of narrative and/or charts. Your submission should include the following information:

a. The extent of proposed participation of HBCU/MIs in terms of the total value of the contract.

b. Specific identification by name of the proposed HBCU/MIs;

c. Extent of Offeror's commitment to use the specifically identified HBCU/MIs;

d. The Offeror's teaming arrangement with the specifically identified HBCU/MIs (e.g., joint venture participant or subcontractor); and

e. The complexity and variety of the work the specifically identified HBCU/MIs will perform.

Important Notes:

1. A list of HBCU/MIs is available online at the following website: http://www.dtic.mil/dtic/postsecondarymi.html.

2. If work under the prospective contract is not suitable for HBCU/MIs, or the Offeror has other valid reasons for not proposing HBCU/MI participation in the contract, in lieu of providing the above information the Offeror must (1) state that no HBCU/MI participation is proposed and (2) provide an explanation of the lack of proposed HBCU/MI participation.

3. This part pertains to prospective contracts with colleges, universities, and minority institutions, NOT to the employment of individuals at either the prime or subcontractor level.

TAB 5-3: PART III - PARTICIPATION OF SMALL DISADVANTAGED BUSINESSES (SDBs) UNDER THE AUTHORIZED CODES AND REGIONS

IMPORTANT NOTE TO OFFERORS: You are urged to call the contract specialist for clarification prior to submission of your initial offer if you have any questions pertaining to the submittal instructions and/or requirements for this Part.

1. Authorized Codes and Regions:

a. The Government will **ONLY** consider the proposed participation in the prospective contract of certified Small Disadvantaged Businesses (SDBs) under the Authorized SIC Major Groups/NAICS Industry Subsectors and Construction Regions, **NOT** the Offeror's total proposed SDB participation in general.

b. A chart of the "authorized" SIC Major Groups is provided below. Only address SDB participation in the SIC Major Groups/NAICS Industry Subsectors listed on the chart in your submittal for this part. As the chart has not yet been revised by the Department of Commerce to reflect NAICS codes, you must cross-reference the old SIC code to the new NAICS code in your response, i.e., provide BOTH the SIC code and the corresponding NAICS code. (Tables providing cross-references between the SIC and NAICS codes are available at the following website: http://www.census.gov/epcd/www/naicstab.htm).

c. Your attention is specifically directed to the construction SIC Major Groups 15, 16, and 17. The Government will **ONLY** consider the participation in the performance of the contract of certified SDBs under the construction SIC codes **IF** the SDB contractor's principal office is located in one of the listed regions and states. Do not address SDB participation under the construction SIC Major Groups/NAICS Industry Subsectors by a SDB contractor whose principal office is not located in one of the listed states.

Industries Eligible for the SDB Participation Program

	Description of SIC Major Group		SIC	Description of SIC Major Group
10	Metal mining		**48**	Communications
12	Coal mining		**49**	Electric, gas, and sanitary services
13	Oil and gas extraction		**50**	Wholesale trade-durable goods
14	Extraction of non-metallic minerals, except fuels		**51**	Wholesale trade-nondurable goods
15	Building construction – General Contractors **(Limited to: Firms in East North Central, East South Central, Middle Atlantic and West South Central Regions comprising the following states: Alabama, Arkansas, Illinois, Indiana, Kentucky, Louisiana, Michigan, Mississippi, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, Tennessee, Texas, and Wisconsin)**		**52**	Building materials, hardware, garden supply, and mobile home dealers
16	Heavy Construction, other than Buildings **(Limited to: Firms in East South Central and West South Central Regions comprising the following states: Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee, Texas)**		**53**	General merchandise stores
17	Construction, Special Trade Contractors **(Limited to: Firms in New England and West North Central Regions comprising the following states: Connecticut, Iowa, Kansas, Massachusetts, Maine, Minnesota, Missouri, Nebraska, New Hampshire, North Dakota, Rhode Island, South Dakota, Vermont)**		**54**	Food stores
22	Textile mill products		**55**	Automotive dealers and gasoline service stations

23	Apparel and other finished products made from fabrics		**56**	Apparel and accessories stores
24	Lumber and wood products, except furniture		**57**	Home furniture, furnishings, and equipment stores
25	Furniture and fixtures		**58**	Eating and drinking places
26	Paper and allied products		**59**	Miscellaneous retail
27	Printing, publishing, and allied industries		**60**	Depository institutions
28	Chemicals and allied products		**61**	Nondepository adjustment institutions
29	Petroleum refining and related industries		**62**	Security and commodity brokers, dealers, exchanges, and services
30	Rubber and miscellaneous plastics products		**63**	Insurance carriers
31	Leather and leather products		**64**	Insurance agents, brokers, and services
34	Fabricated metal products		**65**	Real estate
36	Electronic and other electrical equipment and components, except computers		**67**	Holding and other investment offices
37	Transportation equipment		**70**	Hotels, rooming houses, camps, and other lodging places
38	Measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks		**73**	Business services
39	Miscellaneous manufacturing industries		**75**	Automotive repair, services, and parking
41	Local and suburban transit and enter urban highway passenger transportation		**76**	Miscellaneous repair services
42	Motor freight transportation and warehousing		**80**	Health services
44	Water transportation		**82**	Educational services
46	Pipelines, except natural gas		**87**	Engineering, accounting, research, management, and related services
47	Transportation services		**89**	Miscellaneous services

2. Submittal Instructions for Part III: (TAB 5-3)

a. If you are NOT proposing to use certified SDB concerns under the authorized SIC Major Groups/NAICS Industry Subsectors and Constructions Regions in the performance of the prospective contract, the following applies:

Provide a narrative discussion (not to exceed one page) which includes:

(1) A statement that you are not proposing the participation of certified SDBs under the authorized SIC Major Groups/NAICS Industry Subsectors and Construction Regions; and

(2) A specific explanation for not proposing the use of certified SDBs under the authorized SIC Major Groups/NAICS Industry Subsectors and Construction Regions.

b. If you ARE proposing to use SDB concerns under the authorized SIC Major Groups/NAICS Industry Subsectors and Construction Regions, the following applies:

(1) Address the participation of certified Small Disadvantaged Business concerns in the performance of the contract under the under the Authorized SIC Major Groups/NAICS Industry Subsectors and Construction Regions. You may use a narrative format and/or charts (not to exceed three 8 ½" x 11" pages total for narrative and/or charts) for your submission. Your submissions should include all of the following information:

(a) Identification of the certified SDBs that the Offeror will utilize in performance of work under the contract in the authorized codes and regions. Include the following information:

(i) Specific identification by name of the SDBs that will perform work under the contract in the authorized codes and regions. List the applicable SIC and NAICS code(s) for each firm. For construction codes, also specify in which state the SDB concern's principal office is located. Describe the complexity and variety of work each SDB concern will perform under the authorized codes.

(ii) Extent of Offeror's commitment to use the specifically identified SBCs for work under the contract in the authorized codes and regions;

(iii) The Offeror's teaming arrangement with the specifically identified SDBs (e.g., joint venture participant or subcontractor); and

(b) Targets (expressed as BOTH dollars and percentages of total contract value) for the proposed participation of certified SDBs under the authorized codes and regions. Provide separate targets for the following:

(i) Participation by certified SDBs under each of the applicable, authorized SIC Major Groups/NAICS Industry Subsectors and Construction Regions;

(ii) Total SDB subcontracting participation (i.e., by certified SDB firms under the authorized codes and regions);

(iii) Total SDB participation by the contractor, including joint venture partners, and team members; and,

(iv) If the Offeror is a certified SDB concern, a target for the work it intends to perform as a prime contractor under the authorized codes and regions.

IMPORTANT NOTES:

1. Offerors are responsible for verifying the certification status of proposed Small Disadvantaged Businesses in accordance with paragraph (a) of FAR 52.219-25, Small Disadvantaged Business Participation Program – Disadvantaged Status and Reporting. This clause has been provided in full text in Section I of this solicitation. The Small Business Administration's Procurement Marketing and Access Network (PRO-Net) referred to in the above clause is located at the following website: http://pro-net.sba.gov.

2. The SDB concerns considered in the evaluation will be listed in the contract, and the contractor will be required to notify the Contracting Officer of any substitutions.

3. The targets will be incorporated into and will become a part of any resulting contract. Additionally, contractors with SDB participation targets will be required to report SDB participation during performance of the contract. (See the provision at FAR 52.219-24, Small Disadvantaged Business Participation Program Targets, located in Section K, and the clause at FAR 52.219-25, Small Disadvantaged Business Participation Program—Disadvantaged Status and Reporting, located in Section I.)

4. Monetary incentives are not authorized for exceeding SDB subcontracting targets for this procurement (reference FAR 52.219-26, Small Disadvantaged Business Participation Program—Incentive Contracting, located in Section I).

