

**RESPONSES TO COMMENTS ON THE DRAFT SCOPING SURVEY REPORT FOR FORMER  
 SMELTER AREA, ALAMEDA POINT, ALAMEDA, CALIFORNIA  
 DOCUMENT DATED: DECEMBER 19, 2011**

This document presents the Department of the Navy's responses to comments (RTC) provided by the California Department of Public Health (CDPH) on the "Draft Scoping Survey Former Smelter Area, Alameda Point, Alameda, California," dated December 19, 2011. CDPH comments are dated February 1, 2, and 3, 2012, and were received February 1, 2, and 3, 2012 (via e-mail). Text is shown in red as received from CDPH.

<b>The following are responses to comments provided by Mr. Robert Wilson, CDPH.</b>			
<b>Comment Number</b>	<b>Reference</b>	<b>Comment</b>	<b>Response</b>
<b>General Comment</b>			
A1	Appendix A	Appendix A Task Specific Plan Former Smelter Area, Alameda Point, Alameda California, issued February 2011, contains similar references to <i>release criteria</i> as the Scoping report text, and this is inconsistent with the intent of a Scoping Survey and Report.	Appendix A the Task Specific Plan (TSP) for the Former Smelter Area is a planning document that provides task-specific details for the scoping survey at the Former Smelter Area. The TSP is an internal Navy planning document and is not subject to regulatory review. The TSP is included as an appendix to the scoping survey report to provide additional details of the Former Smelter Area survey and as a reference.
A2	Appendix A, Section 2.3 Reference Area; page 2, first paragraph.	What is the "non-conservative factor" based upon?	The non-conservative error was a result of the analytical method used to measure radium 226 (Ra-226) concentrations. The method used involved direct measurements of the sample rather than allowing for ingrowth of the progeny. Allowing for

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			ingrowth of progeny requires sealing the samples and allowing time for the sample to reach equilibrium. Analysis of the gammas emitted by the progeny provides a more accurate assessment of the Ra-226 concentration, but is not timely. The results via the ingrowth method are lower than initial indications from direct measurements. The higher values applied as a background values are non-conservative than those derived from direct measurement when the results are applied as a background value.
A3	Appendix A, Section 2.6 Establishing the Number of Measurements, Page 4, next to last paragraph	What is this "recommended value" based upon? If this value is placed for the "lower bound" a parameter, then what is the value of the "upper bound" of the grey region.	As stated in the work plan ( <a href="#">ChaduxTt 2010</a> ), the lower bound gray region (LBGR) is set at one-half of the derived concentration guide line (DCGL). This value is a typical starting point for survey planning and is demonstrated in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). MARSSIM Section 5.5.2.2 also states that if data are not available from the survey area, a coefficient of variation of 30 percent should be applied. 0.5/0.3 is 1.67. As stated in MARSSIM, the value of 1.67 does not appear in Table 5.4. The next lower value of 1.6 should be used.

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A4	Appendix A, Section 2.9 Gamma Walk-Over, Page 11, paragraph 1	What values are considered “extreme”? It appears that the gross gamma walk-over survey is not based upon a mean background gross gamma count. How was the scan speed derived for the extreme values?	The values are applied to a cumulative frequency distribution (CFD) plot. CFD plots of values that are the result of a continuum of Poisson-distributed survey data will not have data points separate from the data. “Extreme values” refers to data points that are not part of the continuum. A CFD that represents an area with no areas distinguishable from background will not have data point separate from the continuum. Mean values of a background area can be subtracted, but that will not change the shape of the CFD. The gamma walkover is not designed to be quantitative but instead to identify areas of higher values that should be included in the areas to be sampled. It is a non-quantitative process.
A5	Appendix A, Table 3, Step 6	What about gross gamma values?	Gross gamma values obtained during the walkover survey were used to evaluate whether there are any elevated readings in localized areas indicating additional soil sampling requirements. The effort is non-quantitative.
C1	Appendix C	Identify Appendix C as "Appendix C" on the title page.	The Navy has revised the Final Scoping Survey Report for the Former Smelter Area to include a title page identifying Appendix C.

