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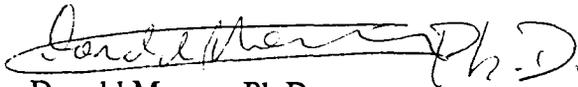
Mr. Ernesto M. Galang
Remedial Project Manager, NSTI
Engineering Field Activity, West
900 Commodore Drive
Code 09ER2EG
San Bruno, CA 94066-5006

Dear Mr. Galang,

Please find enclosed one copy of ARC Ecology's comments on the **Draft Final Phase IIB Remedial Investigation Work Plan Addendum** for Naval Station Treasure Island, San Francisco, California.

If you have any questions regarding these comments, please do not hesitate to contact me by phone or Fax at the above numbers.

Sincerely,


Donald Meyers, Ph.D.

Distribution:

NS Treasure Island, BRAC Environmental Coordinator (Attn. James B. Sullivan)

cc:

U.S. Environmental Protection Agency (Attn. Rachel D. Simons)

California Regional Water Quality Control Board, San Francisco Bay Region
(Attn. Michael Bessette)

City and County of San Francisco, Department of Public Health (Attn. Bill Lee)

California Environmental Protection Agency, Region II (Attn. Chien Kao)

San Francisco Redevelopment Agency (Attn. Larry Florin)

California Department of Toxic Substances Control, Site Mitigation Branch
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Board of Supervisors, San Francisco/ Chair, Base Closures Committee
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DoD Base Transition Coordinator (Attn. Commander Al Elkins)

NS Treasure Island, Remedial Project Manager (Attn. Ernesto M. Galang)

Community Co-Chair, NS Treasure Island Restoration Advisory Board
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Mayor's Treasure Island Citizens Reuse Committee (Attn. Laurie Glass)

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**Comments on Draft Final Phase IIB Remedial Investigation
Work Plan Addendum
for
Naval Station Treasure Island
San Francisco, California**

General Comments and Questions

This work plan addendum details the actions to be taken for completion of the second phase of the remedial investigation (RI) for Naval Station Treasure Island (NSTI). A second phase of remedial investigation is necessary, as the data from the phase I RI were inadequate for achieving the stated goal of the RI process, which is the determination of the nature and extent of the contamination on NSTI.

As written, the work plan describes the utilization of relatively low resolution investigative techniques to define the nature and extent of contaminants for which clean up levels have yet to be decided. It therefore seems highly unlikely that successful execution of the phase IIB work plan will conclude the RI process. A narrowly focused RI utilizing low-resolution techniques will undoubtedly compromise the Feasibility Study component of the clean up process, resulting in the requirement for additional and possibly substantial field work. If the RI is to be completed prior to establishing clean up levels, a highly detailed investigation is required. For the site characterization to be truly cost effective, the clean up goals must be established prior to data collection. Otherwise, there is no way of knowing when site characterization is adequate.

How many additional phases of RI work does the Navy anticipate will be necessary for completion of the RI at NSTI?

A problematic feature of the phase IIB work plan is the formulation of soil and ground water sampling locations without a comprehensive knowledge of the site hydrogeology. The work plan assumes that at all sites, groundwater flow is at right angles to the shore line towards San Francisco Bay. The presence of clay lenses in some areas (e.g. Site 12/area AA and Site 24/area CC) and the possibility that groundwater flow may be influenced by the contours of the shoal on which NSTI was built, suggests that this assumption may not hold. The impact of unexpected groundwater flow patterns on the clean up can not be predicted at this point but the possibility that additional investigations will be required after completion of the hydrogeologic survey cannot be dismissed.

The methodology proposed in the work plan departs significantly from that used in earlier studies by placing considerable reliance on data obtained using the hydropunch and immunoassay field screening techniques. This approach will yield data of lower quality and reliability than that obtained from soil borings and monitoring wells completed via the

use of auger drilling and continuous coring methods. The difference in data quality combined with the relatively high detection limits of the immunoassays and the small percentage of subsurface samples that will be sent off site for confirmatory analysis raises the distinct possibility that additional and otherwise unnecessary sampling will be required if the feasibility studies are to be defensible. In addition, there is no indication in the report that contamination that lies outside the boundaries defined using these techniques will be exempt from clean up. The possibility that these areas will also have to be investigated in the future cannot be dismissed.

