Response to EPA Review Comments
Remedial Investigation Report (Draft) Red Hill Oily Waste Disposal Facility
FISC, Pearl Harbor, Hawaii
Reviewer: Lewis Mitani

Item No.	Review Comment Reference	Response to Comment
1-1	General Comment - Section 1	A discussion related to the general response action related to the Red Hill Geographic Study Area (GSA) is included in the Pearl Harbor Naval Complex (PHNC) Site Management Plan (SMP). As indicated in the SMP, "It was agreed by all parties to the PHNC [Federal Facilities Agreement] FFA during a meeting on May 9, 1995 that..." the Red Hill GSA will not require a Site Evaluation or a Site Summary Report (i.e., further evaluation). The rationale in the SMP for this is that the Red Hill GSA is comprised of a single site that is currently being studied under the provisions of the FFA (i.e., the Remedial Investigation (RI) of the Red Hill Oily Waste Disposal Pit Facility Site). A statement regarding the fact that this site is located in the Red Hill GSA has been added to Section 1 of the RI Report. In addition, the Draft Final (July 1995) PHNC SMP was referenced in this section.
1-2	Specific Comments - Section 1, Page 1-4, Fig. 1-2	Text indicating the location of South Halawa Stream has been added to this figure. The dark bold line on the figure marks the facility boundary, which coincides with the Red Hill GSA boundary. This has also been clarified on this figure.
1-3	Specific Comments - Section 1, Page 1-7, Figs. 1-4, 6, 7, 8, 11	These figures do not show where the discharge point of the former slop line into South Halawa Stream is located. Based upon information gathered during the RI, the location of the slop line has not changed over time. As a result, this issue will not be addressed in the RI Report.
1-4	Specific Comments - Section 1, Page 1-6, Sect. 1.1.2.1	Text describing activities that occurred between the period of 1945 and 1972 was originally included in the Work Plan (WP) for this RI. This text has been incorporated into this section of the RI Report. It should be noted that the two 8,000 gallon above ground tanks were used to store the oily waste generated during cleaning of the Red Hill USTs during this time period.
1-5	Specific Comments - Section 1, Page 1-12, Sect. 1.1.2.3	Fuel was transferred from this pit to the 8,000 gallon aboveground tanks via a series of underground pipelines. This section of the report has been updated to reflect this information.
2-1	Specific Comments - Section 2, Page 2-8, 1st ¶, 2nd sent.	Comment acknowledged. The word vertical has been replaced with "areal."
2-2	Specific Comments - Section 2, Page 2-26, 1st ¶	The "background" sampling location for this site was selected based upon the fact that it is topographically and hydraulically upgradient of the site. In addition, based upon a review of historical records observations made during visits to the site, this area was not suspected to have been impacted by site activities associated with hazardous substances.

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4-1	General Comments - Section 4, Item # 1	Based upon an extensive review of historical site operations and observations made during the RI, these 11 exposure areas of concern (EAOCs) were identified. As described in the WP and the Draft RI Report for this site, sampling locations were selected based upon suspected releases to the surface and subsurface around the site (i.e., purposive sampling in the areas with the highest concentrations of contaminants). Using the data from this initial sampling, a determination as to the significance, based upon potential risk to human health and the environment, of contamination at these EAOCs was made (see Section 7.0 of the Report). The preliminary risk evaluation presented in the RI Report incorporates very conservative assumptions regarding the potential for risk from each of the EAOCs. The potential that low concentrations of contaminants may be present away from the sampled "hotspots" should not significantly increase the exposure risks calculated for the site. Random or systematic sampling in areas where no evidence of a source exists can be expected to lower the risk calculated from purposive sampling. As a result, all of the data for the entire site will not be presented for the soil data. As indicated in Section 8, the Navy is recommending that ground-water monitoring wells be installed to monitor the drinking water aquifer underlying the site. Information from these wells should indicate whether the overall site has had an impact on the basal aquifer. In addition, there is no evidence that the area between the Stilling Basin and South Halawa Stream has been impacted. As stated, random or systematic sampling in this area would not be expected to increase the site exposure risk. If evidence to the contrary becomes available, additional sampling in this area may be warranted.

