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Ser BPMOW.JW\0513
JUN 13 2008

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Mr. John West
San Francisco Bay Regional Water Quality Control Board
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Dear Federal Facility Agreement Members:

SUBJECT: FINAL PROJECT WORK PLAN, INSTALLATION RESTORATION SITES 5 AND 10, BUILDINGS 5 AND 400 STORM DRAIN AND SEWER LINE, TIME-CRITICAL REMOVAL ACTION, ALAMEDA POINT, ALAMEDA, CALIFORNIA

I'm pleased to submit to you the final Project Work Plan, Installation Restoration Sites 5 and 10, Buildings 5 and 400 Storm Drain and Sewer Line, Time-Critical Removal Action, Alameda Point, Alameda, California of 13 June 2008.

If you have any questions, please contact Ms. T. June Wheaton at (619) 532-0902 or me at (619) 532-0907.

Sincerely,

George Patrick Brooks

GEORGE PATRICK BROOKS
BRAC Environmental Coordinator
By direction of the Director

Enclosure: (1) Final Project Work Plan, Installation Restoration Sites 5 and 10, Buildings 5 and 400 Storm Drain and Sewer Line, Time-Critical Removal Action, Alameda Point, Alameda, California (June 13, 2008)

(2) Response to Comments on draft Project Work Plan, Installation Restoration Sites 5 and 10, Buildings 5 and 400 Storm Drain and Sewer Line, Time-Critical Removal Action, Alameda Point, Alameda, California

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(3) Response to Additional Comments on and Additional Changes to draft Project Work Plan for IR Sites 5 and 10 (Buildings 5 and 400) Storm Drain and Sewer Line, Time-Critical Removal Action, Former Naval Air Station, Alameda Point, Alameda, California

(4) Additional Changes to draft Sampling and Analysis Plan (Appendix B of Project Work Plan) for IR Sites 5 and 10 (Buildings 5 and 400) Storm Drain and Sewer Line, Time-Critical Removal Action, Former Naval Air Station, Alameda Point, Alameda, California

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SENSITIVE RECORD

PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

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ENCLOSURE 1

FINAL PROJECT WORK PLAN
INSTALLATION RESTORATION SITES 5 AND 10, BUILDINGS 5 AND 400 STORM DRAIN AND SEWER LINE, TIME-CRITICAL REMOVAL ACTION

DATED 13 JUNE 2008

THIS RECORD IS ENTERED IN THE DATABASE AND FILED AS

RECORD NO. AR_N00236_003179

RESPONSE TO COMMENTS ON
DRAFT PROJECT WORK PLAN
FOR IR SITES 5 AND 10 (BUILDINGS 5 AND 400) STORM DRAIN AND SEWER LINE
TIME-CRITICAL REMOVAL ACTION
FORMER NAVAL AIR STATION ALAMEDA
ALAMEDA POINT, ALAMEDA, CALIFORNIA
(DATED MAY 29, 2007)
DCN: ECSD-RACIV-07-1211

Reviewed by Environmental Protection Agency, Anna-Marie Cook
Comments Dated: March 22, 2007

GENERAL COMMENTS	RESPONSE
Comment 1. It is unclear if the goal of this time-critical removal action (TCRA) is to achieve radiological free release of the areas being excavated. Please clarify whether the goal of the TCRA is free release of these portions of IR Sites 5 and 10.	**Response 1.** Comment noted. Executive Summary, third paragraph, first sentence states "... perform a radiological release survey." The sentence will be revised to state: "The primary objectives of the project's removal action are to extract piping systems and soil containing radioactive contaminants that may be present in or around the storm and sewer line systems external to Buildings 5 and 400, dispose of contaminated material, perform a radiological survey to confirm free release of the excavation area, and replace or remove selected sections of the storm drain and sewer line system."
Comment 2. It is unclear how liquids that are present in the storm drains and sewers will be handled or if these fluids will be sampled. The text indicates that the ends of the lines will be capped, but does not discuss management of any remaining liquids in the lines. It is recommended that liquids found in the storm drains and sewers be handled separately from those generated from dewatering or decontamination. Please revise the Work Plan and Sampling and Analysis Plan to discuss how liquids present in the storm drains and sewers will be handled. In addition, if these fluids will be sampled, please revise the Sampling and Analysis Plan (SAP) to specify that these liquids will be sampled.	**Response 2.** Wastewater will include water generated from dewatering excavated trenches, if required, as well as any residual wastewater released from storm drains and sewer lines into the excavated trenches during the removal process. Accumulated water will be collected in tanker trucks from the point of generation and transferred to storage tanks within the designated storage area. Residual wastewater remaining in storm drains or sewer lines will not be contained separately due to the anticipated condition of the piping and the proposed construction sequencing for pipe removal and installation. Open sewer or storm drain lines left in place during the removal process will be plugged to prevent water from entering or exiting pipes, and to substantially eliminate the release of any contamination that may be present in the lines. Plugging will be by

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	sized mechanical plugs, concrete or grout alternative. In no case will water or sediments from removal or installation of storm drains or sewer lines be allowed to enter recipient outfalls. Per procedures outlined in the waste management section of the Work Plan, wastewater generated from hazardous and nonhazardous waste and/or decontamination activities will be segregated from wastewater generated from radioactive decontamination.
WORK PLAN SPECIFIC COMMENTS	**RESPONSE**
Comment 1. Executive Summary, page ES-1, last paragraph. Delete "or all" from 4th sentence.	**Response 1.** Comment noted. The fourth sentence of the last paragraph on page ES-1 will be revised to state: "Drain lines from Building 5 were connected to the storm drainage system that discharges into Seaplane Lagoon."
Comment 2. Section 2.2.2, San Francisco Bay Dynamics, Page 2-2: Since the storm sewer lines from IR Sites 5 and 10 discharge to the Seaplane Lagoon or the Oakland Inner Harbor, it would be more relevant to discuss the hydrodynamics of the Seaplane Lagoon and the Oakland Inner Harbor and how they interact with San Francisco Bay rather than the dynamics of San Francisco Bay. Please revise the text to discuss the dynamics of the Seaplane Lagoon and the Oakland Inner Harbor and how water and sediment in these areas interact with San Francisco Bay.	**Response 2.** Comment noted. Additional text incorporating characteristics of the hydrodynamics of Seaplane Lagoon has been included to expand the analysis of tidal influence and historical discharge from the storm drain and sewer line on water quality within Seaplane Lagoon.
Comment 3. Section 2.4, Adjacent Land Usage, Page 2-3: This section does not indicate whether there are any facilities that have sensitive receptors like schools or day care centers within one mile of the	**Response 3.** Comment noted. Schools and day care facilities within the Alameda Point facility include the George Miller Elementary School (Alameda Parcel 179) and the Woodstock Child Development

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Alameda Point site boundaries. Please discuss whether there are any schools or day care centers within one mile of the Alameda Point site boundaries.	Center (Parcel 180). Schools and day cares within 1 mile of the former Alameda Point Naval Air Station IR Sites 5 and 10 boundaries include Alameda Community Learning Center (210 Central), Chipman Middle School (401 Pacific Avenue), and Encinal High School (210 Central Avenue). The text will be revised to include this listing of schools and day care centers.
Comment 4. Section 4.1, Radioactive Health and Safety, Page 4-1: The third paragraph indicates that air monitoring will be performed as necessary. It is not clear whether this reference to air monitoring refers to personal air monitoring (i.e., monitoring breathing zones of personnel) or to ambient air monitoring for fugitive dust downwind of remedial activities. Please clarify the type of air monitoring. In addition, if this reference is to downwind ambient air monitoring, discuss what criteria will be used to determine whether air monitoring is necessary and ensure that sampling procedures and analytical methods are included in the SAP.	**Response 4.** Comment noted. Air monitoring referred to within this section here is for "work place air monitoring." The sentence will be revised to state: "Dose rate, contamination, and air monitoring will be performed as necessary according to Appendix D standard operating procedures." No health and safety monitoring procedures will be contained in the SAP. Air monitoring procedures have been detailed in Appendix D-9, Standard Operating Procedure (SOP) 9, Air Sampling and Sample Analysis.
Comment 5. Section 4.11.1, Reference (Background) Areas, Page 4-12: The Work Plan specifies the number of background readings that will be collected using each instrument, as well as the number of soil samples that will be collected in the background area, but it is unclear how these numbers were developed. In addition, it is unclear what criteria will be used to determine that "the variability of the background is not too high." Please clarify how the specific number (18) of samples was determined or include the relevant reference where this information may	**Response 5.** Comment noted. Section 5.6.1 provides the details on how the specific number (18) of samples was determined. The relevant reference, previously provided in Section 5.6.1, is U.S. Nuclear Regulatory Commission Regulation (NUREG)-1575, MultiAgency Radiation Survey and Site Investigation Manual (MARSSIM). If the background data are not consistent with a normal distribution, the Kruskal-Wallis test will be utilized to demonstrate if significant

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be found. Also, clarify what cutoff level will be used to determine if background variability is "too high."	variability in the background is present. In the Kruskal-Wallis Test, a value for K (a statistic) is calculated and compared against a critical value K_C provided in Table 13.1 of NUREG-1505. If K is greater than K_C then it can be concluded that there is significant variability in the background suggesting that a MARSSIM, Scenario B methodology be used. NUREG-1505 recommends a "reasonable" default value for K_C to be 4.6 when three reference areas are used.
Comment 6. Section 4.11.3.1, Static Surveys for Alpha/Beta Radiation, Page 4-13: The text does not provide justification for the statement that a one-minute count time is sufficient to measure the appropriate release criteria. Please provide justification for the assumption that a one-minute count time will be sufficient to measure the appropriate release criteria, especially as related to alpha-emitters.	**Response 6.** Comment noted. Reference to a 1-minute count time will be deleted and Section 4.11.3.1, first paragraph, last sentence will be revised to: "When the alpha/beta static measurements are used to release equipment and materials, the procedure in Appendix D-1, SOP 1, Radiation and Contamination Surveys, will be followed." The count time required to meet the appropriate release criteria will be determined once field conditions are known.
Comment 7. Section 7.8, Excavation of Soils and Removal of Piping and Systems: It is unclear whether excavation of the storm drain and sewer line piping will extend and include the outfalls, or whether it will end at the IR site boundary. Please clarify whether the scope of work includes replacing the storm drain and sewer line piping all the way to the outfalls into Seaplane Lagoon and the Oakland Inner Harbor. If not, please discuss when piping in these areas will be addressed.	**Response 7.** Excavation of the storm drain and sewer line piping will not include or extend past the outfalls represented within the Work Plan figures and associated piping diagrams. Excavation of the storm drain and sewer line piping will not extend past the IR boundaries for IR Sites 5 and 10 as specified in the revised Figure 2-1, Location Map, and Figure 6-1, Storm Drain and Sanitary Sewer System. To minimize the potential for release of contamination to Seaplane

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	Lagoon as well as the introduction of existing contaminated sediment, a technical memorandum is currently being prepared to evaluate two alternatives to prevent re-contamination, namely, a high/low tide discharge structure or the use of a Tideflex (duck-bill type discharge) on the existing outfall structure.
Comment 8. Section 7.8.3, Excavation Approach, Page 7-7: Some of the sanitary sewer lines are within groundwater plume boundaries, but this is not acknowledged. Please discuss specific concerns for each reach of a storm drain or sanitary sewer line that intersects a groundwater plume, including known groundwater contaminants and provide a figure that shows where storm drains and sanitary sewers intersect groundwater plumes.	**Response 8.** Comment noted. A figure will be included within the Draft Final revision of the Work Plan that indicates identified groundwater plumes that may potentially intercept storm drain and sewer line excavation activities. Implementation of Work Plan activities includes the collection of standing water (contaminated or uncontaminated) from excavated trenches, if required, and transfer of the water to on-site storage tanks. Wastewater will either be characterized for off-site treatment and disposal, or treated on site in the event excessive volumes of wastewater are generated. If dewatering is required and results in excessive volumes of wastewater, a temporary wastewater treatment system will be designed and installed at the site to meet waste discharge requirements promulgated by the East Bay Municipal Utility District (EBMUD) for eventual discharge.
Comment 9. Section 7.8.3, Excavation Approach, Page 7-7: It is unclear why soilfreezing will provide an "ability to perform radiological scan of excavated side walls." Since water interferes with the ability to do radiological scans, it seems possible that ice would also interfere with the scans. Please clarify.	**Response 9.** In the event that a survey of soil with field instruments does not confirm the presence of radiological contamination, waste characterization procedures will include soil sampling and off-site laboratory analysis for radiological characterization of soils prior to off-site disposal. Radiological waste characterization will include sampling for radionuclides present and their associated specific

