N00217.002872
HUNTERS POINT
SSIC NO.5090.3

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105-3901

September 1, 1993

Raymond E. Ramos
Western Division
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, CA 94066-2402

Dear Mr. Ramos:

The U.S. Environmental Protection Agency has reviewed the two treatability study proposals (for soil flushing and biodegradation) for the IR-3 oil reclamation ponds at the Hunters Point Annex Superfund site. Our review and that of our consultant, Bechtel Environmental, Inc., indicates that there are significant problems with these proposals, as presented. Comments from our Risk Reduction Engineering Laboratory and Bechtel are enclosed. We wish to assist you in resolving the issues raised in these comments and would be happy to facilitate contact between the Navy, its contractors and the reviewers. Please call me at (415) 744-2385 to discuss how and when this should happen.

Sincerely,

Roberta Blank

Roberta Blank
Remedial Project Manager

Enclosures (3)

cc: Dave Song, WestDiv
Jim Sullivan, NSTI
Cyrus Shabahari, DTSC
Barbara Smith, RWQCB
Amy Brownell, SFDPH
Ashok Verma, HLA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT
RISK REDUCTION ENGINEERING LABORATORY
CINCINNATI, OHIO 45268

DATE: August 12, 1993

SUBJECT: Technical Review of the Naval Station Treasure Island Hunters Point Annex Treatability Study Work Plan

FROM: Steven I. Safferman
Environmental Engineer
Biosystems Engineering Section
Biosystems Branch
Water and Hazardous Waste Treatment Research Division

TO: Joan Mattox
Physical Scientist
Superfund Support Branch
Superfund Technology Demonstration Division

THRU: Carl L. Potter, Ph.D.
Biological Technology Team Leader
Biosystems Development Section
Biosystems Branch
Water and Hazardous Water Treatment Research Division

In response to your request for a technical review of the Treatability Study Work Plan for the Naval Station Treasure Island Hunters Point Annex, my comments follow.

The main text of the report is little more than a brief site description and a brief summary of EPA guidance documents. The meaning of the few pieces of data provided is very unclear. The Tables and Plates are incomplete (and obviously incorrect for copper) as they do not reference analytical methods, detection limits, nor the number of samples collected. The bulk of the data is evidently for groundwater or floating free product (with soil units) even though the purpose of the document was for *ex situ* soil treatment. The high lead and TPH concentrations in the liquid samples, however, would be an alert to potential difficulties for bioremediation and should be the focus of screening level treatability studies. In addition, the assessment of the accuracy of the detailed schedule provided in Plate 1-5 would be impossible due to the lack of a detailed experimental plan.

The ECOVA Corporation Proposal (Appendix C) also suffers form the lack of details and is also contradictory since the screening study is closer to a poor selection study and the selection study could be easily made into a design study. The screening study should be assessing whether the high lead and TPH content or any other matrix characteristic will effect biodegradation. If the screening level study described in the report is to be used as a selection study, duplication of pans is required and details concerning pan sizes and construction materials, analytical methods, target compounds, and operational procedures are necessary. The logic of examining saturated and unsaturated soil separately and the use of two different nutrient levels is also unclear and should be explained.

Because of the lack of site characterization data and details on the proposed treatability studies, additional comments, beyond those stated above, can not be provided nor would initiation of the studies be recommended until a more comprehensive plan can be developed.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT
RISK REDUCTION ENGINEERING LABORATORY
CINCINNATI, OHIO 45268

REPLY TO:
Releases Control Branch
U. S. EPA (MS-106)
2890 Woodbridge Avenue
Edison, New Jersey 08837-3679

DATE: August 16, 1993

SUBJECT: Technical Assistance: Review of Soil Flushing for Hunters Point, San Francisco, CA

FROM: Uwe Frank
Chemist, Technology Evaluation Section, RCB
Superfund Technology Demonstration Division

TO: Joan Mattox
Physical Scientist, Technical Support Branch
Superfund Technology Demonstration Division

As requested, we have reviewed the "Draft Treatability Study Work Plan, Operable Unit I, Site IR-3, Navel Station Treasure Island, Hunters Point Annex, San Francisco, CA" and comments received from the Region IX ARCS contractor "Bechtel Environmental, Inc." regarding the adequacy of the proposed treatability study for in-situ soil flushing to remediate the subject site.