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4-2	General Comments - Section 4, Item # 2	A second set of ground-water samples was collected from the monitoring wells prior to their abandonment as part of the Red Hill Stilling Basin Removal Action. The results from the analysis of these samples is included in the *Closure and Removal of Red Hill Stilling Basin, Draft Remediation Verification Report*, (dated December 1995). This report will be provided to the EPA and the Hawaii Department of Health as an attachment to the Removal Action Decision Document (RADD) for the Red Hill Oily Waste Disposal Pit Site. Information collected during past studies of the site will be evaluated in the RADD and a determination regarding the necessity for further work at the site will be presented in this document. A draft version of the RADD is scheduled to be submitted to the regulatory agencies in February of 1996. It should be noted that replacement ground-water monitoring wells were installed following completion of the Red Hill Stilling Basin Removal Action (i.e., after installation of the impermeable cap) so that the perched aquifer underlying the site may continue to be monitored as deemed necessary. Ground-water level measurements were collected from the wells prior to their abandonment. This information has been added to Table 3-2 of the report for reference. These data, along with historical water level data and observations made during drilling were used to assist in the installation of the replacement ground-water monitoring wells.
5-1	General Comment - Section 5	The expressed purpose for Section 5 is to evaluate the characteristics of chemicals detected onsite media with respect to their ability to persist in, or migrate to, a potential exposure point medium. In addition, simple analytical models were used to evaluate the potential impact of chemicals detected in the soil at each exposure area of concern (EAOC) on the drinking water aquifer which underlies the site at approximately 100 feet below ground surface (bgs). The information derived from these models is used to provide a general conceptual understanding of the degree that each EAOC may potentially affect drinking water, both now and in the future. Based on this understanding, recommendations have been made regarding further action at each EAOC. These actions are in addition to the ground-water monitoring that is obvious to the reviewer. The last sentence of the reviewers comment states this quite well.

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Item No.	Review Comment Reference	Response to Comment
6-1	General Comment - Section 6	According to CERCLA Compliance With Other Laws Manual, Part 1, 8 Aug. 88, Executive Summary page XV, subheading Using ARARs : > Different ARARs that may be applied to a site and its remedial action should be identified at multiple points in the remedy selection process. During the scoping of the RI/FS and the site characterization phase, the list of potential ARARs in Exhibits 1-1, 1-2, and 1-9 and the appropriate regional and state programs should be consulted to determine what ARARs may apply to the site. At this stage, potential chemical- and location-specific ARARs should be identified. As stated above, defining ARARs for a site is a process that begins during site scoping, and is continually refined as more information is gathered. This refining process should not be considered redundant or confusing, but a general method to determine chemicals of concern at a site at each phase of work. Using this problem solving method, the FS and EE/CA, would provide the most refined set of ARARs, including action -specific ARARs associated with each proposed alternative. Design documents for the accepted remedial action must ensure the attainment of these final ARARs.
6-2	General Comment - Section 6	Comment acknowledged.
6-3	Page 6-1, 1st paragraph, last sentence	Please note that the cited text does not seek to summarize the statutory conditions for ARARs waivers, but only to introduce the concept that requirements may be waived under SARA and specific requirements cited therein. As stated, complying with these conditions in order to waive ARARs is only warranted if the protection of human health and the environment is assured. There has been no effort made to waive potential ARARs in this document. If necessary, it is anticipated that waivers will be documented in the FS, with the applicable guidelines and conditions necessary for their invocation.
6-4	Page 6-1, 2nd paragraph, 1st sentence	As stated on page 6-9, first partial paragraph, the PRGs utilized as screening values for the perched water system are strictly associated with concentrations of chemicals which pour directly from the potable tap of a residential drinking water system. As such they are very conservative when applied to the non-potable perched water system sampled during the RI. Because they are health-based values, they are utilized as very conservative screening values for potential risk. In setting quantitation limits, MCLs and various other criteria were used in conjunction with the technical standard methods associated with SW-846 and CLP protocol. These criteria are described in the final sampling and analysis plan entitled *Site Characterization, Phase I - Red Hill Oily Waste Disposal Pit Remedial Investigation/Feasibility Study (RI/FS) Sampling and Analysis Plan (SAP), Part II - Quality Assurance Project Plan (QAPP) (Ogden 1992)*, Section 1.2 Data Quality Objectives.

