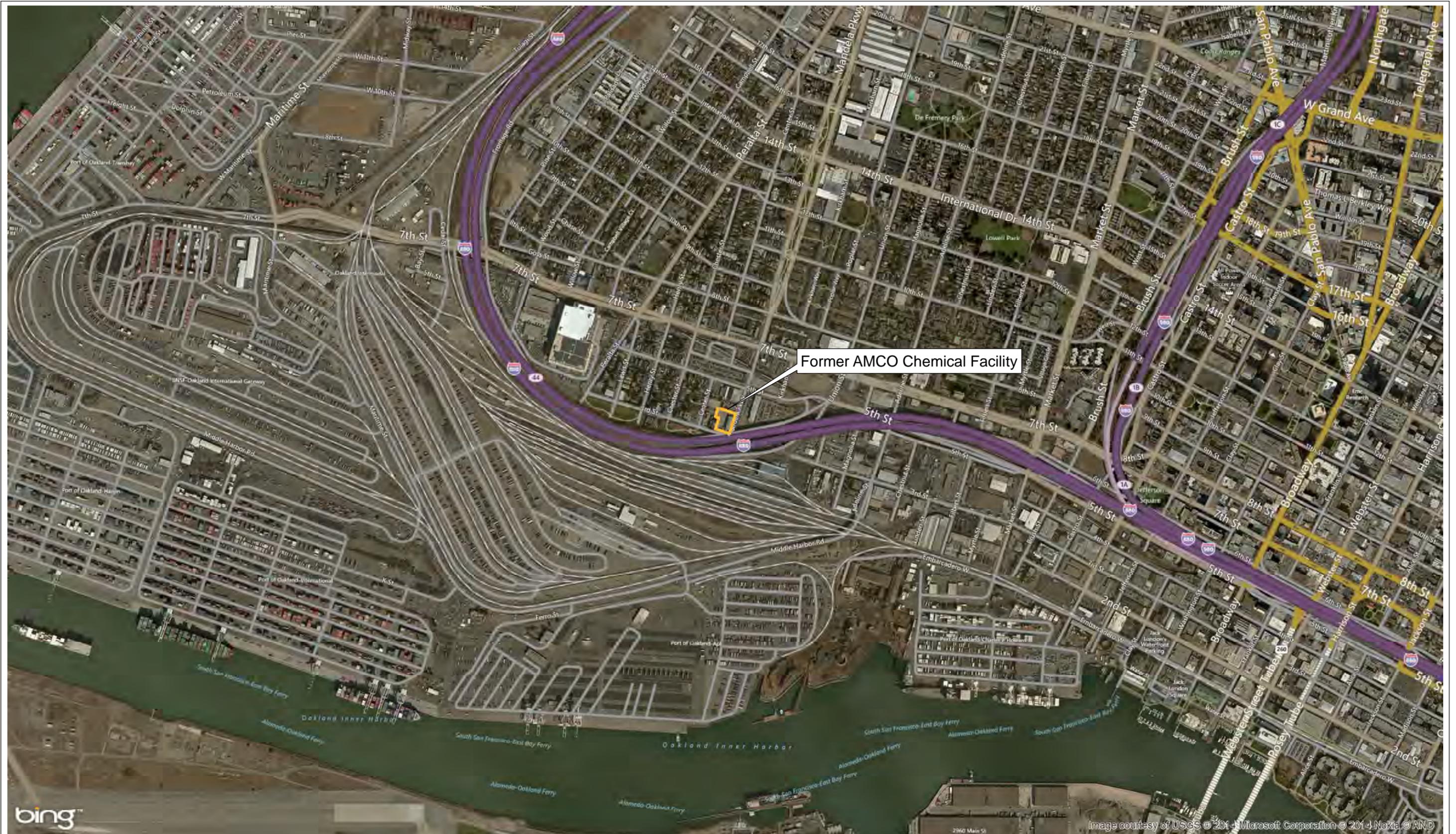


ATTACHMENTS

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Former AMCO Chemical Facility

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USEPA, Region 9
AMCO Chemical Superfund Site
Oakland, California

ATTACHMENT 1
EE/CA Figure 2-1
Site Location Map

ATTACHMENT 2

EE/CA Table 2-6

Light Non-Aqueous Phase Liquid (LNAPL) Composition

Sample Location: MW-14, Sample Date: 14, March 2005

AMCO Chemical Superfund Site Oakland, California

Analyte	Units	Analytical Results
Volatile Organic Compounds		
Trichloroethene	µg/kg	76,000,000 J
Toluene	µg/kg	36,000,000 J
cis-1,2-Dichloroethene	µg/kg	25,000,000 J
Xylenes, total	µg/kg	23,200,000 J
Ethylbenzene	µg/kg	3,400,000 J
1,1,1-Trichloroethane	µg/kg	2,400,000 J
Tetrachloroethene	µg/kg	1,900,000 J
1,1-Dichloroethane	µg/kg	1,300,000 J
Methylene chloride	µg/kg	820,000 J
1,2-Dichlorobenzene	µg/kg	300,000 J
Benzene	µg/kg	200,000 J
trans-1,2-Dichloroethene	µg/kg	150,000 J
Semi-volatile Organic Compounds		
2-Methylnaphthalene	µg/kg	15,000,000
Naphthalene	µg/kg	2,900,000
Phenanthrene	µg/kg	470,000 J
Acenaphthene	µg/kg	350,000 J
Fluorene	µg/kg	220,000
Fluoranthene	µg/kg	160,000
Pyrene	µg/kg	160,000 J
Dibenzofuran	µg/kg	140,000
Di-n-butyl phthalate	µg/kg	100,000
bis(2-Ethylhexyl)phthalate	µg/kg	76,000
Pentachlorophenol	µg/kg	63,000 J
Benzyl butyl phthalate	µg/kg	57,000 J
1,4-Dioxane (p-dioxane)	µg/kg	53,000 J
Chrysene	µg/kg	38,000
Anthracene	µg/kg	37,000
Benzo(a)anthracene	µg/kg	34,000
1,4-Dichlorobenzene	µg/kg	20,000 J
Carbazole	µg/kg	15,000
Benzo(b)fluoranthene	µg/kg	13,000
Benzo(k)fluoranthene	µg/kg	7,000
Metals		
Chromium	mg/kg	42
Copper	mg/kg	7.5 J
Organochlorine Pesticides/PCBs		
4,4'-DDD	µg/kg	3,100,000
4,4'-DDD	µg/kg	3,100,000
Dieldrin	µg/kg	360,000
beta-BHC	µg/kg	4,300
alpha-Chlordane	µg/kg	2,900 J
Aldrin	µg/kg	2,500 J
Methoxychlor	µg/kg	2,300 J
gamma-BHC	µg/kg	2,000 J
4,4'-DDT	µg/kg	1,900
Endrin ketone	µg/kg	1,400
alpha-BHC	µg/kg	1,100 J

Table 2-6
Light Non-Aqueous Phase Liquid (LNAPL) Composition (continued)
Sample Location: MW-14, Sample Date: 14, March 2005
AMCO Chemical Superfund Site Oakland, California

Analyte	Units	Analytical Results
Dioxins/Furans		
OCDD	ng/kg	985,000
OCDF	ng/kg	94,700
1,2,3,4,6,7,8-HpCDD	ng/kg	73,600
1,2,3,4,6,7,8-HpCDF	ng/kg	13,300
1,2,3,6,7,8-HxCDD	ng/kg	1,790
Total Dioxin Toxicity equivalent	ng/kg	1,400 J
1,2,3,4,7,8,9-HpCDF	ng/kg	616
1,2,3,7,8,9-HxCDD	ng/kg	456
1,2,3,7,8,9-HxCDF	ng/kg	213 J
1,2,3,4,7,8-HxCDD	ng/kg	178
2,3,4,6,7,8-HxCDF	ng/kg	170
1,2,3,6,7,8-HxCDF	ng/kg	163 J1
2,3,4,7,8-PeCDF	ng/kg	85.6
1,2,3,7,8-PeCDD	ng/kg	70.3 J
1,2,3,7,8-PeCDF	ng/kg	45.7 J1
Property		
Flash point	°C	18

Notes:

- J estimated value
 - J1 estimated maximum possible concentration
 - R rejected for failure to meet quality control requirements
 - °C degrees Celcius
 - µg/kg micrograms per kilogram
 - mg/kg milligrams per kilogram
 - ng/kg nanograms per kilogram
- Units are presented as reported by the laboratory.

