N00217.000391
HUNTERS POINT
SSIC NO. 5090.3

5090
Ser 1146/HP/DOHS
24 JUN 1988

Mr. Dwight Hoenig
Department of Health Services
State of California
Toxic Substances Control Division
North Coast Section
2151 Berkeley Way, Annex 7
Berkeley, CA 94704

Dear Mr. Hoenig:

In our November 5, 1987 letter to Mr. Ric Notini of your office, we indicated that there are approximately 3,000 cubic yards of sandblasting grit on the Bay Fill Area at Naval Station, Treasure Island, Hunters Point Annex (HPA). Analysis of the sandblasting grit indicated that the total copper and lead levels exceeded the Total Threshold Limit Concentrations and its leachable copper and lead levels exceeded the Soluble Threshold Limit Concentrations established by Title 22 of the California Administrative Code.

Since our letter to you, we have protected the sandblasting grit from weathering by consolidating the sandblasting grit into one pile and covering it with tarp. In addition, we have made arrangements with the Naval Civil Engineering Laboratory to contract with Battelle Columbus Division (see enclosure (1)) to conduct a research program that will 1) quantify the initial level of heavy metals in the sandblasting grit, 2) treat it using a chemical fixation process, 3) quantify the level of heavy metals in leachates from the treated sandblasting grit, and 4) dispose of the treated non-hazardous grit in accordance with federal, state, and local laws and regulations. Prior to initiation of the full-scale treatment of the sandblasting grit in the field, a benchscale pilot study will be performed to determine the types and quantity of materials needed to treat the sandblasting grit and also to demonstrate the effectiveness of the treatment technology. If the benchscale pilot study shows that the chemical fixation process is successful in rendering the sandblasting grit non-hazardous, the full-scale treatment of the sandblasting grit will be performed in the field at HPA.

In section 101 (23) and (24) of the Comprehensive Environmental Response, Compensation and Liability Act, as amended by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA), the terms "removal" and "remedial" are defined as any actions necessary to monitor, assess and evaluate the release or threat of release of a hazardous substance, as well as the disposal of removed material, or the actions necessary to prevent, minimize, or mitigate the damage to the public health and welfare or to the environment.

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We consider the proposed research program including ultimate disposal for the sandblasting grit to be a Time-Critical Removal Action. Section 121(e) of CERCLA provides that:

> No Federal, State, or local permit shall be required for the portion of any removal or remedial action conducted entirely on-site, where such remedial action is selected and carried out in compliance with this section.

Therefore, we will not be applying for any treatment permits to conduct our proposed research program, however we will coordinate closely with all concerned regulatory agencies to assure that our activities satisfy any environmental protection standards. We will also be developing an Engineering Evaluation/Cost Analyses (EE/CA) report and Action Memorandum for Time-Critical Removal Actions in order to meet the substantive requirements of federal and state laws.

Enclosure (1) describes our proposed research program and is provided for your information. We plan to begin our benchscale pilot study in July 1988. We will send our draft EE/CA to you for review and comment. Questions regarding this matter can be directed to Commander, Western Division, Naval Facilities Engineering Command (Attn: Mr. Alex E. Dong, Code 1146, (415) 877-7502).

Sincerely,

P. W. DRENNON
CAPTAIN, CEC, USN
COMMANDER

Encl:
(1) Proposed Research on Evaluation of Corrosion Control Waste Treatment Method, May 11, 1988

Copy to:
Department of Health Services, Sacramento (Attn: Fred Tornature)
Environmental Protection Agency (Attn: Jerry Clifford)
Regional Water Quality Control Board (Attn: Roger James)
Bay Area Air Quality Management District (Attn: Scott Lutz)
Department of Fish and Game (Attn: Mike Rugg)
Fish and Wildlife Service (Attn: Don Palawski)
National Oceanic & Atmospheric Administration (Attn: Sharon Christopherson)

Blind copy to:
COMNAVBASE San Francisco (Attn: Capt. Krumm)
NAVSTA Treasure Island, Hunters Point Annex (Attn: Kam Tung)
Harding Lawson Associates (Attn: Lisa Teague)
1146, 1146CL, 1146GB, 1146RS, 1146KN, 09C5

WRITER: C. Lee/1146CL/7502
TYPIST: C. Lee/23 Jun 88/Ser 3562h
FILE: HP/DOHS

PROPOSED RESEARCH PROGRAM

PROPOSAL NO. 943-M-5020RRR

on

EVALUATION OF CORROSION CONTROL WASTE TREATMENT METHOD

to

NAVAL CIVIL ENGINEERING LABORATORY

May 11, 1988

BATTELLE
Columbus Division
505 King Avenue
Columbus, Ohio 43201

PROPOSED RESEARCH

on

EVALUATION OF CORROSION CONTROL
WASTE TREATMENT METHOD

to

NAVAL CIVIL ENGINEERING LABORATORY

from

BATTELLE COLUMBUS DIVISION

May 11, 1988

INTRODUCTION

The Navy is required by the Comprehensive Environmental Response Compensation and Liability Act and Superfund Amendments and Reauthorization Act (CERCLA), and the Resource Conservation and Recovery Act (RCRA) to clean up hazardous substances that have been released in the past and to minimize the amount of hazardous wastes that are currently produced. These laws further provide for research, development, and demonstration of methods to clean up and reduce the toxicity of hazardous substances in the environment. As part of the Navy's Installation Restoration and Hazardous Waste Minimization programs, this proposed activity will result in the chemical fixation of corrosion control waste containing toxic heavy metals through a field demonstration study at Naval Station, Treasure Island, Hunters Point Annex, California.

We intend for this proposed activity to be funded as a Special Task through the Contract (DLA900-83-C-1744) for the operation of the Metals and Ceramics Information Center (MCIC), managed by Battelle Columbus Division. The primary purpose of this proposed activity is to evaluate the effectiveness of treating corrosion control waste using a chemical fixation process to render it nonhazardous under Environmental Protection Agency and State of California Hazardous Waste rules and regulations. Sandblasting grit contaminated with toxic heavy metals from corrosion control operations at Hunters Point Annex will be sampled and treated to determine the effectiveness of this methodology.