Does the Navy consider that the resolution of the data to be collected as described in the phase IIB work plan will be adequate for completing feasibility studies?

Most of the IR sites on NSTI have been placed in one of four investigative areas on the basis of proximity and the potential for the sites to impact each other. While this a welcome advance in the conceptual approach to the RI, the detail of the work plan does not reflect this new outlook. For example, the work proposed for IR sites 7, 10, 14, and 22 (investigative area BB) still addresses the contamination on a site by site basis rather than considering these four sites as one essentially continuous area of contamination. Given the known level of contamination at Site 06, it could be argued that all five sites should be considered as one.

Matters are further complicated in this area by locating the boundary separating area BB from AA immediately adjacent to the western and northern sides of Site 06 (Fire Training School). As both soil and groundwater are known to be severely contaminated at Site 06, including the presence of a layer of petroleum hydrocarbon floating on the water table, the absence of sample locations on the AA side of the western boundary is difficult to understand. This contrasts markedly with the many sample locations within Site 06 which can rightly be expected to be contaminated. The northern side of Site 06 is adjacent to an uncharacterized waste dump. If the assumed direction of groundwater flow is correct, the dump has almost certainly been impacted by the contamination migrating from Site 06. The dump, however, is considered part of area AA. It is difficult to see how the stated goal of determining the extent of the contamination at Site 06 will be achieved by execution of the work plan.

Environmental investigation at NSTI is handled under a number of different programs. Some forms of contamination, notably petroleum hydrocarbons, are addressed by more than one program. If this arrangement is going to succeed, close attention must be paid to the coordination of the various programs. Such coordination is not apparent in the work plan. For example, although diesel is amongst the many contaminants found in the landfill at the southeastern end of YBI (Site 11), investigation of the underground storage tanks (USTs) and fuel pipelines immediately adjacent to this site will not be investigated as part of the phase IIB RI but will instead be investigated as part of the NSTI UST program. No indication is given regarding the level of coordination of IR activities and the UST program for this site. Similarly, the relationship between the storm water sampling program and IR site investigations is unclear. For example, the work plan does not consider sampling the sediment in the storm drain system serving Site 25 (Seaplane

Maintenance Area), even though the site is known to be contaminated and storm water from the nearby outfall has highly elevated levels of copper and zinc and is also contaminated with diesel (PRC 1993). In addition, the phase I RI indicates that storm water from the drainage area immediately to the east of Site 25 has apparently not been sampled. The vessel waste oil recovery facility (Site 21) is located in this area.

Can the Navy explain how the various clean up programs are coordinated and in particular, the basis for investigation of petroleum hydrocarbon contaminants under either the UST or IR program?

One component of the work plan is concerned with testing for dioxin, presumably as a result of past incineration activities on NSTI. As testing for dioxin at San Francisco/Bay Area military bases has started only recently, it would be helpful to add a short appendix covering briefly the chemical nature, origin and potentially harmful effects of dioxin, along with a brief description of the specificity of the testing procedure to be used and the associated detection limits.

Investigative Area AA deserves special attention as it appears outwardly to be in relatively good condition and may be considered for early reuse due to the presence of a large number of well maintained housing units. There are, however, several major problems with this area that have already been documented (McCreary Koretsky Engineers, 1965 a and b; Lowry and Associates, 1971; Dames and Moore, 1988; TRC Environmental Consultants, 1990; PRC Environmental Management, 1992 c and 1993 a; ERM-West 1994). For instance, as much as half of this area may contain numerous apparently randomly located waste trenches, at least a portion of which were subject to some form of excavation after being filled. It is not clear that execution of the current work plan will identify all the trenches, thoroughly characterize their contents or determine the distribution of the excavated waste. In addition, heavy metals (e.g. cadmium and lead) have been found at several locations and the northern and south western corners of the site each contain a waste dump. There is also petroleum hydrocarbon contamination in the center of area AA. This may be an isolated instance of contamination or it may be symptomatic of a larger problem involving leakage from home heating oil USTs, which are no doubt located throughout the housing area but have yet to be thoroughly investigated. The extent of contamination associated with the former buried oil tank at the southern end of the area and the petroleum hydrocarbon contamination in the northern corner remains to be determined. No plans are included for any form of investigation for the former liquid radioactive waste holding tank area.