It is not clear, whether the described technology in section 2.0 of the work plan is actually soil flushing (Bechtel refers to it as in-situ soil washing - see attachment 1) or just ground water extraction with re-injection of heated water containing surfactants. Attachment 2 (plate 2-3) is the schematic from the work plan. Attachments 3 and 4 (see EPA/540/2-91/021 "Engr. Bulletin-In Situ Soil Flushing and EPA/540/2-90/002 "Handbook on In Situ Treatment of Hazardous Waste-Contaminated Soils") are typical schematics for soil flushing systems. Apparently, there is some confusion which needs to be clarified. Is the proposed remedial technology similar to "Pump and Treat" or is it a mis-representation of soil flushing? Consequently, it is imperative that this issue be resolved before any testing is conducted.

If soil flushing is indeed considered as a proposed remedial technology, the following comments apply:

1. In general, soil flushing does not appear to be the most suitable remedial technology for this site. The geology and hydrology described in the work plan present the worst possible conditions for soil flushing. The stratigraphic sequence at IR-3 from top to bottom, is as follows: artificial fill, undifferentiated upper sand deposits, bay mud deposits, undifferentiated sedimentary deposits, and franciscan bedrock. The bedrock is overlain by about 92 feet of undifferentiated sedimentary deposits consisting of consolidated sands and clays. These are overlain by relatively extensive bay mud deposits consisting of soft,

highly organic, plastic clay and silt with interbedded lenses of sand and peat. The bay mud ranges in thickness from 25 to 30 feet at Site IR-3. In some areas of Site IR-3, the bay mud is overlain by poorly graded sands and silty sands designated as the Undifferentiated Upper Sand Deposits, which may be native or hydraulically deposited from dredging operations. Artificial fill covers the bay mud or Undifferentiated Upper Sand Deposits.

Normally, soil flushing is effective on homogeneous strata of coarse sand and gravel. Soils containing clay, silt and organic matter (peat) may not respond well to this technology.

2. The soil permeability is also a key physical parameter for determining the feasibility of using a soil flushing process. The reported hydraulic conductivity values for IR-3 range from 0.01 to 2 feet per day which are only marginally acceptable at best. Soils with low permeability ($K<1.0x10^{-5}$ cm/sec) will limit the ability of flushing fluids to percolate through the soil in a reasonable time frame. Soil flushing is most likely to be effective in permeable soils ($K>1.0 \times 10^{-3}$ cm/sec), but may have limited application to less permeable soils (1.0×10^{-5} cm/sec $<K<1.0 \times 10^{-3}$ cm/sec). Since there can be significant lateral and vertical variability in soil permeability, it is important that field measurements be made using the appropriate methods. In the work plan it is reported that only limited testing could be performed. Since the soils are very heterogeneous at this site, additional testing may be important.

3. The reported groundwater flow is also not very suitable for soil flushing. It is described as complex because of the heterogeneity of the hydraulic properties of the subsurface fill and is influenced by tides, storm drain, sanitary sewer systems, and variations in topography. Consequently, slurry walls or other containment structures may be needed along with hydraulic controls to ensure capture of contaminants and flushing additives. Berms, dikes, or other runoff control methods may also be required. Impermeable membranes may be necessary to limit infiltration of precipitation, which could cause dilution of flushing solutions and loss of hydraulic control.

4. The review by Bechtel and comments regarding deficiencies in the work plan appear appropriate. Although, the plan prepared by Harding Lawson Associates follows the EPA guidelines (described in EPA/540/2-89/058 "Guide for Conducting Treatability Studies Under CERCLA") to a limited extend, key areas are not or only poorly addressed. The EPA guide's suggested organization and content of a treatability study work plan is as follows:

   1. Project Description
   2. Remedial Technology Description
   3. Test Objectives
   4. Experimental Design and Procedures
   5. Equipment and Materials

6. Sampling and Analysis
7. Data Management
8. Data Analysis and Interpretation
9. Health and Safety
10. Residuals Management
11. Community Relations
12. Reports
13. Schedule
14. Management and Staffing
15. Budget

These items should all be addressed in detail.