This activity will directly support the mission of the MCIC through the collection, analysis, appraisal, and summary of newly developed scientific and technical information and data on the corrosion of ship metals and metal alloys and methods of protection, including the application and maintenance of coatings. Because cleaning by-products frequently contain elevated concentrations of toxic and hazardous heavy metals, it is necessary to take special measures in their disposal. This proposed activity will assess an alternative coating and cleaning technology for stabilizing the heavy metals in the ship metal corrosion product material so that it may be properly disposed of, thereby minimizing any possible adverse environmental effects. The result will be a demonstration to render waste materials from Naval corrosion control operations nonhazardous.

BACKGROUND

From 1976 to 1986, the Navy leased most of the Naval Station, Treasure Island, Hunters Point Annex to Triple A Machine Shop, which operated it as a commercial ship repair facility. Triple A's shipyard operations has resulted in the deposition of piles of waste sandblasting grit from corrosion control operations on the Bay Fill area of the Shipyard. Approximately 3,000 cubic yards of waste sandblasting grit are present at the facility. The waste is similar to waste sandblasting grit generated by Navy shipyards.

Four randomly selected samples were taken of the waste sandblasting grit and analyzed for toxic heavy metals per California Hazardous Waste Law and found to contain hazardous levels of soluble copper and lead. These samples were then treated by McLaughlin Enterprises Inc.'s silicate-based proprietary chemical fixation process to create an "artificial clay" that would prevent the toxic heavy metals from leaching from the samples and render them nonhazardous. Results of the post-treatment sample analysis showed that the treated samples would be considered nonhazardous by the State of California and Federal Environmental Protection Agency (EPA).

The California Department of Health Services (DOHS) has indicated in their December 28, 1987 letter to WESTDIV that chemical fixation prior to

disposal as a nonhazardous waste can be a viable and effective alternative for reducing the solubilities of heavy metals in such waste to levels below the California Soluble Threshold Limit Concentration (STLC) levels.

PROPOSED RESEARCH PROGRAM

Battelle proposes to carry out this research program in three sequential phases, as described below. The objective is to quantify the initial level of toxic heavy metals in the waste sandblasting grit, treat it using McLaughlin Enterprises, Inc's proprietary chemical fixation process, quantify the level of soluble toxic heavy metals in leachates from the treated sandblasting grit, and dispose of the treated grit in accordance with federal, state, and local regulations. Proposed deliverables, milestones, staffing, and costs are presented after this section on the proposed research program.

Coordination with Regulatory Agencies

This demonstration project shall comply with CERCLA, NCP (National Contingency Plan), and state and local laws and regulations and be consistent with regulatory agency guidelines. The Navy (WESTDIV) shall be the focal point for coordination with the regulatory agencies. Any dealings with the regulatory agencies shall be through WESTDIV and Naval Station, Treasure Island, Hunters Point Annex.

Phase I

Permit and Removal Requirements

The proposed stabilization contractor (McLaughlin Enterprises, Inc.) is responsible for drawing up the necessary review package including any permits, if necessary, relevant to the proposed stabilization demonstration for federal, state, and local agencies for the operation of the treatment process at Hunters Point. These are required prior to the onset of the Phase II field demonstration and clean-up activities. This

demonstration program shall comply with removal action requirements under CERCLA and NCP. One specific requirement is the development of an Engineering Evaluations/Cost Analyses (EE/CA) report, which will discuss the proposed waste stabilization action in terms of technical feasibility and effectiveness, cost, engineering options, and protection of public health and the environment. This EE/CA report and an associated Action Memorandum will be prepared by Battelle in draft form at the conclusion of Phase I and prior to the commencement of Phase II, submitted by the Navy to the California DOHS, the Environmental Protection Agency, the Regional Water Quality Control Board, and the Bay Area Air Quality Management District, and other interested parties for review and comment, and finalized at the conclusion of Phase III. See the Reports and Deliverables section below.

Characterization of the Untreated Waste

Samples of the untreated waste will be obtained by Battelle and chemically analyzed to determine the initial levels of heavy metal contamination and to provide a baseline for the later evaluations of the effectiveness of the treatment process. Approximately 12-24 samples of the waste will be obtained and analyzed for heavy metals and soluble toxic heavy metals using State of California Soluble Threshold Limit Concentration (STLC) and Total Threshold Limit Concentration (TTLC) testing methodologies. Actual numbers of samples to be analyzed, quality control measures, and types of analyses will be determined in conjunction with California Department of Health Services. All samples will be collected and preserved according to standard methods. Sampling, preservation, and analytical methods (including which metals will be analyzed) will be described in the Sampling and Analysis Plan and shall comply with the requirements of the EPA and the California DOHS, as per Administrative Title 22. STLC and TTLC testing and associated chemical analyses will be provided by a laboratory approved by the State of California for the appropriate tests or analyses. Chain-of-custody sample handling will be employed for all samples.

Bench Scale Pilot Testing

Prior to initiation of full-scale treatment of the waste sandblasting grit in the field, the stabilization contractor will perform a laboratory treatability study to determine the types and quantity of chemicals to be used to treat the waste and also to demonstrate the effectiveness of the treatment technology. Appropriate state, local, EPA, Navy, and/or contract personnel will be permitted to witness the laboratory demonstration on-site if desired. It is anticipated that approximately 12 waste samples identified as having relatively elevated heavy metal concentrations (as shown by the above TTLC analyses) will be subjected to stabilization using the proprietary McLaughlin process. An appropriate group of the treated samples will be tested using TTLC and STLC methodology to demonstrate the effectiveness of the treatment. Two additional tests will be also be conducted. These will be the EPA Extraction Procedure (EP) Toxicity test (SW-846 Method 1310) and the Multiple Extraction Procedure (SW-846 Method 1320). The latter test simulates the long-term leaching characteristics of the treated waste, after repeated flushing with synthetic precipitation. The results of the Bench-Scale Pilot Study will be documented in the draft EE/CA report, which will be provided to the Government.

