DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132-5190

N00217.004067
HUNTERS POINT
SSIC NO. 5090.3

5090
Ser 06CH.KF/0818
August 6, 2004

Mr. Tom Lanphar
California Department of Toxic Substances Control
Site Mitigation Branch
700 Heinz Avenue, Building F
Berkeley, California 94710

Mr. Jim Ponton
California Regional Quality Control Board, San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, California 94612

SUBJECT: IDENTIFICATION OF STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) FOR THE DRAFT FINAL FEASIBILITY STUDY FOR PARCEL C AT HUNTERS POINT SHIPYARD

Reference: (a) Federal Facilities Agreement (U.S. Environmental Protection Agency [EPA] and U.S. Department of the Navy [Navy]) for Hunters Point Annex in San Francisco, California
(b) Memorandum of Understanding Between the Department of Health Services, the State Water Resources Control Board, and the Regional Water Quality Control Board for Cleanup of Hazardous Waste Sites of August 1, 1990

Dear Regulatory Members:

The Navy is preparing a Feasibility Study that evaluates remedial alternatives to reduce risks to human health and the environment at Hunters Point Shipyard (HPS) Parcel C. As a part of this process, the Navy would appreciate your input on its determination of the applicable or relevant and appropriate requirements (ARARs) that will need to be considered.

Therefore, pursuant to paragraph 7.6 of reference (a) and consistent with Section V.A.2 of reference (b), the Navy requests that your agency identify potential state chemical-, location-, and action-specific ARARs for Parcel C at HPS.

Parcel-specific information on site characterization is available in the following documents:

- Tetra Tech EM Inc. and Levine Fricke-Recon, Inc. (LFR) 1997a. "Parcel C Feasibility Study Draft Final Report, Hunters Point Shipyard, San Francisco, California. July 15, 1998.
- PRC Environmental Management Inc. (PRC), LFR, and Uribe & Associates. 1997. "Draft Final Parcel C Remedial Investigation Report, Hunters Point Shipyard, San Francisco, California." March 13, 1997.
- Tetra Tech EM Inc. (Tetra Tech). 2001. "Parcel C Information Package Groundwater Phase II Groundwater Data Gaps Investigation, Hunters Point Shipyard, San Francisco, California." August 3, 2001.
- Tetra Tech. 2002. "Parcel C Time-Critical Removal Action Closeout Report, Hunters Point Shipyard, San Francisco, California." July 12, 2002.
- Tetra Tech. 2003. "Parcel C Groundwater Summary Report, Phase III Groundwater Data Gaps Investigation, Hunters Point Shipyard, San Francisco, California. Final." September 2, 2003.

Enclosures (1) and (2) provide lists of soil and groundwater chemicals of potential concern (COPC) by Installation Restoration Program site. A list and description of remedial technologies and process options that are currently being evaluated for remedial alternatives at Parcel C are provided as enclosure (3). The COPCs are defined as any organic chemical detected at concentrations that would exceed a cancer risk of 1E-06 or a hazard quotient of 1 (in other words, that would exceed EPA Region IX Preliminary Remediation goals), or any metals at levels that exceed the Hunters Point Ambient Limits (HPALs). The information presented in the documents cited above and the enclosures to this letter should allow you to identify, with specificity, state chemical-, location-, and action-specific ARARs for Parcel C.

To ensure that the Navy can thoroughly evaluate state-identified ARARs, please include the following information in your response:

(1) A specific citation to the statutory or regulatory provisions for the state ARAR and the date of enactment or promulgation.

(2) A brief description of why the state ARAR is applicable or relevant and appropriate.

(3) A description of how the state ARAR would apply to the potential remedial actions identified in Enclosure 3.

(4) The rationale and technical justification for using a state ARAR if your agency regards its proposed ARAR as more stringent than the corresponding federal ARAR.

(5) Any advisories, criteria, or guidance that your agency feels is to be considered and a brief description and justification as to why it should be considered.