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E1	Appendix E	Provide title page and short narrative about the results: type of survey, instrumentation used; what the results represent; why some results are highlighted in yellow, locations of "bkg 1 and bkg 2" surveys, etc.	The Navy has included two additional appendices in the Final Scoping Survey Report for the Former Smelter Area. These appendices were added in accordance with the agreement with the CDPH on the Final Status Survey Report for Building 66. The two additional appendices are "Alameda Point Radiological Survey Methods: Surface Contamination Monitor Surveys Supported by Hand-held Instrumentation" and "Alameda Point Basewide Radiological Surveys Final Status Survey Reports Reference Area Survey Results." Therefore, Appendix E has been reordered and renamed Appendix G. A summary page has been added to Appendix G that provides a narrative as requested.
E2	Appendix E	Provide descriptive summary statistics for "bkg" results.	The statistics have been added to the Appendix G, walkover survey data file. The CFDs also provide a visual presentation regarding the statistics.
R1	Report main text, page vi and vii; Acronyms and Abbreviations	Check that Greek symbols are correctly converted when the PDF is created. For example alpha, beta , sigma, <i>sign p</i> .	When the Word document is converted to PDF, Greek symbols are not recognized. This correction has been made.
R2	Executive Summary, page ES-1, first	Include a reference stating the possible	A reference to the Historical Radiological Assessment (HRA) ( <a href="#">Weston 2007</a> ) has

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	paragraph	presence of “other isotopes”.	been included in this sentence.
R3	Executive Summary, page ES-1, second paragraph	The use of “release criteria” is not appropriate in the context of a scoping survey report.	The Navy agrees with the comment regarding the use of “release criteria.” The final scoping survey report has been revised to conclude areas are “impacted” or “non-impacted.” In addition, “release criteria” has been deleted and replaced with “investigation levels.” Therefore, instead of being above or below a release criterion, the scoping survey report will conclude data indicate “impacted or non-impacted.”
R4	Executive Summary, page ES-1, second paragraph	Consider inserting “residual” in the following sentence “A scoping survey of the area previously occupied by a smelter was performed to determine if there is any indication of “residual” radioactivity that may be caused by direct smelter operations, dispersed materials from the smelter exhaust, or storage of staged materials.	The term “residual” has been incorporated into this section of the executive summary.
R5	Executive Summary, ES-1. third paragraph	Consider revising the text “that are well below the release criteria...”	The first sentence of the third paragraph of the executive summary has been revised to the following: “The results of the FSA scoping surveys indicate that only background levels of Ra-226 that are indicative of non-impacted soil are present

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			in the exposed soil.”
R6	Executive Summary, ES-1, third paragraph	“The concrete pad showed only background levels of alpha and beta activity and no removable radioactivity” What about gamma activity?	The text has been revised as follows: “The concrete pad showed only background levels of alpha, beta and gamma activity and no removable radioactivity.”
R7	Executive Summary, ES-1, third paragraph	“The data were of sufficient type, quality, and quantity.” Based on what level of quality was used to validate this statement? The statement may be too general.	This sentence has been removed from the executive summary and conclusion section of the final scoping report. The Navy believes this statement is more appropriate for a final status survey report.
R8	Executive Summary, ES-1, third paragraph	Consider revising the text “compliance with the release criteria” See Comment R3.	The last sentence of the third paragraph of the executive summary has been revised to the following: “Only data that were validated by successful quality assurance checks were used to demonstrate compliance with the impacted or non-impacted conclusion of the scoping survey report.”
R9	Executive Summary, third paragraph	Can the FSA be classified as “non-impacted”? If so, please include this classification in this Executive Summary.	The last paragraph of the executive summary has been revised to the following: “The results of the scoping survey did not identify any radioactivity in soil or the concrete pad that can be associated with the Navy’s former smelter operations; therefore, the site is considered non-impacted and no further actions are