Phase II

Treatment of Waste

After the benchscale pilot testing conducted in Phase I has been shown to be acceptable, then all waste sandblasting grit on-site (approximately 3,000 cubic yards) will be treated by the proprietary McLaughlin Enterprises Inc. chemical fixation process, subject to the conditions imposed by the State of California and the EPA. The waste will be treated so it may be disposed off-site as a solid nonhazardous waste per State of California and EPA criteria. Prior to the Phase II field demonstration, McLaughlin Enterprises, Inc. will obtain a letter of intent to accept the treated waste for disposal from a local Class III landfill

operator. The Sampling and Analysis and Clean-up and Disposal Plans shall also be completed prior to the onset of Phase II.

The treatment process should not produce any objectionable odors or emissions. The waste sandblasting grit shall be kept covered prior to processing to prevent groundwater contamination, surface run-off, and/or dispersion by the wind. The treated waste shall be stored on plastic and covered with plastic until shown to be nonhazardous by post-treatment testing. At this point the treated waste shall be trucked off-site for permanent disposal in a Class III landfill. The contractor shall not add any material to the waste that would make it a hazardous waste under State of California or EPA criteria.

Characterization of the Treated Waste

Samples of the treated waste will be obtained to determine the effectiveness of the treatment process. A minimum of 2 different sampling and analysis events are planned. The first will take place during the first few days of waste treatment in the field. A limited number of treated waste samples will be collected and sent to a certified analytical laboratory in the state of California for STLC and TTLC testing to ensure that the stabilization process is working satisfactorily in the field and that the treated waste will be classified nonhazardous by state and federal laws and regulations. If the results of this analysis indicate that the waste is not being stabilized satisfactorily, then the stabilization contractor will modify his process and retreat all of the improperly stabilized waste. Sampling and analysis will be repeated until it is shown that the waste has been satisfactorily stabilized.

The second major sampling and analysis event will be the posttreatment sampling and analysis program. This program will be statistically designed to maximize the generalization of the results from the subset of samples tested to the entire population of treated sandblasting waste. Proper sample collection, storage, preservation, quality assurance/quality control (interlaboratory replicates, spiked samples, etc.), and chain-of-custody procedures will be used at all times.

Appropriate state and federal officials will be consulted for their recommendations.

Numbers of samples to be tested will be determined in consultation with California DOHS staff and in accordance with applicable EPA requirements. For costing purposes it has been assumed that the following numbers and types of analyses would be necessary:

- 40 samples analyzed using State of California TTLC methodology. It has also been assumed that it will be necessary to analyze for only those metals that were identified in Phase I as exceeding TTLC standards (i. e., copper and lead);
- 40 samples analyzed using State of California STLC methodology. Again analyze for only those metals that have the potential of exceeding STLC standards based on the results of the TTLC testing;
- 24 samples using the EP Toxicity test
- 12 samples using the Multiple Extraction Procedure (MEP) test. This test simulates repetitive precipitation by acid rain and assesses the stability of the waste form and degree of metal stabilization as free alkali is flushed from the stabilized waste.

STLC and TTLC analyses will be provided by a laboratory approved by the State of California for hazardous waste toxic heavy metal analysis. EP Toxicity and MEP tests will be performed at Battelle, with the metals analysis portion of these activities likely being subcontracted to an approved analytical laboratory.

At the conclusion of the field treatment, soil samples will be collected by Battelle from the areas where the untreated sandblasting waste was stored and treated to ensure that all the waste was treated by the stabilization contractor and that hazardous materials have not been spilled by the stabilization contractor at the site. Approximately 10 soil samples will be obtained and analyzed for the major metals present in the sandblasting grit and for any hazardous materials used by the contractor to treat the waste. If the results of this sampling indicate that untreated sandblasting grit remains at the site, then the stabilization contractor will be responsible for providing additional treatment of the waste or to dispose of it as hazardous waste. If the results of the sampling indicate that hazardous material has been used by the stabilization contractor and has been spilled at the site or is present in the treated waste, then the

stabilization contractor will be responsible for cleaning up the material or the site to background levels.

Phase III

Disposal and Clean-up of Treated Waste

After the waste has been satisfactorily stabilized, it will be disposed as nonhazardous waste in a Class III landfill. Details will be developed during Phase I and described in the Clean-up and Disposal Plan, as described in the Reports and Deliverables section below.

REPORTS AND DELIVERABLES

Progress Reports

Battelle will provide the Contracting Officer with a written monthly progress report at 30 day intervals from the contract award date, in the Contractor's format. The reports should summarize actions to date, problems encountered and their solutions, and pertinent observations.

Health and Safety Plan

The Contracting Officer shall be provided with a draft Health & Safety Plan 30 days after contract award. The plan shall identify hazardous materials that may be used or encountered on-site, outline safety practices and procedures to be used by the stabilization contractor's employees, provide for the training of employees, list appropriate safety equipment available to the employees, identify the responsibilities of the Health and Safety Manager, Project Managers, and staff involved in hazardous material management situations, and outline the steps to be taken should a hazardous materials release or incident occur. The Plan shall conform to Department of Navy, OSHA, EPA, and State of California rules and regulations. Government comments on the draft plan will be addressed in the final plan.

Sampling and Analysis Plan

Battelle shall develop a plan for the collection and analysis of waste, treated waste, and soil samples prior to the onset of any sampling or analysis activities. The purpose of this plan will be to ensure the quality and statistical validity of the sampling and analysis program. The plan shall identify the following types of information:

- Numbers of samples to be analyzed and sample locations, including statistical design
- Types of analyses to be conducted
- Quality assurance/quality control requirements, including sample collection, preservation, and storage procedures, chain-of-custody requirements, and numbers of replicates and spiked samples.

The plan shall be developed in consultation with cognizant California DOHS and federal EPA officials.