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Item No.	Review Comment Reference	Response to Comment
6-5	Page 6-2, 3rd paragraph, last sentence	No baseline risk assessment (BRA) was performed for this RI. The health-based levels (HBLs) calculated in Section 7, Preliminary Risk Evaluation (PRE), are very similar to the EPA Region IX Preliminary Remediation Goals (PRGs) with the exception that they are calculated using site-specific parameters and therefore are more realistic then PRGs. The PRE HBLs use identical toxicological parameters as PRGs, generally only receptor exposure frequencies and durations and site geometries are changed in the calculations. Because they are used to evaluate the potential impact of chemicals detected onsite to human health, and are based on EPA accepted toxicological parameters, as well as derived from EPA- approved formulas, PRE HBLs are included as screening values to be considered (TBCs). It is unclear why this is not a proper use of the term TBC. Section 6 is used to introduce and identify ARARs and TBCs used in Section 7. This is not meant to be redundant or confusing, but to introduce the chemical levels of concern used to evaluate the data onsite.
6-6	Page 6-4, Table 6-1	TSCA regulations regarding PCBs are not applicable to the site because they specifically reference storage and disposal of PCBs at concentrations greater than, or equal to 50 ppm. As such, TSCA regulations are action-specific and will be evaluated, if necessary, during the FS and/or EE/CA documentation.
6-7	Page 6-7, Table 6-2	Comment acknowledged, table and associated text have been changed to address this oversight.
6-8	Page 6-9, 1st paragraph, 2nd complete sentence	EPA Region IX has specified that current EPA Region IX PRGs should be used for risk screening purposes. PRGs are used because they are health-based values which allow the quantification of risk, especially for carcinogens. Calculations of PRGs utilize the toxicological parameters from the latest IRIS and HEAST databases, as well as concepts and formulas put forth in RAGS. PRGs utilize default exposure parameters and site geometry, therefore only provide approximate results. In general, they are accepted as sufficiently accurate to use as screening values prior to performing a risk assessment in which the risk from multiple contaminants may be summed. Establishment of remedial goals is not the purpose of the Phase I RI technical report. Its main purpose is to characterize the nature and extent of the detected chemicals, provide a conceptual understanding of the toxicological, fate and transport behaviors of the detected chemicals, provide a preliminary evaluation of the risk to human health and the environment, and make recommendations for further action. Establishment of remedial goals will take place , if necessary in the FS and/or EE/CA.