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			necessary.”
R10	Section 1.2	Please expand on the prior historical use of the Former Smelter Area in regards to radiological components.	The Navy has revised Section 1.2 to include the following statements: “Historical information about smelter operations involving material containing radiological components, most likely radium, is unknown. Since this information was not available to ascertain whether the site was considered radiologically “impacted,” the Navy conservatively assumed that radioactive contamination could be present as a result of similar smelter operations at other naval sites where the presence of contamination was identified. It was concluded that a scoping survey would be needed to define radiological conditions and evaluate whether if any further actions are required.”
R11	Section 1.4	Suggest rewriting this section with the main objective of the report to determine if the Former Smelter is impacted or non-impacted.	Section 1.4 has been rewritten as follows: “This report details the results of the scoping survey performed to assess whether residual activity from smelter operations exists in accessible areas and to evaluate if the site is impacted or non-impacted.”
R12	Section 3.1	Can we re-write this section to use a term that would adequately support the	Section 3.1 has been revised as follows: ”The investigation levels for ROCs in soil

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		conclusion? A scoping survey should not be used to determine if a site can, or cannot be “released, even though MARSSIM guidelines were used in planning the scoping survey.” A Final Status Survey and its report will be used to support the release of a remediated site.	are as follows: Ra-226, 1 picocurie per gram (pCi/g) above background; Co-60, 0.0361 pCi/g; Sr-90, 0.331 pCi/g; Cs-137, 0.113 pCi/g; Pu-239, 2.59 pCi/g; and UO <sub>2</sub> , 0.398 pCi/g. FSA surface activity limits for ROCs are as follows: Ra-226 and Pu-239, 100 disintegrations per minute (dpm) per 100 square centimeters (cm <sup>2</sup> ) total surface activity; Sr-90, 1,000 dpm/ 100 cm <sup>2</sup> total surface activity; UO <sub>2</sub> , 488 dpm/100 cm <sup>2</sup> total surface activity; and Co-60 and Cs-137, 5,000 dpm/100cm <sup>2</sup> total surface activity (Navy 2006). The removable contamination investigation levels are one-fifth of the total activity limits (Navy 2006). The investigation levels are identified to provide values to compare with survey instrument and laboratory analysis sensitivities are adequately low to provide meaningful information to evaluate whether the FSA is impacted or non-impacted.”
R13	Section 3.2	Suggest retitling Section 3.2 to “Action Levels”	Section 3.2 has been revised to: “Investigation Levels for Gamma Walk-over Surveys.”
R14	Section 4.1	“predetermined release criteria”?	See response to comment number R3.
R15	Section 4.3	In this Section the term “Background activity” is used. Is this activity the mean	The comment is correct. In addition, the text has been revised as follows: “Mean

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		“Background Activity”?) for Ra-226 was 0.5602 pCi/g, resulting in a 1.5602 pCi/g defining non-impacted	background activity for Ra-226 was 0.5602 pCi/g, resulting in an investigation level of 1.5602 pCi/g as defining non-impacted.”
R16	Section 4.3	Include summary statistics for the above Tetra Tech background measurement results (mean, median, minimum, maximum and standard deviation.	Summary statistics are found in the reference area document Appendix F, Table 3-3. The summary values are (all in pCi/g) mean = 0.560, median = 0.556, standard deviation = 0.467, maximum = 1.245, minimum = 0.039.
R17	Section 4.3	Is the unit of measure correct for the following “The results of the walkover surveys in the reference area give an average of approximately 7,000 counts per second.”	The text has been revised to indicate “counts per minute.”
R18	Section 4.3	Is the unit of measure correct for the following “The material under the asphalt removed at the FSA is soil with stone and gives an average of approximately 4,200 counts per second.”	The text has been revised to indicate “counts per minute.”
R19	Section 4.4	Sample analysis and direct readings at defined and random locations were compared with the impact criteria discussed in Section 3.1.	This sentence has been removed from Section 4.4 of the final scoping report. The Navy believes this statement is more appropriate for a final status survey report.
R20	Section 4.5	Were the number of soil samples sufficient for the given statistical test, and how was this confirmed?	Seventeen soil samples per survey unit were collected. The number established in the TSP to provide adequate statistics resulted in 54 soil samples obtained in a relatively small area. There was no