Clean-up and Disposal Plan

Prior to the onset of Phase II, Battelle shall prepare a brief (few page) report that shall describe the plans for disposing of the treated sandblasting grit as nonhazardous waste. Details, such as the location of the landfill, the numbers of truckloads required, the transportation route, and the timing of the disposal action shall be included. This report shall be prepared at the same time as the Sampling and Analysis Plan.

Clean-up Report

Battelle shall prepare a report, for submittal to appropriate regulatory agencies, documenting the treatment and disposal activities. The report shall contain at a minimum results of the chemical analyses of untreated and treated waste, a description of the treatment and disposal process, a chronology of events, and other information required by the regulatory agencies. The final report shall be in accordance with Government comments on the draft report.

Engineering Evaluations/Cost Analyses Report and Action Memorandum

The Contractor shall prepare a Engineering Evaluations/Cost Analyses (EE/CA) report; in accordance with CERCLA, NCP, and EPA requirements and format for a Time-Critical Removal Action. This report shall discuss the proposed waste stabilization and disposal action in terms of technical feasibility and effectiveness, cost, engineering options, and protection of public health and the environment. Also discussed will be: (a) a comparison of the results, in terms of treatment effectiveness, of the bench-scale testing with those from the actual field treatment; (b) a discussion and comparison of disposal options in terms of cost-effectiveness; (c) a comparison of the predicted amounts of chemicals to be used with the actual amounts that it took to treat the entire 3,000 cubic yards of waste; (d) data on the long-term stability of the treated waste (MEP test); (e) process design parameters; and (f) the general applicability of the process to stabilizing other Navy waste sandblasting grit.

Battelle shall prepare an Action Memorandum that will document the scope of the planned removal action. The Action Memorandum shall include, at a minimum:

- Purpose of the action
- Background of the site setting
- Description of the threat or potential threat posed by the site, including a determination of the imminent and substantial endangerment (if any) as required by the NCP
- Any current or previous actions to abate the threat
- Time frame in which the response must be conducted
- Relationship of the removal action to any on-going long-term remedial activities
- Estimated cost of the project.

The EE/CA report and Action Memorandum shall be prepared in draft form at the conclusion of Phase I activities and prior to the commencement of Phase II, and submitted by the Navy to the federal EPA, California DOHS, Regional Water Quality Control Board, and Bay Area Air Quality Management District and other interested parties for a 45-day review period. Phase II

clean-up and demonstration activities will not commence until the draft EE/CA report and Action Memorandum have been properly reviewed. The EE/CA report and Action Memorandum will be finalized at the conclusion of Phase III.

Techdata Sheet

The contractor shall prepare a Techdata Sheet summarizing the information contained in the Clean-up and EE/CA reports described above. The Techdata Sheet shall describe the applicability of the process, the components of the process, and the benefits of the process. The document shall be approximately 3 pages long and include descriptive photographs and figures and be written in an easy to read form. The Contracting Officer will provide an example of the format prior to its initiation.

MILESTONES

Milestones	Delivery Dates
Progress Reports	Forty (40) days after contract award date and at thirty (30) day intervals thereafter
Draft Health and Safety Plan	Thirty (30) days after contract award
Final Health and Safety Plan	Twenty (20) days after receipt of Government comments
Draft Clean-up and Disposal Plan	Thirty (30) days after contract award
Final Clean-up and Disposal Plan	Twenty (20) days after receipt of Government comments
Draft Sampling and Analysis Plan	Prior to the onset of the Phase I Laboratory benchmarking activities
Final Sampling and Analysis Plan	Within fifteen (15) days after receipt of review comments on the Draft Plan
Draft EE/CA Report and Action Memorandum	At least 45 days prior to the onset of the Phase II field demonstration
Letter of intent from Class III landfill to accept treated waste for disposal	Prior to onset of Phase II field demonstration
Necessary permits or variances (if any)	Prior to onset of Phase II field demonstration
Completion of Waste Treatment and Disposal	One hundred and twenty (120) days after contract award
Final EE/CA Report	One hundred and fifty (150) days after contract award
Draft Site Clean-up Report	One hundred and fifty (150) days after contract award
Final Site Clean-up Report	Thirty (30) days after receipt of Government comments
Draft Techdata Sheet	One hundred and eighty (180) days after contract award
Final Techdata Sheet	Thirty (30) days after receipt of Government comments

PROPOSED STAFFING AND ASSIGNMENTS

This proposal covers the activities of Battelle, which will provide program coordination, and McLaughlin Enterprises, Inc., which is the proposed waste stabilization contractor. Battelle's principal contribution will be to provide a testing, monitoring, and reporting function. Battelle's main responsibilities will be to: (a) prepare the Sampling and Analysis Plan, the Clean-up and Disposal Plan, the Clean-up Report, the EE/CA Report and Action Memorandum, the Techdata Report, and the Progress Reports; (b) conduct the EP Toxicity and MEP tests (portions of the analytical work associated with these tests may be subcontracted to suitably qualified laboratories); (c) collect untreated waste samples and provide chain-of-custody for the untreated and treated waste samples that are to be analyzed and tested during the course of this program; (d) oversee the entire operation and coordinate the activities of the stabilization contractor.

The overall responsibility for this special task will reside with Mr. Harold Mindlin, Program Manager of the MCIC. Dr. Jeffrey L. Means will serve as Principal Investigator and will coordinate all project work. A recent biosketch is attached. Battelle will exert its best efforts in monitoring and documenting the stabilization and disposal demonstration but cannot guarantee the effectiveness of the stabilization process.

The primary responsibilities of the stabilization contractor (McLaughlin Enterprises, Inc.) will be as follows: (a) obtain any necessary permits; (b) benchscale demonstration (Phase I) of the reaction effectiveness and reporting the results thereof; (c) treatment of all of the sandblasting grit waste at Hunters Point (approximately 3,000 cubic yards) to make it nonhazardous by code and arrange for its transport and final disposal in a Class III landfill; (d) preparation of the Health and Safety Plan; (e) pay for the costs of approximately 48 TTLC and 26 STLC analyses on untreated and treated waste -- these analyses will be conducted by an analytical laboratory with the appropriate State of California analytical certifications; and (f) provide input to Battelle on the preparation of the Clean-up Report, EE/CA Report and Action Memorandum, Progress Reports, and Techdata Sheet. McLaughlin Enterprises, Inc., Mr. William J. McLaughlin,

President, is a waste stabilization contractor operating out of Claremont, California. A copy of their proposal to Battelle for this stabilization and disposal demonstration at Hunters Point is attached.