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6-9	Page 6-9, 1st paragraph, 1st sentence	The HDOH recommended clean-up levels are listed as potential screening values. Because the HDOH has jurisdiction over contaminated areas which overly drinking water sources for citizens of the state, it is important to review state policy when evaluating the potential impact of this contamination. Comparing state clean-up levels to chemical concentrations detected in soil onsite allows the state regulators to determine if a potential problem exists based on their values. The second part of the comment is addressed in Section 5, Fate and Transport. The comment is acknowledged and the reviewer is referred to Section 5.4, Exposure Pathways.
6-10	Page 6-17, 1st paragraph, 2nd sentence	Comment acknowledged. Text has been added to this paragraph defining and clarifying the petroleum exclusion provision, and how it relates to this document and this site.
6-11	General comment	The petroleum exclusion provision was not invoked in order to deny the landowners liability to those contaminants not covered under the provision. On the contrary, the provision is introduced in order to clarify that the PRE has evaluated <u>all</u> detected chemicals for potential risk, and <u>has not</u> excluded those compounds that are present in petroleum. In addition, because of the high concentrations of TFH quantified as diesel detected in soil overlying an important state drinking water aquifer, it was deemed appropriate to estimate concentrations of concern in the drinking water system based on risk to consumers, should the basal aquifer proved to be impacted. This was done to assess the potential impact of these middle distillate fuels on public health and to provide regulatory agencies with key information upon which the RI recommendations are based. It should be clear that TFH is not used to set cleanup criteria, but is used as a risk assessment screening tool. Finally, there is no documentation that halogenated solvents were used or stored onsite, and based on all available information this did not occur. The presents of halogenated solvents in the perched water system does not indicate that these solvents originated from improper storage, disposal, or treatment of these substances. EPA and DOH have agreed that this facility is not a RCRA unit. Additional action-specific RCRA requirements will be addressed in the EE/CA or FS phase of work.
6-12	Page 6-17, 1st and 3rd paragraph	See first paragraph of item 6-11. It should be noted that the RfDo for middle distillate fuels is used as a screening value for further investigative work and is not expected to drive additional remedial activity at the site. As such, relief from the petroleum exclusion provision is not sought. Second, it is clear that some compounds detected in onsite media require risk assessment to estimate the potential impact on human health and the environment. The PRE provided in Section 7 of the technical report addresses the cumulative risk assumed from potential receptors to quantify these potential impacts and provide evidence for the recommendations given in Section 8.

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Item No.	Review Comment Reference	Response to Comment
7-1	General Comment - Section 7	Section 7 of the Red Hill report was prepared before it was known that the electronic version of the EPA Region IX PRG table was available. In general, the exposure parameters used in Section 7 calculations are similar to those used in the EPA Region IX PRG Table, no modification of Section 7 is deemed necessary. Because the estimated health risks are low, even if a residential scenario is considered, the cumulative risk values will not be above the trigger levels for remediation for most of exposure areas.
7-2	Page 7-1, 2nd paragraph, 2nd sentence	Comment acknowledged. Reference of RAGS Part A was included in the text.
7-3	Page 7-3, Section 7.1.1.3	As indicated in Table 7.1-1, there was extremely limited impact observed in background samples. VOCs and SVOCs, such as methylene chloride, toluene, and phthalates, are expected to be laboratory contaminants at the observed concentrations. It should be noted that phthalates were not detected in significantly impacted site samples. The low levels of TFHs detected are typical at Navy sites. PAHs detected once at extremely low concentrations are expected to be background related. Among the background samples collected, Aroclor-1260, detected only once in 17 samples (0.22 mg/kg) may be considered anthropogenic. However, this concentration is too low to be of public significance. Besides these low levels of organic chemicals, the detected metal levels are low enough to be representative of background conditions. Further background sampling, as recommended may not be warranted.
7-4	Page 7-6, last paragraph, second sentence	The ten times rules established by EPA should not be mechanically applied when evaluating laboratory contamination. Experienced chemists and risk assessors know that even if the associated blank of one particular batch of samples does not have any common laboratory contaminants detected, certain chemical concentrations found in the associated environmental samples may be due to laboratory contamination. These experienced chemists used to say: "If they (common laboratory contaminants) do not show up one day, for sure they would show up the next day." Sometimes, the concentration value detected in an environmental sample may be slightly more than ten times the value detected in the associated blank, but it can be attributed to laboratory contamination if one knows the historical records of the laboratory or of the industry as a whole. Besides, common laboratory contaminants, even if being included in the risk assessment as "valid" data points, rarely or never, contribute significantly to the total risks. Analytical chemistry data are tabulated in Appendix G. Data from specific samples collected between ground surface and 20 feet bgs at the Stilling Basin are provided in Table APP-G2. In addition, Section 4.3.1.4 of the RI technical report evaluates the nature and extent of the contamination detected in the six borings located in proximity to the Stilling Basin. Re-tabulating data in Section 7, especially data from soil that has already been removed seems unnecessary and redundant.