5. As pointed out in the Bechtel review, a key component lacking in the treatability work plan is a thorough discussion of the proposed methods for data analysis. The pilot-scale field tests (Task 5.0) are even more poorly addressed. Compared with bench-scale testing, pilot-scale testing entails evaluation of the critical parameters at fewer levels but with even greater replication. Because selection of the remedy may be based on the results of these investigations, the work plan should provide a statistically sound experimental design (factorial or fractional factorial). Pilot-scale testing typically involves the use of pilot-plant or field-testing equipment of a configuration similar to that of the full-scale operation unit. If the tests are to be conducted on site, the work plan should describe how the site will be prepared, what utility hookups will be required, and how the equipment will be mobilized. The work plan also should specify the form in which treatment reagents or additives will be delivered and stored. If equipment shakedown is necessary, details should be given in this section.

In summary, clarification is needed regarding the proposed remedial technology. Based on the description of the IR-3 site's geology (soil composition) and hydrology, it is doubtful that if soil flushing is considered, it would be the remedial technology of choice. All unfavorable soil characteristics appear to be present (cited in EPA/540/2-88/004 "Technology Screening Guide for Treatment of CERCLA Soils and Sludges"):

- Variable soil conditions - which results in inconsistent flushing and channeling.
- High organic content (peat) - which results in inhibition of contaminant desorption.
- High clay/silt content - which results in low permeability and reduces percolation.

In addition, the unfavorable site hydrology may present problems as well. The ground-water flow must permit recapture of flushing contaminants and soil flushing fluids.

If you have any questions, please call me on (908) 321-6626.

cc: Michael Gruenfeld

Attachment 1

005 00760

Bechtel

50 Beale Street
San Francisco, CA 94105-1895
Mailing address: P.O. Box 193965
San Francisco, CA 94119-3965

July 19, 1993

Ms. Roberta Blank H-7-5
U.S. EPA Region IX
75 Hawthorne Street
San Francisco, CA 94105

Subject: ARCSWEST Program Contract No. 68-W9-0060
Hunters Point Annex Work Assignment No. 60-05-9PP3
Review of the Navy's Draft Treatability Study Work Plan Operable Unit I, Site IR-3 and the Navy's Draft Treatability Study Work Plan for Treating Subsurface Petroleum Products at Site IR-3 by Biodegradation

Dear Roberta,

As you requested, the Bechtel project team has reviewed the Navy's Draft Treatability Study Work Plan Operable Unit I, Site IR-3 and the Navy's Draft Treatability Study Work Plan for Treating Subsurface Petroleum Products at Site IR-3 by Biodegradation.

Both documents are of poor quality. In situ soil washing is a long shot technology. As such Task 5.0 of the soil washing work plan should be deleted. A separate work plan describing field testing should be prepared, if necessary, after Agency review of the bench-scale test results.

The biodegradation work plan provides an outline of the steps necessary to develop an actual work plan. This document in its current state does not satisfy the requirements of a biotreatability work plan.

Please contact me if you have comments or questions.