9. STANDARD FORMATS

--Proposal Cover Sheet

--Resume

--Reference Project

--Past Performance Questionnaire with Cover Letter and Instructions

PROPOSAL COVER SHEET

1. Solicitation Number:

2. The name, address, and telephone and facsimile numbers of the Offeror (and electronic address if available):

3. A statement specifying the extent of agreement with all terms, conditions, and provisions included in the solicitation and agreement to furnish any or all items upon which prices are offered at the price set opposite each item. Statement to include any exceptions in technical or cost/price proposal or exceptions inherent in Offeror's standard terms and conditions.

4. Names, titles, and telephone and facsimile numbers (and electronic addresses if available) of persons authorized to negotiate on the Offeror's behalf with the Government in connection with this solicitation:

5. Name, title, and signature of person authorized to sign the proposal. Proposals signed by an agent shall be accompanied by evidence of that agent's authority, unless that evidence has been previously furnished to the issuing office.

RESUME

Important Note: Sufficient detail must be provided in the resume to clearly substantiate to the Government that the proposed person meets all of the minimum qualification requirements for the position as specified in Section C. Failure to do so will be considered a deficiency in the offeror's proposal.

1. The individual's name and the proposed key position:

2. The total cumulative number of years the individual has worked in the proposed position:

3. [ ] The proposed person will be an employee of the prime contractor.
[ ] The proposed person will be an employee of the following team/key subcontractor:

4. The proposed person [[is [ ] is not* a U.S. citizen.
[* If the proposed key person is a foreign national (e.g., not a U.S. citizen), and the offeror is selected for contract award, documentation verifying that the person was legally admitted into the United States and has authority to work in the U.S. must be provided in accordance with SPK #4-4003 (see Section H).]

5. The individual's availability, to include specific geographical locations:

6. A brief description of the individual's roles and responsibilities under the prospective contract:

7. Individual's relevant education: *(If applicable, specify Degree/Year/Specialization. Attach copy of diploma or other documentation to substantiate satisfactory of minimum qualification criteria, as applicable.)*

8. Individual's active registration, if applicable: *(Specify State, Year, Discipline, and Certification Number. Attach a copy of current registration to substantiate satisfaction of a minimum qualification criteria, as applicable.)*

9. Relevant Specialized Training:

10. Relevant Employment History: (Provide a detailed list of relevant experience showing previous employers, positions with each, dates of employment, and a brief description of the work performed.)

11. Individual's specific qualifications and experience relevant to this project: *(Provide any other information pertaining to the qualifications of this person for this project not specifically addressed above that directly relates to this person's qualifications for the position. When providing project information, provide sufficient detail to establish the relevancy of the experience to this acquisition.)*

The Government is especially interested in the proposed person's experience

(1) as it relates to the environmental services described in Paragraph 3 of the SOW;
(2) working with Federal, State, and local laws, regulations and guidance including but not limited to CERCLA, RCRA, NEPA, and NHPA;
(3) with Federal, State, and local agencies and regulators;
(4) working with the U.S. Army Corps of Engineers and other DoD and Federal agencies/activities; and
(5) for the unrestricted competition, specific information pertaining to the person's prior experience working on cost-reimbursement contracts.

12. Letter of Commitment: *(Attach a letter of commitment signed by the proposed key person stating his or her intent to work on this project in the specified capacity if the Offeror is awarded the contract. This letter is not included in the page limitation.)*

13. Relevant Letters of Appreciation: *(If the proposed key person received letters of appreciation, commendation, recommendation, etc. in conjunction with work in the same capacity on a relevant project, so indicate and attach copies. If the relevance of the project to this acquisition is not clear, explain. This attachment is not included in the page limitation. Note: The Government is not requesting the Offeror to submit letters written "after the fact" for the purpose of this solicitation.)*

REFERENCE PROJECT #___
DEMONSTRATING CAPABILITY
(EXPERIENCE AND PAST PERFORMANCE)

A. IDENTIFICATION OF THE TEAM MEMBER (E.G., THE PROSPECTIVE PRIME CONTRACTOR OR PROSPECTIVE TEAM/KEY SUBCONTRACTOR) WHOSE EXPERIENCE AND PAST PERFORMANCE INFORMATION IS PROVIDED BELOW TO DEMONSTRATE THE TEAM'S CAPABILITY: *(Provide firm name, business unit/division, if applicable, and complete address)*

B. GENERAL INFORMATION PERTAINING TO THE PROJECT PROVIDED AS A REFERENCE FOR THE TEAM MEMBER:

1. Project Title and Location:

2. Complete name and address of customer/project owner (Government agency, commercial firm, or other organization):

3. Name and address of the prime contractor:

4. Contract/reference number, to include task order number(s) if applicable:

5. Team member's role on the referenced project: Prime Subcontractor Other:

6. If the proposed team member was a subcontractor for this project, the name and address of the firm the team member was hired by and the applicable subcontract/reference number.

7. Percentage and type of work on the referenced project self-performed by the team member:

8. Percentage and type of work on the referenced project subcontracted by the team member:

C. SPECIFIC CONTRACT INFORMATION: *(If the team member was a subcontractor on the above project, provide information pertaining to the team member's subcontract, not the prime contract.)*

1. Contract type: Fixed-Price or Cost-Reimbursement

2. Contract price:

Original: $
Current or Final: $:
If the above amounts differ, briefly explain:

D. CURRENT STATUS OF TEAM MEMBER'S CONTRACT: *(Choose one.)*

Work completed, no further action pending or underway.
Work completed, routine administrative action pending or underway.
Work completed, claims negotiations pending or underway.
Work completed, litigation pending or underway.
Terminated for convenience.
Terminated for default.
Other (explain):

E. PERIOD OF PERFORMANCE FOR TEAM MEMBER'S CONTRACT:

1. Contract award date:
2. Original period of performance:

3. Dates performance: Started: Was completed:
4. Explain primary causes of any slippage from original schedule:

F. REFERENCES/PRIMARY POINTS OF CONTACT: *(For prime contractors, use the project owner. For subcontractors, use the business concern that awarded the subcontract. If possible, provide at least one reference from each category below. Ensure that all contact information is accurate, current, and complete at time of submission.)*

1. Technical/Program Manager
   Name:
   Organization/Agency:
   Telephone:
   Facsimile:
   E-mail, if known:

2. Contracting Officer(s)
   Name:
   Organization/Agency:
   Telephone:
   Facsimile:
   E-mail, if known:

3. Primary Regulator
   Name:
   Title:
   Agency:
   Region:
   Telephone:
   Facsimile:
   E-mail, if known:

G. DESCRIBE THE PROJECT AND SPECIFICALLY EXPLAIN THE RELEVANCE OF THE WORK THAT YOU PERFORMED UNDER THE PROJECT TO THE CURRENT ACQUISITION, E.G., TO THE ENVIRONMENTAL SERVICES LISTED IN SECTION C, PARAGRAPH 3, SUBSECTIONS 3.1 THROUGH 3.5. INCLUDE THE FOLLOWING:

a. Describe the general scope of the project and the team member's role on the project.

b. Specifically address the relevance of the experience gained on this project to the current acquisition. Provide specific details, not general statements, with emphasis on similarities in the type of work performed, the size, scope and complexity of the project, etc.

c. Describe use/evaluation/results of innovative technology; problems encountered and solutions provided; and any cost-saving measures that were implemented.

d. Were any of the key personnel proposed for the current acquisition utilized in the same capacity on this project? If so, state which.

e. Provide any other relevant information pertaining to this project not specifically address above that directly pertains to the proposed team member's capability to successfully perform the current acquisition:

H. COMPLIANCE WITH FAR 52.219-8 and FAR 52.219-9 ***(Applicable only if the prime contract was awarded by a federal agency and contained one or both of these clauses.)*** *Address the team member's compliance under this contract with the requirements of FAR 52.219-8, currently titled "Utilization of Small Business Concerns". If the team member was subject to a subcontracting plan, also address compliance under the referenced contract with the requirements of FAR 52.219-9, currently titled "Small*

Business Subcontracting Plan". NOTE: Standard Form 294, Subcontracting Report for Individual Contracts, may be submitted by large businesses to document their compliance in this area. This form will not be included in the page limitation.