ATTACHMENT 3
EE/CA Table 2-7
Maximum VOC Soil Concentrations in Treatment Area
December 2011 – January 2012 Sampling
AMCO Chemical Superfund Site
Oakland, California

Volatile Organic Compounds	Sample Depth ft bgs	Sample Location*	Maximum Concentration µg/kg	Soil Screening Level µg/kg
Xylenes, total	1	SC-029	967,000	630,000
cis-1,2-Dichloroethene	1	SC-021	1,380,000	160,000
1,2,4 Trimethylbenzene	3	SC-055	598,000	62,000
Tetrachloroethene	5	SC-053	737,000	22,000
Ethylbenzene	1	SC-029	259,000	5,400
1,1-Dichloroethane	3	SC-021	49,400	3,300
1,4 Dichlorobenzene	3	SC-061	137,000	2,400
Benzene	3	SC-021	14,600	1,100
Trichloroethene	10	SC-019	5,570,000	910
1,2 Dichloroethane	5	SC-053	19,800	430
Vinyl Chloride	8	SC-042	15,800	60

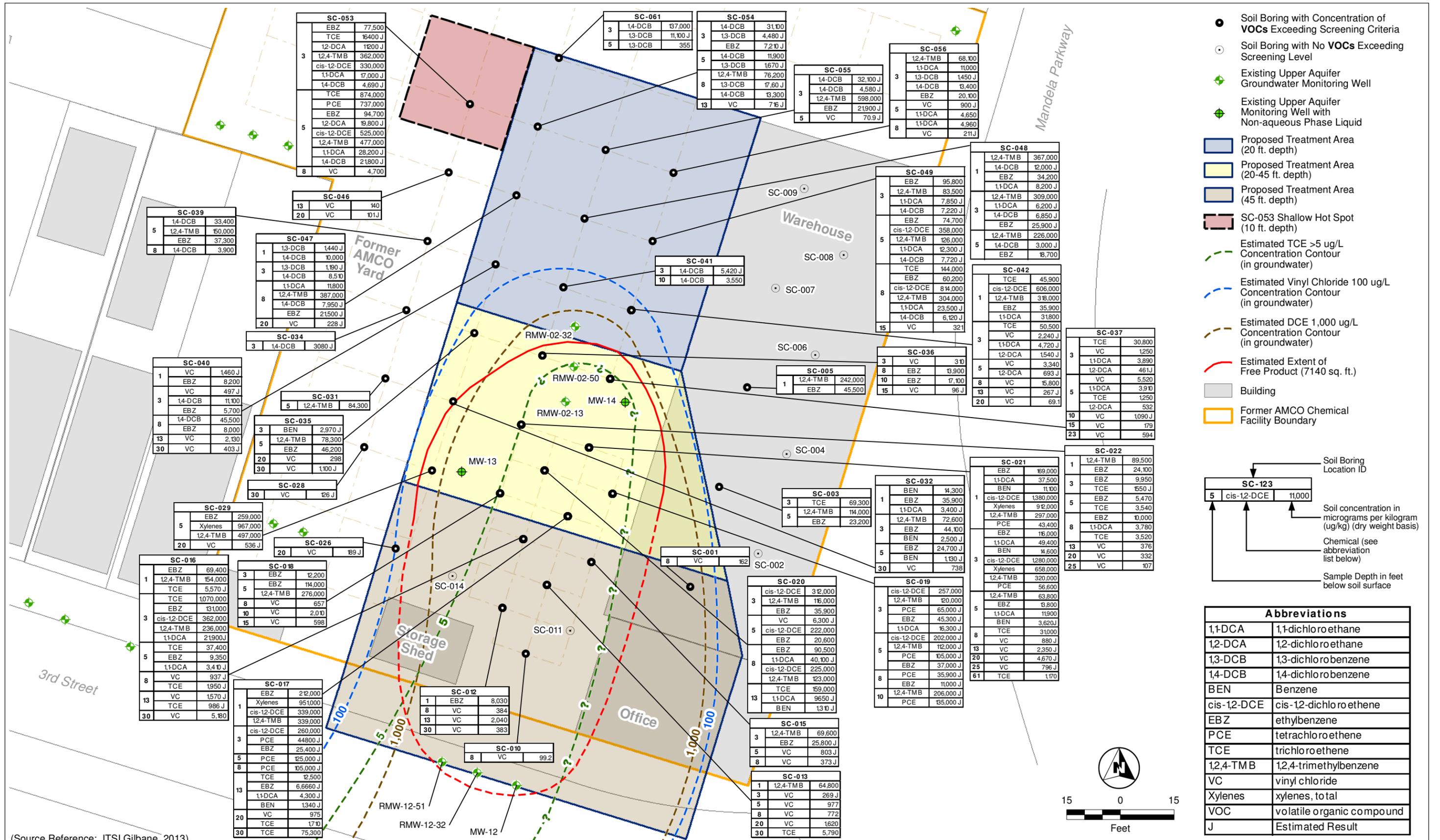
*ITSI-Gilbane, January 2012 event

ATTACHMENT 4
EE/CA Table 2-8
Maximum VOC Concentrations in Groundwater
AMCO Chemical Superfund Site
Oakland, California

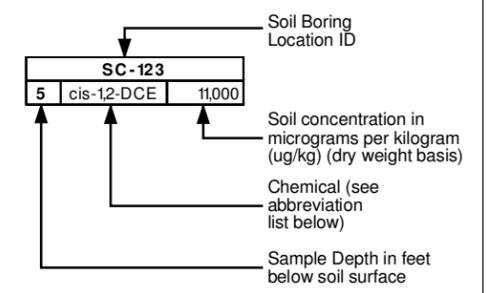
Contaminant	Screening Level Concentration µg/L	Maximum Concentrations Concentration µg/L			
	2012	Sept 2006	Well	August 2012	Well
Trichloroethene	5	140	RMW-10-35	100	RMW-14-50
Toluene	150	12,000	RMW-02-13	24,000	MW-12
cis-1,2-Dichloroethene	6	25,000	MW-12	66,000	MW-12
Xylenes, total	1,750	3,200	RMW-02-13	2,020	RMW-02-13
Ethylbenzene	300	670	RMW-02-13	470	RMW-02-13
1,1,1-Trichloroethane	200	240	MW-12	850	MW-12
Tetrachloroethene	5	24	RMW-07-35	33	RMW-07-35
1,1-Dichloroethane	5	1,300	RMW-02-32	2,300	MW-12
Methylene chloride	5	140	RMW-02-32	<0.25	All Locations
1,2-Dichlorobenzene	600	5,700	RMW-02-32	200	RMW-01-35
Benzene	1	340	RMW-02-13	300	RMW-02-13
trans-1,2-Dichloroethene	10	220	MW-12	730	MW-12
1,1-Dichloroethene	6	19	RMW-12-32	380	MW-12
tert-Butyl Alcohol	12	240	RMW-12-32 and BPZ-01	820	RMW-10-35
Chlorobenzene	70	630	RMW-01-17	1,400	RMW-02-32
1,2,4 Trichlorobenzene	5	48	RMW-02-32	26	RMW-02-13
Vinyl Chloride	0.5	15,000	RMW-02-32	7,300	MW-12

Screened Depths of Monitoring Wells

Well	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
RMW-02-32	22	32
RMW-02-13	3	13
RMW-12-32	27	32
MW 12	5	19.5
MW 13	5	18.5
MW 14	5	18.65



- Soil Boring with Concentration of VOCs Exceeding Screening Criteria
- Soil Boring with No VOCs Exceeding Screening Level
- ◆ Existing Upper Aquifer Groundwater Monitoring Well
- ◆ Existing Upper Aquifer Monitoring Well with Non-aqueous Phase Liquid
- Proposed Treatment Area (20 ft. depth)
- Proposed Treatment Area (20-45 ft. depth)
- Proposed Treatment Area (45 ft. depth)
- SC-053 Shallow Hot Spot (10 ft. depth)
- Estimated TCE >5 ug/L Concentration Contour (in groundwater)
- Estimated Vinyl Chloride 100 ug/L Concentration Contour (in groundwater)
- Estimated DCE 1,000 ug/L Concentration Contour (in groundwater)
- Estimated Extent of Free Product (7140 sq. ft.)
- Building
- Former AMCO Chemical Facility Boundary



Abbreviations	
1,1-DCA	1,1-dichloroethane
1,2-DCA	1,2-dichloroethane
1,3-DCB	1,3-dichlorobenzene
1,4-DCB	1,4-dichlorobenzene
BEN	Benzene
cis-12-DCE	cis-1,2-dichloroethene
EBZ	ethylbenzene
PCE	tetrachloroethene
TCE	trichloroethene
1,2,4-TMB	1,2,4-trimethylbenzene
VC	vinyl chloride
Xylenes	xylenes, total
VOC	volatile organic compound
J	Estimated Result

(Source Reference: ITSI Gilbane, 2013).