Sincerely,

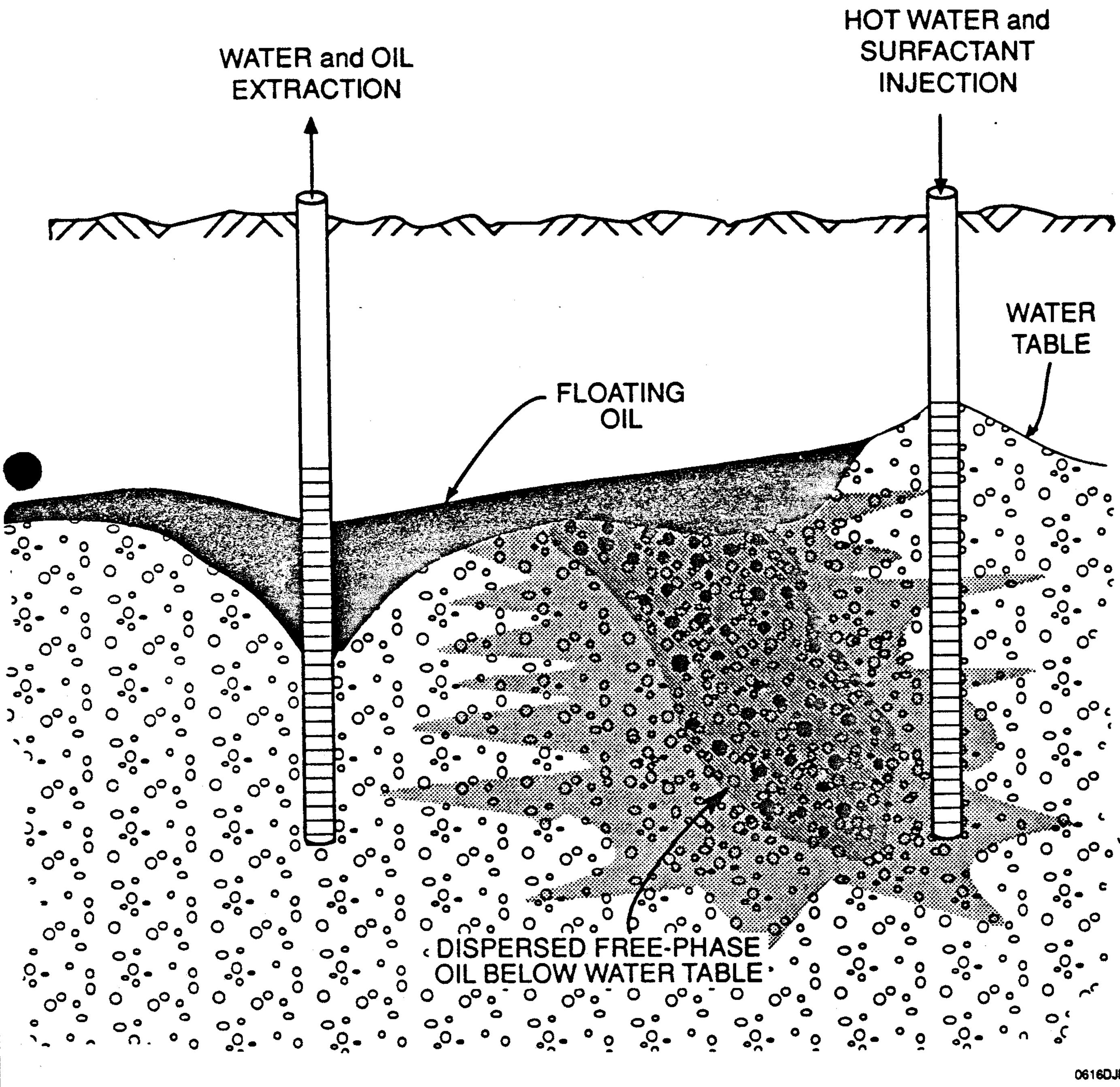
Bart

Richard Draper, Ph.D.
Project Manager
(415) 768-3282

cc: M. Mitguard, EPA
C. Beach, EPA

BECHTEL Bechtel Environmental, Inc.

Attachment 2



Harding Lawson Associates
Engineering and Environmental Services

Schematic of Thermally and Chemically Augmented Oil Recovery
Draft Treatability Study Work Plan
Hunters Point Annex
San Francisco, California

PLATE **2-3**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
DJP	11400 0816	DRS	6/93	

Technology Description

Figure 1 is a general schematic of the soil flushing process [18, p. The flushing fluid is applied (1) to the contaminated soil by subsurface injection wells, shallow infiltration galleries, surface flooding, or above-ground sprayers. The flushing fluid is typically water and may contain additives to improve contaminant removal.

The flushing fluid percolates through the contaminated soil, removing contaminants as it proceeds. Contaminants are mobilized by solubilization into the flushing fluid, formation of emulsions, or through chemical reactions with the flushing fluid [19].