(6) A request for any additional data required if your agency needs more information to fully respond to this request

Timely identification of potential state ARARs is necessary for continued progress toward efficient response action completion at Parcel C, and is required under the Comprehensive Environmental Response, Compensation, and Liability Act, 42 *United States Code* Section 9621(d)(2)(A), and the National Oil and Hazardous Substance Pollution Contingency Plan, 40 *Code of Federal Regulations* Sections 300.400(g) and 300.515(d) and (h). Timely identification of state ARARs is defined as a written response received by the lead agency within 30 working days of receipt of the request. Therefore, the Navy requests a response by your agency to this letter **by September 13, 2004.** Please send your response via first-class mail addressed to this Command, attention: Mr. Keith Forman. Please direct any technical questions to the undersigned at (619) 532-0913, and any legal questions to Mr. Nick Bollo at (619) 532-0909.

Sincerely,

KEITH FORMAN
BRAC Environmental Coordinator
By direction of the Commander

Enclosures: 1. Table 1, Chemicals of Potential Concern in Soil
2. Table 2, Chemicals of Potential Concern in Groundwater
3. Table 3, Potential Remedial Technologies and Process Options

5090
Ser 06CH.KF\0818
August 6, 2004

Copy to:
Mr. Michael Work (SFD 8-3)
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, California 94105-3901

Ms. Amy Brownell
San Francisco Department of Public Health
1390 Market Street, Suite 910
San Francisco, California 94102

Ms. Julia Vetromile (w/o Encl)
Tetra Tech EM Inc
135 Main Street, Suite 1800
San Francisco, California 94105

TABLE 1: CHEMICALS OF POTENTIAL CONCERN IN SOIL

Parcel C, Hunters Point Shipyard, San Francisco, California

IR Site	Analytic Group	COPC [a]
IR-06	Metal	Arsenic, Chromium, Iron, Lead, Manganese, Nickel
	PAH	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenz(a,h)anthracene
	PCB	Aroclor-1260
IR-25	Metal	Antimony, Arsenic, Chromium, Iron, Manganese, Nickel
	PAH	Benzo(a)pyrene
	PCB	Aroclor-1260
	SVOC	1,4-dichlorobenzene
	VOC	1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Tetrachloroethene, Trichloroethene, Vinyl Chloride
IR-27	Metal	Chromium
IR-28	Metal	Arsenic, Chromium, Copper, Iron, Lead, Manganese, Mercury, Nickel, Thallium, Zinc
	PAH	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Naphthalene
	PCB	Aroclor-1242, Aroclor-1260
	SVOC	1,4-dichlorobenzene, Carbazole
	VOC	1,2,4-trimethylbenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, Benzene, Tetrachloroethene, Trichloroethene, Vinyl Chloride
IR-29	Metal	Arsenic, Chromium, Copper, Iron, Lead, Manganese, Nickel, Vanadium
	PAH	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Naphthalene
	PCB	Aroclor-1254, Aroclor-1260
	SVOC	N-nitroso-di-n-propylamine
	VOC	Benzene
IR-30	Metal	Arsenic, Chromium, Copper, Iron, Nickel
	Pesticide	Aldrin
	VOC	Benzene, Trichloroethene
IR-57	Metal	Arsenic, Chromium
	PAH	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene
IR-58	Metal	Arsenic, Chromium, Iron, Lead, Manganese, Mercury, Nickel
	PAH	Benzo(a)pyrene
	Pesticide	Dieldrin

Notes:

a This table lists COPCs based on organic compounds detected at concentrations exceeding EPA Region IX preliminary remediation goals (PRG) and metals detected at concentrations exceeding the Hunters Point Ambient Levels. Data from

TABLE 1: CHEMICALS OF POTENTIAL CONCERN IN SOIL (CONTINUED)

Parcel C, Hunters Point Shipyard, San Francisco, California

IR-06, 25, 28, 29, 30, 58, and 63 were screened against the residential PRGs. Data from IR-27 and 57 were screened against the industrial PRGs.