TIME AND COSTS

Total estimated costs for all three phases of this activity are $487,748, including a fixed fee of $33,575. The total estimated duration is 210 days, assuming a 20-day Government review period for the last deliverable, the Techdata Sheet. A start date of June 1, 1988 and end date of December 31, 1988 are suggested. Detailed cost categories are shown on the attached Optional Form 60 and Standard Form 1411. Included are estimated costs and fee for both Battelle (including 6 round trips for one person by air to San Francisco and approximately $20,000 for STLC and TTLC analyses) and McLaughlin Enterprises, Inc. (including $60,000 for disposal of the treated waste in a Class III landfill, which McLaughlin Enterprises will subcontract to a suitably qualified business).

Analytical costs have been estimated and may change, depending on the analytical requirements imposed by the California DOHS and other cognizant authorities during the course of the study. The above total estimated costs encompass the analysis of approximately 150-200 samples for either STLC's, TTLC's, EP Toxicity leach tests, or MEP tests. It has also been assumed that additional analyses will be provided in the course of this program by another analytical laboratory that has a contract with the NCEL. Any costs associated with these analyses would be paid directly by NCEL and are not included in the above estimate.

It is recommended that this effort be funded as a Special Task through the Contract (DLA900-83-C-1744) for the operation of the Metals and Ceramics Information Center. It is assumed that the terms and conditions of that contract will apply; Battelle reserves the right to negotiate any changes thereto.

This contract is administered through the Defense Electronics Supply Center; questions regarding the transfer of funds should be directed to Ms. Sharon Rodgers/DESC-PSC-338, telephone (513) 296-5200, (Autovon 986-5344).

ATTACHMENT 1

MCIC FUNDING INSTRUCTIONS

Metals and Ceramics Information Center
A DoD Information Analysis Center

Battelle
Columbus Division
505 King Avenue
Columbus, Ohio 43201-2693
Phone (614) 424-5000

HOW TO FUND SPECIAL TASKS WITH THE METALS AND CERAMICS INFORMATION CENTER

The Metals and Ceramics Information Center (MCIC) is a full-service Department of Defense Information Analysis Center (IAC) operated by the Battelle Columbus Division's Materials Information Program Office under contract to the Defense Logistics Agency (Contract No. DLA900-83-C-1744).

In addition to the basic task of collecting, evaluating, and disseminating timely information on the characterization and utilization of advanced metals and ceramics, MCIC provides specialized services to other sponsoring government agencies, such as:

Army Materials Technology Laboratory
Air Force Wright Aeronautical Laboratory
Naval Sea Systems Command
National Aeronautics and Space Administration
Departments of Commerce, Transportation, and Energy
Defense Advanced Research Projects Agency
Strategic Defense Initiative Organization.

These services cover separate, defined special tasks ranging from the technical and logistics support of Conferences to the critical review of new technologies to the establishment and operation of specialized numeric databases. As a full-service IAC, MCIC utilizes the Battelle research staff to provide specialized technical personnel to undertake and support these tasks.

It is important that any proposals submitted for funding under the MCIC contract be directly related to the scope of the Center "*... the collecting, review, analysis, appraisal, and summary of the available scientific and technical information and data on the materials within the scope...*". This includes "*... design characteristics, application, processing, fabrication, quality control, environmental effects, test methods, sources, suppliers and specifications...*". The materials are metals, metal alloys, ceramic materials, and coatings used in critical structural applications and/or stringent environments.

If a Government agency is interested in utilizing the services of the Center, it may be advantageous to support that use through funds transferred into the MCIC contract via an Interdepartmental Funding Authorization. This is a particularly practical method when quick response is desired on a special task of substantial effort (e.g., exceeding 100 professional man-hours), or wherein an agency of the U.S. Government may want to make MCIC's services available to several of its facilities.

Harold Mindlin, Program Manger, of MCIC, should be notified of the action by the organization wishing to transfer the funds. He can be reached at the above address or by calling (614) 424-4425.

He should be advised of the general subject of interest, as well as target dates, principal tasks (insofar as they can be foreseen), magnitude of funding, and other considerations relating to the potential client's requirements. A technical and cost proposal will be submitted to the agency requesting the effort with copies to the PCO and Contracting Officer's Technical Representative (COTR).

(OVER)

ATTACHMENT 2

SUBCONTRACTOR
(McLAUGHLIN ENTERPRISES, INC.)
COST PROPOSAL

STATEMENT OF WORK

McLaughlin Enterprises, Inc. will, as part of this contract, conduct an applied research effort related to the treatment of sandblast residue to make it non-hazardous.

The effort will involve:

1. Review of the data base to determine treatment technology appropriate for treatment of sandblast residues (that at Hunters Point will be considered standard).

2. Benchscale demonstration of the reaction effectiveness.

3. Preparation of a Health and Safety Plan applicable to the Hunter's Point site.

4. Treatment of the approximately 3,000 cubic yards of sandblast residual to insure all metals of interest had soluble components below their respective STLC's.

5. A series of reports will be required as deliverable items and milestones. These are:

a. Progress Report	Initial due 30 days after contract award date and every 30 days thereafter.
b. Draft Health and Safety Plan	Twenty (20) days after contract award.
c. Final Health and Safety Plan	Twenty (20) days after receipt of modifications in draft.
d. Completion of Waste Treatment	One hundred days after contract award.
e. Draft of Site Cleanup Report	One hundred thirty days after contract award.
f. Final Draft of Site Cleanup Report	Twenty days after receipt of Battelle comments.
g. Input to Technology Transfer. Documents	One hundred thirty days after contract award.
h. Review of Technology Transfer Documents	Twenty days after their receipt.