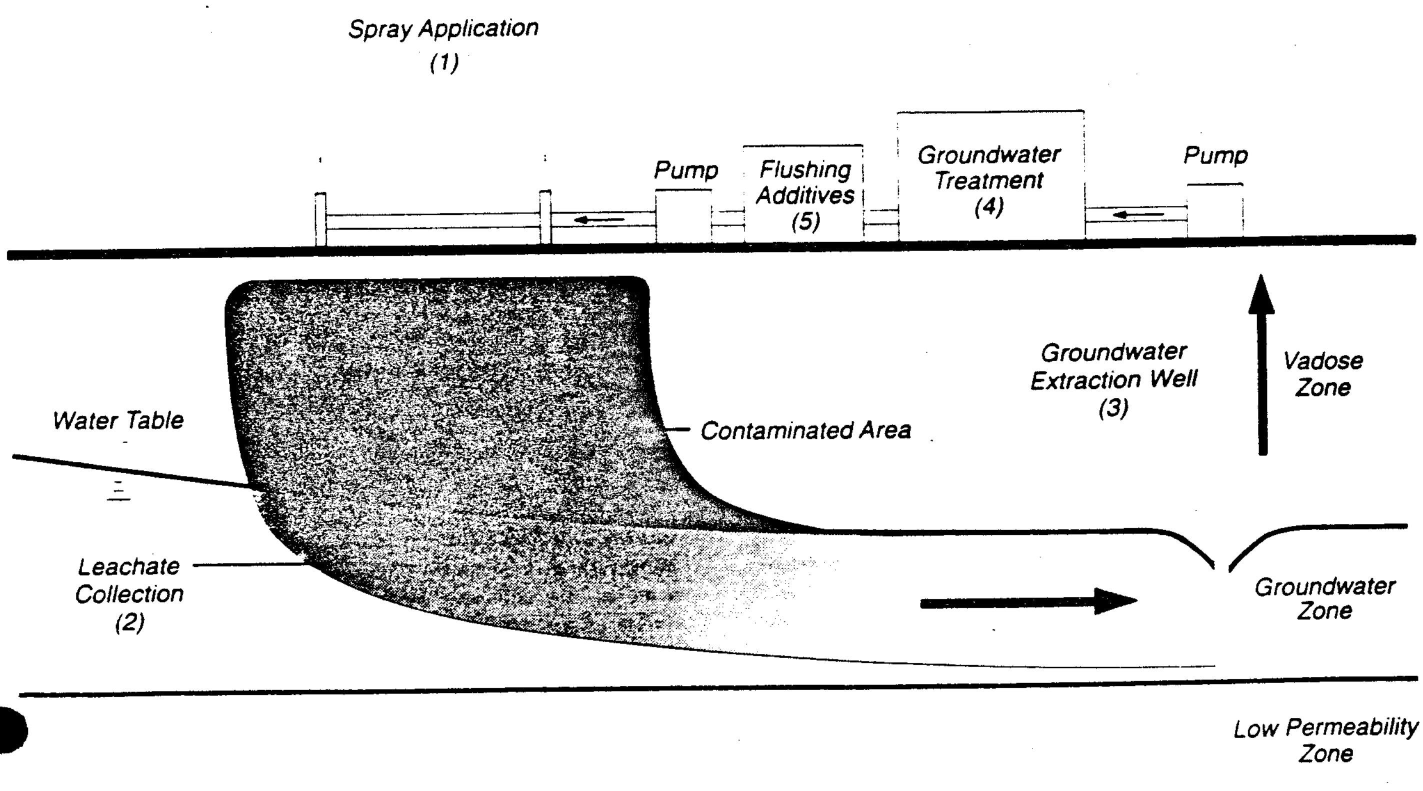
Contaminated flushing fluid or leachate mixes with groundwater and is collected (2) for treatment. The flushing fluid delivery and the groundwater extraction systems are designed to ensure complete contaminant recovery [7]. Ditches open to the surface, subsurface collection drains, or groundwater recovery wells may be used to collect flushing fluids and mobilized contaminants. Proper design of a fluid recovery system is very important to the effective application of soil flushing.

Contaminated groundwater and flushing fluids are captured and pumped to the surface in a standard groundwater extraction well (3). The rate of groundwater withdrawal is determined by the flushing fluid delivery rate, the natural infiltration rate, and the groundwater hydrology. These will determine the extent to which the groundwater removal rate must exceed the flushing fluid delivery rate to ensure recovery of all reagents and mobilized contaminants. The system must be designed so that hydraulic control is maintained.

The groundwater and flushing fluid are treated (4) using the appropriate wastewater treatment methods. Extracted groundwater is treated to reduce the heavy metal content, organics, total suspended solids, and other parameters until they meet regulatory requirements. Metals may be removed by lime precipitation or by other technologies compatible with the flushing reagents used. Organics are removed with activated carbon, air stripping, or other appropriate technologies. Whenever possible, treated water should be recycled as makeup water at the front end of the soil-flushing process.