I. PERFORMANCE PROBLEMS: *(Provide details if applicable. Tell the team member's side of the story of any conflicts with the customer concerning which they may make adverse remarks. Describe any actions that have been taken or are planned to correct any performance shortcomings. Describe any pending, on-going, or competed litigation.)*

J. LETTERS OF APPRECIATION/COMMENDATION/RECOMMENDATION *(If the team member received letters of appreciation, commendation, recommendation, etc. either during contract performance or in conjunction with the completion and acceptance of this project, so indicate and attach copies. This attachment is not included in the page limitation. Note: The Government is not requesting the Offeror to submit letters written "after the fact" for the purpose of this solicitation.)*

K. QUALITY AWARDS RECEIVED FOR THIS PROJECT: (*Provide details and attach a copy of the certificate or other documentation. This attachment is not included in the page limitation.)*

L. THE OVERALL PERFORMANCE RATING RECEIVED FOR THIS PROJECT:
(If an official performance rating/evaluation was received, attach a copy. This attachment is not included in the page limitation. If a written performance rating was not received, send a copy of the past performance questionnaire provided at the end of this section to at least one (preferably two) of the references listed above and state in this block that the reference(s) have been provided with a copy of the questionnaire. The accompanying letter to the reference(s) must request that the completed questionnaires be FAXED directly to the attention of the contract specialist, Ms. Rachel Rosas, at (916) 557-5278 no later than the date set for receipt of proposals.)

PAST PERFORMANCE QUESTIONNAIRE WITH COVER LETTER AND INSTRUCTIONS

A sample cover letter and a past performance questionnaire with instructions to the reference for its completion follow.

*SAMPLE OF LETTER TO BE SENT BY THE OFFEROR TO ITS PROJECT REFERENCES **IF** A FORMAL PERFORMANCE EVALUATION FOR THE REFERENCE PROJECT IS NOT INCLUDED IN THE PROPOSAL.*

Date

Name and Address of Reference

Dear _____:

The U.S. Army Corps of Engineers, Sacramento District, is conducting a past performance review of our firm's past performance as part of an upcoming source selection acquisition.

Your name was given by to the Government as a reference of our past performance on the following contracts with your agency/firm:

(INSERT LIST)

Please complete the attached questionnaire(s) to aid the Government in its evaluation of our past performance and FAX it directly to the Corps of Engineers, ATTN: Ms. Rachel Rosas, at (916) 557-~~5278~~**7854**. Or, if you prefer, you may contact the contract specialist listed below to provide the information verbally. The Corps has requested receipt of this information by close of business on **DATE (Offeror to insert date that the Offeror's proposal is due to the Government),** as their evaluation will commence shortly thereafter.

You are advised that it is Government policy that the identity of sources providing past performance information will not be released outside the Government.

We appreciate your efforts to help the Government fairly evaluate our past performance. Should you have any questions related to this matter, please contact the Government's contract specialist for this project, Ms. Rachel Rosas, at telephone (916) 557-7716.

Sincerely,

Offeror's Signature

Attachments

INSTRUCTIONS TO THE REFERENCE
FOR COMPLETINGTHE PAST PERFORMANCE QUESTIONNAIRE

Handwritten completion of this questionnaire is acceptable, if legible.

Include evaluation of contractor's performance based solely on the performance for which the contractor was/is liable. Please do not let factors beyond the control of the contractor which have resulted in performance delays or other problems bias the evaluation of the contractor's performance.

The following is a definition of the scoring system used:

Excellent: Performance meets contractual requirements and exceeds many to the Owner's benefit. The contractual performance of the element being assessed was accomplished with few minor problems for which corrective actions taken by the contractor were highly effective.

Very Good: Performance meets contractual requirements and exceeds some to the Owner's benefit. The contractual performance of the element being assessed was accomplished with some minor problems for which corrective actions taken by the contractor were effective.

Satisfactory: Performance meets contractual requirements. The contractual performance of the area being assessed contains some minor problems for which corrective actions taken by the contractor appear or were satisfactory.

Marginal: Performance does not meet some contractual requirements. The contractual performance of the element being assessed evaluated reflects a serious problem for which the contractor has not yet identified corrective actions. The contractor's proposed actions appear only marginally effective or were not fully implemented.

Unsatisfactory: Performance does not meet most contractual requirements and recovery is not likely in a timely manner. The contractual performance of the element being assessed contains serious problem(s) for which the contractor's corrective actions appear or were ineffective.

In completing the questionnaire please circle a letter corresponding to your rating, or "N/A" if you are unable to provide an evaluation for any area.

Please provide clear and concise narrative explanations (both positive and negative) for your answers. This is especially important for any rating above or below "satisfactory". If more space is needed than is provided, you may attach additional sheets.

PAST PERFORMANCE QUESTIONNAIRE

(To be completed and returned by the "Reference".)

I. CONTRACTOR/CONTRACT IDENTIFICATION.

A. Contractor (Company/Division):

B. Contract Number/Identification:

C. Contract Title (Brief Description of Work and Location):

D. Contract Type: Fixed-Price, Cost-Reimbursement;

E. Owner: Federal / State / Local Government or Private/Commercial:

F. Period of Performance:

G. Original Dollar Amount of Contract:

H. Number of Modifications:

I. Dollar Amount at Completion (or current amount, if not complete):

II. <u>PAST PERFORMANCE/QUALITY EVALUATION</u>:

1. <u>Quality of Product or Service</u> - Assess the contractor's conformance to contract requirements, specifications and standards of good workmanship (e.g., commonly accepted technical, professional, environmental, or safety and health standards): **EX VG S M UNSAT N/A**
Comments:

2. <u>Schedule</u> - Assess the timeliness of the contractor against the completion of the contract, task orders, milestones, delivery schedules, administrative requirements (e.g., efforts that contribute to or effect the schedule variance): **EX VG S M UNSAT N/A**
Comments:

3. <u>Cost Control</u> (Not applicable if the referenced contract was firm fixed price. :
Assess the contractor's effectiveness in forecasting, managing and controlling contract cost:
EX VG S M UNSAT N/A
Comments:

4. <u>Business Relationships</u> - Assess the integration and coordination of all activity needed to execute the contract, specifically the timeliness, completeness and quality of problem identification, corrective actions plans, proposal submittals, the contractor's history of reasonable and cooperative behavior, customer satisfaction, and the timely award and management of subcontracts. Additionally, please comment as to whether the contractor met small/small disadvantaged and women-owned business participation goals:

EX VG S M UNSAT N/A

Comments:

5. <u>Competence of Technical Staff</u> – Assess the technical capabilities of the contractor's staff. Were technical solutions to your environmental problems developed that saved you time and money? Were you involved by the contractor in the technical planning of projects? Were the contractor's ideas repeatedly rejected or significantly modified by regulatory agencies? Were innovative technologies used?

EX VG S M UNSAT N/A

Comments

6. <u>If you had a choice, would you use this company again?</u> Yes No

Explain:

7. <u>Other contacts who may be able to furnish past performance information</u>:

RESPONDENT INFORMATION

(TO BE COMPLETED AND RETURNED BY THE REFERENCE)

******YOUR NAME WILL NOT BE RELEASED OUTSIDE OF THE GOVERNMENT.******

A. NAME OF EVALUATOR:

B. TITLE:

C. TELEPHONE NUMBER:

D. COMPANY/ORGANIZATION:

E. POSITION HELD IN REFERENCE TO THE CONTRACT (TECHNICAL INSPECTOR, CONTRACT ADMINISTRATOR, ETC.):

F. LENGTH OF INVOLVEMENT IN CONTRACT:

G. WAS THE OFFEROR GIVEN THE OPPORTUNITY TO RESPOND TO ALL ADVERSE PAST PERFORMANCE INFORMATION? Yes No Not Applicable Unknown
Explain:

H. DATE QUESTIONNAIRE COMPLETED/INFORMATION PROVIDED:

I. IF THE INFORMATION WAS SUBMITTED IN WRITING, THE SIGNATURE OF THE RESPONDENT:

J. IF THE INFORMATION WAS OBTAINED TELEPHONICALLY, THE SIGNATURE(S) OF THE GOVERNMENT REPRESENTATIVE(S) DOCUMENTING THE PHONE CALL:

10. PROVISIONS INCORPORATED BY FULL TEXT

FAR 52.204-6 DATA UNIVERSAL NUMBERING SYSTEM (DUNS) NUMBER (OCT 2003)

FAR 52.211-6 BRAND NAME OR EQUAL (AUG 1999)

~~FAR 52.215-1 INSTRUCTIONS TO OFFERORS--COMPETITIVE ACQUISITION (MAY 2001)~~ (DELETED)

FAR 52.215-1 INSTRUCTIONS TO OFFERORS--COMPETITIVE ACQUISITION (MAY 2001)—ALTERNATE I

FAR 52.215-16 FACILITIES CAPITAL COST OF MONEY (JUN 2003)

FAR 52.215-20 REQUIREMENTS FOR COST OR PRICING DATA OR INFORMATION OTHER THAN COST OR PRICING DATA (OCT 1997)

FAR 52.216-1 TYPE OF CONTRACT (APR 1984)

FAR 52.222-24 PREAWARD ON-SITE EQUAL OPPORTUNITY COMPLIANCE EVALUATION (FEB 1999)

FAR 52.222-46 EVALUATION OF COMPENSATION FOR PROFESSIONAL EMPLOYEES (FEB 1993)

FAR 52.233-2 SERVICE OF PROTEST (AUG 1996)

FAR 52.237-10 IDENTIFICATION OF UNCOMPENSATED OVERTIME (OCT 1997)

DFARS 252.209-7001 DISCLOSURE OF OWNERSHIP OR CONTROL BY THE GOVERNMENT OF A TERRORIST COUNTRY (MAR 1998)

FAR 52.204-6 DATA UNIVERSAL NUMBERING SYSTEM (DUNS) NUMBER (OCT 2003)

(a) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation "DUNS" or "DUNS+4" followed by the DUNS number or "DUNS+4" that identifies the offeror's name and address exactly as stated in the offer. The DUNS number is a nine-digit number assigned by Dun and Bradstreet, Inc. The DUNS+4 is the DUNS number plus a 4-character suffix that may be assigned at the discretion of the offeror to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see Subpart 32.11) for the same parent concern.