COST JUSTIFICATION

Labor: Class 1 (Foreman) 620 Hours at $25/hr.		$ 15,500
Class 2 (Workers) 1240 Hours at $18/hr.		22,320
Direct Labor Overhead		20,798
Per diem ($40/day x 6 men x 40 days)		9,600
Chemicals:		
Chemical #1 180,000 lbs. at $0.30/lb.	$54,000	
Chemical #2 150,000 lbs. at $0.04/lb.	6,000	60,000
Hauling & Disposal		60,000
		$188,218
G & A (35%)*		80,267
		$268,485
Fee (10%)*		20,848
		$289,333

* G & A and Profit were not applied to Hauling and Disposal Costs in return for protection against increases from the $20 per ton costs.

6. An analysis plan of the untreated and treated sandblast sand shall be developed in conjunction with Battelle. It is anticipated that 12 samples will be checked for total content of all metals of possible concern, 36 for total content of the metals found with the first 12 tests to have sufficiently high concentrations to be of concern, and 26 California Waste Extraction Tests. All work is to be done in laboratory certified by the California Department of Health Services.

7. Removal of the treated soil and its deposit in a local landfill.

CONTRACT PRICING PROPOSAL COVER SHEET

1. SOLICITATION/CONTRACT/MODIFICATION NO. DAKF04-88-P-0150

FORM APPROVED OMB NO. 3090-0118

NOTE: This form is used in contract actions if submission of cost or pricing data is required. *(See FAR 15.804-6(b))*

2. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*

McLaughlin Enterprises, Inc.
.O. Box 396
Claremont, CA 91711

3A. NAME AND TITLE OF OFFEROR'S POINT OF CONTACT: W.J. McLaughlin

3B. TELEPHONE NO.: (714) 624-4010

4. TYPE OF CONTRACT ACTION *(Check)*

- [X] A. NEW CONTRACT
- [ ] B. CHANGE ORDER
- [ ] C. PRICE REVISION/ REDETERMINATION
- [ ] D. LETTER CONTRACT
- [ ] E. UNPRICED ORDER
- [ ] F. OTHER *(Specify)*

5. TYPE OF CONTRACT *(Check)*

- [X] FFP
- [ ] FPI
- [ ] CPFF
- [ ] OTHER *(Specify)*
- [ ] CPIF
- [ ] CPAF

6. PROPOSED COST *(A+B=C)*

A. COST	B. PROFIT/FEE	C. TOTAL
$268,485.	$ 20,848.	$289,333.

7. PLACE(S) AND PERIOD(S) OF PERFORMANCE

Hunter's Point and Claremont, CA - Mid 1988

8. List and reference the identification, quantity and total price proposed for each contract line item. A line item cost breakdown supporting this recap is required unless otherwise specified by the Contracting Officer *(Continue on reverse, and then on plain paper, if necessary. Use same headings.)*

A. LINE ITEM NO.	B. IDENTIFICATION	C. QUANTITY	D. TOTAL PRICE	E. REF.
001	Health and Safety Plan	1	20,000	
002	Soil Treatment	3000 yds^3	201,333	
003	Cleanup Report	1	5,000	
004	Technology Transfer	1	3,000	
005	Haul Away and Deposit Fees	1	60,000	

9. PROVIDE NAME, ADDRESS, AND TELEPHONE NUMBER FOR THE FOLLOWING *(If available)*

A. CONTRACT ADMINISTRATION OFFICE

Defense Contract Administration Services
609 N. Lemon Ave.
Ontario, CA 91761 714/984-1703

B. AUDIT OFFICE

Defense Contract Audit Agency
2934 E. Garvey Ave., Ste. 221
West Covina, CA 91791 818/967-7521

10. WILL YOU REQUIRE THE USE OF ANY GOVERNMENT PROPERTY IN THE PERFORMANCE OF THIS WORK? *(If "Yes," identify)*

[X] YES [ ] NO

Water
Electricity

11A. DO YOU REQUIRE GOVERNMENT CONTRACT FINANCING TO PERFORM THIS PROPOSED CONTRACT? *(If "Yes," complete Item 11B)*

[X] YES [ ] NO

11B. TYPE OF FINANCING *(if any)*

- [ ] ADVANCE PAYMENTS
- [X] PROGRESS PAYMENTS
- [ ] GUARANTEED LOANS

12. HAVE YOU BEEN AWARDED ANY CONTRACTS OR SUBCONTRACTS FOR THE SAME OR SIMILAR ITEMS WITHIN THE PAST 3 YEARS? *(If "Yes," identify item(s), customer(s) and contract number(s))*

[X] YES [ ] NO

U.S. Army National Training Center

13. IS THIS PROPOSAL CONSISTENT WITH YOUR ESTABLISHED ESTIMATING AND ACCOUNTING PRACTICES AND PROCEDURES AND FAR PART 31 COST PRINCIPLES? *(If "No," explain)*

[X] YES [ ] NO

14. COST ACCOUNTING STANDARDS BOARD (CASB) DATA *(Public Law 91-379 as amended and FAR PART 30)*

A. WILL THIS CONTRACT ACTION BE SUBJECT TO CASB REGULATIONS? *(If "No," explain in proposal)*

[ ] YES [X] NO

B. HAVE YOU SUBMITTED A CASB DISCLOSURE STATEMENT *(CASB DS-1 or 2)? (If "Yes," specify in proposal the office to which submitted and if determined to be adequate)*

[ ] YES [X] NO

C. HAVE YOU BEEN NOTIFIED THAT YOU ARE OR MAY BE IN NON-COMPLIANCE WITH YOUR DISCLOSURE STATEMENT OR COST ACCOUNTING STANDARDS? *(If "Yes," explain in proposal)*

[ ] YES [X] NO

D. IS ANY ASPECT OF THIS PROPOSAL INCONSISTENT WITH YOUR DISCLOSED PRACTICES OR APPLICABLE COST ACCOUNTING STANDARDS? *(If "Yes," explain in proposal)*

[ ] YES [X] NO

This proposal is submitted in response to the RFP contract, modification, etc in Item 1 and reflects our best estimates and/or actual costs as of this date.