Although the phase IIB work plan for area AA is a vast improvement over the phase I investigation, it seems likely that many questions will remain for this area after the phase IIB work is complete. If it is assumed that the work plan is successfully executed, what level of reuse will be achieved for this area? Is it anticipated that any land use restrictions will apply after restoration is complete? There needs to be clear answers to these questions if a work plan with an identifiable endpoint is to be formulated.

The body of data that will result from execution of the RI work plan in its present form will compromise the extent of the remedial actions. This in turn may well result in otherwise unnecessary restrictions being placed on the reuse options available for NSTI.

Report Presentation

Much information in this report is repeated unnecessarily and related factual information that should appear in one section is often spread throughout several sections.

The opening section for each IR site should include a concise summary of all the relevant information on past and current site operations, previous site investigations and a summary of the major analytical findings that form the basis for the site work plan. The two sections for each IR site, generally labeled "Field Investigation Strategy" and "Sampling Locations", should be consolidated into a single section. The sections dealing with field methods and procedures should not contain any information that is presented in Section 3. Conversely, information in Section 3 which does not hold for most IR sites should be removed.

The report should include an additional section detailing the work to be performed under the UST program. This section would therefore draw together and expand upon the information that is currently spread throughout the text. With the work plan in its present form, it is difficult to identify the full extent and schedule for the activities that will take place under the UST program.

The effectiveness of the illustrative material would be greatly enhanced if sample sites from previous investigations that yielded contaminants of concern were highlighted and the more important analytical data included. Orienting to the illustrations would be considerably easier if North always pointed to the top of the page.

Specific Points

3.1.2 Soil Sampling with a Hydraulic Punch

Second last paragraph. Figure 2 shows only the relative position of samples taken immediately above the top of the saturated zone and not "immediately above and immediately below" as stated in the text.

3.5 Location and Construction of Monitoring Wells.

p 10, point 3. At what point will groundwater contamination constitute a plume?

3.7 Groundwater Sampling and Water Level Measurement of Monitoring Wells.

Will analysis of groundwater be performed on filtered or unfiltered samples?
Analysis should be performed on both.

4.1 Site 12, Old Bunker Area

The eastern boundary for Site 12 is clearly different in Figures 3 and 4. Clarification is required.

Site History/Potential Contaminant Sources P26-28. It is implicit in the text that there is a difference between "rubbish" and "debris". Without a definition of these two forms of waste, the volumetric estimates of each are meaningless. Clarification is required.

Unless evidence is cited to the contrary, the text should state that the volumetric estimates of rubbish and debris are minima.

The text provides an estimate of the volumes of rubbish and debris that may still exist "assuming rubbish was excavated to an elevation of 2 feet above mean sea level (MSL)". Please indicate when and for what purpose this excavation was performed and the areal extent of the excavation.

The text states that numerous incinerators have operated at NSTI but only one former incinerator location is marked on Figure 4. Does this mean that only one incinerator was ever operated at Site 12 and that it was always at the location marked on Figure 4? Please state the location and feedstock used in the other incinerators.

Please mark Buildings 345 and 3 on Figure 4.

As Building 345 is listed as a possible source of incinerator ash, the activities that took place in that building should be stated.

Please state all components of the liquid radioactive waste that was stored in the holding tanks formerly located on Site 12. How were the contents of these tanks discharged to the Bay?

Is the "former heating oil tank" discussed in the text and the Former Buried Oil Tank marked on Figure 4 the same tank? If so, please use consistent language.

Please state the capacity of the former buried oil tank.

Previous Investigations

In the paragraph discussing the results from analysis of surface soil samples, please include a statement summarizing the analytical results from surface soil samples taken "directly outside sandy play areas". In addition, a distance should be attached to the phrase "directly outside" as it is unclear what this means. For instance, boring SB26, where the cadmium concentration in the first foot of soil is 4 mg/kg (more than twice the level for the grid samples), appears to be within

about 30 feet of play area E. Is this considered to be "directly outside" the play area? The south east corner of play area E overlies a waste disposal trench. What level of investigation took place in this section of the play area?

Play area K is of particular concern as it is located a few feet within the northern perimeter of the Westside Drive waste dump area, which is known to have raised levels of lead and copper. If the samples taken directly outside the play area were also outside the dump area, then these samples will not be representative of the general conditions outside the boundary of this play area.