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7-5	Page 7-12, 1st paragraph, 6th sentence	This is merely a statement of fact. No threshold of significance is to be assumed, only a threshold in concentration. However, it is misleading to state that "some carcinogenic PNAs pose significant health risk at levels several orders of magnitude below 1 mg/kg" as stated in the review comment. It should be noted that the most toxic PNA, benzo[a]pyrene, has a residential PRG of 0.06 mg/kg, and a more representative industrial PRG of 0.26 mg/kg. Benzo(a)pyrene was detected at 0.24 mg/kg. This is translated into a residential excess cancer risk of 4E-06 or an industrial excess cancer risk of 9E-7. Most of the PAHs detected in surface soils at the Manway Cover at the 40,000-Gallon Aboveground Tank are much lower than 1 mg/kg. For noncarcinogenic PAHs, of which EPA Region IX PRGs are in the order of a couple hundred to thousand mg/kg, these detected concentrations are insignificant.
7-6	Page 7-6, last paragraph, 5th sentence	Detected concentrations of metals are non-statistically compared with the ranges in background samples. Also, the criteria to determine "elevated levels of metals" are based on professional judgment/experience and "common sense." Also, there are typically a set of metals that are commonly found at elevated concentrations together at Navy or defense hazardous waste sites: copper, lead, and zinc; and occasionally arsenic and mercury.
7-7	Page 7-16, 1st complete paragraph, 4th sentence	The maximum PAH concentration detected in soils at the Adit Number 3 is fluoranthene and pyrene (noncarcinogenic PAHs). As stated above, noncarcinogenic PAHs have EPA Region IX PRGs in the order of a couple hundred to thousand mg/kg. Thus, these detected concentrations are insignificant. The most toxic PAH is carcinogenic benzo(a)pyrene. Benzo(a)pyrene was detected at a maximum concentration of 1.5 mg/kg. This is translated into a residential excess cancer risk of 2E-05, still 5 times below the trigger level for remediation of 1E-04. This maximum detected concentration is 16 times lower than the more realistic industrial trigger level based on the PRG.
7-8	Page 7-16, last paragraph, 4th sentence	The following background concentrations of PAHs in urban soils are listed in the ATSDR toxicological profile for PAHs: Carcinogenic: benzo(a)anthracene (0.169 - 59 mg/kg); benzo(a)pyrene (0.165 - 0.22 mg/kg); benzo(b) fluoranthene (15 to 62 mg/kg); benzo(k)fluoranthene (0.30 - 26 mg/kg); indeno(1,2,3-c,d)pyrene (8 - 61 mg/kg), etc. Background concentrations for noncarcinogenic PAHs are much higher than those levels for carcinogenic PAHs. Because PAHs were detected infrequently and at low levels in the soils at the Unauthorized Discharged Area, they may not be related to the typically elevated PAHs commonly found to be associated with fuel releases.