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	activity, which will be measured by an available standardized test method such as gamma spectroscopy, strontium analyses, and/or alpha spectroscopy. Radiological "release" of the trench will be based on sample results. To address the issue of water interfering with the ability to perform radiological scans, it is proposed that a saturated and frozen reference area will be used (to determine background levels). Scans within the trench will then be compared to this reference area. Tetra Tech EC, Inc. (TtEC) has prepared a technical white paper to document detection performance associated with radiological surveys of frozen soil. This document is attached to these RTCs and summarizes radiological instrument sensitivity to gamma radiation as affected by the soil freeze process. Gamma emissions from ^{226}Ra are determined fixed, and atomic numbers of the soil/water mixture are assumed the same as the soil/ice mixture. Density change is anticipated when a soil/water mixture is frozen. Gamma emissions from contaminated, frozen soil differ from emissions from normal soil due to these density changes. The effect of this density change was modeled using a gamma shielding code and presented a nominal measurement variance of less than 2 percent. Modeling demonstrated that decreasing the absorber density increased the gamma dose rate, but decreasing the source density reduced the gamma dose rate at a fixed point. Thus, the two effects presented an offset trend against each other. The variance was calculated at less than the measurement accuracy of field instruments (±20 percent)

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	and is determined to be an insignificant factor that should not interfere with field surveys.
Comment 10. Section 7.8.4, Other Considerations, Page 7-7: This section states that additional soil will be removed if radiological contamination is found, but does not include procedures to be followed if stained soil is encountered. Since stained soil could be the result of releases from the sanitary sewers or storm drain lines, it is possible that both hazardous constituents and radiological contamination may be associated with stained soil. At a minimum, stained soil should be sampled for hazardous and radiological isotopes. The text specifies that excavated material that emits odors or is stained will be segregated for potential sampling. However, stained soil present within the trenches (i.e. unexcavated soil) is not addressed. Please specify procedures for handling/removing unexcavated stained soil. Further, measures to control dust, like sprinkling and sweeping haul roads and areas to be excavated should be discussed. Please revise the text to include.a discussion of dust control measures.	**Response 10.** The scope of work directs the initial removal of soil around the piping system to a radius of 1 foot. The excavated trench walls and floor will then be surveyed and sampled for radiological contamination. Throughout the excavation process, soil and piping will be visually inspected for staining or odors. Excavated material that emits odors or is stained will be segregated for further sampling and analysis per the Sampling and Analysis Plan (SAP). During the course of the work, in the event an area of stained soil remains visible within trench sidewalls or floor, global positioning coordinates will be collected from the area of identified contamination to document the location in trench logs. This information, in addition to the radiation survey results, physical descriptions of the affected area (i.e., odor, color, and instrument readings), and randomly located gamma sample location, if applicable, will be provided to the Department of the Navy (DON). This information will be evaluated by the DON on a case-by-case basis to determine whether further characterization measures are required within the applicable IR site. Text will be revised to include this description for identifying the location of stained soil encountered. Dust control measures will be used to stabilize soil from wind erosion and to reduce dust generated from the following construction activities: clearing and grading activities, construction vehicle traffic

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	on unpaved areas, and sediment tracking onto paved roads and areas of unstabilized soil stockpiles. Water trucks will be used for dust control as specified in Section 9.4.1.2, Air Emissions. The source of water for the truck will be the city public water supply system. In addition to wet suppression (watering), preventative measures to be used for dust control include minimizing disturbed surface areas, limiting on-site vehicular traffic and speed, and controlling the number and activity of vehicles on the site at a given time.
Comment 11. Section 7.12, Final Status Surveys of Trenches, Page 7-14: The definitions of "elevated radiation level" and "elevated gamma activity" are not discussed in this section. Elsewhere in the Work Plan, it appears "elevated" can refer to contamination that exceeds the Radiological Remedial Objective (RRO) for Radium-226, or radiation readings that exceed the 3 sigma background value. Because the final status surveys of trenches will use both gamma surveys and sample collection, the Work Plan should be as specific as possible when discussing the conditions under which further excavation/investigation is necessary, and when no further action on the trench survey unit is required. Please revise the Work Plan to include these details.	**Response 11.** Comment noted. Section 7.11.1, the first paragraph, sixth sentence states, "The data will be used to directly tie the locations of any elevated radiation measurements (e.g., measurements greater than 3 sigma above background) to the corresponding grid coordinates for the pad." This statement defines "elevated readings." The second-to-last sentence of the same paragraph describes the course of action when an elevated level of radiation is documented.
Comment 12. Section 8.2.5, Waste Transportation, Pages 8-7: It is unclear if portal monitors will be established to ensure that trucks leaving Alameda Point with soil designated for Class I or Class II landfills do not contain radioactive materials. Please clarify whether portal monitors will be established at Alameda Point, and if not, please explain if and how this final screening will be done.	**Response 12.** Comment noted. Portal monitors will be utilized for this project. The following will be added to the last paragraph of Section 8.2.4: "Furthermore, all trucks leaving the site with Class I and II waste will pass through a portal monitor to ensure that no

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	radioactive material is present in the load." An SOP will be developed specific to the field activities at Alameda for monitoring trucks with soil designated for off-site disposal at Class I or Class II landfills. It is important to note that the truck portal monitor is not considered a complete "screening" as suggested by the comment. The sensitivity, source-to-detector geometry, and self-shielding provided by the soil would most likely result in radiologically impacted material located more than 1 foot away from the top or side wall of the truck to not alarm the portal monitor. The SOP will be included in the Draft Final revision of the Work Plan.
Comment 13. Section 9.2, Description of Habitat and Sensitive Species, Page 9-1: It is unclear whether excavation of the storm drain and sewer line piping will extend to the outfalls, or whether it will end at the IR site boundary. If the excavation will extend to the outfalls near Seaplane Lagoon, please include a description of the habitat adjacent to Seaplane Lagoon in Section 9.2 and revise the sections describing impacts to plants, fish, amphibians and reptiles, and mammals, as necessary. If excavation will be necessary along the shoreline or in the intertidal zone, the text should discuss the fish window and other specific requirements to protect endangered species and migratory birds that use San Francisco Bay. In addition, specific procedures to minimize discharge of silt and sediment to San Francisco Bay should be specified. Please discuss whether excavation will be required in the shoreline and/or intertidal zones, and if so, discuss the fish window and appropriate procedures to minimize sediment discharge to San Francisco Bay and to protect nesting and	**Response 13.** Excavation of the storm drain and sewer line piping will not extend to the current outfall locations. Excavation will not be required along the shoreline or intertidal zone of Seaplane Lagoon, San Francisco Bay, or Oakland Inner Harbor. To minimize the potential for release of contamination to Seaplane Lagoon as well as the introduction of existing contaminated sediment, a technical memorandum is currently being prepared to evaluate two alternatives to prevent re-contamination, namely, a high/low tide discharge structure or the use of a Tideflex (duck-bill type discharge) on the existing outfall structure. No changes will be made to text.

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migratory birds.	
Comment 14. Section 9.4.1.2, Air Emissions, Page 9-4: In addition to the measures discussed in this section, regularly scheduled street sweeping and/or washing may be necessary to remove dirt and dust from roads. Please revise the Work Plan to include street sweeping and/or washing.	**Response 14.** Comment noted. The Time-Critical Removal Action (TCRA) Work Plan and associated Stormwater Pollution Prevention Plan (SWPPP) will be revised to include text specifying regularly scheduled street sweeping.
Comment 15. Figure 10-1, Traffic Control Route and Alternate and Figure F.3-1, Transportation Route: The marked trailer site and IR Sites 5 and 10 are in the middle of the Seaplane Lagoon on these figures. Also, it is unclear why the figures do not include the Seaplane Lagoon. Further, the pier area (e.g., the location of the USS Hornet) is not dry land as shown on the figures. Please revise the location of the marked trailer site and IR Sites 5 and 10. Please also include the Seaplane Lagoon on the figures and correct the depiction of the pier area.	**Response 15.** Comment noted. The drawing will be revised to include appropriate landmarks and more detailed location of the site support facilities.

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Appendix B, Sampling and Analysis Plan	
Comment 1. Appendix B, Table B.3-1, Data Quality Objectives: Under Step 4, it appears that the second paragraph states that IR Sites 5 and 10 comprise 1,734 acres, when this is the size of Alameda Point. Rather than specifying the acreage of Alameda Point, the size of IR Sites 5 and 10 should be specified. Please revise Step 4 to specify the acreage of IR Sites 5 and 10.	**Response 1.** Comment noted. The Data Quality Objectives table will be revised to state the documented acreage of IR Sites 5 and 10.
Comment 2. Appendix B, Table B.3-1, Data Quality Objectives: Step 7 of the Data Quality Objectives discusses the number of samples that will be collected to obtain the data necessary to achieve the goals of the study. Please provide documentation/rationale that supports the use of these specific numbers (18 post excavation samples per trench, and four random samples of each import material source.)	**Response 2.** Comment noted. Table B.3-1, Step 7 will be revised to provide a reference to the Project Work Plan, Section 5.6.1, Determining the Numbers of Data Points for the WRS Test, for post-excavation sampling determination, as well as Section 5.3, Import Fill Material Sampling, of the Draft Final SAP for import material sampling.
Comment 3. Appendix B, Section 5.1, Pipe Removal Sampling, Page B.5-1: Non-radiological sampling will be conducted for stockpiled soil, and excavated material that emits odors or is stained will be segregated for possible additional sampling. Please discuss whether any biased sampling of unexcavated soil will be conducted in the event that soil staining or other signs of contamination are observed in the trenches.	**Response 3.** Comment noted. In the event an area of stained soil remains visible within trench sidewalls or floor, global positioning coordinates will be collected from the area of identified contamination to document the location in trench logs. This information, in addition to the radiation survey results, physical descriptions of the affected area (i.e., odor, color, and instrument readings), and randomly located gamma sample location, if applicable, will be provided to the DON. This information will be evaluated by the DON on a case-by-case basis to determine whether further characterization measures are required within the applicable IR site. Biased sampling of unexcavated soil with visible

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	contamination will be determined on a case-by-case basis by the attendant Remedial Project Manager (RPM). The Project Work Plan, Section 7.8.4, Other Considerations, has been revised to include text associated with the identification of areas of stained soil that remain visible within trench sidewalls or floors.
Comment 4. Appendix B, Section 5.4, Waste Characterization Sampling, Page B.5-3: The second paragraph in section 5.4 details the number of samples that will be collected after soil has been removed from the trenches. Please provide the rationale behind these numbers (i.e., the collection of two samples per 100 cubic yards of soil for radiation sampling, and one sample per 500 cubic yards of soil for chemical analyses). In addition, it is unclear if soil that is segregated because of staining or odors will be sampled separately or if this soil will be combined into 500 cubic yard piles and sampled. Since soil that has staining or odors is more likely to be contaminated, it is recommended that soil from each stained/odiferous area be segregated and sampled separately. Please revise the text to clarify how stained/odiferous soil will be sampled.	**Response 4.** The number of soil samples was deemed sufficient to obtain a representative population to determine the radiological properties and chemical composition of the soil population, and the average proportions of the radiological and chemical composition in relation to the population from which it was collected. Collection of soil samples will occur after soil is placed in stockpiles, whereas sampling of waste will be a function of pile size. Soil will be sampled after completion of a 100 percent scan per radiological screening criteria specified in the Work Plan. Soil/sediment identified with staining or odors will be segregated and scanned separately for discrete radioactive point sources. Once the soil has been scanned, two samples per 100 cubic yards of soil will be collected and analyzed by the on-site laboratory by gamma spectroscopy. The contaminated soil will then be segregated separately from the other excavated soil stockpiles, combined with similarly identified soil material into 500-cubic-yard piles, and sampled according to Appendix B, Section 5.4. No changes will be made in text. As to the basis for sampling frequency, one sample per 500 cubic yards is generally considered to be a conservative value by industry

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	standards for bulk excavated soil chemical characterization. We have found that this frequency is well accepted by regulatory agencies and disposal facilities and is commonly utilized on Navy project sites. For radiological sampling, two samples per 200 cubic yards was selected as a very conservative frequency more suited to the nature of discrete sources of radiation in the soil and given a heightened concern for protectiveness in the area of radiological materials. There are no standardized frequency requirements or regulations, so these frequencies are based on technical judgment and experience from a number of similar projects and sites.
Comment 5. Appendix B, Section 6.4, Decontamination Procedures, Page B.6-10: The text indicates non-disposable sampling equipment will be screened for alpha/beta radiation prior to decontamination, but does not indicate what will happen if alpha/beta radiation is detected. Please clarify the decontamination procedures for non-disposable sampling equipment found to be contaminated with alpha/beta radiation.	**Response 5.** In the event radiological contamination is detected for any non-disposable sampling equipment, decontamination procedures will be implemented. The decontamination process is stated at the end of the first paragraph in Section 6.4, and Appendix D-7, SOP 7, Decontamination of Equipment and Tools.
Comment 6. Appendix B, Table B.7-1, Reference Limits for Soil Samples, Pages 4 and 6: Some footnotes assigned to numbers in this table appear to have been assigned in error. Specifically, footnote g, which refers to Endosulfans, is applied to polynuclear aromatic hydrocarbons on page 4, and footnote f, which applies to 4,4-DDD, 4,4-DDE, and 4,4-DDT, is applied to metals on page 6. Please review this table for similar discrepancies and assign the correct footnotes, as applicable.	**Response 6.** Comment noted. The footnotes in Table B.7-1 will be updated to correct discrepancies.
Comment 7. Appendix B, Table B.7-4, Measurement Performance	**Response 7.** Comment noted. Table B.7-4 will be revised to reflect