(b) If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one.

(1) An offeror may obtain a DUNS number--

(i) If located within the United States, by calling Dun and Bradstreet at 1-866-705-5711 or via the Internet at http://www.dnb.com; or

(ii) If located outside the United States, by contacting the local Dun and Bradstreet office.

(2) The offeror should be prepared to provide the following information:

(i) Company legal business name.

(ii) Tradestyle, doing business, or other name by which your entity is commonly recognized.

(iii) Company physical street address, city, state and Zip Code.

(iv) Company mailing address, city, state and Zip Code (if separate from physical).

(v) Company telephone number.

(vi) Date the company was started.

(vii) Number of employees at your location.

(viii) Chief executive officer/key manager.

(ix) Line of business (industry).

(x) Company Headquarters name and address (reporting relationship within your entity).

(End of provision)

FAR 52.211-6 BRAND NAME OR EQUAL (AUG 1999)

(a) If an item in this solicitation is identified as "brand name or equal," the purchase description reflects the characteristics and level of quality that will satisfy the Government's needs. The salient physical, functional, or performance characteristics that "equal" products must meet are specified in the solicitation.

(b) To be considered for award, offers of "equal" products, including "equal" products of the brand name manufacturer, must--

(1) Meet the salient physical, functional, or performance characteristic specified in this solicitation;

(2) Clearly identify the item by--
(i) Brand name, if any; and

(ii) Make or model number;
(3) Include descriptive literature such as illustrations, drawings, or a clear reference to previously furnished descriptive data or information available to the Contracting Officer; and

(4) Clearly describe any modifications the offeror plans to make in a product to make it conform to the solicitation requirements. Mark any descriptive material to clearly show the modifications.

(c) The Contracting Officer will evaluate “equal” products on the basis of information furnished by the offeror or identified in the offer and reasonably available to the Contracting Officer. The Contracting Officer is not responsible for locating or obtaining any information not identified in the offer.

(d) Unless the offeror clearly indicates in its offer that the product being offered is an “equal” product, the offeror shall provide the brand name product referenced in the solicitation.

(End of provision)

FAR 52.215-1 INSTRUCTIONS TO OFFERORS--COMPETITIVE ACQUISITION (MAY 2001) — ALTERNATE I (OCT 1997)

(a) Definitions. As used in this provision--

“Discussions” are negotiations that occur after establishment of the competitive range that may, at the Contracting Officer's discretion, result in the offeror being allowed to revise its proposal.

In writing, writing, or written” means any worded or numbered expression which can be read, reproduced, and later communicated, and includes electronically transmitted and stored information.

“Proposal modification” is a change made to a proposal before the solicitation's closing date and time, or made in response to an amendment, or made to correct a mistake at any time before award.

“Proposal revision” is a change to a proposal made after the solicitation closing date, at the request of or as allowed by a Contracting Officer as the result of negotiations.

“Time”, if stated as a number of days, is calculated using calendar days, unless otherwise specified, and will include Saturdays, Sundays, and legal holidays. However, if the last day falls on a Saturday, Sunday, or legal holiday, then the period shall include the next working day.

(b) Amendments to solicitations. If this solicitation is amended, all terms and conditions that are not amended remain unchanged. Offerors shall acknowledge receipt of any amendment to this solicitation by the date and time specified in the amendment(s).

(c) Submission, modification, revision, and withdrawal of proposals. (1) Unless other methods (e.g., electronic commerce or facsimile) are permitted in the solicitation, proposals and modifications to proposals shall be submitted in paper media in sealed envelopes or packages (i) addressed to the office specified in the solicitation, and (ii) showing the time and date specified for receipt, the solicitation number, and the name and address of the offeror. Offerors using commercial carriers should ensure that the proposal is marked on the outermost wrapper with the information in paragraphs (c)(1)(i) and (c)(1)(ii) of this provision.

(2) The first page of the proposal must show--

(i) The solicitation number;

(ii) The name, address, and telephone and facsimile numbers of the offeror (and electronic address if available);

(iii) A statement specifying the extent of agreement with all terms, conditions, and provisions included in the solicitation and agreement to furnish any or all items upon which prices are offered at the price set opposite each item;

(iv) Names, titles, and telephone and facsimile numbers (and electronic addresses if available) of persons authorized to negotiate on the offeror's behalf with the Government in connection with this solicitation; and

(v) Name, title, and signature of person authorized to sign the proposal. Proposals signed by an agent shall be accompanied by evidence of that agent's authority, unless that evidence has been previously furnished to the issuing office.

(3) Submission, modification, or revisions of proposals. (i) Offerors are responsible for submitting proposals, and any modifications, revisions, or withdrawals, so as to reach the Government office designated in the solicitation by the time specified in the solicitation. If no time is specified in the solicitation, the time for receipt is 4:30 p.m., local time, for the designated Government office on the date that proposal or revision is due.

(ii)(A) Any proposal, modification, or revision received at the Government office designated in the solicitation after the exact time specified for receipt of offers is “late” and will not be considered unless it is received before award is made, the Contracting Officer determines that accepting the late offer would not unduly delay the acquisition; and--

(1) If it was transmitted through an electronic commerce method authorized by the solicitation, it was received at the initial point of entry to the Government infrastructure not later than 5:00 p.m. one working day prior to the date specified for receipt of proposals; or

(2) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of offers and was under the Government's control prior to the time set for receipt of offers; or

(3) It is the only proposal received.

(B) However, a late modification of an otherwise successful proposal that makes its terms more favorable to the Government, will be considered at any time it is received and may be accepted.

(iii) Acceptable evidence to establish the time of receipt at the Government installation includes the time/date stamp of that installation on the proposal wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.

(iv) If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at the office designated for receipt of proposals by the exact time specified in the solicitation, and urgent Government requirements preclude amendment of the solicitation, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Government processes resume.

(v) Proposals may be withdrawn by written notice received at any time before award. Oral proposals in response to oral solicitations may be withdrawn orally. If the solicitation authorizes facsimile proposals, proposals may be withdrawn via facsimile received at any time before award, subject to the conditions specified in the provision at 52.215-5, Facsimile Proposals. Proposals may be withdrawn in person by an offeror or an authorized representative, if the identity of the person requesting withdrawal is established and the person signs a receipt for the proposal before award.

(4) Unless otherwise specified in the solicitation, the offeror may propose to provide any item or combination of items.

(5) Offerors shall submit proposals in response to this solicitation in English, unless otherwise permitted by the solicitation, and in U.S. dollars, unless the provision at FAR 52.225-17, Evaluation of Foreign Currency Offers, is included in the solicitation.

(6) Offerors may submit modifications to their proposals at any time before the solicitation closing date and time, and may submit modifications in response to an amendment, or to correct a mistake at any time before award.

(7) Offerors may submit revised proposals only if requested or allowed by the Contracting Officer.

(8) Proposals may be withdrawn at any time before award. Withdrawals are effective upon receipt of notice by the Contracting Officer.

(d) Offer expiration date. Proposals in response to this solicitation will be valid for the number of days specified on the solicitation cover sheet (unless a different period is proposed by the offeror).

(e) Restriction on disclosure and use of data. Offerors that include in their proposals data that they do not want disclosed to the public for any purpose, or used by the Government except for evaluation purposes, shall--

(1) Mark the title page with the following legend: This proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed--in whole or in part--for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of--or in connection with-- the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets [insert numbers or other identification of sheets]; and

(2) Mark each sheet of data it wishes to restrict with the following legend: Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal.

(f) Contract award. (1) The Government intends to award a contract or contracts resulting from this solicitation to the responsible offeror(s) whose proposal(s) represents the best value after evaluation in accordance with the factors and subfactors in the solicitation.

(2) The Government may reject any or all proposals if such action is in the Government's interest.

(3) The Government may waive informalities and minor irregularities in proposals received.