Flushing additives (5) are added, as required, to the treated groundwater, which is recycled for use as flushing fluid. Water alone is used to remove hydrophilic organics and soluble heavy-metal salts [9]. Surfactants may be added to remove hydrophobic and slightly hydrophilic organic contaminants [12]. Chelating agents, such as ethylenediaminetetra-acetic acid (EDTA), can effectively remove certain metal compounds. Alkaline buffers such as tetrasodium pyrophosphate can remove metals bound to the soil organic fraction. Reducing agents such as hydroxylamine hydrochloride can reduce iron and manganese oxides that can bind

Figure 1
Schematic of Soil Flushing System



Attachment 4

Section 3
Technologies for In Situ Treatment

This section presents detailed information on specific in situ technologies that were selected for their potential or demonstrated ability to augment natural soil processes. The discussions are divided into the following treatment categories: soil flushing, solidification/stabilization, degradation, control of volatile materials, and physical and chemical separation techniques.

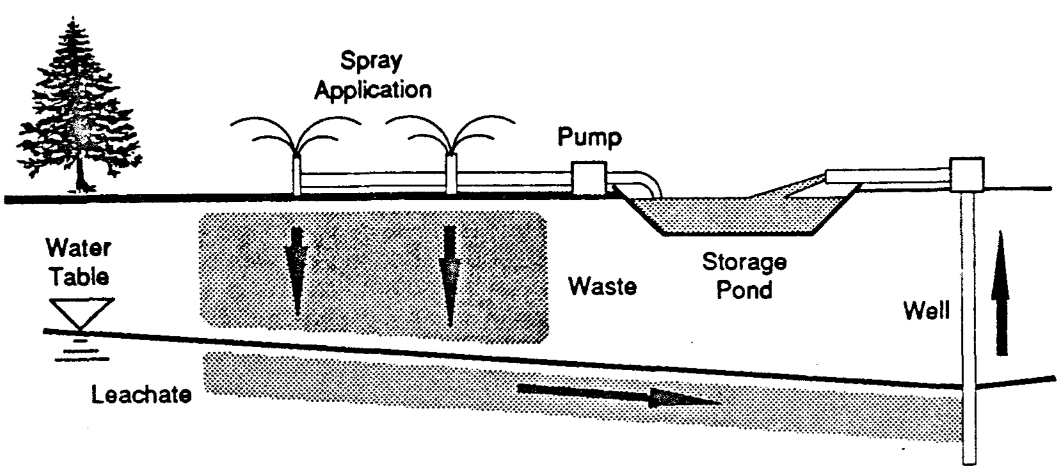
Remediation of hazardous waste sites can involve implementing several treatment technologies in series or what is called a treatment train. This approach may allow for a more comprehensive remediation than a single technology could provide. An example of this is product recovery by pumping free product to the surface, followed by soil flushing and pumping and treating on the surface, and subsequent in situ treatment of the residual materials by biodegradation.

3.1 Soil Flushing

The use of soil flushing to remove soil contaminants involves the elutriation of organic and/or inorganic constituents from soil for recovery and treatment. The site is flooded with the appropriate washing solution, and the elutriate is collected in a series of shallow wellpoints or subsurface drains. The elutriate is then treated and/or recycled back into the site. During the elutriation process, contaminants are mobilized into the flushing solution by way of solubilization, formation of emulsions, or a chemical reaction with the flushing solution (USEPA 1985). Collection of elutriate is required to prevent uncontrolled contaminant migration through uncontaminated soil and into receiver systems, including ground and surface waters. Figure 1 presents an example of a soil flushing system with elutriate recycling.

Flushing solutions may include water, acidic aqueous solutions (sulfuric, hydrochloric, nitric, phosphoric, and carbonic acid), basic solutions (e.g., sodium hydroxide), and surfactants (e.g., alkylbenzene sulfonate). Water can be used to extract water-soluble or water-mobile constituents. Acidic solutions are used for metals recovery and for basic organic constituents (including amines, ethers,

Figure 1. Schematic of an elutriate recycle system.



Bechtel
50 Beale Street
San Francisco, CA 94105-1895
Mailing address: P.O. Box 193965
San Francisco, CA 94119-3965

005 00760

July 19, 1993

Ms. Roberta Blank H-7-5
U.S. EPA Region IX
75 Hawthorne Street
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Subject: ARCSWEST Program Contract No. 68-W9-0060
Hunters Point Annex Work Assignment No. 60-05-9PP3
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Please contact me if you have comments or questions.

Sincerely,

Bart

Richard Draper, Ph.D.
Project Manager
(415) 768-3282

cc: M. Mitguard, EPA
C. Beach, EPA

BECHTEL
Bechtel Environmental, Inc.