**USEPA, Region 9
AMCO Chemical Superfund Site
Oakland, California**

**ATTACHMENT 5
Soil Sampling Results and Combined Plume Map January 2014
Source Area (Former AMCO Facility)
December 2011 - January 2012**



(Source Reference: ITSI Gilbane, 2013)



USEPA, Region 9
 AMCO Chemical Superfund Site
 Oakland, California

ATTACHMENT 6
 EE/CA Figure 5-1
 Proposed treatment Area

Attachment 7
Summary of State and Federal ARARs

Regulation	Description	Media			ARAR Determination	
		Soil	Ground-water	Gas (soil gas, indoor air, vapor emissions)	Applicable	Relevant and Appropriate
Waste Management						
22 CCR Division 4.5, Chapter 11 (Identification of Hazardous Waste)	Defines what wastes are identified as hazardous.	X	X	NA		X
22 CCR Sections 20210, 20220, and 20230	Defines regulated waste (hazardous), nonhazardous waste, and inert waste.	X	X	NA		X
22 CCR Sections 66262.10-66262.89 (Standards Applicable to Generators of Hazardous Waste)	Describes the responsibilities of hazardous waste generators. Specific requirements are given for the manifest system, pre-transport requirements, and exportation of hazardous waste.	X	X	NA		X
California Health and Safety Code Section 25123.3, Remediation Waste Staging	Applies to liquid and solid hazardous waste materials temporarily stored onsite which are not RCRA wastes.	X	NA	NA		X
22 CCR Part 172 (Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Info. Training Requirements, and Security Plans)	Describes the requirements for the transport of hazardous materials.	X	X	NA		X
49 CFR Part 173 (Shippers – General Requirements for Shipments and Packaging)	Describes the requirements for preparing hazardous materials for transport.	X	X	NA		X
22 CCR Section 66264.170 – 66264.178 (Use and Management Containers)	Defines the responsibilities for handling hazardous waste containers stored or transferred by owners or operators of a hazardous waste facility.	X	X	NA		X
Water Quality						
SWRCB Order No. 2009-00090DWQ, Construction General Permit, Sections III, A, B, & D, Section V, Section VI, Section VIII	This permit requires compliance with the NPDES General Permit for storm water discharges associated with construction and land disturbance activities. The permit conditions apply to stormwater which has come into contact with contaminated materials, as well as, water which has not hot been in contact with contaminated materials.	X	X	NA		X

Attachment 7 - Summary of State and Federal ARARs (continued)

Regulation	Description	Media			ARAR Determination	
		Soil	Ground-water	Gas (soil gas, indoor air, vapor emissions)	Applicable	Relevant and Appropriate
Air Quality						
BAAQMD Regulation 6-1-301 (Particulate Matter)	Prohibits emissions equal to or greater than 20% opacity.	NA	NA	X		X
BAAQMD Regulation 6-1-305 (Particulate Matter, General Requirements Visible Particles)	A person shall not emit particles from any operation in sufficient number to cause annoyance to any other person, which particles are large enough to be visible as individual particles at the emission point or of such size and nature as to be visible individually as incandescent particles. This Section 6-1-305 shall only apply if such particles fall on real property other than that of the person responsible for the emission.	NA	NA	X		X
BAAQMD Regulation 6-1-310 (Particulate Matter, General Requirements, Particulate Weight Limit)	Particulate Weight Limitation: A person shall not emit from any source particulate matter in excess of 343 mg per dscf (0.15 gr. per dscf) of exhaust gas volume.	NA	NA	X		X
BAAQMD Regulation 6-1-311 (Particulate Matter; General Operations)	General Operations: In addition to the limitation of Section 6-1-310, a person shall not discharge into the atmosphere from any general operation particulate matter from any emission point, at a rate in excess of that specified in in Table 1 (of this section) for the process eight rate indicated	NA	NA	X		X
BAAQMD Regulation 8, Rule 5 (Storage of Organic Liquids)	Limits emissions of organic compounds from storage tanks.	NA	NA	X		X
BAAQMD Regulation 8 (Organic Compounds), Rule 47 (Air Stripping and Soil Vapor Extraction Operations), 8-47-301 and 8-47-302	This regulation limits emissions of organic compounds from contaminated groundwater and soil and requires soil vapor extraction systems to be vented through a control device.	NA	NA	X		X

Abbreviations:

BAAQMD	Bay Area Air Quality Management District	NA	Not Applicable
CA	California	NPDES	National Pollutant Discharge Elimination System
CCR	California Code of Regulations	POTW	Publicly Owned Treatment Works
CFR	Code of Federal Regulations	RWQCB	Regional Water Quality Control Board
EBMUD	East Bay Municipal Utility District	SWRCB	State Water Resources Control Board

**Attachment 9 - RESPONSE TO COMMENTS on the
Final Engineering Evaluation and Cost Analysis (EE/CA)
AMCO Superfund Site, Oakland, California**

Comments 1-22 present EPA’s Response to Comments (RTCs) to comments made in a March 9, 2015, letter to EPA on behalf of the Community Advisory Group (CAG). The letter was submitted by the following CAG members:

- David Carter, resident, Vice President South Prescott Neighborhood Association, CAG member
- Brian Beveridge, resident, Co-Director West Oakland Environmental Indicators Project, CAG Co-chair
- Bradley Angel, Exec. Director, Greenaction for Health and Environmental Justice representing residents of South Prescott, CAG member

No.	Comments and Recommendations	Response
1	EPA should provide a robust communication plan detailing how the community, especially nearby residents, will be kept informed of planned daily activities during construction and operation of the removal action. The communication plan should also describe how residents will be notified and what they should do in case of an emergency. Outreach should include door-to-door outreach, multilingual information and a system that informs residents of ongoing activities. Information should also be provided to and posted at local businesses frequented by residents.	EPA agrees. During the removal design, a comprehensive communication plan will be developed for the Site with CAG input. The plan will describe the typical construction and system operation activities, a project schedule, hours of operation, and how the public will be notified of any changes. It will also describe what types of emergencies may arise, how the public will be notified and what actions the public may take during and after the emergency. EPA will work with the CAG and also share this plan with the broader community for their review and comment.
2	Information should be communicated in English, Chinese and Spanish.	Fact Sheets and other community notifications will be provided in English and Spanish. Verbal translation of other languages will be provided, as needed.
3	EPA should consider all options and identify a means to hire local community and environmental justice groups represented on the CAG to conduct the community outreach and communications services.	EPA remains committed to supporting the community in any way legally possible. EPA will continue to engage with the CAG, where local community and environmental justices groups are represented. Local groups can coordinate with EPA’s Community Involvement Coordinator if they’d like to volunteer or discuss outreach collaboration at the Site.
4	What system controls will be put in place to prevent accidental vapor releases?	Specific system controls will be designed during the removal design. A common system control is an automatic shut off switch for the thermal heating rods in the event the vapor extraction system is not operating.
5	We wish to see EPA establish a 24-hour hotline number to call for information and complaints. This number should be posted at the site and on all outreach materials and websites. This should not be a “leave a message” line, but should have an informed operator to answer common questions or take messages.	EPA will provide 24-hour phone number(s) with operators that residents may call during the construction and operation of the treatment system. The number(s) will be posted at the Site and on outreach materials.

**Attachment 9 - RESPONSE TO COMMENTS on the
Final Engineering Evaluation and Cost Analysis (EE/CA)
AMCO Superfund Site, Oakland, California**

No.	Comments and Recommendations	Response
6	Establish an emergency response plan to immediately notify residents in the event of an accidental release of toxic vapor.	During the removal design an operations manual will be prepared which will include a standard operating procedure for implementing an emergency response at the Site. The response actions will be detailed in the Communications Plan referenced above.
7	Residents should be notified about the construction and treatment process and be given information about the monitoring and alarm system, and instructions for what to do in the unlikely event of an emergency involving air emissions or other problems from the site.	The treatment process and construction plan will be developed during the removal design. EPA will provide an opportunity for interested community members to tour the Site after the system is constructed. In addition, please refer to the response to Comment #1.
8	Are there “sensitive receptors” living near the AMCO site? Many residences have changed hands since the local population studies were done for the Remedial Investigation plan. Most of these new residents know little about the AMCO site or the implications of the risk or clean-up action.	EPA has been in touch with the residents of 4 homes (10 units), prior to and during an indoor air sampling event conducted in February 2015. We have had discussions with these residents about the AMCO site and the plans for a cleanup action and have discussed with them any particular sensitivities they may have. We will continue to communicate with these residents as the cleanup plans develop.
9	Residents adjacent to the AMCO site and/or areas impacted by the construction and/or treatment work should be offered temporary relocation during this work and treatment. Relocation should cover lodging and other reasonable costs of relocation. We suggest a one-half block radius of the site is a reasonable area of concern for voluntary relocation.	The noise level and patterns (e.g., typical working hours) will be similar to the levels experienced during the intensive soil characterization investigation conducted in 2012, during which residents did not request temporary relocation. However, we will consider requests for temporary relocation on a case-by-case basis, and will follow EPA’s relocation guidance in accommodating those requests.
10	When will deed restrictions, covenants and/or institutional controls be placed on the property, and at what point would they be removed?	Following this NTCRA, EPA will evaluate options and propose a final cleanup remedy which may or may not include deed restrictions, covenants, and/or institutional controls. The State (Department of Toxic Substances Control) enforces these controls and must concur on a remedy that selects them. The specific conditions under which these controls are removed is established on a case-by-case basis.
11	We understand that a higher temperature Thermal Conductive Heating (TCH) process could remove more of the primary source material in the first phase of the remediation. The EE/CA describes this process as requiring more heating wells, potentially higher costs and may not work under buildings. We are satisfied that a lower temperature Electrical Resistive Heating (ERH) process will remove	After implementing this thermal removal, EPA will complete a subsequent investigation and evaluation, which will result in a final remedy being selected for the Site. The process will be similar to that employed for this NTCRA, with our study being published, after which we will solicit public comment and input, and select the final remedy.