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Criteria, Field QC Samples: The text of Section 6.3.3 (Item #8) indicates field duplicates will be collected for 10% of import fill samples for chemical analyses as well as gamma emitting isotopes. Table B.7-4 indicates field duplicates will only be analyzed for gamma emitting isotopes. Please resolve this discrepancy.	the collection of field duplicates for both chemical and radiological analyses.
Appendix D, Standard Operating Procedures	
Comment 1. Appendix D-6, Standard Operating Procedure (SOP) 6 – Sampling Procedures for Radiological Surveys, Section 4.2.1, Swipe Sampling, Page 2: Section 4.2.1 indicates swipe samples will be obtained in accordance with Appendix D-6, Radiation and Contamination Surveys. It appears swipe samples are described in Appendix D-1. Please correct this discrepancy.	**Response 1.** Comment noted. Appendix D-6, Section 4.2.1, first sentence will be revised to state: "Swipe samples will be obtained in accordance with Appendix D-1, Standard Operation Procedures (SOP) 1, Radiation and Contamination Surveys."
Appendix E, Stormwater Pollution Prevention Plan	
Comment 1. Appendix E, Section 2.4, Construction Activities, Page E.2-3: The second complete paragraph on page E.2-3 states that stockpiles will be covered with plastic during rainy weather and/or windy conditions. However, Section 7.7 of the Work Plan indicates that stockpiles will be covered with plastic at the end of each work day. Please revise the text on Page E.2-3 to indicate that stockpiles will be covered with plastic during rainy weather, windy conditions, and at the end of each work day.	**Response 1.** Comment noted. Based on the premise that the stockpiles are temporary and scheduled for immediate off-site disposal after waste characterization, a minimum 6-mil plastic liner or an approved biodegradable soil stabilizer will be allowed for use as a stockpile cover. The text in Appendix E will be modified as follows: "To prevent rain from coming in contact with the stockpiled soil and to minimize wind dispersion of particulate matter, the stockpiles will be covered with a minimum 6-mil polyvinyl chloride (PVC) liner (or equivalent), or an approved

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	biodegradable soil stabilization compound during rainy weather, windy conditions, and at the end of each work day."
Comment 2. Appendix E, Section 5.0, Non-Stormwater Management, Page E.5-1: This section does not provide information regarding sequencing and/or procedures to be followed to ensure that groundwater that will be encountered when sanitary sewer lines are excavated will not be discharged to San Francisco Bay. For example, if a sanitary sewer line adjacent to a storm drain line is excavated, and there is a tie-in or gravel fill between the lines, it is possible that groundwater could enter the storm sewers and be discharged directly to the Seaplane Lagoon or to the Oakland Inner Harbor. Please revise this section to discuss sequencing and procedures to ensure that contaminated groundwater is not discharged to the Seaplane Lagoon or the Oakland Inner Harbor.	**Response 2.** Open sewer or storm drain lines left in place during the removal process will be plugged to prevent water from entering or exiting pipes and to substantially eliminate the release of any contamination that may be present in the lines. Plugging will be by sized mechanical plugs, concrete or grout alternative. Excavation of the storm drain and sewer line piping will not extend past the outfalls represented within the Project Work Plan figures and piping diagrams. Excavation will also not be required along the shoreline or intertidal zone of Seaplane Lagoon, San Francisco Bay, or Oakland Inner Harbor. In addition to existing procedures, a technical memorandum is currently being prepared to evaluate two alternatives to prevent re-contamination, namely a high/low tide discharge structure or the use of a Tideflex (duck-bill type discharge) on the existing outfall structure, that would also minimize the potential for release of contamination to Seaplane Lagoon as well as the introduction of any existing contaminated sediment. In no case will water or sediments from removal or installation of storm drains or sewer lines be allowed to enter recipient outfalls. No changes will be made to text.
Appendix F, Transportation and Disposal Plan	
Comment 1. Appendix F, Section 2.0, Scope of Work, Page F.2-2: The last sentence of the first partial paragraph on Page F.2-2 states "Work is anticipated to commence in May 2007 and continue through	**Response 1.** Comment noted. An updated project schedule will be included with the Draft Final revision of the Work Plan and SAP,

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November 2007." Please update the anticipated field work dates to reflect the most recent anticipated schedule. Please also make this change in Step 3 of the Data Quality Objectives table in Appendix B, Sampling and Analysis Plan.	and the text will be corrected.
GENERAL COMMENTS Appendix G, Design Criteria	**RESPONSE**
Comment 1. Text in Section 1.1 (Site Background and Design Period in Appendix G) states that the second phase of the redevelopment program proposes demolition/redevelopment of Buildings 5 and 400. However, this TCRA includes the removal of radiologically contaminated lines and impacted surrounding soil adjacent to structures/foundations and does not discuss RAD impacted soil under structures/foundations. Please ensure that radiologically impacted soils adjacent to structures/foundations that could not be removed during this TCRA, due to shoring/design limitations, are addressed during the second phase of the redevelopment program.	**Response 1.** The primary objectives of this Work Plan are to research and investigate previous storm and sewer line removal work at OU-2C, IR Site 5 and Building 400, which was done by New World Technology in the fall of 1998 and spring of 1999, and to complete a Time-Critical Removal Action (TCRA) Action Memorandum and Work Plan to implement removal of radiologically contaminated piping and impacted soil prior to reconstruction of the storm drain system. The end result of radiological work at impacted sites should be a Final Status Survey (FSS) document to obtain free release from the California Department of Public Health (CDPH). The DON intends to evaluate and address the removal of radiologically impacted soils beneath structures and foundations that could not be removed during this TCRA. No changes will be made to text.
Comment 2. Appendix G does not provide an implementation schedule. As such, the sequence of tasks and proposed commencement/completion dates and timeframes cannot be evaluated. For example, it is unclear if trench excavations will occur simultaneously or sequentially. It is also unclear if multiple pumping stations will be operated simultaneously as	**Response 2.** Comment noted. A construction sequencing schedule will be submitted with the Draft Final revision of the Work Plan. The construction sequencing schedule will be included as a figure in the Project Work Plan.

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part of the dewatering system. Please revise the Work Plan to include an implementation schedule with a sequence of tasks and associated commencement/completion dates and timeframes.	
Comment 3. The Work Plan does not provide design details for the Low Level Radiological (RAD) Soil Stockpile Area, RAD Cleared Chemical Contaminated Soil Stockpile Area, or RAD Contaminated Construction Debris. As a result, it is unclear if these areas are lined, covered, or include erosion control measures. In addition, the dimensions and anticipated volume to be included in these areas is unclear. Also, it is unclear if pre- and post-TCRA confirmation samples of system components will be collected. Please revise the Work Plan to include design details for all system components including staging, decontamination, and stockpile areas.	**Response 3.** Comment noted. Section 7.8.2, Stockpile/Laydown Pads, provides a general description of the pad construction, which includes material construction of polyethylene or polyvinyl chloride liner or equivalent construction material (sealed asphalt), to include 6- to 8-inch curb or berms consisting of sandbags, asphalt, concrete blocks, or an approved equivalent to separate the pads. A main collection point where water will drain shall be established. A minimum slope of 0.25 percent is required to adequately drain water to the collection point. Section 7.8.4 states that the stockpiles will be sized in the field to accommodate the excavation activities. Field estimates for excavated soil volumes indicate that required pad sizes will be approximately 50-foot by 200-foot areas, although there are no specific limit requirements on the actual size of the stockpile size, and actual design details relative to size will be determined in the field. Section 7.8.4 text will be revised with the following text insertion between paragraphs 3 and 4: "In the event the stockpile liner system consists of plastic liner, the liner will be a continuous sheet of a minimum 20-plastic (HDPE, PVC) material and covered with 6 inches of fine sand to protect the liner. TtEC may create larger stockpile areas consisting of multiple sheets of plastic which will be bonded

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	together in the field, per the manufacturer's recommendations, to create a single sheet. Prior to stockpile installation in the former taxiway area, the existing concrete and asphalt surface area will be surveyed for background gamma radiation and the area sealed with an appropriate material sealer. The selected liner system will be installed and the final surface (sand or asphalt) re-surveyed. At the conclusion of waste characterization sampling, the stockpiles situated on the liner system will be removed for disposal including the underlying sand down to the liner. The liner (plastic or asphalt) will then be re-surveyed for gamma radiation, and a determination will be made by the radiation group if the material can be removed off site or must be handled as radiologically impacted material."
Comment 4. It is unclear when design drawings for replacement of the storm drains will be provided. These drawings should be provided for Regulatory Agency Review. Please provide design drawings for storm drain replacement, including materials and compaction specifications.	**Response 4.** Comment noted. Project Work Plan Appendix H, 90% Design Package, which includes drawings and specifications for the storm drain replacement for IR Sites 5 and 10, has been completed and will be included in the Draft-Final submittal.
SPECIFIC COMMENTS	
Comment 1. Section 1.0, Introduction and Purpose, Page G1-1: This section states that, "The removed sewer lines are not to be replaced," but, details regarding the disconnection of sewer pipes have not been provided in the Work Plan. Therefore, it is unclear if the sewer pipes will be properly disconnected and placed out of use. Please ensure that the	**Response 1.** As noted in the Project Work Plan Section 7.8.3, Excavation Approach, open sewer or storm drain lines left in place during the removal process will be plugged to prevent water from entering or exiting pipes, and to substantially eliminate the release of any contamination that may be present in the lines. Plugging will be

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disconnection and closure of sewer pipes occurs prior to TCRA activities and describe how this will be done. Similarly, ensure that the disconnection and closure of storm drain lines occurs prior to TCRA activities.	by sized mechanical plugs, concrete or grout alternative. In no case will water or sediments from removal or installation of storm drains or sewer lines be allowed to enter recipient outfalls.
Comment 2. Section 2.1.2, New Storm Drain System Design and Installation, Page G.2-1: According to this section, "The new storm water drainage system can be installed in the existing storm drain system, or at an adjacent new location. Both options should be evaluated, but it is unclear when this evaluation and decision process will occur. Also, it is unclear what adjacent new location is under consideration for the new storm water drainage system. Please include specific details regarding the evaluation and decision process related to the new storm drain system design and installation.	**Response 2.** A preliminary storm drain alignment analysis was prepared in March 2007 to identify potential replacement options for the existing storm drain, where consolidation of piping could occur, and other piping configurations for alignment alternatives. The analysis evaluated three options: • Option A: Replacement of the storm drain pipe in the existing alignment • Option B: Elimination of the lateral length of pipe adjacent to Building 5 and connecting existing roof downspouts and inlets into the pipe along Building 400, which would be enlarged to carry the increased flows • Option C: Eliminating the lateral length of pipe along Buildings 5 and 400 and consolidating them into one pipeline alignment in the center of the road between the two buildings; the existing roof downspouts and inlets along the buildings would then be connected to this pipeline. Summary recommendations concluded that Option A provided the maximum advantages due to the elimination of existing utility conflict requiring extensive potholing and mapping, as well as a

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	reduction of required linear feet of trenching.
Comment 3. Section 2.1.2, New Storm Drain System Design and Installation, Page G.2-1: The text states that some monitoring wells located at the site will be destroyed due to storm line removal action; however, the monitoring wells to be destroyed have not been identified in the Work Plan. Please specify the monitoring wells which will be destroyed due to the storm line removal action. In addition, please revise Drawing 0028-105 (Groundwater Plume and Monitoring Wells) to indicate which monitoring wells will be destroyed.	**Response 3.** Comment noted. Drawing 0028-105 has been deleted from Appendix G, Design Criteria. A figure has been included in the Project Work Plan as Figure 7-2, Groundwater Plume Activity, that provides locations of adjacent monitoring wells and wells that are currently scheduled for abandonment.
Comment 4. Section 2.1.5, Trench Excavation, Page G.2-2: According to the text, "Crossing through contaminated groundwater plume areas shall be minimized whenever possible." However, it is unclear what measures will be taken if crossing through a contaminated groundwater plume areas is unavoidable. Please discuss measures that will be taken if contaminated groundwater is encountered during trench excavations.	**Response 4.** The standard operating procedure for required dewatering will be to collect standing water from the trench (contaminated and uncontaminated), transfer the water to on-site holding tanks, and subsequently direct the water through an on-site water treatment system. The groundwater treatment system will be designed to treat the water to meet the East Bay Municipal Utility District (EBMUD) promulgated discharge requirements, as stated in the Project Work Plan, Section 9.4.2.3, Wastewater Discharge to East Bay Municipal Utility District.
Comment 5. Section 2.1.5, Trench Excavation, Page G.2-2: The text does not discuss how RAD contaminated lines and impacted surrounding soil will be removed from the trench excavations and transported to stockpile areas. Appendix F only addresses transport off-site. Please revise the Work Plan to include details regarding the removal and on-site	**Response 5.** Comment noted. A second paragraph will be added to include the following text: "Storm drain lines, sanitary sewer lines, soil, and debris characterized as radiologically contaminated are to be placed in a lined dump truck for on-site transport to radiological sample pads