15. NAME AND TITLE *(Type)*

.J. McLaughlin, President

16. NAME OF FIRM

McLaughlin Enterprises, Inc.

17. SIGNATURE

W. J. McLaughlin

18. DATE OF SUBMISSION

6 May 1988

NSN 7540-01-142-9845

1411-101

STANDARD FORM 1411 (10-83)
Prescribed by GSA
FAR (48 CFR) 53.215-2(c)

U.S. GOVERNMENT PRINTING OFFICE

ATTACHMENT 3

BIOSKETCH OF
PROPOSED PRINCIPAL INVESTIGATOR,

Jeffrey L. Means

JEFFREY L. MEANS

Associate Section Manager,
Environmental Physics and Chemistry Section

Education

B.S., Geology (1974) Bucknell University
M.A., Geology (1976) Princeton University
Ph.D., Geochemistry (1981) Princeton University

Qualifications

Dr. Means has participated in a wide range of chemical and geochemical research studies, but his primary interests are in the area of aqueous geochemistry. His dissertation research at Princeton dealt with radionuclide migration and adsorption from shallow intermediate-level radioactive waste disposal sites at Oak Ridge National Laboratory and with the hydrogeochemistry of the Pine Barrens swamps of southern New Jersey. Dr. Means' research at Oak Ridge emphasized the importance of synthetic complexing agents employed in decontamination operations in contributing to radionuclide leakages. Dr. Means also demonstrated that manganese oxides in shale and soil are strong radionuclide adsorbents. These findings, published in Science and Nature, have had broad implications for the field of radioactive waste disposal.

Since joining Battelle in 1978, Dr. Means has been Principal Investigator of a 7-year program with The Office of Nuclear Waste Isolation to study the organic geochemistry of deep ground waters and to evaluate the significance of natural organic compounds in terms of radionuclide complexation, ground water origin, and petroleum exploration. Dr. Means has served as also Deputy Program Manager for several large task order contracts for government and industrial clients. Dr. Means currently serves as Associate Manager for the Geochemistry and Water Quality Group in the Environmental Physics and Chemistry Section.

Relevant Experience

Biodegradation Protocols. Task Leader on an EPA Study to compare and validate 5 different procedures for evaluating the biodegradability of organic compounds in aqueous geochemical environments.

Copper Chemistry. Coordinated round-robin analytical studies on the precision and accuracy of measurements of soluble copper in natural fresh waters. In a related effort, reviewed the speciation of copper in natural waters.

Scale Formation in Oil Wells. Collected field data and conducted laboratory measurements in support of a study for an industrial client to determine the chemical mechanisms of NaCl precipitation in deep oil wells.

JEFFREY L. MEANS (Continued)

Flue Gas Desulfurization. Evaluated chemical speciation of fluoride in flue gas desulfurization environments, resulting in the identification of aluminum-fluoride species, which has had important ramifications in subsequent corrosion studies.

Borosilicate Glass Leaching. Task Leader for a large program to evaluate the chemical mechanisms of simulated high-level borosilicate glass leaching in simulated ground water. Includes numerous experimental programs, including an evaluation of experimental artifacts, validation of a numerical model for glass dissolution kinetics, effects of glass devitrification on leach rates, and effects of natural organic acids on leach rates of transition metals and transuranics in borosilicate glass.

Spent Fuel/UO_2 Leaching. Conducted long-term experiments examining the dissolution rates of UO_2 and radionuclides in spent fuel in simulated ground water in realistic deep geologic repository geochemical environments. The spent-fuel experiments were conducted in Battelle's Hot Cell Facility.

Professional Recognition and Affiliations

Phelps-Dodge Fellowship, 1976
Harold Dodd Fellow, 1977-78
Listed in: "American Men and Women in Science"
"Who's Who in Technology Today"
"Who's Who in the Midwest"

Selected Publications

Winstead, M. B., Means, J. L., and others, 1975. Relationship of Chemical Structure and Solvent to in vitro Scintigraphic Distribution Patterns of ^{11}C Aminonitriles. J. Nucl. Med. 1049-1957.

Means, J. L., Crerar, D. A., and Duguid, J. O., 1976. Chemical Mechanisms of ^{60}Co Transport in Groundwater from Intermediate Level Liquid Waste Trench 7. ORNL/TM 5348, 38 pp.

Means, J. L., Crerar, D. A., and Amster, J. L., 1977. Application of Gel Filtration Chromatography to Evaluation of Organo-Metallic Interactions in Natural Waters. Limnology and Oceanography 22, 957-965.

Means, J. L., Crerar, D. A., and Duguid, J. O., 1978. Migration of Radioactive Wastes: Radionuclide Mobilization by Complexing Agents. Science 200, 1477-1481.

Means, J. L., Crerar, D. A., Duguid, J. O. and Borcsik, M. P., 1987. Radionuclide Adsorption by Manganese Oxides and Implications for Radioactive Waste Disposal. Nature 274, 44-47.

JEFFREY L. MEANS (Continued)

Recommended chemical treatment procedures to alleviate the scaling problem.

Desalinization of Sea Water. Evaluated chemical additions for inhibiting the flocculation of $CaSO_4$ during desalinization of sea water.

Organic Geochemistry of Deep Ground Water. Principal Investigator of a long-term study with the Office of Nuclear Waste Isolation to characterize the organic geochemistry of deep ground water from potential repository sites in salt and to evaluate the effects of natural organic compounds on radionuclide mobility.

Humic and Fulvic Acid Studies. Characterized and identified humic and fulvic acids in deep ground water from granitic bedrock from the Finnsjön and Sternö areas of Sweden.

Chelating Agents. Developed, based on conditional stability constant theory, a novel formation for the removal of calcium phosphate scale from nuclear reactor secondary cooling environments.