**Attachment 9 - RESPONSE TO COMMENTS on the
Final Engineering Evaluation and Cost Analysis (EE/CA)
AMCO Superfund Site, Oakland, California**

No.	Comments and Recommendations	Response
	<p>the primary source area and possibly cause less disruption of the new business activities on the site. However, considering the inability of ERH to remove the combined mix of chemicals at AMCO, the community expects EPA to complete the cleanup with a plan to remove SVOC's, PAH's and metals.</p>	
12	<p>We recognize that the recommended clean up method avoids open excavation activities. However, the traffic area around the site has significant sections of unpaved surfaces. Movement of heavy vehicles in these adjacent areas could create significant dust in the neighborhood. EPA should require controls and implement mitigation measures to prevent dust emissions during construction activities. This should include but not be limited to:</p> <ul style="list-style-type: none"> • Fence line dust monitoring • Standard dust management practices, with independent on-site oversight to assure compliance. • Work stoppage procedures in the event of dust events. • Vehicle cleaning and dust management for construction equipment. • Street sweeping and watering as needed. 	<p>Installation of the In-Situ Thermal Heating (ISH) system will require 2 months. Most of the construction work will be drilling wells and installing above ground plumbing, electrical work, and treatment components (tanks and equipment). A more detailed description of the construction of the treatment system will be developed during the removal design. We anticipate the construction plan will include all of the bulleted items in your comment.</p>
13	<p>What decibel measurement is estimated for cleanup activities? In consultation with the CAG, specific hours of work during construction must be established to minimize noise for residents.</p>	<p>Work will be done during regular business hours and will be at the same noise level as a typical construction site. As mentioned above, EPA will work with the community and the CAG as plans develop.</p>
14	<p>In consultation with the CAG, EPA and contractors should establish an agreed-upon site for the equipment and vehicle staging area. We suggest that EPA require appropriate city permits to control the area of Third St. and Mandela Parkway fronting the property and fence it securely as a staging area. This will keep the public away from the construction area and avoid the need to stage construction equipment on neighborhood streets further from the site of operations. EPA and its contractors should work with the CAG to develop a plan to accommodate the need for residents to park in their neighborhood during the construction and treatment activity.</p>	<p>The Site is large enough to accommodate construction related parking and staging on the property. A more detailed traffic plan and a layout for the on-site parking and staging areas will be developed during the removal design, and will be developed with input from the community and the CAG as necessary. EPA will work with any directly impacted residents to ensure the plan meets their needs.</p>

**Attachment 9 - RESPONSE TO COMMENTS on the
Final Engineering Evaluation and Cost Analysis (EE/CA)
AMCO Superfund Site, Oakland, California**

No.	Comments and Recommendations	Response
	Construction access in and out of the site should be limited to Mandela Parkway. Construction vehicles and equipment should not be staged or stored on neighborhood streets.	
15	The site should have security lighting and new signage that defines the site as an EPA Superfund site and explains the removal action. The site must be protected by security cameras and security personnel at all times, 24 hours per day, seven days per week, to protect the equipment and to prevent tampering that can endanger people and the environment.	The EPA agrees that a high level of security will be needed and will include security lighting and alarm, a perimeter fence, a fence around the treatment system, on-site security 24 hours a day, seven days a week during the removal action, and an emergency shut-off in the event unauthorized individuals tamper with the treatment system.
16	<p>Local businesses may have concerns about potential interruptions to their operations during the removal action. As already mentioned, several businesses have taken up residence in the old AMCO warehouse building and are making investments in physical improvements.</p> <ul style="list-style-type: none"> • Are interruptions to these business operations anticipated? • The warehouse on the site is being rented. Will activities in the building be prevented during the removal action? • Will these unexpected business activities be allowed to limit or delay the full clean-up activities detailed in the EE/CA? 	<p>The ISH treatment electrodes, extraction wells and equipment must be installed in the building to effectively remove the VOCs in the subsurface. It is anticipated that the tenants will not be able to use these spaces during the removal action.</p> <p>Since the inception of the proposed NTCRA method, EPA has communicated proactively with the site owner, tenant, and subtenants regarding the implications of the removal work on the warehouse facility. On multiple occasions EPA notified the owner, tenants, subtenants, and CAG that the most likely cleanup scenario would require that the warehouse not be occupied during the NTCRA system installation and treatment period. EPA will continue proactive communication with the owner, tenants, and subtenants and will continue to work with them in anticipation of the impacts to their operations. EPA will notify the tenants well in advance of the implementation of the removal action of the construction schedule to minimize the potential for delays in the cleanup schedule.</p>

**Attachment 9 - RESPONSE TO COMMENTS on the
Final Engineering Evaluation and Cost Analysis (EE/CA)
AMCO Superfund Site, Oakland, California**

No.	Comments and Recommendations	Response
17	EPA should provide continuous perimeter monitoring for vinyl chloride, trichloroethylene and other VOCs for the duration of the non-time-critical removal action and for an appropriate length of time after the removal action to make sure that people near the site, especially residents along 3rd Street, are protected from any potential air emissions from the action or the site.	Continuous monitoring of certain chemicals, such as vinyl chloride, is problematic because real-time field monitoring devices cannot detect it at the health screening levels. EPA will develop a monitoring plan similar to the one followed during the 2012 intensive soil characterization investigation, which addresses this problem with a combination of continuous monitoring for certain chemicals and grab samples for others. The plan will be provided to the CAG for review and comment.
18	EPA should specify that the contractor use local labor during the removal action, for example graduates of the hazmat training program, a local security company and local hauling companies. The previous lead clean-up action in South Prescott demonstrated that hiring local workers from local skills development programs is a viable option for such projects. Several local organizations can help the EPA contractors find these sources for skilled workers.	Please refer to the response given to comment #3. EPA supports the use of local labor, but cannot direct our contractors to hire specific sub-contractors.
19	<ul style="list-style-type: none"> • For how long will recovered product be stored on the site in the double-walled storage tank shown in Figure 6-6 of the EE/CA? • How will this hazardous material be kept secure? • How will it be removed from the site? • Will the entire storage tank be removed and replaced periodically? 	<p>Liquid contaminants will be stored for less than 90 days on-site in accordance with State and Federal regulations</p> <p>The storage tank will be within the treatment area fence and will be visible to on-site security (Please refer to the response given to comment #21).</p> <p>The tank will be removed from the Site when the removal action is completed. The actual removal of the tank will be determined during the design phase of the NTCRA.</p> <p>No. The tank will be periodically pumped by a regulated disposal treatment company and transported to a regulated treatment facility for treatment and disposal.</p>
20	<ul style="list-style-type: none"> • What is the expected content and quality of the wastewater that may be discharged into the sewer? • Could this water be used for some useful purpose? 	<p>The quantity and quality of the wastewater discharged by the system will not be known until the treatment system is designed. These engineering calculations will be made during the removal design.</p> <p>With ISH technology, some water may be reinjected into the subsurface to increase system performance. We will continue to seek out opportunities to use and re-use the water in a beneficial manner during the design process.</p>

**Attachment 9 - RESPONSE TO COMMENTS on the
Final Engineering Evaluation and Cost Analysis (EE/CA)
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No.	Comments and Recommendations	Response
21	<p>We are told by EPA that the standard Superfund Remedial Investigation and Record of Decision process will continue during and after this Non-time-critical Removal Action.</p> <ul style="list-style-type: none"> • What contaminants of concern (COC) will remain on site after the removal action? • What engineered and/or institutional controls are planned for after the non-time-critical removal action, during the remainder of remedial process and after cleanup is complete? • How will the non-time-critical removal action inform further cleanup of the site? • Will remaining contamination be excavated, treated or capped on site? 	<p>EPA expects SVOCs, metals and other non-volatile compounds to remain on-site after the removal action is complete. VOCs will be present in the dissolved groundwater plume downgradient of the source area.</p> <p>The concrete layer over the Site will continue to serve as an engineered control that prevents exposures to soils and groundwater.</p> <p>The primary goal of the NTCRA is to reduce potential risks associated with vapor intrusion into structures on and near the Site by reducing the mass of VOCs at the Site. Removal of the VOCs from the Site will expedite the final remedial action for the Site. Groundwater monitoring during and after the thermal treatment will identify concentrations of residual contaminants (including SVOCs, metals, etc.) in the source area. This information will be used to re-evaluate the nature and extent of contamination and potential risks upon completion of this action, so that a final remedy can be selected.</p> <p>Treatment alternatives for the final remedial action will be evaluated after the NTCRA is completed. These alternatives may include institutional controls. We cannot speculate on a final remedy without the additional information that will be provided by post-NTCRA monitoring, but will communicate closely with the community and the CAG as they are being developed.</p>
22	<p>We are very concerned that the property owner has been allowed to lease the AMCO site buildings to several small business operators (an art collective and a fitness gym). It appears that little disclosure of the actual risk was presented to these tenants by the property owner.</p>	<p>EPA remains committed to proceeding with the cleanup as expeditiously as possible. We are proactively communicating with the tenants to ensure that their needs are evaluated and considered, where possible, to encourage a smooth transition to the cleanup phase.</p>

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Comments 23-34 present EPA's Response to Comments (RTCs) to written comments submitted by the public during the AMCO Superfund Site EE/CA Workshop hosted by EPA on 25 February 2015 at 359 Mandela Parkway, Oakland CA.