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transportation of RAD contaminated lines and impacted surrounding soil.	for further survey."
Comment 6. Section 2.1.6, Backfill, Page G.2-2: The text states that, "Backfill material shall consist of clean import material with acceptable chemical/RAD levels as approved by the engineer/compliance person, as well as poorly graded river rock and/or crushed stone." It is unclear if the material will be sampled for construction specific parameters (i.e., permeability, particle size, moisture content, and compaction/density). Please ensure the clean import material will be sampled for construction specific parameters.	**Response 6.** Comment noted. Technical specifications for import material, including required construction parameters, will be included as Appendix H, 90% Design Package for Storm Drain Replacement for IR Sites 5 and 10., to the Project Work Plan.
Comment 7. Section 2.2, Codes and Standards, Pages G.2-3 to G.2-4: This section provides a list of codes and standards which will be utilized and adhered to during the TCRA, but the list of codes and standards does not provide specific detail regarding which sections, chapters, and/or regulations apply to the site and various design system components. As such, it is unclear if specific codes and standards apply to the entire site or only to specific system components. Please clarify which sections, chapters, and/or regulations will be utilized during TCRA activities.	**Response 7.** Comment noted. Technical specifications providing corresponding codes and standards for specific design components will be included as Appendix H, 90% Design Package for Storm Drain Replacement for IR Sites 5 and 10., to the Project Work Plan.

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MINOR COMMENTS	**RESPONSE**
Comment 1. Section 2.1.5, Trench Excavation, Page G.2-2: According to the text, "If personnel entry is necessary, adequate shoring/sloping/benching shall be required per California OSHA rules and regulations." However, the section does not discuss whether personnel will be confined-space trained, since trenches do meet the definition of confined-space. Please ensure that if entry is necessary, personnel will be properly trained in confined-space entry.	**Response 1.** Per the project site-specific health and safety plan, the Project Environmental Health and Safety Manager (PESM) and the Site Safety and Health Supervisor will identify confined spaces or confined spaces created by the nature of the work. The Site Safety and Health Supervisor will develop a confined space entry plan and Activity Hazard Analysis (AHA) that will detail the confined space entry procedure and requirements. Prior to entry, the plan and the AHA will be reviewed by all personnel.
Comment 2. Drawing 0028-101, Storm Drain and Sanitary Sewer – Enlarged Plans, Sheet 6: The scale of Sheet 6 is different than the scale of Sheets 1-5. As such, Sheet 6 cannot be matched to Sheets 1-5 to provide an enlarged plan. Please ensure that the scale of Sheet 6 is revised to match the scale of Sheets 1-5.	**Response 2.** Comment noted. The drawings as referenced for the Appendix G Design Criteria have been revised. Revised drawings 0028-PL001 through 0028-PL004 include the corrected Sheet 6, Storm Drain System - Plan. The four Storm Drain System - Plan drawings (Drawings 0028-PL001 through 0028-PL004) include the corrected scale for each individual drawing, and correspond to the Key Map and Horizontal Control, drawing 0028-G2.
Comment 3. Drawing 0028-002, Site Vicinity Map: The drawing does not include a legend. As a result, it is unclear if lines shown on the drawing represent sewer or storm water lines. Please ensure that all pertinent details shown on the drawings are included in a legend.	**Response 3.** Comment noted. This drawing has been deleted from the Appendix G. The Project Work Plan will provide a Figure 6-1, Storm Drain System, that will include a corresponding symbol to denote storm drain lines to be removed and replaced.

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GENERAL COMMENTS	RESPONSE
Comment 1. Because a portion of this removal effort was previously started but never finished, please include a discussion of what was learned during the last removal effort, what issues or problems arose, and how the proposed removal activities will incorporate these lessons learned.	**Response 1.** Removal action activities were performed in 1997 and 1998 for the removal and replacement of storm drain and sewer pipelines in and around IR Sites 5 and 10, and Buildings 5 and 400. Adequate funding was not available during that period to complete the scope of this removal action. The 2007 TCRA Work Plan provides revised scope and work activities to complete removal of the identified drain and sewer pipelines within IR Sites 5 and 10, thereby removing possible sources of radioactive contamination to Seaplane Lagoon prior to implementation of the Remedial Action and proposed infrastructure system that will be necessary to support the redevelopment of Alameda Point. The text of Section 2.6, Storm Drain and Sewer Line Background, will be revised as follows. ". . . water that enters the storm sewer system at IR Site 10 eventually flows into Seaplane Lagoon (Bechtel, 2006). Remedial/removal actions were performed on portions of impacted storm drain and sewer lines associated with IR Sites 5 and 10 in 1997 and 1998. In February 2000, New World Technologies (NWT) issued the *Final Report, Alameda Naval Air Station Storm Drain Removal Project* (NWT, 2000) that described the removal and replacement of radioactively contaminated storm drain piping and manholes. The following is a description of changes made to previous infrastructure:

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- Approximately 660 linear feet of storm drain piping outside of Building 5/5A were removed.
- Approximately 60 linear feet of "abandoned line" were removed and not replaced outside of Building 5/5A.
- Approximately 270 linear feet of storm drain piping between manholes 5F-4 and 5F-3 were hydroblast cleaned and resurveyed.
- Approximately 430 linear feet of storm drain piping between manholes 6F-5 and 6F were hydroblast cleaned and resurveyed.

The action level and release levels for removed material and trench bottoms were reported to be 1.5 times background and 5 picocuries per gram (pCi/g).

Several issues and challenges occurred during the CERCLA removal action. The Final Report detailed the following problems:

- The original shoring installed (trench plate and whaler system) was found to be ineffective at shoring due to the soil conditions; however, an interlocking sheet pile system was effective.
- Excessive contamination was encountered at several locations outside Building 5/5A resulting in a large increase in the amount of soil requiring off-site disposal.

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	• Reinforced piping was discovered due to repairs that occurred during the mid-1970s, and a hydraulic breaker was required. • Excessively wet soil was encountered requiring the implementation of soil staging and drying prior to shipment off site. The previous removal action was not completed due to a lack of sufficient funds. This TCRA is intended to complete the work for removal of the drain and sewer pipelines, and thereby remove all possible sources of radioactive contamination to Seaplane Lagoon prior to the Remedial Action for that site."
Comment 2. We would like to inspect the site prior to the rainy season to ensure that best management practices have been implemented and are protective of neighboring surface waters. Please work with us to schedule a time to inspect the removal action activities prior to the rainy season.	**Response 2.** Comment noted. Site access will be scheduled for Best Management Practice (BMP) inspection by regulatory agencies prior to the rainy season.
Comment 3. Historic activities in Buildings 5 and 10 were known to discharge numerous contaminants into storm and sanitary sewer lines prior to 1972. Considering this information, we request that soil and groundwater sampling be conducted where sewer lines are found to be cracked, broken, disconnected, or destroyed. Sampling should focus on contaminants associated with activities that occurred up-gradient of the damaged sections. Please revise the Work Plan to address potential historical releases of contaminants from damaged sewer lines.	**Response 3.** Comment noted. The purpose of this TCRA is to remove radiologically contaminated lines and impacted surrounding soil rather than general site/facility improvement. The project also includes the installation of a temporary storm drain system to bridge the gap between the new developments. This scope of work does not include additional investigation activities to further assess soil and groundwater contamination associated with sewer lines found to be cracked, broken, disconnected, or destroyed.

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SPECIFIC COMMENTS	RESPONSE
Comment 1. Section 1.1 – Removal Action Objectives – Page 1-2 – This paragraph indicates that the removal action objective (RAO) for ^{226}Ra is to remove radiological contamination in excess of 1 pCi/g of ^{226}Ra above background levels. The Draft Action Memorandum for this TCRA states the RAO is to ensure the total effective dose equivalent (TEDE) is <15 mrem/yr. Please reference source for establishing this RAO and resolve the discrepancy between the objectives specified in this document and the TCRA Action Memorandum.	**Response 1.** Comment noted. The RAO specified in the Draft Action Memorandum is to ensure that the total effective dose equivalent (TEDE) is <15 millirem per year (mrem/yr), which has been established in the following references: Draft Final Feasibility Study, Report IR Site 1, 1943-1956 Disposal Area, Alameda Point Alameda, California, Volume I, Part A, CTO-0068/0099, January 2006 (Bechtel Environmental)
Comment 2. Section 1.2 – Scope of Work – Page 1-2 – This paragraph summarizes the proposed scope of this TCRA. Not included in this summary is the use of soil freezing technology during sewer line removal activities, as discussed in Section 7.8.3, to minimize flow of groundwater into excavation areas. As this excavation approach is discussed later in this document, it should be summarized in this section as well.	**Response 2.** Comment noted. Section will be revised to include text referencing soil freeze technology as detailed in Section 7.8.3. See revised section text, paragraph two: "To minimize the flow of groundwater into excavation areas, as well as provide acceptable trench shoring, a method termed soil freeze is proposed prior to conducting excavation activities. The soil freeze method employs nitrogen or chilled calcium-chloride brine that is continuously circulated through underground steel and high-density polyethylene (HDPE) pipes in a completely closed, pressurized system. As heat is extracted in the "freezedown" process, the soil and groundwater surrounding each steel and HDPE pipe segment freezes to produce a solidified matrix. Within a period of 3 to 6 weeks, expanding columns of frozen soil meet to form a continuous, impermeable, and structurally stable mass. When underground construction work is

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	completed, the soil-freeze system is deactivated, and the soil and groundwater return to their natural condition. Some advantages of the ground-freezing technique to this project include complete groundwater cutoff, ability to go around buried utilities, and ability to perform radiological scan of excavated sidewalls without interference from shoring materials." "
Comment 3. Section 2.6 – Storm Drain and Sewer Line Systems Background – This section indicates that some sewer lines discharge to the Oakland Inner Harbor and some discharge to Seaplane Lagoon. With removal actions proposed in this work plan focusing on sewer lines that drain to Seaplane Lagoon, please indicate whether any sewer lines that discharge to the Oakland Inner Harbor may have been impacted by historic activities at this site.	**Response 3.** The primary objectives are to research and investigate all previous storm and sewer line removal work at OU-2C, IR Site 5 and Building 400, which was done by New World Technology in the fall of 1998 and spring of 1999, and to complete a Time Critical Removal Action (TCRA) Action Memorandum and Work Plan, along with all radiological removal of the storm and sewer in the OU and reconstruction of the storm water system. The end result of radiological work at impacted sites should be a Final Status Survey (FSS) document to obtain free release from CDPH. Investigation of historical activities that may have radiologically-impacted sewer lines that discharge to the Oakland Inner Harbor is not part of the scope of this TCRA.
Comment 4. Section 2.7 – Previous Investigations – Page 2-4 – First paragraph – This paragraph states that historic activities at IR Sites 5 and 10 may have led to radiological contamination flowing toward Seaplane Lagoon at Outfall F and G. Outfall FF at Seaplane Lagoon, which also discharges sewer lines that originate in the subject area, is not mentioned here. Please indicate whether historic activities or previous investigations have identified potential radiological contamination associated with sewer	**Response 4.** The primary objectives are to research and investigate previous storm and sewer line removal work at OU-2C, IR Site 5 and Building 400, which was done by New World Technology in the fall of 1998 and spring of 1999. The DON, at its discretion, can expand the TCRA scope to include other lines that, based on historic activities, may have lead to radiological contamination flowing toward Seaplane Lagoon at Outfall FF. Outfall G has not been

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lines leading to Outfall FF.	identified to be of concern for radiological contamination.
Comment 5. Section 7.8.3 – Excavation Approach – Pages 7-7 and 7-8 – This section explains that management of shallow groundwater at the site may require the installation of a well-point extraction system or a soilfreezing technique. As this is the work plan for the proposed removal action, please clearly indicate which method is being proposed and justify the selection of the proposed method. For example, if the soilfreeze method is proposed, please explain how this method was selected, and where it has been previously utilized. Please also include a discussion of the potential energy requirements using this approach and discuss whether there are other less-energy intensive approaches that might prove equally effective.	Soil freeze has also been successfully used at the following locations: • Mallard Bay Sewer Lift Station—Sammamish, Washington • Lake Sammamish Sewer Interceptor—Sammamish, Washington • Gravity Wall for Container Wharf —Pasadena, Texas • Sewer Manhole Replacement—Los Angeles, California Additional civil engineering and environmental project applications include the following: • I-405/SR-522 Stormwater Detention Vault—Woodinville, Washington • Madison Park Condominium Basement—Seattle, Washington • Terminal 5 Pipe Repair—Seattle, Washington • Boring Machine Recovery—Renton, Washington • Boring Machine Receiving Pit and Storm Line Tie-in—Renton, Washington • Remedial Excavation at Shuffleton Substation—Renton, Washington