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7-9	Page 7-21, 1st paragraph, 5th sentence	The analytical chemistry results from sample RHSEI-D00.25 are provided in Appendix G, Table APP-G11. The sediment sample RHSEI-D00.25 was collected from the end of the outlet pipe which originated at the Stilling Basin and terminated at the concrete culvert that emptied into South Halawa Stream. This length of pipeline was addressed during the Stilling Basin removal action (see *Closure and Removal of Red Hill Stilling Basin, Draft Remediation Verification Report, December 1995).* The section of this conduit located between the former Stilling Basin and the fence line was removed. The remaining 80 feet of conduit between the fence and the stream was cleaned, filled with grout, and capped.
7-10	Page 7-21, last paragraph, 4th sentence	At the Former Transformer Area, Aroclor-1260, detected in surface soils at a maximum concentration of 0.25 mg/kg, approximates a residential excess cancer risk of only 4E-06, still 25 times below the trigger level for remediation of 1E-04. Because this purposive sampling focused on the most likely contaminated locations, no further sampling is warranted. According to the EPA's Guidance for Data Usability in Risk Assessment - Part A (1992), the minimum number of samples required for purposive sampling is about 3 to 5; and these purposive sample results can be used to calculate risks. The total number of samples collected at the Former Transformer Area is 3 for the surface and 4 for the subsurface. These samples should be sufficient to determine the potential health threat at this site. In addition, significant releases of PCBs in the environment usually accompanies some sort of oil releases. Because no other compounds were found above background levels in soil samples from this area, it is extremely unlikely that Aroclor-1260 would be detected at much higher concentrations had more samples been collected.
7-11	Page 7-29, 1st incomplete paragraph, 1st complete sentence	See response to comment above.
7-12	Page 7-29, last paragraph	Generally, <u>potentially complete</u> pathways are expected to occur in the future time frame under either the current or future land use conditions. For example, under the current land use conditions, the ground water underlying a site is contaminated, but contaminants have not yet reached a residential well downgradient (pathway potentially complete). If there is no remedial action planned for this site, site-related contaminants will reach the well eventually and residents there will be exposed to the contaminated ground water (pathway becomes complete in some years). For baseline (meaning no action alternative) risk assessment purposes, risk assessors will have to evaluate those potentially complete exposure pathways and estimate the potential health risks to residents. The uncertainty here is the time it takes for contaminants to reach the well. For that offsite exposure point, we cannot say that the ground water pathway is <u>complete</u> under the current land use because there is no actual exposure yet at this point in time. Under the future land use conditions, any pathways that may be complete in some years are termed "potentially complete" to indicate the time frame during which exposure will occur or the uncertainty regarding the future receptors.

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7-13	Page 7-32, last paragraph, 1st sentence	Comment noted.
7-14	Page 7-36, Table 7.1-21	Comment acknowledged. An insignificant risk may be considered as less than or equal to an HI of 0.01 and\or a carcinogenic risk less than or equal to 1E-06, considered to be the "point of departure". The notation "IS" (insignificant) for the soil ingestion and dermal contact to soil pathways on this page were changed to "C" (complete) for the current land use and "PC" (potential complete) for the future land use.
7-15	Page 7-43 last paragraph, 4th sentence	The additive effects associated with exposure to multiple contaminants are addressed by the quantitative PRE (whereby cumulative health risks are estimated) that follows the qualitative PRE (comparison of chemical concentrations to PRGs).
7-16	Page 7-44, 4th complete paragraph	Comment noted. For the two 8,000-gallon aboveground tanks, a total of two surface soil samples and 9 subsurface soil samples were collected and analyzed for constituents of concern. The number of these data points is considered adequate for a preliminary screening of the health risks at this EAOC. Although the number of surface soil samples is limited, the data indicated that fuel releases have occurred in this EAOC.
7-17	Page 7-44, 5th complete paragraph	Comment noted. Given the small size of the Manway Cover at the 40,000-gallon aboveground tank and the purposive sampling results, the limited number of soil samples collected do not indicate any significant fuel release. Thus, collecting more samples from this EAOC may arrive at the same results regarding potential impact at this EAOC.
7-18	Page 7-44, 6th complete paragraph	Comment noted. For the Underground Piping and Oily Waste Delivery System, a total of 2 surface soil samples and 22 subsurface soil samples were collected and analyzed for constituents of concern. A greater number of subsurface samples were collected because of the nature of the subsurface source. The number of these data points is considered adequate for a preliminary screening of the health risks at this EAOC. Although the number of surface soil samples is limited, the data indicated that fuel releases have occurred in this EAOC.
7-19	Page 7-47, 2nd paragraph, 4th sentence	Actually, the correct reference for this paragraph should be EPA 1991c (Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions. Memorandum from U.S. EPA Assistant Administrator Don R. Clay, April, 22), not RAGS Part B.
7-20	Page 7-54, table 7.1-23	Comment acknowledged. Oversight corrected in Table 7.1-23 and associated text and tables. The impact of the new RME values on the cumulative risk at this EAOC is negligible and does not affect the conclusions and recommendations of the technical report. Parameters used to calculate HBLs are given in Table 7.1-23 or in the associated footnotes. Default values were taken from the EPA Region IX PRG Table, dated February 1995 for industrial land-use exposure settings.