No.	Comment Made By:	Comments and Recommendations	Response
23	John Schweizer	<p>Comments are derived from written notations made to the EE/CA Figure 2-2, <i>Soil Characterization Sampling Grid and Concrete Thickness</i>:</p> <p>a: A red square is drawn in the northwest corner of the proposed treatment area which is larger than the treatment area proposed in the EE/CA. The caption reads "Down to 45' top of sand (Middle Zone Source)".</p> <p>b: A red, irregular shape is drawn in the central area of the proposed treatment area which is significantly smaller than the treatment area proposed in the EE/CA. The caption reads "Down to 35' (Middle Zone Source)".</p>	<p>The purpose of this NTCRA is to reduce the potential for vapor intrusion (VI) at the Site. Volatile organic compounds (VOCs) in the soil, groundwater and light non-aqueous phase liquids (LNAPLs) are the source material for VI.</p> <p>The red outlines are smaller treatment areas that seem to rely on groundwater data alone; the selected treatment area relies on groundwater as well as the results of a very intensive soil characterization investigation. EPA's more conservative approach will better ensure that residuals that could re-contaminate the cleaned up area are not left behind.</p>
24 - 32	Meredith Baker, Evan Musai, Suzanne Tipton, Michael Lindsay, Barry Van Deerlin, Greg Schlesinger, Richard Langhammer Bob Castro, Mark Martelaro	<p>Please do not interrupt the Glass Studio located at 1414 3rd St. I am a member of the studio and I will lose my job. Please take into consideration, [sic] that a lot has been invested into this artist space, and we will be put into significant hardship. Glass blowing is an art form that requires a lot of equipment and customization to the building. There are a number of concerns, including the potential for damage to the delicate copper tubing for oxygen and propane that run throughout the building. Please don't shut us down unless it is absolutely necessary to. Please take us into consideration. And, please don't damage our facilities.</p>	<p>Please refer to response to Comment #33-34 below.</p>

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33 - 34	Sage Loring, Fuming Gorilla Productions Nicole Camp, Acala Studios	<p>The following is an excerpt from Sage Loring’s letter:</p> <p>Acala Studios is supporting the Oakland economy and culture. Acala Studios needs to exist, thrive and grow. It can’t do that if it’s shut down for nine months. It would be disastrous for his artisans that work here. In fact, Acala Studios is becoming the talk of the town in the art community and it just recently opened.</p> <p>Other than there being a health risk posed to anybody working on this property, Acala Studios should continue regular operation and its employee’s allowed access to and from there [sic] place of work. There has to be some type of allowance for these artists and people that make their livelihood here if there is not a proven and eminent health or safety risk.</p> <p>The following is an excerpt from Nicole Camp’s letter:</p> <p>A closure of this facility, no matter the duration, would put each person in this building in a sever [sic] situation. Please let us know if there is anything on our part that can be done to prevent this from happening. We would gladly work with you in any matter that is within our means. ... If you could please reconsider your notion for closure of the building we call Acala Studios, it would mean everything to us and our families.</p>	<p>EPA supports re-use of Superfund Sites and is required to clean sites to “reasonably anticipated future use”. Currently the Site and the surrounding neighborhood is zoned for mixed commercial/residential use.</p> <p>We have been planning this NTCRA (a streamlined cleanup process) to address VOCs in the source area since mid-2013. The Community Advisory Group (CAG) and the building owners, with whom we communicate our plans and activities, have been aware of these plans since that time, and a schedule for the NTCRA was presented (as a handout) at a CAG meeting held in March, 2014. At that time the warehouse had been vacant for several years. On multiple occasions EPA notified the owner, tenants, subtenants, and CAG that the most likely cleanup scenario would require that the warehouse not be occupied during the NTCRA system installation and treatment period. EPA will continue proactive communication with the owner, tenants, and subtenants and will continue to work with them in anticipation of the impacts to their operations. EPA will notify the tenants well in advance of the implementation of the removal action of the construction schedule to minimize the potential for delays in the cleanup schedule.</p> <p>We regret you are facing potential hardships due to the cleanup. However, the benefits to the community that come from this cleanup will be substantial and permanent. Since the cleanup requires installation of heating electrodes and extraction wells through the floor of the warehouse and office space, it will not be feasible for these buildings to be occupied while the cleanup is occurring. The parking lot will be used as a staging ground for large equipment and vehicles, so it will also not be available as parking space for tenants. Further, a partial cleanup of the source area (ie, not including the area beneath the warehouse/office space) would be a waste of public funds, as the contamination left behind would re-contaminate the cleaned-up area.</p>

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Comments 35-39 present EPA's Response to Comments (RTCs) to written comments submitted by e-mail between February 25th and March 12th, 2015.

No.	Comment Made By:	Comments and Recommendations	Response
35	David Latimer	<p>The following is an excerpt from D. Latimer's e-mail:</p> <p>It would truly be a shame if the action planned could not be done in such a way that the new businesses would continue operating.</p> <p>Drilling inside the building will essentially destroy these new business and likely cause a cascade of lawsuits.</p> <p>I strongly urge the EPA to seek a way to remove pollution from the 1414 Third Street site without entering the building and destroying the businesses inside.</p>	Please see response to 33 – 34 above.
36	Clyde Abell, Owner CrossFit Power Grid	<p>The following is an excerpt from C. Abell's e-mail:</p> <p>I am a business owner currently occupying one portion of the warehouse space at 1414 Third.</p> <p>If the EPA moves forward in occupying the inside of the warehouse, my business will be devastated. The financial impact of having to relocate our business will be insurmountable and cause undue hardship. I will be forced to lay off my employees who have come to rely on their position with us. The fate of my business relies now solely on the financial impact that this action would cause.</p> <p>I implore the EPA to find a way to bring remediation to the site at 1414 Third Street without having to drill or occupy the inside of the warehouse space.</p>	See response to Comment #33 - 34, above
37	Caesar Garcia, Owner CrossFit Power Grid	<p>The following is an excerpt from C. Garcia's e-mail:</p> <p>First off, I am not completely convinced that there the site possess an immediate danger. Based on numerous air quality reports conducted at the site, more specifically inside the space I conduct my business, the air quality meets Federal standards and is well</p>	<p>See Response to Comment #33 34, above</p> <p>In addition, EPA is investing time and energy into improving air quality with other programs. Whether</p>

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		<p>below the limit on all accounts. Additionally, any chemicals below the surface of the building are not being disturbed or posing any threat to water that residents are utilizing. If the EPA wants to utilize the parking lot to perform a clean up, so be it. However, I am in no way in favor of having local small businesses being disturbed and put out of business for some political agenda that has been going on for close to 20 years.</p> <p>If the EPA really wants to help West Oakland they should allocate the funding they want to receive for the project into identifying ways to improve air quality being generated from the diesel trucks and cargo ships; or helping to find ways to reduce the amount of dumping taking place in our neighborhood.</p> <p>If the EPA decides to pursue their initiative at 1414 3rd Street, I and other neighbors in the area believe, will cause more harm than good. I further this by finding out that the proposed solution is an experiment that has never been completed before.</p>	<p>or not the funds are expended on this project will have no impact on those projects.</p> <p>As presented in the EE/CA, the proposed solution is not new: ISH is a proven technology, having been used on many sites for over 10 years.</p>
38	Richard Langhammer Acala Studios	Severe structural damage to our facilities would put us out of business. In the event that the remediation requires extensive and severe damage to the existing structure, we would need \$85,000.00 in order to rebuild.	EPA does not anticipate that there will be severe structural damage to the warehouse due to NTCRA activities. Completing this NTCRA is very important to the local community, and EPA is committed to reducing environmental hazards in the West Prescott neighborhood.
39	Rocio Guerrero, Owner CrossFit Power Grid	I ask that you please reconsider your plan to take over the inside space and explore the option of testing on the outside of the building and parking lot. I would think you would get the same results if you don't test within the 48 feet width of the space.	See response to Comment #35, above

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Comments 40-83 present EPA's Response to Comments (RTCs) to written comments submitted by John Schweitzer on 26 February 2015. The original comments were submitted as an annotated copy of the EE/CA to EPA. The transcribed comments are given below:

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40	Title page, Title block	This is not a draft document. How will the EPA incorporate comments?	EPA has carefully evaluated each comment received during the Public Comment period, and is formally responding via this specific response to comments attachment. EPA then reviewed the proposed removal to determine what, if any, changes should be made to the proposed action. Those changes were then incorporated into the decision document – the Action Memorandum.
41	pg. ES-1, para. 2, line 3	How will EPA determine the Final Action? Will the community have advisory input? What is the EPA's estimate of the timing for final action?	Upon completion of this interim, NTCRA of VOCs for the Site, EPA will update the Remedial Investigation/ Feasibility Study based upon the amount of contaminants remaining at the site. A final Record of Decision (ROD) will address the remaining contamination at the Site. This process will be initiated following implementation of the NTCRA and will take several years. The community will be involved in the RI/FS process leading to the Final ROD.
42	pg. ES-2, para. 1, line 6	The community's concern was legitimate. Burning chlorinated hydrocarbons creates toxins such as dioxin and furan. There is no concentration below which these compounds are known to have no health effects. Didn't EPA also have a concern?	EPA agrees that the concern is legitimate. In response to the concerns of the AMCO and other Superfund communities regarding this issue, the Division Director of Superfund Region 9 issued a policy memorandum on 11/30/1998 directing Superfund staff to consider alternatives to thermal destruction technologies for treating vapors. Since that time new technologies and improvements of old technologies have been developed, which have substantially improved capture and treatment of the vapors. However, based in large part on those concerns, EPA has selected a cryogenic technology for treating vapors during this NTCRA which eliminates the need for thermal destruction on the Site.
43	pg. ES-2, para. 3, lines 5-6	The warehouse has an intact concrete slab floor and is not subject to vapor intrusion. The attached office has a wooden floor over a crawl space. Vapor intrusion into the office has been detected.	The results of sampling and analysis of indoor air from the warehouse, conducted in October, 2014, indicated that vapor intrusion is occurring in both the warehouse and office buildings. Vapor intrusion can occur through cracks in the cement floor or other breaches, such as the bore holes (sealed) from earlier soil investigations. EPA re-sampled indoor air in the warehouse and office

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			building in February and March 2015. Vapor intrusion continues to occur in both structures, at levels that are not safe for unrestricted use. However, the concentrations of TCE and degradation products in the indoor air of the warehouse do not currently exceed commercial screening levels.
44	pg. ES-2, para. 3, line 6	There is an actual human health risk in the office space of the warehouse. There is no mention of the potential risk to residents in the adjacent homes as being the reason for the NTCRA.	The reason for the NTCRA is stated in the Executive Summary of the EE/CA (p ES-1) as follows: "The vapor intrusion (VI) exposure pathway is the overriding issue addressed by this NTCRA." . . ."The primary goal of the NTCRA is to reduce potential risks associated with VI into structures and residences at and near the Site, by reducing the mass of chlorinated VOCs in the source area". "Existing data have not confirmed a completed VI pathway into residences adjacent to the site. However, due to detections of site-related VOCs in the crawl spaces of some homes, EPA installed vapor mitigation systems beneath four homes to address the potential for a complete VI pathway. By eliminating the contaminant source, which feeds the groundwater plume, the risks associated with vapor flux from groundwater will diminish over time."
45	pg. ES-3, Table, Alternative 3, "Effectiveness"	Because the tight soil in the source area will release only a small amount, probably 10% or less of the LNAPL and will prevent the flow of air and/or water and chemicals used for biological enhancement to treat the remainder, Alternatives 3, 4 and 5 should be listed as "Poor" in the effectiveness column. The [sic] will be little more effective than the "do nothing" option.	A specific study of the extent of LNAPL at the Site has not been conducted. The recommended alternative, In-Situ Thermal Heating (ISH) does not require an initial treatment of LNAPLs. Also please refer to the response given for comment #46.
46	pg. ES-3, Table, Alternative 2, "Effectiveness"	As described, Alternative 2 should be listed as "Poor". See my comments in Section 6.2.	The EE/CA identifies potential alternatives for a proposed NTCRA removal action and evaluates the alternatives against each other using the following criteria: effectiveness, implementability and cost. The ranking of each alternative is based on the past experience of EPA in implementing these technologies on similar sites.

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47 - 48	pg. ES-3, Table, Alternative 6, "Effectiveness"	Because the tight soil in the source area will release only a small amount, probably 10% or less of the LNAPL and will prevent the flow of air and/or water and chemicals used for biological enhancement to treat the remainder, Alternatives 3, 4 and 5 should be listed as "Poor" in the effectiveness column. The [sic] will be little more effective than the "do nothing" option.	Please refer to the response given for comment #46.
49	pg. ES-3, para. 6, lines 4-6	The southern part of the proposed treatment area already has an organic substrate resulting from incomplete removal of soil when a fuel tank was removed. Evaluation of biological activity has shown this to be a very active treatment area and not a source area. Not treating this area may speed up meeting RAOs. Has EPA considered this?	Yes; however, the biological breakdown of contaminants in the subsurface is slow. The recommended alternative, ISH, is capable of removing the VOC contamination from the Site in a short time frame (i.e., months). If the EPA were to implement a partial cleanup using ISH there is considerable risk that the contamination remaining in the soil will migrate to the recently cleaned areas before being biologically degraded, thus reversing the cleanup effort. To avoid this possibility, the EPA intends to target the entire source area.
50	pg. 1-1, Section 1.0, para. 1, line 3	It is not clear how the EE/CA is a vehicle [sic] public involvement. If the CAG were allowed, through its TA, to comment on how the RI/RI Addendum inform [sic] the EE/CA, some of the problems in this apparently final document could have been avoided.	The EE/CA provides the basis and screening of technologies for the action, and was made available for public review and comment. In addition, EPA provided a technical consultant, through its contractor, to assist the community in reviewing and generating comments on the document. The comments and EPA's responses to comments are included in the Administrative Record. The CAG's involvement and participation is valuable and EPA will continue to engage the CAG where and when the process provides opportunity. Public involvement is a priority for EPA.
51	pg. 2-13, Section 2.1.5.1, para. 1, lines 7-8	This underestimates how tight the soil is in the upper than the lower regions of the aquifer. CH2M Hill calculated ground water that flow velocities [sic] are an order of magnitude lower in the upper regions of the aquifer.	Yes, the groundwater flow velocities vary across the Site due to changes in soil types and backfill in the subsurface. The following excerpt is from the RI prepared by CH2M Hill in 2011 (pg. 3-8): <i>"Ranges of groundwater flow velocities for the shallow aquifer have been calculated based on an estimated porosity of 0.35 and the range of hydraulic conductivity values and gradients. The calculated ranges of groundwater flow velocities are from 0.33 to 7.5 ft per year (ft/yr) and 8.6 to 48 ft/yr in the shallow and deeper portions of the aquifer,</i>

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			<i>respectively (i.e. above and below approximately 25 feet bgs, respectively)."</i>
52	pg. 2-16, Section 2.2.1, para. 2, lines 1-4	This is why the area near 3 rd Street shows high biological degradation of the TCE, DCE and vinyl chloride that originate in the source area west of the warehouse. The organic content of the soil in this area may be the reason that these risk-driver chemicals have not migrated farther than they have, and that their plumes may be retracting. The CAG may want the EPA to consider not treating this area.	Please refer to the response given for comment #49.
53	pg. 2-16, Section 2.2.3, para. 1, lines 7-10	It is still a potential pathway for exposure. What happens if a fan breaks? What happens if the chemicals in the soil that are promoting biodegradation of the toxics get used up and the plumes start expanding again? Statements like this are untrue and could be used by the Remedy Review Board for selecting the No Action alternative.	<p>Please refer to the response given for comment #44.</p> <p>ISH is the recommended alternative for the NTCRA and is expected to remove the highest concentrations of VOCs at the Site. The biological degradation of VOCs at the Site is significantly slower.</p> <p>The National Priority Panel, which has reviewed the project, uses specific criteria to rank the proposed project for funding against a national field of cleanup projects, and is not influenced by this particular statement.</p>
54	pg. 2-17, Section 2.3.1.1, para. 1, lines 1-4	Same comment as Executive Summary. LNAPL has never been found in MW-12, the well the closest to where the trench was. This implies that the area where the trench was is in the source area. Maybe there was a sheen from the presence of the underground fuel tank which wasn't removed until a couple of years later, but there certainly is no evidence now of LNAPL ever being there.	The former SVE system trench is T-shaped. The trench is parallel to the warehouse/ office building (roughly extending North- South) and is located in the center area of the Site where LNAPLs have been observed. This trench intersects a horizontal section of trench which extends parallel to 3 rd Street (roughly extending East-West). MW-12 is located in the 3 rd Street sidewalk near this trench. LNAPL was found by Smith-Reidel in the 3 rd Street trench in 1995 during a sampling event.
55	pg. 2-17, Section 2.3.1.2,	EPA may want to monitor the two down gradient wells from the well that shows TCE contamination. The RI/RI Addendum show that the site is the source of this contamination. The contamination is expected to	After implementation of the NTCRA, which will remove VOCs in the source area, EPA will revise the monitoring program for the Site to ensure it addresses revised objectives for groundwater monitoring.