(4) The Government intends to evaluate proposals and award a contract after conducting discussions with offerors whose proposals have been determined to be within the competitive range. If the Contracting Officer determines that the number of proposals that would otherwise be in the competitive range exceeds the number at which an efficient competition can be conducted, the Contracting Officer may limit the number of proposals in the competitive range to the greatest number that will permit an efficient competition among the most highly rated proposals. Therefore, the offeror's initial proposal should contain the offeror's best terms from a price and technical standpoint.

(5) The Government reserves the right to make an award on any item for a quantity less than the quantity offered, at the unit cost or prices offered, unless the offeror specifies otherwise in the proposal.

(6) The Government reserves the right to make multiple awards if, after considering the additional administrative costs, it is in the Government's best interest to do so.

(7) Exchanges with offerors after receipt of a proposal do not constitute a rejection or counteroffer by the Government.

(8) The Government may determine that a proposal is unacceptable if the prices proposed are materially unbalanced between line items or subline items. Unbalanced pricing exists when, despite an acceptable total evaluated price, the price of one or more contract line items is significantly overstated or understated as indicated by the application of cost or price analysis techniques. A proposal may be rejected if the Contracting Officer determines that the lack of balance poses an unacceptable risk to the Government.

(9) If a cost realism analysis is performed, cost realism may be considered by the source selection authority in evaluating performance or schedule risk.

(10) A written award or acceptance of proposal mailed or otherwise furnished to the successful offeror within the time specified in the proposal shall result in a binding contract without further action by either party.

(11) The Government may disclose the following information in postaward debriefings to other offerors:

(i) The overall evaluated cost or price and technical rating of the successful offeror;

(ii) The overall ranking of all offerors, when any ranking was developed by the agency during source selection;

(iii) A summary of the rationale for award; and

(d) For acquisitions of commercial items, the make and model of the item to be delivered by the successful offeror.

(End of provision)

FAR 52.215-16 FACILITIES CAPITAL COST OF MONEY (JUN 2003)

(a) Facilities capital cost of money will be an allowable cost under the contemplated contract, if the criteria for allowability in FAR 31.205-10(b) are met. One of the allowability criteria requires the prospective Contractor to propose facilities capital cost of money in its offer.

(b) If the prospective Contractor does not propose this cost, the resulting contract will include the clause Waiver of Facilities Capital Cost of Money.

(End of provision)

FAR 52.215-20 REQUIREMENTS FOR COST OR PRICING DATA OR INFORMATION OTHER THAN COST OR PRICING DATA (OCT 1997)

(a) Exceptions from cost or pricing data. (1) In lieu of submitting cost or pricing data, offerors may submit a written request for exception by submitting the information described in the following subparagraphs. The Contracting Officer may require additional supporting information, but only to the extent necessary to determine whether an exception should be granted, and whether the price is fair and reasonable.

(i) Identification of the law or regulation establishing the price offered. If the price is controlled under law by periodic rulings, reviews, or similar actions of a governmental body, attach a copy of the controlling document, unless it was previously submitted to the contracting office.

(ii) Commercial item exception. For a commercial item exception, the offeror shall submit, at a minimum, information on prices at which the same item or similar items have previously been sold in the commercial market that is adequate for evaluating the reasonableness of the price for this acquisition. Such information may include--

(A) For catalog items, a copy of or identification of the catalog and its date, or the appropriate pages for the offered items, or a statement that the catalog is on file in the buying office to which the proposal is being submitted. Provide a copy or describe current discount policies and price lists (published or unpublished), e.g., wholesale, original equipment manufacturer, or reseller. Also explain the basis of each offered price and its relationship to the established catalog price, including how the proposed price relates to the price of recent sales in quantities similar to the proposed quantities;

(B) For market-priced items, the source and date or period of the market quotation or other basis for market price, the base amount, and applicable discounts. In addition, describe the nature of the market;

(C) For items included on an active Federal Supply Service Multiple Award Schedule contract, proof that an exception has been granted for the schedule item.

(2) The offeror grants the Contracting Officer or an authorized representative the right to examine, at any time before award, books, records, documents, or other directly pertinent records to verify any request for an exception under this provision, and the reasonableness of price. For items priced using catalog or market prices, or law or regulation , access does not extend to cost or profit information or other data relevant solely to the offeror's determination of the prices to be offered in the catalog or marketplace.

(b) Requirements for cost or pricing data. If the offeror is not granted an exception from the requirement to submit cost or pricing data, the following applies:

(1) The offeror shall prepare and submit cost or pricing data and supporting attachments in accordance with Table 15-2 of FAR 15.408.

As soon as practicable after agreement on price, but before contract award (except for unpriced actions such as letter contracts), the offeror shall submit a Certificate of Current Cost or Pricing Data, as prescribed by FAR 15.406-2.

(End of provision)

FAR 52.216-1 TYPE OF CONTRACT (APR 1984)

The Government contemplates award of an Indefinite Delivery Indefinite Quantity (IDIQ) contract from this solicitation. If the contract is awarded under the Unrestricted portion, the contract will allow fixed price task orders and cost plus fixed fee task orders. If the contract is awarded under the Small Business Set-Aside portion, the contract will include only fixed price task orders.

(End of clause)

FAR 52.222-24 PREAWARD ON-SITE EQUAL OPPORTUNITY COMPLIANCE EVALUATION (FEB 1999)

If a contract in the amount of $10 million or more will result from this solicitation, the prospective Contractor and its known first-tier subcontractors with anticipated subcontracts of $10 million or more shall be subject to a preaward compliance evaluation by the Office of Federal Contract Compliance Programs (OFCCP), unless, within the preceding 24 months, OFCCP has conducted an evaluation and found the prospective Contractor and subcontractors to be in compliance with Executive Order 11246.

(End of provision)

FAR 52.222-46 EVALUATION OF COMPENSATION FOR PROFESSIONAL EMPLOYEES (FEB 1993)

(a) Recompetition of service contracts may in some cases result in lowering the compensation (salaries and fringe benefits) paid or furnished professional employees. This lowering can be detrimental in obtaining the quality of professional services needed for adequate contract performance. It is therefore in the Government's best interest that professional employees, as defined in 29 CFR 541, be properly and fairly compensated. As part of their proposals, offerors will submit a total compensation plan setting forth salaries and fringe benefits proposed for the professional employees who will work under the contract. The Government will evaluate the plan to assure that it reflects a sound management approach and understanding of the contract requirements. This evaluation will include an assessment of the offeror's ability to provide uninterrupted high-quality work. The professional compensation proposed will be considered in terms of its impact upon recruiting and retention, its realism, and its consistency with a total plan for compensation. Supporting information will include data, such as recognized national and regional compensation surveys and studies of professional, public and private organizations, used in establishing the total compensation structure.

(b) The compensation levels proposed should reflect a clear understanding of work to be performed and should

indicate the capability of the proposed compensation structure to obtain and keep suitably qualified personnel to meet mission objectives. The salary rates or ranges must take into account differences in skills, the complexity of various disciplines, and professional job difficulty. Additionally, proposals envisioning compensation levels lower than those of predecessor contractors for the same work will be evaluated on the basis of maintaining program continuity, uninterrupted high-quality work, and availability of required competent professional service employees. Offerors are cautioned that lowered compensation for essentially the same professional work may indicate lack of sound management judgment and lack of understanding of the requirement.

(c) The Government is concerned with the quality and stability of the work force to be employed on this contract. Professional compensation that is unrealistically low or not in reasonable relationship to the various job categories, since it may impair the Contractor's ability to attract and retain competent professional service employees, may be viewed as evidence of failure to comprehend the complexity of the contract requirements.

(d) Failure to comply with these provisions may constitute sufficient cause to justify rejection of a proposal.

(End of provision)

FAR 52.233-2 SERVICE OF PROTEST (AUG 1996)

(a) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from Contracting Officer, U.S. Army Corps of Engineers, Sacramento, 1325 J Street, Sacramento, California 95814-2922.

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

(End of provision)

FAR 52.237-10 IDENTIFICATION OF UNCOMPENSATED OVERTIME (OCT 1997)

(a) Definitions. As used in this provision--

Uncompensated overtime means the hours worked without additional compensation in excess of an average of 40 hours per week by direct charge employees who are exempt from the Fair Labor Standards Act. Compensated personal absences such as holidays, vacations, and sick leave shall be included in the normal work week for purposes of computing uncompensated overtime hours.

Uncompensated overtime rate is the rate that results from multiplying the hourly rate for a 40-hour work week by 40, and then dividing by the proposed hours per week. For example, 45 hours proposed on a 40-hour work week basis at $20 per hour would be converted to an uncompensated overtime rate of $17.78 per hour ($20.00 x 40 divided by 45=$17.78).

(b) For any proposed hours against which an uncompensated overtime rate is applied, the offeror shall identify in its proposal the hours in excess of an average of 40 hours per week, by labor category at the same level of detail as compensated hours, and the uncompensated overtime rate per hour, whether at the prime or subcontract level. This includes uncompensated overtime hours that are in indirect cost pools for personnel whose regular hours are normally charged direct.