The concentrations of analytes found in play-area samples should be stated.

In addition to the possibility that debris disposal areas are the source of pesticides found in soil samples, a discussion of pesticide usage at Site 12 should be included. Is it possible that vegetation and insect control activities have also contributed to pesticide contamination in area AA?

4.1.1 Site 12 Field Investigation Strategy

In the first paragraph on page 30, it is stated that a fraction of the soil samples will be taken from "immediately below the water table". On page 5, however, it is stated that samples will be taken "immediately above the top of the saturated zone". Clarification is required.

4.1.2 Site 12 Sampling Locations

How can the maximum number of additional sample sites required be known in advance of analytical results from initial samples?

Why are there no sample locations in area AA along the boundary with site 06?

The dioxin sample sites do not spatially cover the areas of suspected debris disposal. The text in the second paragraph which states that this is the case should be removed and the dioxin sampling plan reevaluated.

Little evidence is presented to support the rationale for dioxin sampling immediately below the water table. Presumably the greatest risk is posed by the presence of dioxin in surface soil. As dioxin contamination is suspected and as there is no guarantee that all contaminated soil is now below the water table, dioxin samples should come from shallow soils, as is being done for Site 06.

As the extent of dioxin contamination is unknown at this time, the text stating that no secondary samples will be taken should be removed.

Please provide the evidence that shows that "shallow buried debris has been mixed with clean sand or removed". A detailed account of these activities should appear

in the "Site History" section rather than being mentioned briefly in the "Sampling Locations" section.

Petroleum contamination at less than 90 ppm will not be investigated further. Please state how this level was derived and whether it is the cleanup level for petroleum hydrocarbon contamination at NSTL.

4.2 Site 20, Auto Hobby Shop and Transportation Center

The known underground storage tanks (USTs) at Site 20 should be marked on Figure 6.

Please mark soil boring B4 (BSK Associates) on Figure 6.

4.2.2 Site 20 Sampling Locations

The rationale for sampling locations, other than those near well 20-MW03, is unclear. For example, if petroleum hydrocarbon contamination is a major concern, why is there no monitoring well proposed for the area down gradient of the four removed USTs (UST 225 A-D)? As the locations of the former USTs are not marked, it is difficult to determine whether sample locations D, E, J, and G are appropriate.

What rationale underlies the location of sample points F, H, I and J? The text states that boring B10 and monitor well 20-MW01 showed no signs of petroleum contamination, while no analytical data for MW2 (BSK Associates) are provided.

Please indicate the storm drains and drainage reaches that may have been associated with disposal of waste fluids at Site 20.

5.1.2 Site 06 Sampling Locations

The last sentence in the first paragraph states that there will be one location within each cell from which a soil and groundwater sample will be taken. Figure 8 is not in agreement with this statement. Clarification is required.

Overall, there appears to be too great an emphasis on sampling within areas that could rightly be expected to be contaminated and too little emphasis on defining plume boundaries and groundwater flow direction.

5.2 Site 07, Pesticide Area and Site 10, Bus Painting Shop

Please provide a rationale for making Sites 07 and 10 into two separate study areas. Given that the contaminants in each area are very similar and that these areas have a common boundary, there seems little point in separating them. In addition, of the two storm drains east of Building 62 (Site 07) which may have

been used to dispose of waste liquids generated in that building, one is within the Site 10 boundary and the other is outside the boundaries of both Site 07 and Site 10 (see Figure 9). Site boundaries should be altered so that these drains are within the study area.

Has Building 62 been inspected for the presence of floor drains?

Has the possibility been considered that "pier 11", mentioned in the PA/SI as a paint mixing area, actually refers to the pier 21 which is about 350' east of Site 10? This seems more logical than assuming that paint was mixed at pier 11 which is at the opposite end of the island or that the report is incorrect. Have pier numbers ever been changed?

5.2.1 Sites 07 and 10 Field investigation Strategy

The sludge disposal area is listed as a possible source of contamination and yet no further investigation is planned. Please provide a rationale for this decision or cite the document which provides the basis for this decision.

Please provide a rationale for curtailing investigation of pesticide and herbicide contamination east of Building 335.

Investigation of the drainage system within Building 335 is required.