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	para. 1, lines 4-5	dissipate. Monitoring the down gradient wells will give EPA the data needed to prove AMCO did not contribute to contamination of the UPRR property.	One of these objectives will be to evaluate the potential contribution from potential secondary sources.
56	pg. 2-17, Section 2.3.1.2, para. 2, line 2	This is not correct. Soil sampling from one boring in the Old Bay Mud directly below the source area indicates that there is DNAPL in the pore spaces of the clay in a very limited area near the Merritt Sand interface. Groundwater sampling shows the DNAPL is not migrating from the clay, so there is no need to do anything.	Soil sampling conducted during the RI addendum (ITSI-Gilbane 2014) found TCE in a soil sample (SC-021, please refer to EE/CA Figure 2-4). The sample was collected at 60 feet bgs which is the interface between the Merritt Sand and the Older Bay Mud. VOCs were not found in soil samples collected below this depth. SC0-021 is located within the proposed treatment area.
57	pg. 5-1, Section 5-2, para. 1, lines 3-6	The treatment area shown has too large a footprint for the selected option. See my sticky notes on Figure 2-2. The size of the treatment area is detrimental to the overall site remediation and and [<i>sic</i>] causes the cost estimate to be much higher. I am concerned this could cause rejection by the Remedy Review Board.	The proposed treatment area is based on the presence of the highest levels of VOC contamination in the groundwater and soil found at the Site.
58	pg. 6-2, Section 6.2.1, para. 2, lines 4-6	Where will the water be disposed? Because of the chlorinated solvents in the ground water, I believe the cost of liquid disposal is underestimated.	The contaminated water will be treated and disposed off-site at a regulated facility. The cost of off-site disposal and treatment of the contaminated water is included in the cost estimate.
59	pg. 6-2, Section 6.2.1, para. 4, lines 1-4	Where would the soil be disposed? Because several of the contaminants are banned from landfills, even Class I landfills, I believe the cost of doing this is greatly underestimated.	The soil would be sent out of state to a regulated landfill for disposal. In the event this excavation is selected, disposal issues will be resolved during the removal design. The cost for transport and disposal of the contaminated soil off-site was included in the cost estimate and is based on best available information.
60	pg. 6-3, Section 6.2.2, para. 4, lines 2-3	Alternative 2 should be listed as "Poor" in the effectiveness column of [<i>sic</i>]	Please refer to the response given for comment #46.

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61	pg. 6-3, Section 6.2.2, para. 4, line 3	The warehouse should be demolished and the contaminated soil removed. Not removing it causes the one source that is causing [sic] and actual exposure pathway to exist not to be removed [sic].	The recommended alternative, ISH, can be implemented without demolishing the building, which is a reason why the thermal alternative has been selected.
62	pg. 6-3, Section 6.2.3, para. 2, line 1	There are no disposal sites in California that can take the waste.	The waste will be transported to a regulated hazardous waste disposal facility out of state. The estimated costs have been included in the estimate for this alternative and is based on the best available information.
63	pg. 6-4, Section 6.2.4, para. 1, line 1	Why is this about half of previous estimates. [sic] What changed? I suspect this is way understated.	The prior cost estimates for excavation (from the RI/FS for a previously proposed excavation remedy) were for a removal action with a significantly larger treatment area. The goal of the previously proposed excavation was to remove all site contaminants, including SVOCs and metals from the entire Site. This EE/CA addresses the most concentrated VOCs in the much smaller source area.
64	pg. 6-4, Section 6.3.1, para. 1, line 3	This would do nothing to remove the contaminants that are adsorbed in the pore spaces of the source area. About 90% of the contamination in the source area is in this adsorbed form, so this method will be ineffective in reaching the RAO goals, and only very slightly more effective than doing nothing.	A specific study to determine the ratio of contaminants in the adsorbed vs mobile form was not conducted at the Site during the RI investigations. The EE/CA discusses the potential for contamination to remain after treatment at the Site (pg. 6-5, Section 6.3.2 <i>Effectiveness of Cleanup</i> , Sub-paragraph, <i>Overall Protectiveness of Public Health and the Environment</i>). The inability to meet the NTCRA RAOs contributed to this alternative ranking lower than the recommended alternative, ISH.
65	pg. 6-5, Section 6.3.2, para. 1-2, all lines	This is just wrong. The method would leave behind contamination that is responsible for contaminating the groundwater, which is causing the vapor intrusion risk.	This portion of the EE/CA, Section 6.3.2 <i>Effectiveness of Cleanup</i> , Sub-paragraph, <i>Overall Protectiveness of Public Health and the Environment</i>), discusses the potential for contamination to remain after treatment at the Site. The inability to meet the NTCRA RAOs contributed to this alternative ranking lower than the recommended alternative, ISH.

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66	pg. 6-5, Section 6.3.2, para. 4, line 1	would not (Note: The comment is a substitute for the underlined word in the following excerpt from the EE/CA: <i>Alternative 3 is not likely to achieve RAOs for soil or groundwater due to the residual LNAPL what will remain at the groundwater . . .</i>)	Multi-phase extraction (MPE) systems have been used by EPA at sites with VOC contamination. The purpose of the EE/CA is to consider a variety of potential cleanup removal technologies to determine the best alternative for a site. During the evaluation of this alternative, the EE/CA concluded that the presence of LNAPL would likely reduce the expected performance of this technology. As a result, it was rated lower than the recommended alternative, ISH.
67	pg. 6-5, Section 6.3.2, para 5, line 1	leave behind (Note: The comment is a substitute for the underlined word in the following excerpt from the EE/CA: <i>Implementing MPE would remove considerable VOC mass in the vadose and dewatered groundwater zones, resulting in a permanent reduction of vapor risks.</i>)	MPE systems have successfully removed VOCs from the vadose zone and shallow groundwater zones at sites similar to AMCO. VOCs and LNAPLs below the dewatered zone would remain after the system was shutdown. The benefits and limitations of this treatment technology are discussed on page 6-5, Section 6.3.2 <i>Effectiveness of Cleanup</i> .
68	pg. 6-5, Section 6.3.2, para 5, line 2	virtually no (Note: the comment is a substitute for the underlined word in the following excerpt from the EE/CA: <i>Implementing MPE would remove considerable VOC mass in the vadose and dewatered groundwater zones, resulting in <u>a</u> permanent reduction of vapor risks.</i>)	Please refer to the response given for comment #67.
69	pg. 6-6, Section 6.3.3, para. 7, line 1	not sites with tight soil in the source area	MPE systems have been used successfully on sites with soil profiles similar to the AMCO site.
70	pg. 6-7, Section 6.4.1, para. 5, lines 1-2	Should be reduced to treat only the TCE source and to sustain existing biological treatment zones.	The goal of the NTCRA is to remove the highest concentrations of VOCs from the Site in a relatively short timeframe. TCE is only one of many VOCS of concern and it would not be practical to treat only TCE in the source area, leaving high concentrations of other VOCs for a separate, future cleanup. The proposed removal and treatment area will address all VOCs of concern in the groundwater, soil and LNAPL of the source area.

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71	pg. 6-9, Section 6.4.2, para. 1, line 1	Will (Note: The comment is a substitute for the underlined word in the following excerpt from the EE/CA: <i>ISH is a proven and reliable technology that should considerably reduce risks to public health and the environment by treating both the vadose and saturated zones within a rapid timeframe.</i>)	ISH has been successful in removing VOC contamination from sites similar to AMCO; however, since the remedy has not yet been implemented, EPA believes the language is appropriate as stated.
72	pg. 6-11, Section 6.5.1, para. 2, all lines	Adsorbed LNAPL material in the source area will not be removed (see my comments for Alternative 3). In tight soil, only a very small amount can be removed by free product recovery. ESB [<i>sic</i>] will not be effective. Water does not release from some wells in the source area – some of the wells can pump a well dry with a low flow samples [<i>sic</i>] that pumps a few ccs per minute. Release of the oil material that forms the LNAPL will be even worse.	As described in the EE/CA, pg. 6-11, Section 6.5.1 <i>Description of Process/ Technology</i> , the initial step in conducting an Enhanced In-Situ Bioremediation (EISB) removal action must be the reduction/ removal of LNAPL at the Site. As described in the EE/CA, removal of LNAPL from the subsurface may be difficult to achieve and in the event this removal alternative is selected, a pilot test would be conducted during the removal design.
73	pg. 6-11, Section 6.5.2, para, 1, all lines pg. 6-12, Section 6.5.2, para. 1-3, all lines	This whole section is just wrong. EISB would be ineffective at this site unless the source area were removed by excavation or thermal treatment.	The purpose of the EE/CA is to consider a variety of potential cleanup removal technologies to determine the best alternative for a site. During the evaluation of this alternative, EPA found that the presence of LNAPL would likely reduce the expected performance of this technology. As a result, EISB was rated lower than the recommended alternative, ISH.
74	pg. 6-12, Section 6.5.2, para. 4, all lines	This underestimates the time it would take if the source area were not treated somehow.	The estimated time to complete a removal action using EISB includes the steps described in the EE/CA pg. 6-10 through 6-11, Section 6.5.1 <i>Description of Process/Technology</i> .