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- Microtunnel Receiving Shaft, Tolt Pipeline #2 at Bear Creek Crossing—Redmond, Washington
- Arapahoe Coal Handling Facility—Englewood, Colorado
- Canterbury Castle Underpinning—Portland, Oregon
- Soos Creek Sewer Lift Station #38—Maple Valley, Washington
- Dockside Handling Building D5 Service Unit Training Pit—U.S. Naval Submarine Base (SUBASE), Bangor, Washington
- Microtunnel Receiving Shaft, Tolt Pipeline #2 at W. Snoqualmie River—Redmond, Washington
- Tunnel Through Railroad Embankment—The Dalles, Oregon
- Olympic Pipe Line Company East Creek Reroute—Bellevue, Washington
- Shoring and Groundwater Cutoff at Shear #2 & #3, Nucor Steel —Norfolk, Nebraska
- Four Microtunnel Shafts, L.A. Harbor Sewer Relocation—San Pedro, California
- Gravity Wall for Container Wharf —Pasadena, Texas
- Sewer Manhole Replacement—Los Angeles, California

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	The mechanical process to freeze the ground includes circulating calcium chloride brine through a series of closed-ended steel pipes in the ground. The -10°F to -20°F brine circulates down along the outside pipe and up through an inside pipe, thus freezing the soil around the pipes. It is a completely closed and tested system so that no brine goes into the ground. Unlike dewatered sites, frozen shoring can remain stable for weeks without power. The storm drain removal and replacement major constructability issues were comparable to other documented soil-freeze project profiles that required the following: • Excavations requiring temporary slope stabilization in unstable materials • Excavation in high seepage areas • Groundwater cutoff in potentially contaminated areas Value analysis of soil freezing using circulating calcium chloride brine determined that overall project costs were comparable with conventional shoring and dewatering methods. If the soil-freeze method is selected for the construction shoring and dewatering approach, the shoring work plan associated with the soil freeze will include additional criteria to document how this method was selected, where it has been previously utilized, and what the electrical utility requirements are for the specified equipment.

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Comment 6. Section 7.11.1 – Radiological Screening – Page 7-12 – Bottom Paragraph – This paragraph describes how excavated soil will be dewatered prior to performing radiological surveys. Please include a description of how drainage from dewatering areas will be captured, tested, and treated. Also include a discussion of what other best management practices will be implemented in these areas to prevent wind and water erosion of soil stockpiles.	**Response 6.** BMPs to be implemented for excavated soil stockpiles are presented in Appendix E, Section 4.5 of the Stormwater Pollution and Prevention Plan, which states that soil will be stockpiled in a generally uncompacted condition and is, therefore, subject to erosion. In addressing stockpiling, BMPs will include diversion of drainage from the stockpile areas using earthen dikes or drainage swales, placement of additional sandbag and/or hay bale desilting facilities, silt fencing on the downgradient toe of the stockpile slope, and dust control. In addition, large stockpiles will be sloped to encourage sheet flow and reduce the infiltration of rainwater. A plastic liner (HDPE, PVC, or equivalent) will be used to cover stockpiles during rainy weather and/or windy conditions. Sandbags or other applicable ballast will be used to weigh down the cover. Wastewater sampling and analysis for waste discharge requirements are detailed in Appendix B, Sampling and Analysis Plan, Section 5.4, which states that water resulting from excavation stormwater runoff, dewatering, and decontamination will be collected and contained in tanks or other appropriate containers for discharge into EBMUD, which provides wastewater treatment for portions of Alameda County. One to two water samples per discharge event will be collected and analyzed for discharge permit requirements per Ordinance No. 311A-03 that regulates wastewater discharges to EBMUD. Off-site laboratory analysis will be conducted to verify compliance with discharge limits (local limits) for select pollutants that include volatile organic compounds (VOCs), metals, oil and

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	grease, pH, cyanide, phenols, and on-site laboratory analysis for gamma emitting isotopes. Additional analyses may be added if wastewater discharge is not feasible, after which the wastewater will be sent for off-site disposal at an approved treatment facility.
Comment 7. Figure 6-1 – Storm Drain and Sanitary Sewer System – This figure is unreadable. Is there any way the resolution can be improved to make this figure clearer? Also, can it be reproduced in color so the various types of pipelines in this figure can be distinguished?	**Response 7.** Comment noted. Figure will be revised to provide colored symbols and corresponding legend.
Comment 8. Appendix E, Section 2.5 – Construction Site Estimates – As this property will ultimately be transferred to the City of Alameda, please confirm that the proposed storm water and sanitary sewer pipeline designs will conform to applicable city design standards.	**Response 8.** Comment noted. Technical specifications to be submitted with the Draft 90% Storm Drain Replacement Project for IR Sites 5 and 10 will comply with City of Alameda Standard Subdivision Specifications and Design Criteria.
Comment 9. Appendix E, Section 4.1 – Construction Sequence/Scheduling – Please include a timeline showing how long this removal action is expected to take place, when construction activities will be conducted with respect to the rainy season, and how activities will be scheduled around storm events.	**Response 9.** Comment noted. A construction schedule will be included in the Draft Final revision of the Work Plan.
Comment 10. Appendix E, Section 9 – Site Inspections and Monitoring – This section states that periodic sampling and analysis is not required, because of Resolution 2001-046. Resolution 2001-046 serves as an amendment to the General Permit for Storm Water Discharges Associated with Construction Activity (Water Quality Order 99-08-DWQ). As such, the entire amended General Permit must be referenced when evaluating potential requirements for sampling and analysis, not just	**Response 10.** Comment noted. As specified in Section 5.4 of the Sampling and Analysis Plan, all wastewater collected during the course of trench excavation, stormwater runoff, soil dewatering activities, and decontamination will be collected and sampled for analysis prior to wastewater discharge to EBMUD, or off-site disposal to a pre-approved facility. One to two water samples will be collected and analyzed for discharge permit requirements per

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Resolution 2001-046. Section 2.1 of the General Permit explicitly requires that a sampling and analysis plan be developed and conducted for pollutants which are: • Are not visually detectable in storm water discharges, • Are known or should be known to occur on the construction site, and • Could cause or contribute to an exceedance of water quality objectives in the receiving water. Furthermore, the water quality objective for radioactivity, as specified in the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan, current draft 12/22/06) states that radionuclides shall not be present in concentrations that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life. Because there is a potential for radiological contamination associated with the sewer line removal, we request that periodic sampling and analysis be conducted as part of the storm water management at this site.	discharge event, and/or waste characterization for off-site disposal. Off-site laboratory analysis will include VOCs, metals, oil and grease, pH, cyanide, phenols, and on-site laboratory analysis for gamma-emitting isotopes. Additional analyses may be added if wastewater discharge is not feasible, and if additional characterization is required in order to dispose of wastewater off site.

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RESPONSE TO ADDITIONAL COMMENTS

Reviewed by Peter Russell, Russell Resources, Alameda Reuse and Redevelopment Authority
Verbal comments received February 1, 2008 via telephone conversation with June Wheaton, Navy Environmental Project Manager

COMMENTS	RESPONSE
Comment 1. How much, if any, of the pipeline would be removed from inside Building 5?	**Response 1.** Currently, the line(s) inside the building running between Buildings 5 and 5A (drainage primarily from the former small parts paint shop) is planned for removal; the text and figures in the draft Work Plan did not consistently depict this. The figures will be revised in the final Work Plan, as necessary, to consistently indicate that this line will be addressed during the TCRA. See attached revised Figure 6-1 showing the lines proposed for removal.

RESPONSE TO ADDITIONAL COMMENTS ON AND ADDITIONAL CHANGES TO DRAFT PROJECT WORK PLAN FOR IR SITES 5 AND 10 (BUILDINGS 5 AND 400) STORM DRAIN AND SEWER LINE TIME-CRITICAL REMOVAL ACTION FORMER NAVAL AIR STATION ALAMEDA ALAMEDA POINT, ALAMEDA, CALIFORNIA (DATED MAY 29, 2007)

Comment 2. Mr. Russell indicated he had a question about the lines north of Building 5A. Ms. Wheaton said those lines were not part of the TCRA scope. Mr. Russell referred to the draft Work Plan, Appendix G, Drawing 0028-101, Sheet 1 of 6, where those lines appeared to be depicted as part of the project. Mr. Russell asked if these lines came from inside the building. Ms. Wheaton said she was not sure and would research the lines origins. In addition, she would clarify if they should be part of the TCRA scope.	**Response 2.** Research of historical documents and maps was performed and these lines have not been identified as radiologically contaminated in previous storm drain line investigations conducted by the Navy. The lines north of Building 5A and northeast of Buildings 5/5A were not intended to be part of the original proposed work and were erroneously depicted as part of the removal action on the figure referenced in Comment 2. The figures will be revised so these lines are consistently not designated for removal in the final Work Plan. See attached revised Figure 6-1 showing the lines proposed for removal.

ADDITIONAL CHANGES

Additional changes to the final Work Plan not included in the Response to Comments:

Project Organization: The following key personnel have been revised: June Wheaton – new BRAC PMO West RPM; Pat Brooks – new BRAC PMO West BEC; and Marc Kyllo, PE – new TtEC Project Engineer. The associated project organization charts and text will be updated in the final Work Plan accordingly.

Project Schedule: The project schedule has been updated. See attached Figure 1-3.

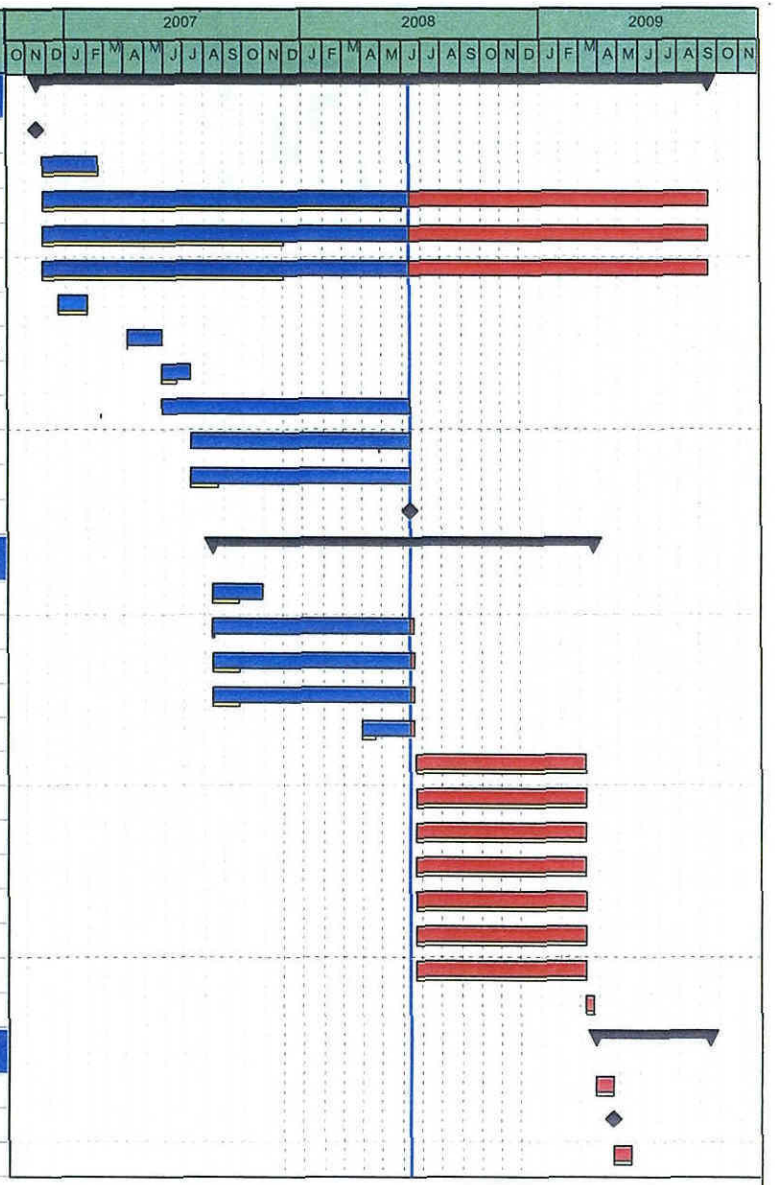
RESPONSE TO ADDITIONAL COMMENTS ON AND ADDITIONAL CHANGES TO DRAFT PROJECT WORK PLAN FOR IR SITES 5 AND 10 (BUILDINGS 5 AND 400) STORM DRAIN AND SEWER LINE TIME-CRITICAL REMOVAL ACTION FORMER NAVAL AIR STATION ALAMEDA ALAMEDA POINT, ALAMEDA, CALIFORNIA (DATED MAY 29, 2007)

Section 7.8.2 Stockpile/Laydown Pads- 3rd paragraph: The text has been revised from '...the stockpile areas will be bermed with a 6- to 8-inch-high curb...' to "...the stockpile areas will be bermed with a 12-inch-high curb..." The increased height was based on findings during constructability review and experience at IR Sites 1, 2, and 32 that indicates increased curb height benefits the overall maintenance of the stockpile areas.