(c) The offeror's accounting practices used to estimate uncompensated overtime must be consistent with its cost accounting practices used to accumulate and report uncompensated overtime hours.

(d) Proposals that include unrealistically low labor rates, or that do not otherwise demonstrate cost realism, will be considered in a risk assessment and will be evaluated for award in accordance with that assessment.

(e) The offeror shall include a copy of its policy addressing uncompensated overtime with its proposal.

(End of clause)

DFARS 252.209-7001 DISCLOSURE OF OWNERSHIP OR CONTROL BY THE GOVERNMENT OF A TERRORIST COUNTRY (MAR 1998)

(a) "Definitions."

As used in this provision --

(a) "Government of a terrorist country" includes the state and the government of a terrorist country, as well as any political subdivision, agency, or instrumentality thereof.

(2) "Terrorist country" means a country determined by the Secretary of State, under section 6(j)(1)(A) of the Export Administration Act of 1979 (50 U.S.C. App. 2405(j)(i)(A)), to be a country the government of which has repeatedly provided support for such acts of international terrorism. As of the date of this provision, terrorist countries include: Cuba, Iran, Iraq, Libya, North Korea, Sudan, and Syria.

(3) "Significant interest" means --

(i) Ownership of or beneficial interest in 5 percent or more of the firm's or subsidiary's securities. Beneficial interest includes holding 5 percent or more of any class of the firm's securities in "nominee shares," "street names," or some other method of holding securities that does not disclose the beneficial owner;

(ii) Holding a management position in the firm, such as a director or officer;

(iii) Ability to control or influence the election, appointment, or tenure of directors or officers in the firm;

(iv) Ownership of 10 percent or more of the assets of a firm such as equipment, buildings, real estate, or other tangible assets of the firm; or

(v) Holding 50 percent or more of the indebtness of a firm.

(b) "Prohibition on award."

In accordance with 10 U.S.C. 2327, no contract may be awarded to a firm or a subsidiary of a firm if the government of a terrorist country has a significant interest in the firm or subsidiary or, in the case of a subsidiary, the firm that owns the subsidiary, unless a waiver is granted by the Secretary of Defense.

(c) "Disclosure."

If the government of a terrorist country has a significant interest in the Offeror or a subsidiary of the Offeror, the Offeror shall disclosure such interest in an attachment to its offer. If the Offeror is a subsidiary, it shall also disclose any significant interest the government of a terrorist country has in any firm that owns or controls the subsidiary. The disclosure shall include --

(1) Identification of each government holding a significant interest; and

(2) A description of the significant interest held by each government.

(End of provision)

11. SAMPLE PROJECT

A separate Adobe Acrobat file with the Sample Project, is available for download at the Corps of Engineers, Sacramento District, Contracting Division's website at http://www.spk.usace.army.mil/cespk-ct/ . Go this website to download the Sample Project for use and submission with your proposal.

SECTION M - EVALUATION FACTORS FOR AWARD

The following have been added by full text:
EVALUATION FACTORS FOR AWARD

SECTION M
EVALUATION FACTORS FOR AWARD

SECTION M
Evaluation Factors for Award

1. ELIGIBILITY FOR CONTRACT AWARD

In accordance with the FAR, no contract shall be entered into unless the contracting officer ensures that all requirements of law, executive orders, regulations, and all other applicable procedures, including clearances and approvals, have been met. This includes the FAR requirement that no award shall be made unless the contracting officer makes an affirmative determination of responsibility. To be determined responsible, a prospective contractor must meet the general standards in Part FAR 9 and any special standards set forth in the solicitation.

2. SOURCE SELECTION USING THE TRADE-OFF PROCESS

The Government will select the offer that represents the best value to the Government by using the trade-off process described in FAR Part 15. This process permits tradeoffs between cost/price and technical ("non-cost") factors and allows the Government to accept other than the lowest priced offer. The award decision will be based on a comparative assessment of proposals against all source selection criteria in the solicitation.

3. MULTIPLE AWARDS

The Government intends to award four contracts resulting from this solicitation, as follows: The Government intends to award two contracts to small business concerns under the small business set-aside. The Government intends to award two contracts under the unrestricted competition. Firms may only receive one prime contract as a result of this solicitation. Notwithstanding the above, the Government reserves the right to award fewer than four contracts. Unrestricted contracts will allow for both firm, fixed-price task orders and cost-plus-fixed-fee task orders. Contracts awarded under the Small Business Set-Aside will have only firm, fixed-price task orders issued.

4. RELATIVE IMPORTANCE OF COST/PRICE TO THE TECHNICAL EVALUATION FACTORS

All evaluation factors other than cost or price, when combined, are approximately equal to cost or price. The Government is concerned with striking the most advantageous balance between technical merit ("quality") and cost to the Government (i.e., the cost/price). The degree of importance of cost/price could become greater depending upon the equality of the technical proposals. If competing technical proposals are determined to be essentially equal, cost/price could become the controlling factor.

5. EVALUATION OF THE COST/PRICE PROPOSALS

a. Price or cost to the Government will be evaluated and considered but will not be scored or combined with other aspects of the proposal evaluation. The proposed costs/prices will be analyzed for reasonableness. They may also be analyzed to determine whether they are realistic for the work to be performed; reflect a clear understanding of the requirements; and are consistent with the Offeror's Technical Proposal. Additionally, all offers will be analyzed for unbalanced pricing.

b. When applicable, the Price Evaluation Preference for HUBZone Small Business Concerns will be applied under the unrestricted competition only. The Price Evaluation Preference for HUBZone Small Business Concerns will not be applied under the Small Business Set-Aside competition.

c. The Price Evaluation Adjustment for Small Disadvantaged Businesses will not apply to this procurement as it is currently suspended for DoD.

d. The cost/price information will be used along with the technical evaluation to make selection for award. Since evaluation of the cost/price proposal will represent a portion of the total evaluation, it is possible that an offeror might not be selected for award because of unreasonable, unrealistic, or incomplete cost/price proposal information. The Government will evaluate the format and clarity of the cost/price proposal. The results of the cost/price realism

analysis will determine each offeror's probable cost of doing business and will be used for purposes of evaluation to determine the best value.

e. The Government will evaluate each offeror's overall cost of doing business over the life of the contract, reasonableness and realism using the pricing information submitted in the proposal in the following manner:

(1) All information required in the Cost/Price Proposal (see Section L), Tabs 1, 2, 4, 5, 6, 7, 8 (if required), and 10 (if required) will be evaluated using a Pass/Fail method.

(2) The projected composite rate information. To evaluate the proposed composite rates, the Government will use its own "estimate of the labor mix". Each offeror's "estimate of the labor mix" will be replaced with the Government Estimate and will be multiplied by the offeror's projected composite rates to calculate an adjusted composite hourly rate to be used in the evaluation. The Government's "estimate of the labor mix" will be developed by Government technical personnel prior to receipt of proposals; it will be developed independently of any proposal information and applied exactly the same to each offeror's projected composite rates. The Government will select a subset of job titles to use for evaluation purposes. These selected job titles will be representative of the majority of the anticipated work requirement over the life of the contract. The evaluation of each firm's adjusted composite hourly rate will be made using the Government's selected set of job titles. The same set of job titles will be used to evaluate all offers. Neither the set of job titles nor the Government's estimate of the labor mix used in the evaluation of the adjusted composite hourly rate will be releasable information.

(3) Overall Cost of Doing Business Over the Life of the Contract, Reasonableness and Realism.

(a) Using the information provided the Government will perform cost/price analysis by completing the following model which is designed to look at the overall cost of doing business over the life of the contract to include all burdens--with the exception of the prime's profit or fee--by equalizing the amount of direct costs. The direct costs are represented in a manner that depicts the usage of professional/administrative labor as well as the proportion of other direct costs in a manner the Government estimates will be the actual usage over the life of the contract (considering all the different types of work to be ordered under the contract). The offeror's multipliers will be applied to other direct costs, travel and subcontractors in the same manner the offeror would apply them in task order proposals under the contract. This will allow the Government to determine the offeror's probable cost for an equalized amount of direct costs. After the offeror's probable overall cost of doing business is determined using the model below a subjective evaluation will be made of each offeror's overall cost of doing business over the life of the contract including reasonableness and realism of the overall cost.

(b) Additional risk factors to be taken into consideration in the Government's evaluation of overall cost of doing business over the life of the contract are other direct costs calculated on direct labor and proposed to be added to the labor rates (some firms calculate all or some other direct costs by labor hour and add a per labor hour rate of the labor rates; this was not allowed to be added into Charts 1A, 1B or Chart 2), and other differences between cost proposals and cost information which affect the overall cost of doing business over the life of the contract such as, but not limited to, each offeror's method of dealing with uncompensated overtime in its calculation of hourly labor.