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75	pg. 6-12, Section 6.5.2, para. 6, all lines	This is an amazing statement. It says that the method would be highly effective because it would be ineffective.	The EE/CA states that while EISB could effectively reduce some LNAPL mass, it is not likely to remove all LNAPL and VOCs in the vadose zone. The remaining contaminant source will likely continue to be a source of groundwater contamination and could result in a significant recontamination of the treated area, after completion of the project. As a result, EISB is unlikely to reach the RAOs for this removal action and was rated lower than the recommended alternative, ISH.
76	pg. 6-12, Section 6.5.2, para. 6, all lines	EISB depends on contact of the treatment chemicals with the contaminants. Because of the tight soil in the source area, contact with the treatment materials is very hard to do. There would not just be pockets left. There would be large areas left untreated in the source area.	In the event this alternative is selected for the NTCRA, a pilot test would be conducted during the removal design to determine the well spacing to reduce the potential for untreated areas in the subsurface.
77	pg. 6-12, Section 6.5.2, para. 8, all lines	This is optimistic given the tightness of the soil in the source area.	EISB has been conducted successfully at sites with similar soil types. In the event this alternative is selected for the NTCRA removal action, a pilot test would be conducted during the removal design to determine the well spacing to reduce the potential for untreated areas in the subsurface.
78	pg. 6-13, Section 6.5.3, para. 2, lines 2-4	This contradicts the statement above that biodegradation of chlorinated VOCs has already begun, so clearly mobile LNAPL is not the problem. The problem is the “LNAPL” oil that adsorbed in the soil in the source area. This cannot be removed by free product removal equipment and renders EISB ineffective.	The movement and location of LNAPL has not been specifically studied at the Site. LNAPL has been consistently found in several groundwater monitoring wells at the Site (please refer to pg. 2-17, Section 2.3.1.1). In addition, EPA has conducted sampling of the LNAPL. For a list of the chemicals found in the LNAPL is given in Table 2-6, of the EE/CA, and as Attachment 2 of this Action Memo.
79	pg. 6-13, Section 6.5.3, para. 3, all lines	The problem is not the availability of water. The limiting factor is the distribution of the waterborne treatment chemicals into the soil. This statement is astounding. Whoever wrote it does not understand the issue at all.	EISB will require water to inject the treatment substrate into the Site. (Please refer to pg. 6-13, Section 6.5.3 <i>Implementability of Removal Technology</i> , para. 4 for a description of the need for water during the injection process.) If it is not possible to use the groundwater at the Site as a source without reducing the effectiveness of the treatment it will be necessary to obtain water from the local municipality.

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80	pg. 6-13, Section 6.5.3, para. 4, all lines	This understates the situation at this site. Large areas of the source area will not be receive [sic] the chemicals that enhance the biotreatment.	The effectiveness of EISB at a site with clay soils is dependent on the spacing of the treatment injection wells. If this removal action alternative is selected for the NTCRA, a pilot test would be conducted during the removal design.
81	pg. 6-13, Section 6.6.1, para. 1, all lines	The TCE that needs to be removed to reduce the health risk is dissolved in oil. Air will channel through the tight soil in the source area causing very little contact with the oily contaminant. Where air does contact contaminant, it will not strip TCE from the oily contaminant mixture because TCE preferentially partitions into the oil. Air will increase the dissolved oxygen in the groundwater which will kill the biodegradation that is already in progress.	It is not known if TCE is dissolved in oil at the Site. TCE is present in high levels in the central area of the Site in soil, groundwater and LNAPL. TCE has migrated offsite in the groundwater. (Figure 5-1, <i>Proposed Treatment Area</i>).
82	pg. 7-1, Sec 7.1.2, para. 4, line 2	So tear down the warehouse!	The ISH remedy can be effectively implemented without demolishing the property.
83	pg. 7-2, Section 7.1.2, para. 4, all lines	EISB would work very well and the others would not if the source area were removed by thermal or excavation. The author of this paragraph does not seem to get that the vapor comes from the groundwater and the objective is to remove the source contaminants feeding the groundwater in the source area. EISB, MPE, and AS/SVE will not do this.	EPA agrees that VOC vapors emanate from Site groundwater. However, VOC vapors can also emanate from Site soils and from LNAPL. A list of VOCs found at the Site soils is given in Table 2-7 of the EE/CA (Attachment 3 of this Action Memo), and the VOCs found in the LNAPL are given in Table 2-6 of the EE/CA (Attachment 2).

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Comments 84-88 present EPA's Response to Comments submitted by the CA Department of Toxic Substances Control in a letter dated March 12, 2015.

No.	Comment Section	Comments and Recommendations	Response
84	Lynn Nakashima (letter to Lynn Suer) Page 1, para. 1	DTSC understands that the activity is being conducted as a non-time critical removal action and is an interim remedy, not meant to be the final remedy. We therefore ask for clarification to the statement made on page 5-1, Section 5.0 that "Adsorbed, dissolved, and vapor phase VOCs will naturally attenuate after the source is removed". We assume this statement is not implying that additional remediation for VOCs at the Site will not be required.	Correct - the proposed removal action, In-Situ Thermal Heating, is expected to remove up to 98% of VOCs, based on experiences at similar sites. The present concentration levels of VOCs in the soil, groundwater and LNAPL are very high and it is expected that some low levels of VOCs will remain on the Site after the treatment is completed. The residual heat from the ISH treatment is expected to stimulate and support the naturally occurring biodegradation of the residual VOCs at the Site. Once this action is complete, EPA will conduct additional sampling to move towards a final decision on cleanup for this Site.
85	Lynn Nakashima (letter to Lynn Suer) Page 1, para. 2	. . . "Table 5-1 (Removal Action Objectives" indicates that the source of the RAOs is derived from the Regional Water Quality Control Board Environmental Screening Levels (ESLs). Since multiple ESL tables exist, the specific ESL table(s) cited should be identified.	During the removal design, the most current ESL tables will be used. The SFRWQCB Interim final December 2013 ESL Tables were used for the EE/CA. Soil screening levels (soil RAOs) were taken from Table A-1 (see link below), and groundwater screening levels (groundwater RAOs) were taken from Table E-1 (they are from the column related to fine-coarse mixed soil in residential areas). www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/ESL/Lookup_Tables_Dec_2013_Detail.pdf
86	Lynn Nakashima (letter to Lynn Suer) Page 1, para. 2	Dioxins can form when materials containing PCs and chlorinated hydrocarbons are heated. The prospect of dioxin formation should be addressed.	The proposed removal action is In-Situ Heating, which will extract all vapors, which may include dioxin, from the subsurface. The proposed design for the system includes multiple steps for treating air emissions, including a cryogenic condensation phase and carbon (Geo C3 and GAC). Thermal destruction of vapors will not occur on site.
87	Kimiko Klein (letter to Lynn Nakashima)	The risks/hazards from potential exposure to only the semi-volatile and non-volatile chemicals present in soil at the site should have been separately presented from the risks/hazards from potential exposure to VOCs in soil. This is necessary in order to identify the residual risks/hazards from potential exposure to non-volatile chemical of concern in the soil that will not be affected by the subject NTCRA that will address remediation of VOCs only. The response to this comment states that "the risks/hazards posed by	The primary purpose of the NTCRA is to address vapor intrusion from the VOCs present in the Site soil, groundwater and LNAPL. The non-VOC contaminants of concern will be addressed in the final remediation, which will be pursued after the completion of the NTCRA. In the interim, all but a small area of the Site is covered by a thick concrete cap which prevents direct dermal or inhalation exposure.

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		<p>non-VOC residuals in soil will be considered when moving forward with the final phase of the AMCO cleanup”. The HERO believes it is necessary to understand these risks/ hazards prior to working on the final cleanup phase for the AMCO site. Therefore, the response to this comment remains unacceptable.</p>	
88	<p>Kimiko Klein (letter to Lynn Nakashima)</p>	<p>The HERO requested that explicit citations identifying the tables in the San Francisco Regional Water Quality Control Board (SFRWQCB) residential Environmental Screening Levels (ESLs) for groundwater and soil from which removal action objectives (RAOs) for this removal action were drawn be included in Table 5-1 of this EE/CA. Although the response to comments states that the table would be so edited, the table submitted has not been revised. In addition, the table has not been revised to include a footnote that the soil ESLs are not necessarily based only on protection of human health, nor has a statement been added that the soil ESLs are based only on direct soil exposure pathways and do not include consideration of the vapor intrusion pathway, Therefore, this comment has not been adequately addressed.</p>	<p>Please refer to the response given for comment #85.</p>