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			indication of elevated areas based on walkover surveys with the sodium iodide (NaI) detector. Therefore, there was no reason to obtain additional samples.
R21	Section 5.2	Were surveys performed on the portions of asphalt which were in contact with removed soil? If not, then state reason(s) for not performing such surveys.	The asphalt and concrete surface have been installed after smelter operations concluded. No surveys were performed on the surface of the asphalt or concrete that was in contact with the exposed soil. The gamma walkover survey and later soil sample results did not identify activity, precluding the need to perform surveys of the removed asphalt.
R22	Section 5.2	Why were additional sampling locations needed for SUs 2 and 3?	Based on a random start and a triangular grid pattern, some survey units included the 18 <sup>th</sup> or 19 <sup>th</sup> sample location based on the random start location for the systematic grid.
R23	Section 6.0	The instruments and selected measurement methods used were able to detect the ROC or radiation type of interest and were, in relation to the survey or analytical technique, capable of measuring levels equal to or less than the <b>release criteria</b> .	See response to comment number R3.
R24	Section 6.6	“Outliers identified as <b>departures toward extreme values</b> would be linked to the time of data collection, which in turn would be linked to location. Those areas would be	The “speed” and survey instrument to surface distance are not critical to any calculations, but are important only in that they are held relatively constant during the

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		used to bias the soil sampling. Since the walk-over gamma readings were used as relative values, system sensitivity and MDC values are not critical and are therefore not discussed.” <b>If this is the case, then please explain the inclusion of survey specifics, such as, a walking “speed” of 0.5 meter per second, or a distance of 10 cm from the soil surface? If these values are worth mentioning in this report then the values can be considered critical enough for further discussion in the section. In addition, the lack of discussion in the section (6.6) may contradict the discussion of information expressed in Section 8.3 of this report.</b>	survey. The data are accumulated sequentially. If outliers are noted on a CFD of the data, the data listing will identify an approximate location of the outlier along the survey path. The investigation would include a return to the approximate location of the outlier with the same instrument and performance of a more detailed survey in an attempt to identify the source of the elevated measurement. Identification of an elevated reading would result in additional soil sampling at that location. The NaI walkover survey and investigations, if necessary, are not quantitative relative to soil activity (for example, picocuries per gram [pCi/g] in soil, and minimum detectable activity [MDA]).
R25	Section 6.7	Resulting instrument sensitivities for the FSA scoping survey are more than sufficient to detect the ROCs at the applicable <b>release criteria.</b>	See response to comment number R3.
R26	Section 7.1	<b><u>Step One – State the Problem</u></b> The problem can be stated as, “Can the available areas in the FSA be shown to demonstrate compliance with the release criteria?” <b>Determine if the surveyed area (FSA) is radiologically impacted or non-</b>	Step One has been revised as follows: “Identify whether the FSA survey area is radiologically impacted or non-impacted and whether further action is required.”

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		<p>impacted and if further action is required.</p> <p><b><u>Step Two – Identify the Goal of the Study</u></b></p> <p>The primary use of the data from this survey is to provide input into requirements for further actions at the FSA. Therefore, the decision to be made can be stated as, “Do the results of the survey meet the <b>release criteria for the site-specific ROCs?</b>”</p>	See response to comment number R3.
R27	Section 7.1	<p><b><u>Step Four – Identify the Boundaries of the Study</u></b></p> <p>“The lateral and vertical spatial boundaries for this survey effort are confined to the area specified as the FSA as shown in <b>Figure 3.</b>” <b>Did the survey include obtaining subsurface soil samples?</b></p>	Soil samples were collected from surface to 6 inches beneath the exposed soil. Samples and results are discussed in Section 8.4.
R28	Section 7.1	<p><b><u>Step Five – Identify the Decision Rules</u></b></p> <p>If the presence of the site-specific ROCs in soil samples or on the concrete slab surface or in swipe samples is <b>less than the release criteria</b>, then no further measurements are</p>	See response to comment number R3.