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7-21	Page 7-56, table 7.1.24	The inhalation chronic reference dose of 2.9E-01 mg/kg-day for ethylbenzene is taken from the EPA Region IX PRG Table, dated February 1995. The same value is listed again in the September 1 version. This value agrees with the IRIS on-line database.
7-22	Page 7-57, table 7.1.25	See Item No. 7-20, above.
7-23	Page 7-58, table 7.1-26	Comment acknowledged. Oversight corrected in Table 7.1-26 and associated text and tables. The impact of the new RME values on the cumulative risk at this EAOC is negligible and does not effect the conclusions and recommendations of technical report. Parameters used to calculate HBLs are given in Table 7.1-23 or in the associated footnotes. Default values were taken from the EPA Region IX PRG Table, dated February 1995 for industrial land-use exposure settings.
7-24	Page 7-61, table 7.1-28	Comment acknowledged. Oversight corrected in Table 7.1-26 and associated text and tables. The impact of the new RME values on the cumulative risk at this EAOC is negligible and does not effect the conclusions and recommendations of technical report.
7-25	Page 7-69, Table 7.1-35	See Item No. 7-20, above
7-26	Page 7-70, 1st complete paragraph, last sentence	In the Superfund context, the regulatory levels of concern are the risk levels typically used as trigger levels of remediation. These are a cumulative excess cancer risk of 1E-04 and a cumulative hazard index (HI) of 1. In the paragraph noted, the regulatory level of concern is the noncarcinogenic risk associated with an HI of 1. As stated, the calculated cumulative HI of 1.3 is unrealistically high when the non-additive characteristics of the chemical risk drivers are accounted for. There is no footnote (5) on page 7-70; however, footnote (5) on pages 7-69 and 7-71 do provide the exposure duration and frequency for Receptor B.
7-27	Page 7-70, last paragraph, next to last sentence	Subtracting the health risks posed by arsenic and thallium, which are expected to be representative of background, the remaining excess cancer risk and HI under the residential scenario is 3E-05 and 0.6 (contributed by benzo(a)pyrene, Aroclor-1260 and others), respectively. These risk levels do not warrant a remediation for the soils, although benzo(a)pyrene and Aroclor-1260 may be present at low concentrations at the site.
7-28	Page 7-72, table 7.1-37	Comment acknowledged. Footnote (b) in Table 7.1-37 has been revised to indicate that for the Proposed Coast Guard Parcel, future health risks are based on residential exposure of 30 years (0 to 30 years old adult) for carcinogenic effects and 0- to 6-year old children for noncarcinogenic effects.
7-29	Page 7-73, 1st complete paragraph, 2nd sentence	The exposure frequency of 26 days per year indicates the approximate amount of time current workers show up at the site. However, each time they show up, they may not have the opportunity to have direct contact with the soils that would result in incidental soil ingestion or dermal contact to soils.