COPC	Chemical of potential concern
EPA	Environmental Protection Agency
IR	Installation Restoration
PAH	Polynuclear aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PRG	Preliminary Remediation Goal
SVOC	Semivolatile organic compound
VOC	Volatile organic compound

TABLE 2: CHEMICALS OF POTENTIAL CONCERN IN GROUNDWATER

Parcel C, Hunters Point Shipyard, San Francisco, California

IR Site	Analytic Group	COPC [a]
IR-06	Metal	Barium, Chromium, Chromium VI, Iron
	PAH	1-Methylnaphthalene, 1-Methylphenanthrene, 1,6,7-Trimethylnaphthalene, 2-Methylnaphthalene, 2,6-Dimethylnaphthalene, Acenaphthene, Anthracene, Benzo(a)anthracene, Biphenyl, Chrysene, Fluoranthene, Fluorene, Naphthalene, Phenanthrene, Pyrene
	Pesticide	Heptachlor Epoxide
	SVOC	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 2,4-Dimethylphenol, 2-Methylphenol, 4-Methylphenol, Carbazole, Dibenzofuran, Dibenzthiophene, Pentachlorophenol
	VOC	1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,1-Dichloroethane, 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,2-Dichloroethene (total), 1,2-Dichloropropane, 1,4-Dichlorobenzene, 2-Butanone, Benzene, Carbon Tetrachloride, Chloroform, Chloromethane, Cis-1,2-dichloroethene, Ethylbenzene, Tetrachloroethene, Toluene, Trans-1,2-dichloroethene, Trichloroethene, Trichlorofluoromethane, Vinyl Chloride, Xylene (total)
IR-25	Metal	Barium, Chromium, Cobalt, Copper, Iron, Mercury, Nickel, Thallium, Zinc
	Other	Cyanide
	PAH	1-Methylnaphthalene, 1-Methylphenanthrene, 1,6,7-Trimethylnaphthalene, 2-Methylnaphthalene, 2,6-Dimethylnaphthalene, Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene, Dibenzothiophene,Fluoranthene, Fluorene, Naphthalene, Phenanthrene, Pyrene
	PCB	Aroclor-1260
	Pesticide	4,4'-DDE, 4,4'-DDT, Aldrin, Alpha-BHC, Alpha-chlordane, Beta-BHC, Delta-BHC, Dieldrin, Endrin, Endrin Aldehyde, Endrin Ketone, Gamma-BHC (Lindane), Gamma-Chlordane, Heptachlor, Heptachlor Epoxide, Heptachlor Epoxide A
	SVOC	1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4,5-Trichlorophenol, 2,4-Dichlorophenol, 2,4-Dimethylphenol, 2,4-Dinitrotoluene, 2-Chloronaphthalene, 2-Chlorophenol, 2-Methylphenol, 3,4-Methylphenol, 4-Methylphenol, Acetophenone, Benzoic Acid, Biphenyl, Carbazole, Dibenzofuran, Pentachlorophenol, Phenol

TABLE 2: CHEMICALS OF POTENTIAL CONCERN IN GROUNDWATER (CONTINUED)