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		required. If the results of the survey exceed the release criteria, then the data will be used to characterize the site-specific ROCs with the intent to design and implement remediation in the future. No additional surveys to determine extent?	
R29		<b><u>Step Seven – Optimize the Study Design</u></b> Is an “Attachment” for TSP included in this scoping survey document?	Appendix A is the TSP for the Former Smelter Area and is included in this report.
R30	Section 8.1.1, first paragraph	“The application of the reference area background value obtained for the Building 112 concrete is not considered representative of the FSA area concrete pad. A similar situation exists in the Building 114 Courtyard area.” Please clarify the “similar situation”: Is the situation at Building 114 similar to Building 112 or SU-4?	Section 8.1.1, first paragraph was revised to clarify as follows: “A similar situation exists in the Building 114 Courtyard area. Concrete ramps in the Building 114 Courtyard have been exposed to weather for several decades and have a different appearance from the reference area concrete. Much of the finished concrete has been eroded, exposing more of the aggregate. A similar area of concrete on the south side of Building 114, outside any impacted area, was identified as a reference area for the concrete ramps within the Building 114 Courtyard.”
R31	Section 8.1.1, first paragraph	“A similar area of concrete on the south side of Building 114, outside any impacted area, was identified as a reference area for	The text of Section 8.1.1 has been revised as follows: “A similar situation exists in the Building 114 Courtyard area. Concrete

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		the (SU-4?) concrete ramps.”	ramps in the Building 114 Courtyard have been exposed to weather for several decades and have a different appearance from the reference area concrete. Much of the finished concrete has been eroded, exposing more of the aggregate. A similar area of concrete on the south side of Building 114, outside any impacted area, was identified as a reference area for the concrete ramps within the Building 114 Courtyard. The reference area concrete has an average alpha measurement of 9.9 cpm. Further investigation into the reasonable alpha background was conducted as described below.”
R32	Section 8.1.1, third paragraph	“Second, the average alpha activity from SCM scans has been evaluated. The SCM scan of the FSA concrete pad indicated randomly distributed low-level counts across the entire pad. The coincidence logic applied to the data indicates the pad to be free of activity in the <b>range of the release criteria</b> . The SCM records the counts in each 25 cm <sup>2</sup> area as the scan is conducted. The computer clock, measuring the time interval for the collection of each data point, converts the counts to cpm. The process for assessing <b>compliance with release criteria</b> for alpha	Section 8.1.1, third paragraph was revised to clarify as follows: “Second, the average alpha activity from SCM scans has been evaluated. The SCM scan, both primary and recount detectors, of the FSA concrete pad, indicated randomly distributed low-level counts across the entire pad. The coincidence logic applied to the data indicates the pad to be free of activity in the range of the investigation levels. Two locations indicate activity slightly above the threshold values, with a maximum calculated value of 22 dpm/100 cm <sup>2</sup> as reported in <a href="#">Section 8.2.1</a> . The SCM