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7-30	Page 7-74, 2nd complete paragraph, 1st sentence	Comment acknowledged. The text was revised to incorporate this comment. However, it should be emphasized that the decision to take action at sites with a cumulative excess cancer risk within the acceptable risk range of 1E-06 to 1E-04 must be fully justified.
7-31	General Comment - Section 7.2	Comment acknowledged. Text has been changed to clarify the view that the impact of surface water run-off from the site is believed to be small because of the low concentrations of chemicals found onsite, the presents of ground covering vegetation or asphalt over most of the ground surface, and the channelization of South Halawa Stream adjacent to the site. The most important receptors for this site are aquatic and marine species due to the disturbed nature of the site. However, off-site transport of contaminants is not considered significant due to the volatility of most of the contaminants, channelization of the stream bed adjacent to the site, and the distance to the marine environment. Because of the large number of non-point pollution sources both upstream and downstream of the site and the nature of the concrete-lined channel next to the site, it would be extremely difficult to characterize potential site releases or contributions from the site to contamination in Halawa Stream. Although the Pearl Harbor Sediment Study may reveal contamination at the mouth of Halawa Stream, there would be no way to trace it to the Red Hill Site; therefore, reference to the Pearl Harbor Sediment Study has been eliminated from the text
7-32	General Comment - Section 7.2	The section title has been changed to "Site Scoping for the Screening Ecological Risk Assessment." Although the biological survey was preliminary, it was apparent that due to the disturbed nature of the site, an in-depth survey with sampling and repeat visits was not warranted. Section 3.7 provides a more complete description of the biological resources onsite with a vegetation map and species lists.
7-33	General Comment - Page 7-74	It is incorrect that only two samples were analyzed for VOCs and SVOCs. Table 4-3 of the technical report gives a sample summary by method and matrix. Maximum values were added for each media on Table 7.2-1 instead of just presence/absence data.
7-34	General Comment - Section 7.2	Ecological effects data reflected here is a general overview of toxic effects as commonly presented in the problem formulation. At this point in the report, receptors, pathways, and endpoints have not been determined; therefore, calculations cannot be made at this point.
7-35	General Comment - Section 7.2	See general comments about Pearl Harbor/Halawa Stream. A more comprehensive effort to evaluate ecological risk onsite is not warranted because there are no special status terrestrial receptors onsite. Therefore, the assessment endpoint is met. There is not probability for acute or chronic effects to special status species. All the terrestrial species identified or potentially occurring onsite are common, non-native species that are not socially or ecologically important species.

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Response to EPA Review Comments (continued)
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Item No.	Review Comment Reference	Response to Comment
8-1	General Comment - Section 8	Based on the results of the data collected during the first phase of the RI, and the preliminary Human-health Risk Assessment and Site Scoping for Ecological Risk Assessment, there does not appear to be compelling evidence that all eleven of the EAOCs investigated require additional soil sampling. As recommended in the RI, soil at several of the EAOCs may not need to be evaluated further based on either the low levels of chemicals detected or past removal actions which have addressed immediate health hazards (Stilling Basin Closure). Although maximum chemical concentrations have exceeded PRGs in several of these locations, evaluations provided in Section 7 (PRE) of this technical report indicate that the cumulative health risks are below the trigger level for remediation in all cases. As such, "action generally is not warranted" (EPA 1991c). It is the view of the investigators that the general isolation of the site, and the low degree of direct-contact exposure experienced by human and ecological receptors under both current and anticipated future land-use scenarios provide adequate justification for no further action at the recommended EAOCs. However, as stated in the technical report, the current data gap remains the impact to the basal drinking water aquifer that underlies the site. The site sampling plan was based on purposive sampling in areas anticipated to be most impacted from historical events and daily activity. As described in Section 1 of the technical report, eleven EAOCs were evaluated based on a preliminary site assessment. The rationale is that this would facilitate identification and mitigation of problem areas where further investigation was justified. An additional benefit of this view of the site as multiple exposure areas is that specific EAOCs which do not show significant risk to human health or the environment may be eliminated from concern by recommending no further action. These two benefits are much harder to achieve using a site-wide evaluation. Finally, it was understood that the results of the exposure-area-specific risk evaluation would provide a much more conservative evaluation of each EAOC for the following reasons. 1) Purposive sampling should provide higher chemical concentrations detected than random sampling. 2) The formulation for the 95% UCL is biased high for low numbers of samples. In many cases evident in Section 7, HRA statistical tables (Tables 7.1-1 through 7.1-20) , the resulting reasonable maximum exposure (RME) value defaulted to the maximum detected concentration. 3) If site-wide evaluation of the data were to be conducted, the effect of averaging impacted EAOCs with those EAOCs which were not impacted would produce a lower RME value than were calculated at many of the "hotter" EAOCs. The inherent conservatism described above is additional justification for no further action at the recommended sites as presented in Section 8 of the technical report. It is suggested that the results of the Stilling Basin removal action be addressed in planning documents for the next phase of work rather than adding them to this technical document at this late date.

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Item No.	Review Comment Reference	Response to Comment
8-2	General Comment - Section 8	Comment acknowledged. Nested monitoring wells will be considered if perched ground water is encountered during drilling.

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