Section 7.11 Radiological Surveys and Sampling of Excavated Material: The text describing the step of segregating all soil within 1-foot of the pipeline into 12-cy stockpiles for separate radiation surveys by manual methods after placing into 6-inch lifts, has been deleted. All excavated soil will still be spread into 6-inch lifts for radiation surveys, as otherwise described in Section 7.11. This original approach had been modeled after similar work being conducted at Hunters Point Shipyard. However this step was later omitted at Hunters Point Shipyard, with agency concurrence, based on learning that it was considered to be a redundant step that had no added benefit.

Section 7.11.1 Radioactive Screening- 1st paragraph: The sentence "After the soil has been radiologically screened and cleared, 2 samples per 100 cy will be collected (each sample as a 5-point composite) and analyzed by the on-site laboratory by gamma spectroscopy." has been added before the last sentence. This is consistent with the draft Sampling and Analysis Plan.

Activity Name	At Completion Duration	Start	Finish
Pre-Construction	1329	17-Nov-06 A	15-Sep-09
Contract Awarded	0	17-Nov-06 A	
Internal Draft - Action Memorandum & Work Plan	60	27-Nov-06 A	20-Feb-07 A
Project Management, Support & Administration (regular)	714	27-Nov-06 A	15-Sep-09
Community Relations	714	27-Nov-06 A	15-Sep-09
Regulatory Interaction	714	27-Nov-06 A	15-Sep-09
Research and Investigation	30	21-Dec-06 A	02-Feb-07 A
Draft Action Memorandum (AM) and TCRA Work Plan (WP)	39	05-Apr-07 A	29-May-07 A
Review of Draft AM and WP by Regulators	31	30-May-07 A	13-Jul-07 A
Storm Drain Installation Design Package	267	30-May-07 A	13-Jun-08
Incorporate Comments and Issue Final WP	236	13-Jul-07 A	13-Jun-08
Incorporate Regulators Comments & Issue Final AM	236	13-Jul-07 A	13-Jun-08
Issue Final WP	0		13-Jun-08
Construction	757	13-Aug-07 A	23-Mar-09
Survey Work for Stock Pile Area	56	13-Aug-07 A	31-Oct-07 A
Mobilization	220	13-Aug-07 A	20-Jun-08
Institutional Controls	220	13-Aug-07 A	20-Jun-08
Site Security	220	13-Aug-07 A	20-Jun-08
Stock Piling Pad Set Up	58	01-Apr-08 A	20-Jun-08
Pipe and Soil Excavation/Removal/Rad Surveying	180	23-Jun-08	09-Mar-09
Sewers Removal	180	23-Jun-08	09-Mar-09
Soil Sampling for Sewer Work	180	23-Jun-08	09-Mar-09
Water Sampling for Sewer Work	180	23-Jun-08	09-Mar-09
Sewer Sample Analysis	180	23-Jun-08	09-Mar-09
Installation of New Sewer Line	180	23-Jun-08	09-Mar-09
Non-Rad Waste Transport	180	23-Jun-08	09-Mar-09
Demobilization	10	10-Mar-09	23-Mar-09
Post Construction	226	24-Mar-09	15-Sep-09
Prepare Internal Draft Post Construction Report (PCR)	20	24-Mar-09	20-Apr-09
Submit Internal Draft PCR	0		20-Apr-09
Navy Review of Internal Draft PCR	20	21-Apr-09	18-May-09



Primary Baseline
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

SWDIV RAC IV

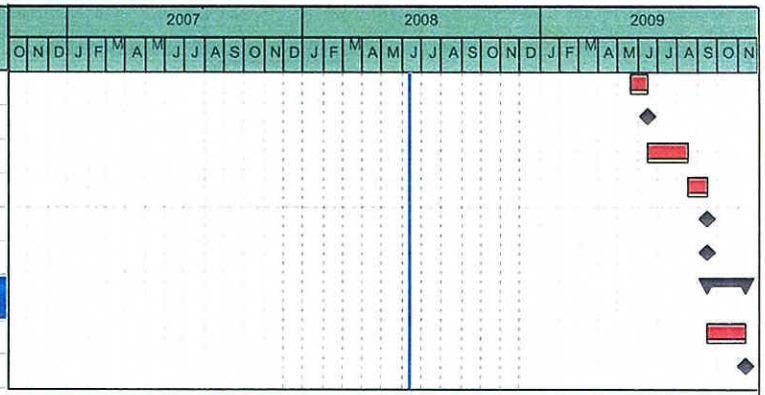
Figure 1-3

Alameda Storm Drain and Sewer Line TCRA

Alameda Point, Alameda, CA

TETRA TECH EC, INC.

Activity Name	At Completion Duration	Start	Finish
Prepare Draft PCR	20	19-May-09	16-Jun-09
Submit Draft PCR	0		16-Jun-09
Regulatory Agencies Review	43	17-Jun-09	17-Aug-09
Prepare Final PCR	20	18-Aug-09	15-Sep-09
Submit Final PCR	0		15-Sep-09
Technical Completion	0		15-Sep-09
Project Close Out	75	16-Sep-09	13-Nov-09
CTO Closeout	43	16-Sep-09	13-Nov-09
CTO Complete	0		13-Nov-09*



Primary Baseline
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

SWDIV RAC IV

Figure 1-3

Alameda Storm Drain and Sewer Line TCRA

Alameda Point, Alameda, CA

TETRA TECH EC, INC.

DRAWING NO: 000161.DWG

DCN: ECSD-2201-0028-0001

CTO: #0028

APPROVED BY: A E

CHECKED BY: A E

DRAWN BY: AAS

DATE: 08/17/07

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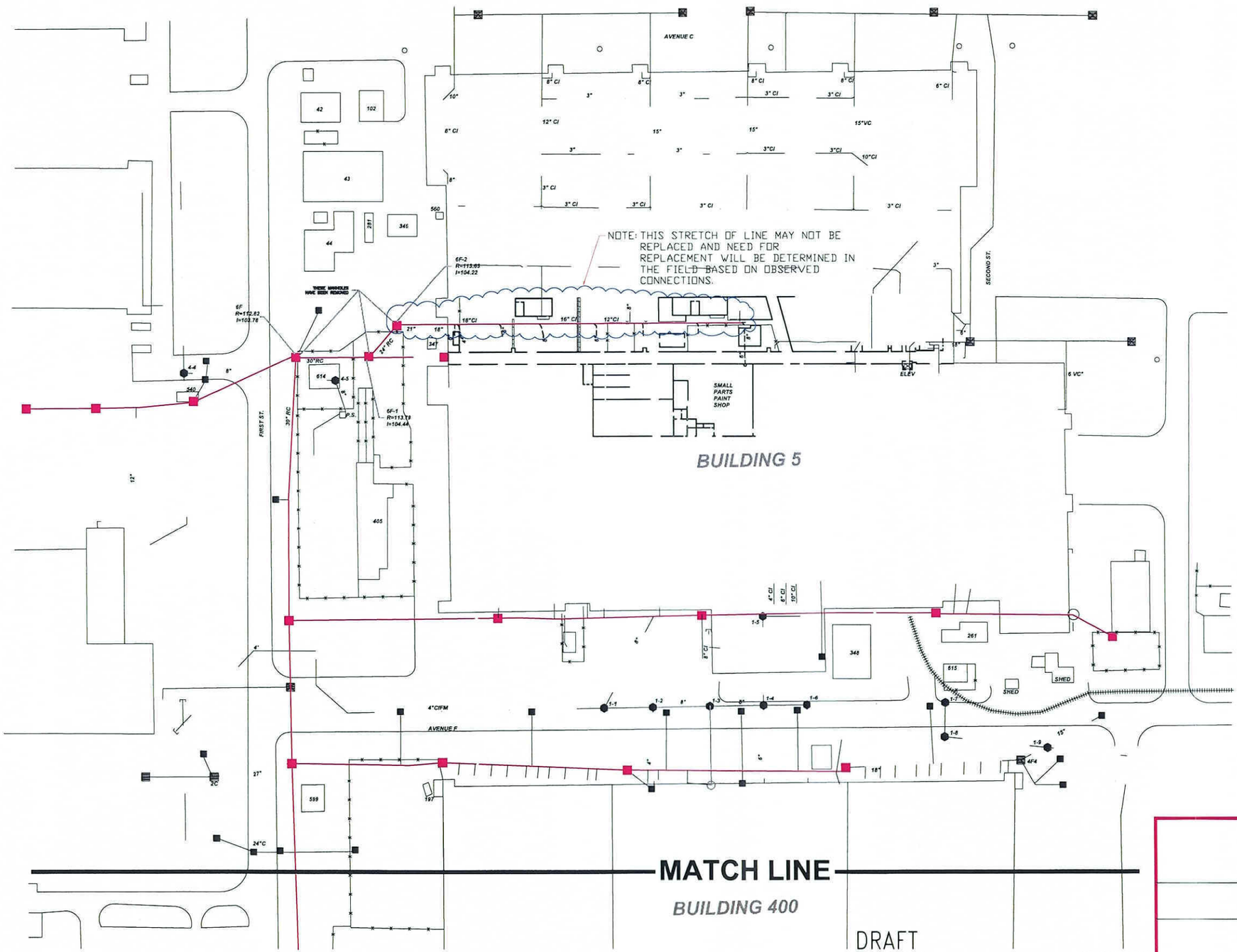

LEGEND

- STORM DRAIN TO BE REMOVED AND REPLACED
- CATCH BASIN
- SANITARY SEWER MANHOLE
- STORM DRAIN
- INDUSTRIAL WASTE LINE
- I-5 INDUSTRIAL WASTE MANHOLE
- P.S. PUMP STATION
- VALVE
- VALVE PIT
- CATCH BASIN
- CLEAN OUT
- 4F-1 STORM DRAIN MANHOLE

C	CONCRETE
CI	CAST IRON
VC	VITRIFIED CLAY
RC	REINFORCED CONCRETE
SS	SANITARY SEWER
SSMH	SANITARY SEWER MANHOLE
SDMH	STORM DRAIN MANHOLE

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SCALE IN FEET

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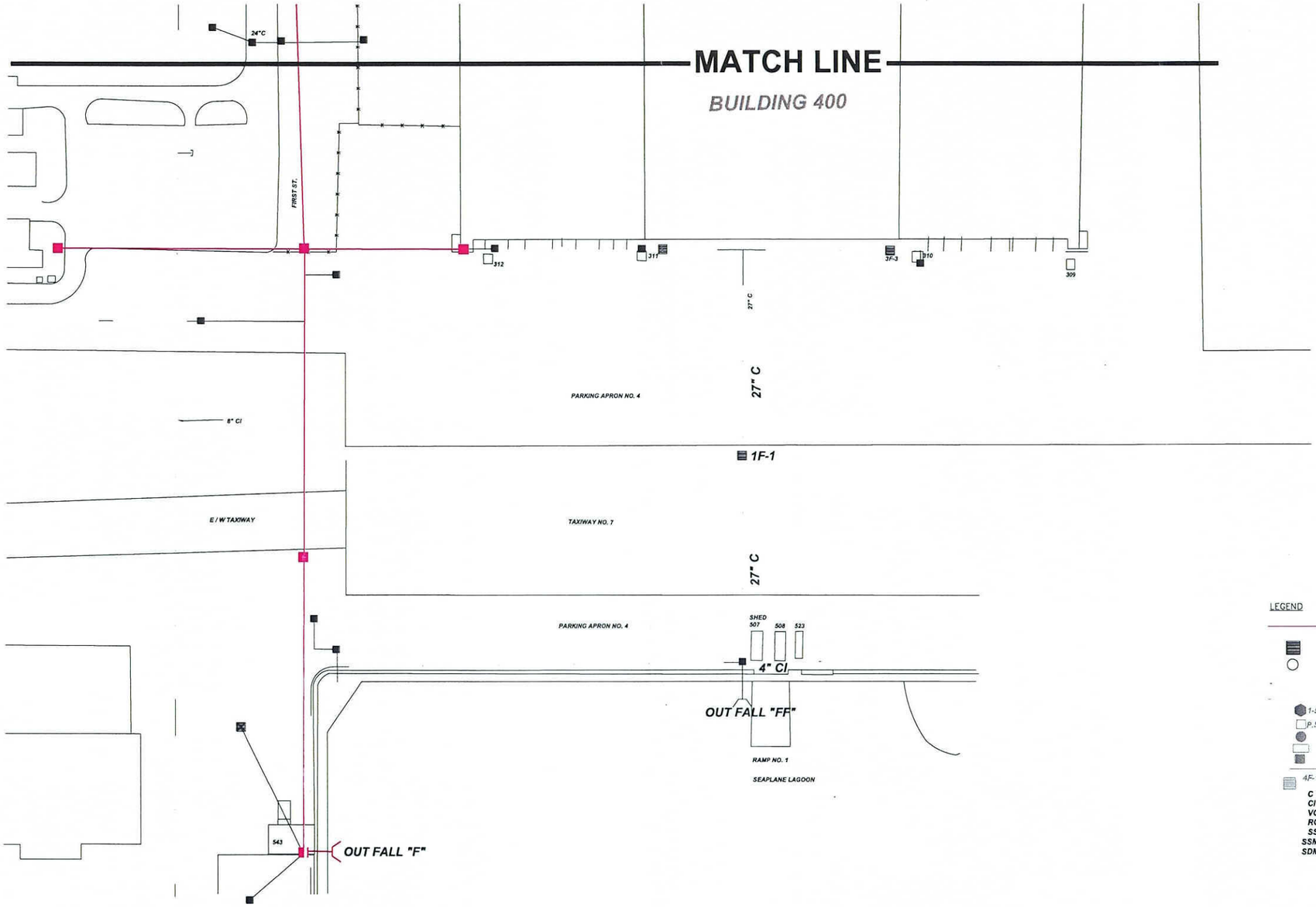
NOT ISSUED FOR CONSTRUCTION

Figure 6-1
SHEET 1 OF 2
STORM DRAIN SYSTEM

OU-2C, IR SITES 5 AND 10
ALAMEDA POINT – ALAMEDA, CA

TETRA TECH EC, INC.