5.2.3 Sites 07 and 10 Field Methods and Procedures

If field screening of groundwater samples is for TPH only, how will the evaluation of this data be used to determine which samples will be sent off site for VOC, SVOC and metals analysis?

Installation of monitoring wells is contingent upon contamination being detected "and subsequently defined during field screening". Please explain what is meant by this phrase and the action that will be taken if groundwater contamination cannot be defined using field screening techniques?

5.3 Site 14, New Fuel Farm and Site 22, Navy Exchange Service Station

Figure 10 indicates the presence of a fuel line running from the horizontal tanks on Site 14 and terminating in Building 85. What activities took place in Building 85 and what level of investigation for contamination in and around this building has been performed?

The pipeline running from tanks four and five to pier 21 is discontinuous on Figure 10. Clarification is required.

Please indicate in the figure legend the origin of monitoring wells identified with the prefix "CW" in Figure 10.

5.3 Sites 14 and 22 Field Investigation Strategy

Why is it stated that a down gradient monitoring well will be installed near the boundary of Sites 10 and 14 when in the next section it is stated that up to seven wells may be installed?

If this well is being installed, what is the rationale for locating it roughly midway between the two areas suspected of being contaminant sources?

6.1 Site 04, Hydraulic Training School, and Site 19, Refuse Transfer Area

There is no clear rationale for the site boundaries. For example, the fenced paved storage yard that was part of the operational area for the hydraulic training school is divided between Sites 04 and 19. Why is Building 342, which is known to contain contamination from the hydraulic training school activities not included in Site 04? Why are some sample sites prefixed "4/19" when they are presumably in either Site 04 or Site 19? If the two sites are being considered together then a single site boundary is appropriate.

What is indicated by the stippled area in Figure 12? The key for this figure should contain this information.

Figure 12 indicates that Building 343 is connected to Building 342. Has building 343 been inspected for contamination?

What activities took place in Building 458 on Site 19?

Is there a suspected source for the petroleum hydrocarbon contamination identified at sample sites SB-6, 9 and 10 which were drilled in a previous study?

6.1.1 Sites 04 and 19 Field Investigation Strategy

Is there an explanation for the presence of diesel contamination in a region that the text states was used to store hydraulic equipment and drums of transmission and hydraulic oil?

6.1.2 Sites 04 and 19 Sampling Locations

If the assumed direction of groundwater flow is correct, then the proposed sample site "N" is not down gradient of the suspected contamination source in Building 342 as stated in the text.

Site 05, Old Boiler Plant

The location of the former boiler plant is not clear. The text states that the plant was located near the intersection of 5th Street and Avenue H. On Figure 13, however, the site boundary includes the corner of H Street (presumably Avenue H) and an unnamed street running between Avenue I and H Street. To put the matter beyond doubt, the footprint of the boiler plant should be marked on the figure.

How were boilers used in operations at NSTI? If they fed steam distribution systems, why has there been no investigation of these systems?

What activities took place in Building 455?

As the underground fuel lines that pass through Site 05 were damaged during the 1989 earthquake and as an estimated 20,000 gallons of diesel fuel was released in 1983 at adjacent Site 17, analysis of soil samples for petroleum hydrocarbons should be performed.

Storm drain sediment samples should be taken and analyzed for petroleum hydrocarbons and mercuric nitrate.

6.3 Site 17, Tanks 103 and 104

Please state the activities that took place in Building 105.

Please indicate on Figure 14 the extents of the berm.

6.4 Site 24, Fifth Street Fuel Releases/Dry Cleaning Facility

As Section 6.4 does not deal in any depth with the Fifth Street Fuel Releases, the site boundary should be redrawn to include only the suspected contamination from the dry cleaning facility. The reference to the fuel releases in the section heading and the sentence stating that the fuel pipelines will be dealt with under the UST program should be placed in a section that details the activities taking place under the UST program.

Why are the fuel releases within the Site 24 boundary being dealt with under the UST program and while others (e.g. Site 19) are being dealt with as part of a specific study area?

6.4.1 Site 24 Field Investigation Strategy

Investigating the extent of the chlorinated solvent should include work that will provide a full description of the condition and extent of the drainage system that served Building 99.

7.1 Site 09, Foundry

In Figure 16, the boundary for Site 09 appears to encompass Building 384 and not Building 41 which the text states is the foundry. Clarification is required.