Comment on the Navy's Draft Treatability Study
Work Plan Operable Unit I, Site IR-3

General Comments

1. Regardless of the treatability study results, the long term effectiveness of an injection/extraction remediation system must be addressed by reference to previous experience, etc. The apparent heterogeneity of the soil resulting from the wide range of soil types used as fill may result in difficulty removing all hydrocarbon present in the matrix. Because of the tendency for injected water to follow the path of least resistance, channeling may occur which could result in the incomplete removal of contamination.

Specific Comments

1. The possibility of chemical compatibilities should be addressed in both the flask tests and the pilot-scale field tests of this treatability study. The formation of iron oxides and clay swelling may be potentially significant issues at this site. The formation of iron oxides may occur in response to increases in pH. Iron oxide precipitation and subsequent pore plugging may be minimized by maintaining the pH of the injectate at the same level as the ground water.

   Any clays present in the soil may be sensitive to pH and perhaps to a lesser extent sodium content. The nature and the amounts of clays present in the soil and their sensitivity to these factors should be determined.

2. Oil/water emulsions may be formed during treatment which are very stable and difficult to brake or otherwise separate into phases. These emulsions would required further physical and/or chemical treatment prior to disposal of the recovered hydrocarbons. The Navy should consider expanding the scope of this study to evaluate physical and/or chemical treatment of stable oil/water emulsions.

3. The extracted water to be reinjected from the Baker tanks into the ground during the field tests may contain a significant amount of suspended fine particles. This recirculating stream should be filtered to prevent the inhibition of injection/extraction.

4. The conceptual model of oil contamination and proposed treatment as presented in Section 2.1 and Plates 1-2, 1-3, 2-1, and 2-3 oversimplifies this site. The affect of tidally influenced groundwater level fluctuations, the salinity of the groundwater, and the presence of debris zones should be explicitly addressed and considered in the design of this treatability study.

5. The horizontal axis of Plate 2-4 should be labelled.

6. Paragraph four of Section 2.2 should include "type of *surfactant*" in the bullet list.

7. The selection of 50°C and 80°C as test temperatures should be supported by reference to previous studies and a discussion of the feasibility of achieving these temperatures at IR-3.

8. Section 3.1 should specify whether samples should be collected at high tide, low tide, or some intermediate tide. This section should also specify the boring locations to assure the soil samples collected are representative of the various fill materials underlying the site. Groundwater samples should be collected from a monitoring well closer to the bay, e.g. IR03MW226A of IR03B228A, as appropriate, to assure the water is representative of ground water likely to be encounter during treatment.

9. Section 3.2 should specify the procedures for determining soil bulk density, total porosity, and effective porosity. Quality assurance requirements and special considerations not included in the QAPjP should also be discussed.

10. A quantitative removal efficiency objective should be specified in Section 3.3.1.1 and 3.3.2.1. Section 3.3.2.2 should specify the surfactant concentrations to be tested.

11. Section 3.4.1 should define, with an equation, how irreducible oil saturation is determined. If the flask tests are designed to provide an estimate of irreducible oil saturation, then specify in the Task 3 objectives section. Section 3.4.3 should prescribe measures to assure the packed soil columns have bulk density, total porosity, effective porosity, particle size distribution, and pH characteristics representative of subsurface soil at IR-3.

12. Section 3.4.5 should specify how recovery efficiency, pore volume, and residual saturation are to be determined. Acceptable recovery efficiencies should be quantitatively defined.

13. Task 5.0 should be deleted from this work plan. A separate work plan describing field testing should be prepared, if necessary, after Agency review of the bench-scale test results.

14. A key component which is lacking from this document is a thorough discussion of the proposed methods for data analysis. EPA guidance clearly states treatability studies shall use sound statistical techniques including analysis of variance testing to evaluate the effects of different treatment regimes. There is a noticeable absence of data analysis planning in this document.

Comments of the Navy's Draft Treatability Study Work Plan
for Treating Subsurface Petroleum Products
at Site IR-3 by Biodegradation

General Comments

1. The document is titled "Treatability Study Work Plan..."; however, the actual function of the draft is to provide an outline for the steps necessary to develop an actual Work Plan. This document in its current state does not satisfy the requirements of a biotreatability Work Plan.