LEGEND

- STORM DRAIN TO BE REMOVED AND REPLACED
- CATCH BASIN
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- 4F-1 STORM DRAIN MANHOLE
- C CONCRETE
- CI CAST IRON
- VC VITRIFIED CLAY
- RC REINFORCED CONCRETE
- SS SANITARY SEWER
- SSMH SANITARY SEWER MANHOLE
- SDMH STORM DRAIN MANHOLE

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SCALE IN FEET

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08/17/2007

NOT ISSUED FOR CONSTRUCTION

Figure 6-1
SHEET 2 OF 2
STORM DRAIN SYSTEM

OU-2C, IR SITES 5 AND 10
ALAMEDA POINT – ALAMEDA, CA

TETRA TECH EC, INC.

DRAWING NO: 000161.DWG
DCN: ECSD-2201-0028-0001
CTO: #0028
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CHECKED BY: A E
DRAWN BY: AAS
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ADDITIONAL CHANGES

Additional changes to the Final Sampling and Analysis Plan for the subject document are enumerated herein and were based on the revisions received by Tetra Tech EC, Inc. (TtEC) for the Final Base-wide Hunters Point Sampling and Analysis Plan for the Storm Drain and Sanitary Sewer Removal on 06/06/08 from RASO. Text revisions or additions are denoted in red text in the following table which corresponds with the red tracked changes in the SAP.

#	REVISION
1	**UFP-QAPP Worksheet #3 (Distribution List), Figure B.2-1 (Project Organization Chart), and Table B.2-1 (Personnel Responsibilities and Qualifications):** These tables and figure were updated as applicable with the current Navy RPM's (June Wheaton) and BRAC Environmental Coordinator's (Pat Brooks) contact information.
2	**Section 3.2, paragraph 2, Page B.3-1 to B.3-2:** The following sentence was revised: Soil and sediment samples will be analyzed by gamma spectroscopy at the on-site laboratory operated by New World Technology, Inc. (NWT) at Hunters Point Shipyard.
3	**Section 5.1, Page B.5-1:** This section heading was revised as follows: 5.1 BACKGROUND (REFERENCE) SAMPLING
4	**Section 5.1, Page B.5-1:** The following paragraphs were added to Section 5.1 after the first paragraph: The background values for ^{226}Ra will be determined at the on-site laboratory, by counting for a period typically necessary to meet the QLs listed in Table B.7-1. If the results of the average background determination indicate ^{226}Ra activity less than half the release criterion (without regard to MDA), with few or no negative results, then the background will be considered acceptable. Background values will be calculated using the reported activity, regardless if the value is below MDA or less than zero. Measurement uncertainty values will be considered acceptable if, in the opinion of the laboratory manager, a longer duration count would not improve the counting statistics markedly, and the two-sigma total uncertainty is less than 10 times the QL limit for ^{226}Ra for activity indicated below the QL. Data collected in reference areas will be statistically evaluated using a graphical format, such as a frequency distribution chart, and approved for use by the RASO. The purpose of the evaluation is to ensure that the data collected in the reference area are consistent with a normal distribution and that the variability of the background is not too high.

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DATE: JUNE 10, 2008

	Ten percent of the reference area samples shall be sent to an offsite laboratory for QA purposes and counted in the cumulative number of samples processed by the onsite laboratory. This requirement shall apply specifically to the background (reference) area samples, in addition to the cumulative total described above.
5	**Section 5.2, Page B.5-2:** This section heading was added as follows: 5.2 PIPE REMOVAL SAMPLING
6	**Section 5.2, paragraph 1, Page B.5-2:** The first paragraph had two references to Section 5.4 that were revised to Section 5.5.
7	**Section 5.3, Page B.5-3:** The original Section 5.2 was revised to Section 5.3 Trench Sampling.
8	**Section 5.3, Page B.5-3:** The original paragraph 2 was deleted from Section 5.3, and the following 4 paragraphs were added after the first paragraph of Section 5.3: Any area from a trench that indicates radioactive materials present above the RROs will be characterized and remediated. Remedial action support surveys will be considered completed when post-remediation sample results do not indicate activity above the RROs. An FSS will be performed on each trench unit after the remedial action support survey has concluded. Trench units will be considered acceptable for backfill or limited storm drain replacement when no contamination is found above the RROs during a single phase of systematic sampling, either from a scoping survey or FSS. The Navy has applied a conservative remediation decision criteria (any one sample result exceeding the action level or RRO will require remediation) and the conservative approach effectively overrides the large uncertainty in single sample results. Measurement uncertainty values will be considered acceptable if, in the opinion of the laboratory manager, a longer duration count would not improve the counting statistics markedly, and the two-sigma total uncertainty is less than 10 times the QL limit for ^{226}Ra for activity indicated below the QL. Since any indicated activity above the release criteria will be remediated prior to a FSS, using these limits for uncertainty measurement effectively overrides a larger uncertainty in a single sample result.
9	**Section 5.3, Page B.5-3 to B.5-4:** The last paragraph on Page B.5-3 and the first paragraph on Page B.5-4 had some text deleted and were revised to include the following text red: The post-excavation soil samples will be analyzed by the on-site laboratory by gamma spectroscopy. Ten percent of the post-excavation soil samples analyzed by the on-site laboratory by gamma spectroscopy will be randomly selected and sent to an off-site laboratory for gamma spectroscopy analysis for QA purposes. Data from the on-site and off-site gamma spectroscopy analysis will be compared, and

	the acceptance criteria of RPD for each on-site/off-site laboratory pair are established at 30% in instances where the same method was used for analysis, and when both activities are reported above the quantification or reporting limit (with no qualifiers or flags). If any appropriate RPD is not within the established acceptance criteria, then the RASO and the DON will be notified and corrective actions will be identified and implemented. At the direction of the RASO and/or DON, corrective actions may include, but not be limited to: reanalysis of the sample by the appropriate laboratory; additional field sampling; counting for an additional time period; or analysis by alternative vendors. A description of procedures for the collection of post-excavation soil samples is described in Section 6.3.2.
10	**Sections 5.4 and 5.5, Page B.5-4:** These sections were originally number as Section 5.3 and 5.4 but were revised to Section 5.4 and 5.5 based on renumbering of sections above.
11	**Section 5.5, Page B.5-5:** The text in the second to last paragraph of this section was revised as follows in red: Ten percent of samples analyzed by the on-site laboratory by gamma spectroscopy will be randomly selected and sent to an off-site laboratory for gamma spectroscopy analysis for QA purposes. Data from the on-site and off-site gamma spectroscopy analysis will be compared, and the acceptance criteria of RPD for each on-site/off-site laboratory pair are established at 30% in instances where the same method was used for analysis, and when both activities are reported above the quantification or reporting limit (with no qualifiers or flags). If any appropriate RPD is not within the established acceptance criteria, then the RASO and the DON will be notified and corrective actions will be identified and implemented. At the direction of the RASO and/or DON, corrective actions may include, but not be limited to: reanalysis of the sample by the appropriate laboratory; additional field sampling; counting for an additional time period; or analysis by alternative vendors.
12	**Table B.5-1, Page 1 of 1:** The sample numbering scheme for this project has been revised (see Section 6.5). Therefore, the sample numbering reference (RBA1 thru RBA10) in the first row of Table B.5-1 associated with Reference Background Area was deleted.
13	**Section 6.5, Pages B.6-10 to B.6-12:** This section was completely revised to include a similar sampling numbering scheme that is being used at Hunters Point Shipyard projects performed by TtEC. See Pages B.6-10 to B.6-12 of the SAP in the attachment to this "Additional Changes" package for the revised text.
14	**Table B.6-1, Page 1 of 2:** The on-site laboratory's analytical and preparation method was added to column 3, row 2 as: C1402-98 Standard Guide for High-Resolution Gamma-ray Spectrometry and/or on-site laboratory SOPs
15	**Table B.6-1, Page 1 of 2:** The holding time for gamma spectroscopy in column 6, rows 1 and 2 was revised to N/A for not applicable.

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16	**Section 7.1, Pages B.7-1 to B.7-6:** Originally, Section 7.1 discussed the same quality objectives requirements for both the on-site and off-site laboratories under the context that both laboratories would be state of California-certified and NFESC-evaluated laboratories. However, Section 7.1 was revised to include just the off-site laboratory quality objectives, and subsequently Section 7.2 was added to discuss the on-site laboratory quality objectives. Therefore the heading of Section 7.1 was revised to "OFF-SITE LABORATORY QUALITY OBJECTIVES", and the subsection headings and text were revised to include only "off-site" laboratory references.
17	**Section 7.2, Pages B.7-7 to B.7-9:** For the on-site laboratory's quality objectives, Section 7.2 and subsections were added from the Hunters Point Base-wide SAP, including the revised changes in the Hunters Point SAP that clarified laboratory duplicates (Section 7.2.4.1 of the Hunters Point SAP) and the selection of samples for QA purposes (Section 7.2.4.6 of the Hunters Point SAP). See Pages B.7-7 to B.7-9 in attachment to this "Additional Changes" package for revised text. In addition, the following sentence was added to Section 7.2: California DHS certification and NFESC evaluation are not required for the on-site radiological laboratory per written confirmation from DHS and EPA received by TtEC in 2004. Note: Section 7.2.3, Method Validation, in the Hunters Point SAP was not included in the Alameda SAP since strontium 90 and alpha spectroscopy analysis are not required for the project.
18	**Sections 7.3 and 7.4, Pages B.7-10 to B.7-14:** The original Section 7.2, Data Quality Indicators, was revised to Section 7.3 with the addition of Section 7.2 as described above. Subsequently, all sections and subsections were renumbered accordingly.
19	**Section 7.3.1, Page B.7-10:** This section was revised as follows in red: Precision is the measure of the reproducibility of a set of replicate results or the agreement among repeat observations made under the same conditions. Analytical precision is the measurement of the variability associated with duplicate or replicate analyses. Field duplicate, laboratory duplicate, MSD, and LCSD (if analyzed) samples will be used to assess field and analytical precision. Precision measurements will be made from the on-site and off-site laboratories as appropriate by analysis. The precision measurement will be determined using the relative percent difference (RPD) between the duplicate sample results as follows: $RPD = 100 \times 2 \times (result - duplicate\ result)/(result + duplicate\ result)$ The RPD limits for laboratory duplicate, MSD, and LCSD are presented in Table B.7-3, and the field duplicate limits are listed in Table B.7-4. Associated samples that do not meet the criteria will be evaluated by the validator as described in Section 8.2. For gamma spectroscopy, the indicated radionuclide concentrations between the on-site and off-site laboratory will be compared as

	follows: • Radium-226 activity that is reported above the quantification or reporting limit from both laboratories and the acceptance criterion is RPD ≤ 30 The comparison will be performed using the RPD calculation, and the acceptance criteria are specified in Table B.7-3. Additionally, other radionuclides that may be present in samples from both laboratories may also be compared using an RPD ≤ 30.
20	**Section 7.3.2, Pages B.7-10 to B.7-11:** This section was revised as follows in red: Accuracy is defined as the nearness of a result or the mean of a set of results to the true or accepted value. Analytical accuracy is measured by comparing the percent recovery (%R) of analytes spiked into a sample against a control limit. Spiked samples (typically from wet chemical analysis and separation processes) include MS, MSD, and LCS that are analyzed for every batch of up to 20 samples. They serve as a measure of analytical accuracy and surrogate standards that are added to all samples, blanks, MS, MSD, and LCS analyzed for organic contaminants to evaluate the method's accuracy and help to determine matrix interferences. %R is calculated as follows: %R = 100 x (spiked sample result - unspiked sample result)/amount of spike added The laboratory will review the QC samples and surrogate standard recoveries for each analysis to ensure that the %R lies within the control limits listed in Table B.7-3. Otherwise, data will be flagged as discussed in Section 8.2. The on-site and off-site laboratories will typically calculate %R for analyses that require a radiochemical separation processes.
21	**Section 7.4.1, Pages B.7-12 to B.7-13:** This section heading was revised to Duplicates, and the content of the section was revised as follows in red: **7.4.1.1 Field Duplicates** For chemical analysis, field duplicates consist of two distinct samples (an original and a duplicate) of the same matrix collected at the same time and location to the extent possible and using the same sampling techniques. Field duplicates for radiochemical analysis will be collected as directed by the PRSO or RSM. Field duplicates are uniquely identified so that the identity of the field duplicates is blind to the analytical laboratory. Exact locations of field duplicate samples and their identifications will be recorded in the field logbook. **7.4.1.2 Laboratory Duplicates**