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		activity is described in <a href="#">Section 7.2</a> and in <a href="#">Section 8.2.1.</a> ”	records the counts in each 25 cm <sup>2</sup> area as the scan is conducted. The computer clock, measuring the time interval for collection of each data point, converts the counts to cpm. The process for assessing surface activity and evaluating compliance with investigation levels for alpha activity is described in <a href="#">Section 7.2</a> and in <a href="#">Section 8.2.1</a> . Processing the data collected by the SCM in the SIMS allows for determination of average activity in any selected region of interest for a specific scan using a sub-routine ‘Snooper.’
R33	Section 8.1.1, page 16, seventh paragraph	“Based on the investigation, the basis for the elevated measurements is a higher alpha background on the surface of the FSA concrete pad.” Please include a brief discussion as to the reason(s) for the elevated alpha measurements.	The reason for the elevated alpha reading is unknown; however, the important observation is that it appears to be elevated consistently across the entire concrete slab, similar to the elevated alpha reading on the ramps within the Building 114 Courtyard. Normally distributed activity is representative of background and not contamination. This assessment is consistent with the results from the SCM scan of the area.
R34	Section 8.1.2	“Gamma dose rates varied very little on the FSA concrete pad. They ranged from 4 to 5 microrentgens per hour (μR/hr), averaging 4.8 μR/hr, consistent with values found in the reference area.” Identify the	The text was revised to include “Building 112” at the end of second sentence in Section 8.1.2.

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		reference area used.	
R35	Section 8.1.3, second paragraph	“Seventeen smears were collected on the concrete in SU 4. The maximum activities were 4.9 (alpha) and 37.0 (beta) dpm/100cm <sup>2</sup> as reported in <a href="#">Table 4</a> . These maxima are less than the <b>release criteria</b> for removable contamination. The removable contamination <b>release criterion</b> for surfaces is 1,000 beta dpm per 100 cm <sup>2</sup> for Cs-137 and Co-60. The criterion for UO <sub>2</sub> is 98 dpm alpha/100 cm <sup>2</sup> ( <a href="#">Navy 2006</a> ). The <b>release criterion</b> for Sr-90 is 200 dpm beta/100 cm <sup>2</sup> and for Ra-226 and Pu-239 is 20 dpm alpha/100 cm <sup>2</sup> .”	See response to comment number R3.
R36	Section 8.1.4	“Direct measurement results were compared with the <b>release criteria</b> . All results were less than the applicable <b>release criteria</b> . No further analysis is required, since no readings exceeded the <b>release criteria</b> .”	See response to comment number R3.
R37	Section 8.2.1, second paragraph	“The maximum alpha activity detected in SU 4 was 22 dpm/100 cm <sup>2</sup> . Alpha scan results are shown in <a href="#">Appendix D</a> . The three color-coded maps in the appendix show results from the primary detector, the recount detector, and points where the ‘coincidence’ threshold is met. The	The alpha scans produced two points greater than threshold in both primary and recount detectors. The maximum value is 22 disintegrations per minute (dpm). Based on the survey speed (0.5 inches per second) and efficiency (50 percent), the counts per detector would be

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		activity shown on the third map is the average reading from the two detectors. Only one 100 cm <sup>2</sup> area exceeded the ‘coincidence’ threshold.” Please specify the location in Appendix D.	approximately 3, most likely a false positive caused by background. The locations of the two spots, using the southwest corner of the survey area as the 0,0 point are (1 meter, 0.8 meter) and (2.9 meter, 3.8 meter). Appendix E is the computer-generated SCM report; locations are found using the grid system. Locations greater than the investigation levels include an exception report providing the grid coordinates.
R38	Section 8.2.3, paragraphs one and two	<p>“To meet the sensitivity requirements of the survey, the SCM must show the high end of the normally distributed data to be less than the <b>release criteria</b>. Then, areas that meet or exceed the release criteria will be identifiable and can be investigated. Deviations from normally distributed, straight-line CFDs were not observed in the FSA SU 4 survey.”</p> <p>“The maximum 100 cm<sup>2</sup> area is 3,532 dpm/100 cm<sup>2</sup> in SU 4, which is less than the <b>release criterion</b> for Co-60. Beta scan survey reports are presented in <a href="#">Appendix D</a>. <a href="#">Appendix D</a> contains information regarding the survey name, technicians who performed the survey, background and efficiency values, and <b>release criteria</b>.</p>	See response to comment number R3.