If the boundary drawn for Site 09 on Figure 16 is superimposed on Building 41, there is substantial overlap between Sites 09 and 03. The potential for these sites to impact each other should be assessed.

What activities took place in Building 361?

7.1.1 Site 09 Field Investigation Strategy

Has the floor of Building 41 been thoroughly inspected for the presence on cracks, sumps and drains?

7.1.2 Site 09 Sampling Locations

As Site 09 has a long history of metals usage and as the phase I RI has identified at least one area contaminated with lead, why will the necessity for additional probing locations be based on the level of TPH present?

7.1.3 Field Methods and Procedures

If the estimated ground water flow direction is correct, soil and ground water contamination originating from the lift area may migrate toward sample site 09-SB04 where currently no further investigation is planned. If contamination appears in samples taken near the lift, the down gradient area outside the building should be investigated.

Has the source of the silver contamination been determined? Why will there be no analysis for silver in addition to lead?

7.2 Site 25 Seaplane Maintenance Area

The text states that three USTs were removed from the area around Building 180. Figure 18 shows only two. Clarification is required.

Please indicate on Figure 18 the location of fuel pipelines.

7.2.1 Field Investigation Strategy

The western half of Site 25 contains many storm water drains. Given the activities that have taken place in this area, why is there no plan to sample sediment in these drains?

8.1 Site 15 Old Fuel Farm

Please mark the location of the 1000 gallon diesel UST on Figure 19.

What activities took place in former Building 89?

8.1.2 Site 15 Sampling Locations

Please discuss how potential contamination from pipeline leaks will be addressed.

8.2.1 Site 21 Field Investigation Strategy

Please mark on Figure 20 the fuel pipeline that the text states is within the Site 21 boundary.

Please indicate the phase I RI soil borings in which TPH extractables were detected.

The text states that TPH concentrations from samples taken closer to the source of contamination are expected to be higher than those detected during the phase I RI. Please state the suspected source(s).

8.2.2 Site 21 Sampling Locations

Please indicate on Figure 20 the area that cannot be accessed for investigation.

What activities took place in Building 112?

What is the purpose of investigating potential contamination arising from pipeline leakage in both the phase IIB RI and the UST Program? Would it not be more efficient to deal with it once under a single program?

8.2.3 Site 21 Field Methods and Procedures

The planned level of sample analysis is inadequate. Metals analysis is also required. In addition, analysis for PCBs should also be performed, unless solid evidence can be presented that demonstrates that PCB-containing oil was never included in the discharged waste oil.

9.1 Site 08, Army Point Sludge Disposal Area

Although the presence of sandstone underlying this site reduces the probability of groundwater contamination, the potential for contamination to reach the bay in surface run off and interflow is considerable. The text should indicate this.

Is the sandstone underlying this site fractured?

9.1.1 Site 08 Field Investigation Strategy

The text states that the primary focus of the investigation will be to determine the extent of pesticide contamination and the presence of any SVOCs. As the results of the phase I RI for this site indicated that metals were present, why does the plan not address this issue?

How will the five additional borings planned for this site, only three of which are outside previous investigation areas, achieve the stated goal of "determining the vertical and horizontal extent of pesticide contamination"?

9.2 Site 11, Yerba Buena Island Landfill

Please mark the large anomalous region found during the phase I RI geophysical survey of this site on Figure 22.

9.2.1 Site 11 Field Investigation Strategy

Why will soil samples sent off site be analyzed only for pesticides and metals? As this is one of the few sites where all samples will be sent off site for analysis, it seems short sighted to analyze for less than the full range of suspected contaminants. The resulting improvement in data quality over that achievable with field screening methods would assist greatly in the characterization of this site.

Why is no investigation planned for the area in which UST 204 and its associated piping are located? As there is a reasonable possibility that UST 204 is the source of the petroleum hydrocarbon contamination at Site 11, investigation of the UST area cannot be divorced from that of the landfill.

9.2.2 Site 11 Sampling Locations

As the groundwater at this site contains SVOCs, TPH-diesel and metals, an upgradient monitoring well is essential, rather than optional as implied in the text.

9.3 Clipper Cove Tank Farm

Please mark the locations of the former above ground storage tanks on Figure 23.