Parcel C, Hunters Point Shipyard, San Francisco, California

IR Site	Analytic Group	COPC [a]
IR-28	VOC	1,1-Dichloroethene, 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloroethene (total), 1,2-Dichloropropane, 1,2,4-Trimethylbenzene, 1,3-Dichlorobenzene, 1,3,5-Trimethylbenzene, 1,4-Dichlorobenzene, Acetone, Benzene, Bromodichloromethane, Carbon Disulfide, Chlorobenzene, Chloroethane, Cis-1,2-dichloroethene, Cyclohexane, Ethylbenzene, Isopropylbenzene, M,P-xylenes, Methylcyclohexane, Methylene Chloride, Naphthalene, O-xylene, Para-isopropyl Toluene, Tert-butyl Methyl Ether, Tetrachloroethene, Toluene, Trans-1,2-dichloroethene, Trichloroethene, Vinyl Chloride, Xylene (total)
	Metal	Barium, Chromium, Chromium IV, Cobalt, Copper, Iron, Lead, Manganese, Mercury, Nickel, Potassium, Selenium, Silver, Thallium, Vanadium, Zinc
	Other	Cyanide
	PAH	2-methylnaphthalene, Acenaphthene, Anthracene, Fluoranthene, Fluorene, Naphthalene, Phenanthrene, Pyrene
	PCB	Aroclor-1260
	Pesticide	4,4'-DDT, Aldrin, Alpha-BHC, Beta-BHC, Heptachlor Epoxide
	SVOC	1,2-dichlorobenzene, 1,4-dichlorobenzene, 2,4,6-trichlorophenol, 2-chloronaphthalene, Bis(2-ethylhexyl)phthalate, Carbazole, Di-n-butylphthalate, Phenol
	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloroethene (total), 1,2-Dichloropropane, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2-Hexanone, 4-Methyl-2-pentanone, Acetone, Benzene, Bromobenzene, Bromodichloromethane, Bromoform, Carbon Disulfide, Carbon Tetrachloride, Chlorobenzene, Chloroethane, Chloroform, Cis-1,2-dichloroethene, Cyclohexane, Dibromochloromethane, Ethylbenzene, Isopropylbenzene, M,P-xylenes, Methylcyclohexane, Naphthalene, O-xylene, Tert-butyl Methyl Ether, Sec-butylbenzene, Tetrachloroethene, Toluene, Trans-1,2-dichloroethene, Trichloroethene, Trichlorofluoromethane, Vinyl Chloride, Xylene (total)
IR-29	Metal	Chromium, Chromium VI, Molybdenum
	PAH	2-Methylnaphthalene, Acenaphthene, Naphthalene
	Pesticide	4,4'-DDD, Dieldrin
	SVOC	Carbazole, Dibenzofuran
	VOC	1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Benzene, Carbon Disulfide, Chlorobenzene, Chloromethane, Ehtylbenzene, Isopropylbenzene, M-P-xylenes, O-xylene, Tetrachloroethene, Toluene, Trichloroethene
IR-42	Metal	Cadmium, Molybdenum

TABLE 2: CHEMICALS OF POTENTIAL CONCERN IN GROUNDWATER (CONTINUED)

Parcel C, Hunters Point Shipyard, San Francisco, California

IR Site	Analytic Group	COPC [a]
	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichlorobenzene, 1,2-Dichloroethene (total), 1,4-Dichlorobenzene, Benzene, Chlorobenzene, Cis-1,2-dichloroethene, Trans-1,2-dichloroethene, Trichloroethene, Vinyl Chloride
IR-58	Metal	Chromium, Chromium VI, Selenium

Notes:

a This table lists COPCs based on organic compounds detected in groundwater during the three most recent sampling rounds and metals where at least three results exceeded the Hunters Point Groundwater Ambient Levels by at least 20 percent.

COPC Chemical of potential concern
DDD Dichlorodiphenyldichloroethane
DDE Dichlorodiphenyldichloroethene
DDT Dichlorodiphenyltrichloroethane
IR Installation Restoration
PAH Polynuclear aromatic hydrocarbon
PCB Polychlorinated biphenyl
SVOC Semivolatile organic compound
VOC Volatile organic compound