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		Both a color graphic two-dimensional plot and a CFD are included. The two-dimensional plots include a color bar indicating activity measured. The identification of hot spots or distributed activity indicated by patterns is apparent if activity beyond that of background distributions is present in the survey unit.”	
R39	Section 8.2.4	“More than 24,000 scan measurements were obtained in SU 4 on the concrete pad in accordance with the TSP and SOPs. The quality of the field measurements was assured through quality checks performed in accordance with procedure, both before and after data were obtained with the SCM. Scan measurement results were compared with <b>release criteria</b> . All results were less than the <b>applicable limits</b> . For beta scans, the CFD plots indicate that the 50 <sup>th</sup> percentile is near zero when applying the average background value from the reference area, indicating the reference area to be reasonable for the materials of construction of the concrete pad. No further statistical analysis is required for SU 4, since no readings exceeded <b>the criteria</b> .”	See response to comment number R3.
R40	Section 8.3	“A description of the gamma walk-over	Three sigma is the 99 percent value of a

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		<p>survey is provided in <a href="#">Section 6.6</a>. The walk-over pattern covered both SUs because of the limited area in SUs 1 and 2. SU 3 was surveyed separately. The data were collected in 1-second intervals for each strip. The data for each strip and the composite data were analyzed for the presence of outliers that may indicate a localized high activity source. Data were compared to the <math>3\sigma</math> value above the average for each strip”. <b>Where did the 3 sigma value originate from?</b></p> <p>“The data were also displayed as CFDs for each strip as well as the composite for the two areas. Although a few individual 1-second values slightly exceed the <math>3\sigma</math> value, no outliers were evident in the CFDs. Investigations in the areas of the highest readings did not identify any abnormalities.” <b>Where are these investigation located within this document?</b></p>	<p>normal distribution. Use of 3 sigma is a standard for identifying potential outliers when more advanced statistical tools such as CFDs are unavailable. The mean and standard deviation were calculated from each data strip obtained from the walkover survey and are shown at the bottom of the Excel data sheets provided in Appendix G.</p> <p>Investigations in the areas of the highest readings did not identify any physical abnormalities. Numerous samples (54 samples) were obtained in the limited area of exposed soils.</p>
R41	Section 8.4	<p>“Analysis results for Ra-226 in soil reported no sample greater than the <b>release criterion</b>. The maximum value reported was 0.75 pCi/g. The average Ra-226 concentration was 0.32 pCi/g. Gamma-emitting radionuclides, Co-60 and Cs-137,</p>	<p>See response to comment number R3. Additional text was revised to clarify FSA results relative to the reference area results.</p>

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		are reported less than the <b>release criteria</b> for all samples. Only two samples indicated results greater than the minimum detection level (MDL) for Cs-137. Both results were slightly above the MDL of the analytical method, and well below the <b>release criterion</b> . Sample results are reported in Appendix F.” <b>Please highlight this reference; see “Appendix F” in the next section.</b>	The reference to the appendix has been linked and is in a blue font color.
R42	Section 8.5	“Two of the three storm drains in the vicinity of the FSA contained adequate amounts of sediment for sampling. Those drains are on the north and south sides of Building 399. The drain east of Building 399 did not contain sufficient sediment volume to sample. Laboratory analysis for gamma-emitting radionuclides was performed on each of the samples in a manner identical to the soil samples. Each of the sediment samples contained Ra-226 at 0.39 pCi/g, consistent with the soil sample data. Co-60 activity was less than the MDL. The Cs-137 concentration in each sample exceeded the <b>release criterion.</b> ”	See response to comment number R3.
R43	Section 9.0	“This scoping survey was performed to evaluate whether radionuclides of concern	The HRA ( <a href="#">Weston 2007</a> ) describes the location of the smelter. Section 1.1 of the