CATEGORIES	ESTIMATED QUANTITY LABOR HOURS	ADJUSTED COMPOSITE HOURLY RATE (FROM CHART 2)	TOTAL MULTI-PLIER	DIRECT DOLLARS ASSIGNED	OVERALL COST OF DOING BUSINESS
PROFESSIONAL & ADMIN. LABOR (FROM CHART 2)	40	See Note 1	No Entry	No Entry	$ See Note 2
EQUIPMENT, MATERIALS &	No Entry	No Entry	See Note 3	$300	$ See Note 4

CATEGORIES	ESTIMATED QUANTITY LABOR HOURS	ADJUSTED COMPOSITE HOURLY RATE (FROM CHART 2)	TOTAL MULTI-PLIER	DIRECT DOLLARS ASSIGNED	OVERALL COST OF DOING BUSINESS
SUPPLIES					
LABORATORY	No Entry	No Entry	See Note 3	$800	$ See Note 4
TRAVEL	No Entry	No Entry	See Note 3	$500	$ See Note 4
ALL OTHER DIRECT COSTS	No Entry	No Entry	See Note 3	$200	$ See Note 4
SUBCONTRACTOR OTHER DIRECT COSTS	No Entry	No Entry	See Note 3	$100	$ See Note 4
TOTAL COST OF DOING BUSINESS					$ See Note 5

The estimated quantity of labor hours (40) will be used consistently in this evaluation for each offeror. The direct dollars assigned in the above model will be used consistently in this evaluation for each offeror. The Government will not change the entries in the above model and will apply them consistently.

Note 1 - The Adjusted Composite Hourly Rate (ACHR) to be used here is each offeror's ACHR (after adjustment and evaluation by the Government as described above) including escalation, as proposed by the offeror, to the fifth contract year.

Note 2 - Multiplication of the estimated quantity of 40 by the ACHR, escalated to Year 5.

Note 3 - Total multipliers to be used here are the total multipliers as proposed by the offeror on the Section J Charts but escalated to Year 5 using the offeror's proposed escalation rates.

Note 4 - Multiplication of the Total Multiplier and the direct dollars assigned.

Note 5 - Total overall cost of doing business for each cost element listed.

f. The cost/price proposal will also be evaluated against the requirement that the information other than cost or pricing data requested and submitted be accurate, complete and current and in accordance with the directions of this solicitation.

g. Under the Small Business set-aside, an evaluation will be made against the requirement of FAR 52.219-14 – which requires the Small Business prime to perform 50% of the labor dollars with it's own work force.

h. The Other Direct Costs and the Total Multiplier on Other Direct Costs will be evaluated against the Government's intent to pre-price ODCs to the maximum extent practicable, to have a clear understanding of the indirect costs applied to all ODCs, and based upon the requirement in the solicitation that the prime contractor will proposed one unit price for each ODC which will be used whenever the ODC is proposed on a task order whether the prime or a subcontractor will incur the cost.

i. Escalation Factors over the subsequent periods of the contract as it impacts proposed costs.

j. The evaluation of the offeror's overall price to the Government (reasonableness, realism and affordability) over the life of the contract will be based on subparagraph e.1. above and Other Award Factors (see paragraph below).

k. The worksheet from the Army Supplement to the Federal Acquisition Regulations (AFARS) that will be used to determine the acceptability of the subcontracting plans submitted by large businesses is attached in Section J. An acceptable subcontracting plan must be submitted by a large business in order to be eligible for contract award.

l. The following submissions will be reviewed for acceptability on a pass/fail basis:

--The Proposal Cover Sheet;
--The SF 33 and Acknowledgement of Amendments;
--Representations, Certifications, and Other Statements of Offerors;
--Total Compensation Plan;
--Identification of Uncompensated Overtime & Offeror's Policy Addressing Uncompensated Overtime;
--Audit from Cognizant Federal Audit Agency Evidencing Approval of Offeror's Accounting System;
--Determination of Adequacy of the Cost Accounting System (CAS) Disclosure Statement, if applicable*;
--JV Agreement, if applicable.

*The Government reserves the right to waive the pre-award submission of the Determination of Adequacy of the CAS Disclosure Statement and to obtain it as soon as possible after contract award from the successful contractor in accordance with FAR Part 30.

m. Should the Cost/Price Proposal include any standard company terms and conditions that conflict with the terms and conditions of the solicitation, the proposal may be determined to be "unacceptable" and thus ineligible for award. Should the offeror have any questions related to specific terms and conditions, these should be resolved prior to submission of the offer; see Section L, Inquiries, for instructions relative to resolving questions during the proposal phase.

n. Other Award Factors: The Contracting Officer shall consider several factors in the selection process which are important, but not quantified, such as:

(1) Agreement by the offeror to all general and special contract provisions and clauses.

(2) Submission of an acceptable Subcontracting Plan, if required (see Section J), in accordance with the terms and conditions of the solicitation.

(3) Determination of responsibility of the contractor by the Contracting Officer in accordance with the provisions of the Federal Acquisition Regulation, Part 9.1. In order to be determined responsible, a prospective contractor must:

(a) Have adequate financial resources to perform the contract or the ability to obtain them.

(b) Be able to comply with the required or proposed delivery or performance schedule taking into consideration all existing commercial and Governmental business commitments.;

(c) Have a satisfactory performance record.

(d) Have a satisfactory record of integrity and business ethics.

(e) Have the necessary organization, experience, accounting and operational controls, and technical skills, or the ability to obtain them.

(f Have the necessary production, construction, and technical equipment and facilities, or the ability to obtain them.

(g) Be otherwise qualified and eligible to receive an award under applicable laws and regulations.

6. <u>THE TECHNICAL EVALUATION FACTORS</u>

The Technical Proposal will be evaluated based on the following technical evaluation factors and subfactors:

FACTOR 1: ORGANIZATIONAL AND MANAGEMENT APPROACH

Responses to this factor will be evaluated to determine the offeror's ability to respond to the requirements of the contract, and their understanding of organizational coordination necessary for proper operation/management of the

contract. The size, technical diversity and organizational structure of the team will be reviewed. The authorities granted to each key individual will be reviewed. The adequacy of the offeror's proposed teaming arrangements will also be evaluated. The proposals will be evaluated for adequacy of description of entity having overall authority for the contract, responsibility for management of the contract, length the arrangement has been in place and which entity will be responsible for project management, engineering/geo-technical, and other environmental services. The proposal will be evaluated to determine if the proper balance of engineering, other environmental and geo-technical services have been proposed to execute typical task orders. The proposal will also be evaluated for the distribution of work between in-house and subcontracted work. The organizational approach will be evaluated to determine the offeror's ability to provide expeditious, responsive, and cost effective service. The offeror's approach to cost and schedule control and change management will also be evaluated under the Unrestricted Competition.

FACTOR 2: KEY PERSONNEL QUALIFICATIONS

The offeror's key personnel resumes and qualifications will be evaluated to determine the depth and breadth of their experience and training as it relates to the responsibilities the person will have on this contract. Resumes will also be evaluated for geographic availability, technical knowledge of Federal, State, and local laws, regulations, and guidance (including but not limited to CERCLA, RCRA, NEPA, NHPA, etc.) applicable to this procurement, and specific experience gained on projects with requirements similar to this procurement. Experience with Federal, State, and local agencies/regulators will also be evaluated. The prior experience of the proposed key personnel with cost reimbursement contracts will also be considered under the Unrestricted Competition.

FACTOR 3: CAPABILITY

FACTOR 3A: EXPERIENCE

Responses to this factor will be evaluated to determine the offerors' experience performing related projects that include services as described in Section C, Paragraph 3.0 and subsections. The Government will take into consideration the type, size, complexity, geographical location of projects and experience with regulatory offices. The SSEB will evaluate roles, responsibilities, actual work performed by offeror or team member and whether experience pertains to current teaming arrangement and organizational structure proposed for this contract. Experience with California regulators will be more heavily weighted. Unique characteristics of the projects, problems encountered and solutions provided, cost saving measures implemented, and schedule performance will be evaluated. The proposed prime contractor's prior experience with cost-reimbursement contracts will also be considered under the unrestricted competition.

~~Responses to this factor will be evaluated to determine the offerors' experience performing related projects that include services as described in Section C, Paragraph 3.0 and subsections. The type, size, complexity, geographical location, experience with regulatory offices. The SSEB will evaluate roles, responsibilities, actual work performed by offeror or team member, and whether experience pertains to current teaming arrangements and organizational structure proposed for this contract. Project management, environmental, and geo-technical services provided will be evaluated.~~ ~~**Experience with California regulators will be more heavily weighted.**~~ ~~Unique characteristics of the projects, problems encountered and solutions provided, cost saving measures implemented, and schedule performance will be evaluated. The proposed prime contractor's prior experience with cost reimbursement contracts will also be considered under the Unrestricted Competition.~~

FACTOR 3B: PAST PERFORMANCE

(1) The Government will evaluate past performance information to assess the level of performance risk associated with the Offeror's likelihood of success in performing the requirements stated in the solicitation. The currency and relevance of the information (as determined by the Government), the source of the information, context of the data, and general trends in the contractor's performance may be considered.