TABLE 3: POTENTIAL REMEDIAL TECHNOLOGIES AND PROCESS OPTIONS

Parcel C, Hunters Point Shipyard, San Francisco

Remedial Technology Alternative	Description
SOIL OPTIONS	
Land Use Controls	Applying deed restrictions on future excavation and construction. Deed restrictions would inform future property owners of the presence of contaminated soil. Land use controls would vary depending on future land use at Parcel C.
Containment via capping	Capping – Installation of a cap including the following options: clay, asphalt or concrete single-layer capping. Site preparation requirements for capping at Parcel C would require removal of existing asphalt, and demolition of buildings, utility poles, and other miscellaneous aboveground structures. In addition, caps may require long-term maintenance to prevent erosion of the cap material.
Excavation and Off-site disposal	Excavation – Removal of contaminated soil with typical excavation equipment and backfilling with clean fill. Exposure to occupational workers via ingestion, dermal contact, or ingestion of contaminated soil. Additional considerations include control of fugitive dust, monitoring for volatile organic compounds (VOC) potentially released from contaminated soil, physical obstructions to excavation, and intrusion of groundwater into excavation areas. The excavated soil will be transported to a Class I, II, or III landfill facility off-site. Soil transported to a Class I facility may require additional treatment, such as stabilization.
Soil Vapor Extraction	Soil vapor extraction – Removal of VOCs may be accomplished by extracting soil gas and treating the off gas with activated carbon before discharge to the atmosphere. Enhancements may include fracturing to improve permeability.
GROUNDWATER AND FREE PRODUCT OPTIONS	
Land Use Controls	Applying deed restrictions to restrict future access to groundwater. Deed restrictions would inform future property owners that contaminated groundwater is present at the site and restrict installation of groundwater extraction wells. A deed restriction would be imposed to require vapor barriers in inhabited to prevent exposure to VOCs. Land use controls would vary depending on future land use at Parcel C.
Groundwater Monitoring	Periodic sampling and analysis of current groundwater monitoring wells would determine hazardous levels in groundwater, whether contamination is migrating off site, and whether continued monitoring is required.
Thermally-enhanced recovery of LNAPL	Heavier fraction, separate-phase petroleum product will be mobilized in the soil by steam injection or heating the soil matrix. The light nonaqueous phase liquid (LNAPL) will be recovered by skimming or total fluids pumping in conjunction with groundwater extraction to enhance recovery. The extracted LNAPL and water are separated and treated.

TABLE 3: POTENTIAL REMEDIAL TECHNOLOGIES AND PROCESS OPTIONS (Continued)
Parcel C, Hunters Point Shipyard, San Francisco

Extraction of LNAPL	Dual vapor extraction (DVE) uses a vacuum system to help remove separate-phase petroleum product, from the subsurface. The pumping system lowers the water table around the well, exposing more of the formation. Contaminants in the newly exposed vadose zone are then accessible to vapor extraction. LNAPL is generally skimmed from the water surface. Once above ground, the extracted vapors or liquid-phase organics are separated and treated. Extraction without the vacuum-enhancement may also be used.
Open Excavation Skimming for Recovery of LNAPL	Separate-phase petroleum product will be removed from the surface of standing water in an open excavation using a vacuum skimmer. The extracted LNAPL and water are separated and treated.
Thermal Treatment for Dense Nonaqeous Phase Liquids (DNAPL) and dissolved VOCs	A heat source is introduced into the aquifer to help vaporize volatile contaminants. Vaporized components rise to the unsaturated zone, where they are removed by vacuum extraction and then treated.
In Situ Chemical Oxidation	Injection of chemical oxidant into the water-bearing zone to degrade dissolved VOCs by oxidation. Construction associated with this remedial alternative includes injection and downgradient monitoring wells.
Zero-Valent Iron (ZVI) Injection	Injection of ZVI Iron into the A-aquifer at Parcel C to create a reactive zone with reducing conditions (anaerobic) amenable to degradation of VOCs. Construction associated with this remedial alternative includes injection and downgradient monitoring wells.
Enhanced bioremediation	Substrate injections used to provide energy/nutrient source for naturally occurring anaerobic or aerobic bacteria (or both) to degrade organic contaminants, including VOCs and petroleum hydrocarbon constituents. Construction associated with this remedial alternative includes injection and downgradient monitoring wells.
Monitored Natural Attenuation	Uses natural attenuation processes such as biodegradation, volatilization, and physical/chemical processes to remediate contamination, in conjunction with data collection, long-term monitoring, and modeling.

5090
Ser 06CH.KF\0818
August 6, 2004

Blind copy to:
09C.NB
06CH
06CH.GB
06CH.KF
06CH.RP
05GIH.DS
Read file
Serial file

Writer: K. Forman, 06CH.KF, 2-0913
Typist: N. Lilley, 06BU.NL, 10/06/03

E-mail/Parcel C FS ARARs Request Letter.doc