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		<p>are present in accessible areas at levels in excess of the <b>release criteria</b> and to provide information to assist in identifying future actions. A scoping survey of the area previously occupied by a smelter was performed to determine if there is any indication of <b>(residual?)</b> radioactivity that may be the result of direct smelter operations, dispersed materials from the smelter exhaust, or storage of staged materials.” <b>Please explain how this particular area was determined to be an area “previously occupied by a smelter.”</b></p> <p>“The survey included a gamma walk-over survey and soil sampling in areas exposed by removal of surface asphalt and concrete. The scoping survey also included sediment sampling in storm drains. Alpha and beta surface scanning measurements, direct measurements at defined and random locations of alpha, beta, and gamma radiations, and smear surveys were performed on the concrete pad adjacent to the smelter location.</p> <p>The results of the FSA scoping surveys indicate that only background levels of Ra-226 that are well below the <b>release criterion</b> for that isotope are present in the</p>	<p>scoping survey reports provides the following evidence to support the location of the former smelter: “A 1949 drawing identifies a proposed Turbo Jet Overhaul facility to be constructed in the area occupied by the smelter and is presented in <b>Attachment 1</b>. The Turbo Jet Overhaul facility was never built, however. By 1954, Buildings 398 and 399 were shown on the station map in the location where the proposed Turbo Jet Overhaul facility was to be constructed, with the smelter no longer present. <b>Attachment 2</b> presents an aerial photograph overlay that shows the current buildings and the footprint of the former smelter area. A concrete pad west of Building 399 is identifiable in photographs that show the smelter location and in later photographs that show the site during the late 1950s. The concrete pad appeared to be a storage location for metal bins. The concrete pad has been identified as the only existing feature from the former smelter footprint; it is currently fully exposed and present at the FSA site.”</p> <p>See response to comment number R3.</p>

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Comment Number	Reference	Comment	Response
		<p>exposed soil. The data are indistinguishable from background. No evidence of residual radioactivity from historical Navy activities was found in the exposed soil. Sediment Cs-137 concentrations are consistent with levels found in the area and throughout the United States resulting from fallout from weapons testing and nuclear plant accidents (NRC 1998). A concrete pad at the FSA has been identified as the only existing feature from the former smelter footprint. The concrete pad showed only background levels of alpha and beta activity and no removable radioactivity. The data were of sufficient type, quality, and quantity.” In accordance with ? Impacted/Non-impacted determination criteria discussed in Section 3.0?</p> <p>All measurements were obtained in accordance with the TSP and SOPs as presented in the work plan (ChaduxTt 2010). Quality assurance checks of all instruments were performed throughout the survey process in accordance with the TSP and SOPs. Only data that were validated by successful quality assurance checks were used to demonstrate compliance with</p>	<p>Section 9.0 has been revised to incorporate suggested revisions and comments.</p>

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Comment Number	Reference	Comment	Response
		the release criteria. Therefore, the results of the scoping survey did not identify any radioactivity in soil or the concrete pad that can be associated with the Navy's former smelter operations and no further actions are necessary." Is the area considered "not impacted?"	
R44	Figure 7	Please reference location in the scoping survey report that provides explanations of the above screen captures.	Section 8.1.1 paragraph 4 explains and references Figure 7.
R45	Table 2	Please add a "4" to 43-68 within Table 2.	Table 2 was revised as suggested.
R46	Table 3	Where does this Table apply within the text?	Table 3 is referenced in Sections 8.1 and 8.2.
R47	Table 4	What is the unit of measure?	Table 4 has been revised to include all gamma and smear data. Units have been included.
R48	Table 5	What is the unit of measure?	Table 5 has been revised to include all gamma and smear data. Units have been included.

## References

Weston Solutions, Inc. (Weston). 2007. *Historical Radiological Assessment, Volume II, Alameda Naval Air Station, Use of General Radioactive Materials, 1941-2005*. June.

ChaduxTt. 2010. *Final Work Plan for Basewide Radiological Surveys, Former Naval Air Station Alameda, Alameda, California*. July 23.