(2) This comparative risk assessment of past performance information is separate from the responsibility determination required under FAR Subpart 9.1.

(3) The Government will evaluate the information submitted by the Offeror pertaining to recent, relevant contracts. The Government may also use data obtained from other sources, including automated databases and questionnaires. References other than those identified by the Offeror may be contacted by the Government. The Government may take into consideration the offeror's performance of contracts with the agency; other Federal, State, and local government activities; and commercial concerns.

(4) For the purpose of the past performance evaluation, Offerors shall be defined as business arrangements and relationships, such as Joint Venture participants, teaming partners, and major subcontractors. The past performance record of each firm in the business arrangement may be evaluated by the Government.

(5) The evaluation may take into consideration the Offeror's record of conformance to contract specifications and standards of good workmanship; the Offeror's adherence to contract schedule, including the administrative aspects of performance; and the Offeror's history of reasonable and cooperative behavior, commitment to customer satisfaction, and timely award and management of subcontracts. For Federal contracts, the evaluation will also include the Offeror's history of compliance with the requirements of FAR 52.219-8, "Utilization of Small Business Concerns" and for large businesses, past compliance with the requirements of FAR 52.219-9, "Small Business Subcontracting Plan".

(6) The evaluation may take into account the number and severity of problems, the demonstrated effectiveness of corrective actions taken, and the overall work record.

(7) The result will be a performance risk rating based on each Offeror's record of past performance.

(8) In the case of an Offeror without a record of recent, relevant past performance (and for which there is also no recent, relevant past performance information for its predecessor companies or key subcontractors), or for whom information on past performance is not available or cannot be verified, the Offeror will not be evaluated favorably or unfavorably on past performance. This does not preclude the Government from making award to a higher-priced Offeror with a favorable past performance record over a lower-priced Offeror with a neutral past performance rating.

FACTOR 4: TECHNICAL APPROACH TO THE SAMPLE PROJECT

a. The Offeror's response to the sample project will be considered as representative of the offeror's technical approach to a typical requirement for environmental services.

b. The Government's evaluation may include considerations such as the following:

--Whether the Offeror has proposed appropriate kinds and numbers of personnel and has adequately explained the proposed staffing;

--The adequacy of the proposed project organization in terms of lines of authority, responsibility, and communications;

--How well the Offeror has demonstrated its technical understanding of the project requirements through its analysis of the applicable regulatory framework; its proposed approach to characterization of the nature and extent of contamination at the site; its assessment of potential cleanup criteria; and its proposed remedial options;

--The soundness and workability of the Offeror's proposed technical approach;

--The validity of the proposed methodology and/or techniques;

--Whether or not the Offeror has proposed an innovative approach for accomplishing the work;

--Possible cost and/or schedule impacts of the proposed approach; and

--The likelihood of success and risk of failure or problems associated with the proposed approach.

c. Although the Government will separately consider the offeror's response to each of the tasks and will identify the strengths and weaknesses associated with each task, the result of the Government's evaluation will be an overall rating for the evaluation factor as a whole.

d. Because the purpose of the sample project is to assess the merits of the offeror's approach to a typical requirement, during discussions the Government will not reveal the results of its technical evaluation with the offerors determined to be in the competitive range, except to disclose any tasks for which significant weaknesses and/or deficiencies were identified. Additionally, the Government's evaluation of proposal revisions pertaining to the sample project will be limited to determining whether or not the significant weaknesses and/or deficiencies were eliminated by the proposal revision and readjusting the overall rating accordingly. The Offeror will not be given credit for any new "strengths" resulting from such a proposal revision.

FACTOR 5: SOCIO-ECONOMIC CONSIDERATIONS

[Note: This factor only applies to the unrestricted competition.]

SUB-FACTOR 5A: PARTICIPATION OF SMALL BUSINESS (SB) CONCERNS

The response to this factor will be evaluated to determine:

--The extent to which proposed small business concerns (SBCs) and historically black colleges and universities and minority institutions (HBCU/MIs) are specifically identified by name by the Offeror;

--The extent of commitment by the offeror to use the specifically identified firms, whether as a joint venture, teaming arrangement, or subcontractor;

--The complexity and variety of the work the identified firms are to perform.

SUB-FACTOR 5B: PARTICIPATION OF SMALL BUSINESS CONCERNS, HISTORICALLY BLACK COLLEGES AND UNIVERSITIES, AND MINORITY INSTITUTIONS (SBC/HBCU/MI)

The response to this factor will be evaluated to determine:

--The extent to which proposed small business concerns (SBCs) and historically black colleges and universities and minority institutions (HBCU/MIs) are specifically identified by name by the Offeror;

--The extent of commitment by the offeror to use the specifically identified firms, whether as a joint venture, teaming arrangement, or subcontractor;

--The complexity and variety of the work the identified firms are to perform.

SUBFACTOR 5C: SMALL DISADVANTAGED BUSINESS (SDB) PARTICIPATION (LIMITED TO THE PARTICIPATION OF SDB CONCERNS IN THE PERFORMANCE OF THE CONTRACT UNDER THE AUTHORIZED SIC CODES:

The response to this factor will be evaluated to determine:

--The extent to which SDB concerns are specifically identified;

--The extent of commitment to use SDB concerns (for example, enforceable commitments are to be weighted more heavily than non-enforceable ones);

--The complexity and variety of the work SDB concerns are to perform;

--The realism of the proposal;

--Past performance of offerors in complying with subcontracting plan goals for SDB concerns and monetary targets for SDB participation; and

--The extent of participation of SDB concerns in terms of the value of the total acquisition.

7. RELATIVE WEIGHTING OF THE TECHNICAL EVALUATION FACTORS AND SUBFACTORS

Factor 3, Capability is the most heavily weighted factor, with Subfactor 3a, Experience, weighted somewhat more than Subfactor 3b, Past Performance.

Factor 4, Technical Approach, is weighted somewhat less than Factor 3.

Factor 1, Organization and Management Approach, is weighted somewhat less than Factor 4.

Factor 2, Key Personnel, is the same weight as Factor 1.

Factor 5, Socio-Economic Considerations, is weighted significantly less than Factor 2. Subfactor 5A, Participation of Small Business (SB) Concerns; Subfactor 5B, Proposed Small Business/HBCU/MI Participation, and Subfactor 5C, SDB Participation under the Authorized Codes, are weighted the same.

8. GENERAL TECHNICAL EVALUATION CRITERIA

a. The Offeror's conformance with the specified format and submission requirements will be considered during the technical evaluation. Failure to comply with the format and/or the submission requirements may be seen as indicative of the type of problems that could be expected during contract performance. Lack of conformance could therefore result in a higher risk assessment, in addition to any other impacts on the evaluation. Material omission(s) may cause the technical proposal to be rejected as unacceptable.

b. Technical proposals which do not provide the specified information in the specified location in accordance with the submission instructions may be downgraded. The Government is under no obligation to search for information that is not in the specified location.

c. Proposals which are generic, vague, or lacking in detail may be downgraded. The proposal submission instructions are written to given prospective contractors, where feasible, an indication of the level of detail desired by the Government. The offeror's failure to include information that the Government has indicated should be included may result in the proposal being downgraded and/or being found deficient if inadequate detail is provided.

d. Any prescribed page and formatting limitations will be strictly adhered to and enforced by the Government. The Government will not evaluate any excess information resulting from the Offeror's failure to comply with the submission instructions. Examples: If an Offeror were to submit three pages in response to an item with a two page limitation, the information on the first two pages would be evaluated but the information on the third page would not be evaluated. If an Offeror were to submit a fold-out sheet (11"x17") in response to a one-page limitation where fold-out sheets were not specifically authorized, only the information that could reasonably have been submitted on one 8 ½ x 11 inch sheet would be evaluated.

e. The degree of risk to the Government inherent in the Offeror's technical proposal will be a consideration under every evaluation factor/subfactor.

f. The Government cannot make award based on a deficient offer. Therefore, a rating of "Unsatisfactory" or "Fail" under any subfactor will make the offer ineligible for award, unless the Government elects to enter into discussions with that Offeror and all deficiencies are remedied in a revised proposal.

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52.217-5 EVALUATION OF OPTIONS (JUL 1990)

Except when it is determined in accordance with FAR 17.206(b) not to be in the Government's best interests, the Government will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. Evaluation of options will not obligate the Government to exercise the option(s).
(End of provision)

(End of Summary of Changes)