Chelated Radioactive Wastes. Reviewed current nuclear industry practices for the decontamination of nuclear reactors and made recommendations to the Department of Energy for the treatment and disposal of chelated radioactive wastes.

Acid Rain. Studied the chemical equilibria of organic acids in acid rain, particularly the contribution of organic components to acidity.

Accelerated Environmental Testing. Served as Deputy Program Manager on a large environmental testing program on proprietary data relay connectors.

Silica Chemistry. Analytically characterized speciation of dissolved and colloidal silica in power plant make-up water samples.

Polymer Chemistry. Characterized the dissolution characteristics and transformation products of a proprietary co-polymer used in borehole and shaft sealing.

Uranium Mine Tailings. Examined the chemical composition and rheological properties of uranium mine tailings from a New York state storage site.

Environmental Assessment. Assisted the Office of Nuclear Waste Isolation in the preparation of the Environmental Assessments for the salt sites.

Site Characterization Plan. Major contributor to Geochemistry sections of the Site Characterization Plan for the possible radioactive waste repository in bedded salt in Deaf Smith County, Texas.

JEFFREY L. MEANS (Continued)

Means, J. L., Crerar, D. A., Duguid, J. O., and Borcsik, M. P., 1978. Adsorption of Co and Selected Actinides by Manganese and Iron Oxides in Soils and Sediments. Geochimica Cosmochimica Acta 52, 1763-1771.

Crerar, D. A., Knox, G. W., and Means, J. L., 1978. Biogeochemistry of Bog Iron in the New Jersey Pine Barrens. Chemical Geology 24, 111-135.

Means, J. L., and Hastings, D. W., 1979. Status Report on the Importance of Natural Organic Compounds in Groundwater as Radionuclide Mobilizing Agents. ONWI-84, prepared for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, OH.

Means, J. L., Kucak, T., and Crerar, D. A., 1980. Relative Degradation Rates of NTA, EDTA, and DTPA and Environmental Implications. Environmental Pollution (Series B) 1, 45-60.

Means, J. L., 1980. The Importance of Organic Compounds in Ground Water as Radionuclide-Mobilizing Agents. ONWI-231, prepared for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, OH.

Means, J. L, Yuretich, R. E., Crerar, D. A., Kinsman, D. J. J., and Borcsik, M. P., 1981. Hydrogeochemistry of the New Jersey Pine Barrens. New Jersey Geol. Surv. Bulletin 76, 107 pp.

Yuretich, R. E., Crerar, D. A., Kinsman, D. J. J., Means, J. L., and Borcsik, M. P., 1981. Hydrogeochemistry of the New Jersey Coastal Plain I: Major-Element Cycles in Precipitation and River Water. Chemical Geology 33, 1-21.

Means, J. L., Crerar, D. A., Yuretich, R. E., and Borcsik, M. P., 1981. Hydrogeochemistry of the New Jersey Coastal Plain II: Transport and Deposition of Iron, Aluminum, Dissolved Organic Matter, and Selected Trace Elements in Stream, Ground-, and Estuary Water. Chemical Geology 33, 23-44.

Means, J. L., and Anderson, S. J., 1981. Comparison of Five Different Methods for Measuring Biodegradability in Aqueous Environments. Water, Air, and Soil Pollution 16, 301-315.

Means, J. L., and Alexander, C. A., 1981. The Environmental Biogeochemistry of Chelating Agents and Recommendations for the Disposal of Chelated Radioactive Wastes. Nuclear and Chemical Waste Management 2, 183-196.

Means, J. L., 1982. The Organic Geochemistry of Deep Ground Waters. ONWI-268, prepared for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, OH.

Means, J. L., 1982. The Importance of Organic Compounds in Ground Water as Radionuclide-Mobilizing Agents. ONWI-348, prepared for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, OH.

Means, J. L., Maest, A. A., and Crerar, D. A., 1983. The Organic Geochemistry of Deep Groundwaters and Radionuclide Partitioning Experiments under Hydrothermal Conditions. ONWI-448, prepared for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, OH.

Koch, G. H., Thompson, N. G., and Means, J. L., 1984. Trace Elements in Flue-Gas Desulfurization Environments and Their Effects on the Corrosion of Alloys. Proceedings of Corrosion/ 84, Symposium on Materials Evaluation and Environmental Effects on Corrosion in Flue Gas Desulfurization Systems, 273-293.

Means, J. L., and Ferrante, J. G., 1984. Precision of Low-Level Soluble Copper Measurements in Natural Freshwater Systems. Journal of Testing and Evaluation 12, 171-176.

Means, J. L., and Hubbard, N., 1985. The Organic Geochemistry of Deep Ground Waters from the Palo Duro Basin, Texas: Implications for Radionuclide Complexation, Ground Water Origin, and Petroleum Exploration. BMI/ONWI-578, prepared for Battelle Memorial Institute, Office of Nuclear Waste Isolation, Columbus, OH.

Means, J. L., and Spinosa, E. D., 1986. Simulated Nuclear Waste Glass Leaching: Alteration Layer Artifacts Produced by Reprecipitation of Solutes During Cooling. Ceramic Bulletin 65, 780-782.

Means, J. L., Hubbard, N., 1987. Short-chain Aliphatic Acid Anions in Deep Subsurface Brines: A Review of their Origin, Occurrence, Properties, and Importance and New Data on their Distribution and Geochemical Implications in the Palo Duro Basin, Texas. Organic Geochemistry, in press.

Means, J. L., 1987. The Geochemical Characteristics of the Palo Duro Basin, Texas: A Selective Annotated Bibliography of Studies Conducted for the Salt Repository Project through December, 1986. in press.

Markworth, A. J., McCoy, J. K., Means, J. L., and Spinosa, E. D., 1987 The Dissolution and Precipitation of Simulated High-Level Nuclear Waste Glass: A Geochemical Model and Experimental Validation. in preparation.

Means, J. L., Failey, M. P., Stenhouse, M. J., and Kohli, R., 1987. The Leaching Characteristics of Spent Fuel in Simulated Tuff, Basalt, and Brine Groundwaters. in preparation.