Specific Comments

1. Because the document does not fulfill its purpose as a Work Plan, difficulties in the interpretation of its intent arise. For example, on page 5, the text states the two main goals of the initial tier of the treatability study, yet on page 9 of the ECOVA proposal there are 8 main goals of the initial tier and these goals are much broader than that proposed in the main body of text. Thus, it is unclear what is being proposed for Tier 1. Please clarify.

2. Also on page 5, the text conflicts with itself when it states that Tier 1 is "...not expected to provide...design information." while three sentences later the text states that a main goal of the Tier 1 screening is to "Produce the design information required..." Please clarify.

3. On page 7 the text states that the FSAP will describe the "type" of samples to be collected. The meaning of the word "type" in this context should be clarified.

4. On pages 8 and 9, Task 3, change QAPjP to Work Plan. For Task 6 change SAP to Work Plan. For Task 8 change QAPjP to Work Plan, and for Task 9 Change QAPjP to Work Plan.

5. There are numerous unexplained, identical "Max." and "Min." values in Table 2. A foot note should be added to explain why the two values are identical. Copper shows a minimum value of 4,706 ppm and a maximum value of 150 ppm, there is obviously an error here. Please correct.

6. On page 1, the document states that the attached proposal discusses the proposed scope and methodologies for conducting the treatability study. This is not acceptable. It appears the authors intend that a proposal from a potential subcontractor serve as the approved Work Plan.

7. The text states that land farming was selected as the remediation technique. Have the authors considered other biotreatment techniques? Why was land farming chosen for testing? What methods of treatment were proposed by the non-selected vendors (12 vendor proposals were apparently reviewed)?

8. The discussion (Section 1.2, page 4) regarding floating oil indicates that although a possibly substantial volume of material is present in the subsurface, attempts at removal have been unsuccessful. What cause is attributed to this difficulty in product recovery?

This point is important because regardless of the ability of biodegradation to reduce contaminant levels, *ex-situ*, the presence of a continuing source of subsurface contamination essentially negates an *ex-situ* treatment benefits.

In addition, on page 9 the authors state that Task 11 will include "...a detailed approach concerning the collection, separation, and disposal of groundwater and oil expected..." Because previous attempts at product recovery were unsuccessful there is no reason to believe that such a statement is supportable. The reader can therefore conclude that the floating product will remain in-place and continue to recontaminate soil.

9. The text states that for the evaluation to proceed to Tier 2, Tier 1 testing should produce reductions in pollutant concentrations of at least 20 percent. Based on the plans described in ECOV's proposal, 20 percent reductions are too small to form the justification to proceed to Tier 2 which involves a pilot-scale outdoor unit. Consider the statement on page 6 of the report "...the treatability study will need to achieve a value of 1,000 ppm TPD as diesel to indicate success." However, Table 2 of the same report indicates that TPH as diesel was found to be 480,000 ppm which would require approximately 99.9 percent reduction to achieve 1,000 ppm. Thus, although the performance of the system in the Tier 1 stage need not be equivalent to a 99.9 percent reduction, expectations must be much greater than currently indicated. This is especially significant when considering that ECOVA's proposal states that 12 weeks, rather than the 6 weeks mentioned in the main body of the text, would be the period of Tier 1 study. A 12 week period of optimal lab conditions should be sufficient to demonstrate removals in excess 80 percent

10. Another key component which is lacking from this document is a thorough discussion of the proposed methods for data analysis. EPA guidance clearly states treatability studies shall use sound statistical techniques including analysis of variance testing to evaluate the effects of different treatment regimes. There is a noticeable absence of data analysis planning in this document.

11. Toxicity testing is mentioned as an aside, yet toxicity to microorganisms is often a prime cause for the failure of biotreatment systems. The work plan should clearly identify the methods to be used for the evaluation of toxicity.

12. On page 6 the authors state that remedy selection testing (Tier 2) will consist of bench-scale test and if necessary, pilot-scale tests. In the following paragraph, the authors state that remedy design tests (Tier 3) will consist of small, pilot-scale testing. It remains unclear what the difference or the nature of these pilot tests are, especially when considering that ECOVA's proposal does not include any testing as part of Tier 3.

13. On page 7 the text states that the QAPjP will include details of the experimental project description. This is not correct. The work plan should contain such information and the QAPjP should address QA objectives and QC procedures.