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	For sampling events that are used to recommend unrestricted release of survey units or sites (namely FSS samples), the on-site laboratory will perform at least one laboratory duplicate per survey unit. Selection of duplicate samples will be as random as possible but ensure that samples with activity less than the quantification or reporting limit are included. It will also ensure that at least one sample per isotope per survey unit will be run for samples above the quantification limit, if present. The laboratory duplicates for gamma spectroscopy will consist of reanalyzing the original sample in the original container on the same gamma spectroscopy system. The laboratory duplicate sample will be chosen prior to analysis, and the results will be compared using the methodologies described in Section 7.3. In addition, the laboratory may compare radionuclide activities for any other radionuclide that is reported above the quantification or reporting limit during both analyses. For purposes of a laboratory duplicate, the limits for RPD are given in Table B.7-3. The off-site laboratory will perform a laboratory duplicate at least once per SDG. The RPD limits for these analyses are specified in Table B.7-3.
22	**Table B.7-1, Page 1 of 7:** "On-site laboratory" reference was added to the second column, first row. In addition, the Project Quantitation Limits and Analytical Method QLs were updated in the first row to 1.4 pCi/g, and the Analytical Method MDLs/MDA column was updated in the first row to N/A for not applicable.
23	**Table B.7-2, Page 1 of 3:** The first row of this table was updated with NE for not established with regards to the Regulatory Limits for Wastewater Samples for STLC and TCLP. In addition, the first row was updated with N/A for not applicable for the Analytical Method MDLs/MDA.
24	**Table B.7-3, Page 1 of 4 and 4 of 4:** The accuracy for soil and water for the first row of this table was updated to N/A [d] for not applicable with the following footnote added to Page 4 of 4: [d] Radium-226 value is determined by daily energy calibrations performed and held by the instrumentation. Spike samples are not used. A 30pCi/g Ra-226 NIST traceable standard was used to verify the accuracy in quantification of Ra-226 by the onsite laboratory.
25	**Table B.7-4, Page 1 of 1:** Post-excavation was deleted from the first row, third column of this table.
26	**Table B.7-5, Pages 1 to 3:** A clarification of field duplicate versus laboratory duplicate was added to the fifth column throughout this table. In addition, the first row (columns 6, 7, and 8) under "Import Fill Samples"heading was updated with N/A for not applicable.
27	**Section 8.3, Page B.8-3:** The reference to Section 7.2 in the first sentence of this section was updated with Section 7.3.

ATTACHMENT

6.4 DECONTAMINATION PROCEDURES

Decontamination of non-disposable sampling equipment that comes into contact with samples (such as hand auger) will be performed to prevent the introduction of extraneous material into samples, and to prevent cross-contamination between samples. In the event radiological contamination is detected for any non-disposable sampling equipment, decontamination procedures will be implemented. Prior to decontamination, non-disposable sampling equipment will be screened using a hand-held alpha/beta survey meter. Sampling equipment will then be decontaminated by washing with a nonphosphate detergent such as Liquinox™ or equivalent as follows:

1. Dilute the nonphosphate detergent with potable water in a bucket as directed by the manufacturer. Wash the equipment with the nonphosphate detergent and potable water solution.
2. A second bucket with potable water will be used to rinse the equipment.
3. A third bucket with potable water will be used to rinse the equipment again.
4. A fourth bucket with deionized water will be used as a final rinse for the equipment. (Certificates from the supplier demonstrating that the deionized water is analyte-free will be kept in the project files for each lot.)

Equipment rinsate samples will be applicable to the collection of import material samples if the use of a hand auger for sampling was necessary. Laboratory reagent-grade water (that is certified to be analyte-free by the supplier) will be used as an additional rinse after Step 4. Water that is falling off the sampling equipment as it is being rinsed will be collected in appropriate sample bottles and analyzed for the same parameters as the field samples. Equipment rinsate samples will not be collected with stockpile samples.

6.5 SAMPLE NUMBER

Samples will be uniquely designated using a numbering system that identifies the type of sample and a sequential number (i.e., 28-001). Sample numbers will be generated by the TtEC COC Database Program with the exception of pipe/manhole sediment samples.

The sample number will be recorded in the field logbook, on the labels, and the COC record at the time of sample collection. A complete description of the sample and sampling conditions will be recorded in the field logbook and referenced using the unique sample identification number. The sample number scheme will be as follows:

For non-radiological samples, samples will be numbered as follows:

WW-ZZZ, where:

WW – CTO numbe

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ZZZ – consecutive number begins with 001 for this project and continues consecutively throughout the project with no repeated numbers

For radiological samples, numbering schemes for RSY survey pads, pipe sediment, manhole sediment, pip/manhole swipes, extraneous pipe sediment and swipes, trench survey units, import fill material, and waste bins will be used. Other numbering schemes as approved by the RSO may be used for special circumstances. The typical radiological sample numbering schemes are as follows:

- RSY Survey Pads: **WW-AQQQQ-UU**, where:

  WW – CTO number
  A – Identifier to indicate that the sample is from a survey pad
  QQQQ – Four-character consecutive pile number that begins with 0001 for this project and continues consecutively throughout the project with no repeated numbers
  UU – Two-character consecutive sample number starting from 01 (number of samples collected from each survey pad)

- Reference Area: **WW-RA-UU**, where:

  WW – CTO or TO number
  RA – Identifier to indicate that the sample is reference area sample
  UU – Two-character consecutive sample number starting from 01 (number of samples collected from each reference area)

- Pipe Sediment: **WW-PI-QQQQ-UU**, where:

  WW – CTO number
  PI – Abbreviation to indicate a pipe sediment sample
  QQQQ – Four-character consecutive sample number that begins with 001 for this project and continues consecutively throughout the project with no repeated numbers
  UU – Two-character consecutive sample number starting from 01 (number of sediment samples collected from each pipe)

- Manhole Sediment: **WW-MHYYY-QQQ-UU**, where:

  WW – CTO number
  MH – Indicates a manhole sediment sample
  YYY – Three-character manhole identification number
  QQQ – Three-character consecutive sample number that begins with 001 for this project and continues consecutively throughout the project with no repeated numbers
  UU – Two-character consecutive sample number starting from 01 (number of samples collected from each manhole)

- Pipe/Manhole Swipes : **WW-S-YY-AABB-SS-UU**, where:

  WW – CTO number
  S – Identifier to indicate a swipe sample

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YY – Two-character component identifier (PI – Pipe, MH – Manhole)
AA – Two-character work area number (06 for Area 6, 10 for Area 10, etc.)
BB – Two-character trench identification number (4A, 8C, 1G, etc.)
SS – Two-character pipe component number
UU – Two-character consecutive sample number starting from 01 for this project (number of swipes performed for each pipe)

- Extraneous Pipe Sediment and Swipes: **WW-S/P-EPYYY-UU**, where

WW – CTO number
S/P – Use "S" to indicate a swipe sample and use "P" to indicate a sediment sample
EP – Identifier to indicate an extraneous pipe sample
YYY – Three-character unique extraneous pipe identifier
UU – Two-character consecutive sample number starting from 01 for this project (number of swipes performed or sediment samples collected from each pipe)

- Trench Survey Unit: **WW-T-YYY-UUU**, where

WW – CTO number
T – Indicates a trench sample
YYY – Three-character trench survey unit number
UUU – Three-character consecutive sample number starting from 001 (number of samples collected from each survey unit)

- Import Fill Material: **WW-BACKFILL-UUU**, where

WW – CTO number
BACKFILL – Indicates backfill sample
UUU – Three-character consecutive sample number starting from 001 (number of samples collected from each survey unit)

- Radiological Waste Bin: **WW-BT-YYYYYYY-UU**, where

WW – CTO number
B – Indicates a waste bin sample
T – Bin manufacturer letter designation (i.e., G-GFLU, C-CVGU, B-BKRU or BFLU)
YYYYYYYY – Nine-character waste bin identification number
UU – Two-character consecutive sample number starting from 001 (number of samples collected from waste bin)

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Deleted: Samples will be uniquely designated using a numbering system that identifies the CTO number and a sequential number (i.e., 28-001).¶ The sample number will be recorded in the field logbook, on the labels, and the COC record at the time of sample collection. A complete description of the sample and sampling conditions will be recorded in the field logbook and referenced using the unique sample identification number.

6.6 SAMPLE PACKAGING AND SHIPMENT

Sample packaging and shipment procedures for this project will conform to Department of Transportation/International Air Transport Association procedures as applicable for packaging.

Immediately after sample labeling, custody seals will be affixed to each sample container (except for containers being sent to on-site laboratory). For vials and En Cores, the custody seal will be

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In addition to preventive maintenance, the laboratory must keep a sufficient supply of replacement parts on hand for those parts known to require frequent changes due to wear and tear or contamination. Whenever preventive or corrective maintenance is applied to an instrument, the laboratory must demonstrate the instrument's return to operating conditions and must recalibrate the instrument prior to resumption of sample analyses.

7.2 ON-SITE LABORATORY QUALITY OBJECTIVES

NWT will perform gamma spectroscopy and gross alpha/beta analyses using NWT's SOPs approved by the RASO. California DHS certification and NFESC evaluation are not required for the on-site radiological laboratory per written confirmation from DHS and EPA received by TtEC in 2004.

7.2.1 On-site Laboratory Sample Custody and Documentation

The integrity and traceability of samples from the time they are collected through the time data are reported are essential in any sampling and analysis program. The handling of the samples and transferring of custody must be well-documented given the evidentiary nature of the analytical data. A sample is considered to be in one's custody if it meets any of the following criteria:

1. In actual possession or in view of the person who collected the sample
2. Locked in a secure area
3. Placed in an area restricted to authorized personnel

The samples will be delivered to the person in the laboratory authorized to receive samples. Upon receipt of a sample, the sample condition is inspected, and verification of the information on the sample container is checked against that on the COC record. The sample is logged in the laboratory logbook. The sample will be stored in a secured room.

7.2.2 On-site Laboratory Quality Control Requirements

The analytical laboratory must have written SOPs defining the instrumentation, calibration, method detection, and QC requirements. The SOPs must be available to the analysts performing the work. The SOPs must meet or exceed the requirements of the analytical methods cited in this SAP. The laboratory must maintain logs of all activities that have an impact on the quality of the laboratory results.

The laboratory must maintain the instruments in the working condition required by the methods specified for the analyses. Sufficient redundancy in equipment must be available in the laboratory to handle downtime situations.

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7.2.3 On-site Laboratory Quality Control Checks

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The following subsections describe in detail the laboratory QC samples required for the on-site laboratory.

7.2.3.1 Laboratory Duplicates

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Laboratory sample duplicates are prepared and analyzed with each batch of systematic samples for most analyses. Laboratory duplicate samples will be analyzed independently as appropriate. For this project, a laboratory duplicate will be prepared and analyzed by gamma spectroscopy for the on-site laboratory for each 18 systematic samples collected. A batch is defined as 20 samples or less. The laboratory duplicate selection process is designed to be "blind" so that the process also applies to activities less than the MDA. It will also ensure that at least one sample per isotope per batch will be run for samples above the quantification limit. If the sample analysis identifies no activity greater than the MDA to be present, the total activity of the sample will be used for comparison.

7.2.3.2 Calibration

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All instruments and equipment must be calibrated in accordance with the manufacturer's requirements and/or laboratory SOPs. Each instrument must be calibrated with the standard appropriate to the type of instrument and the calibration range established for the method.

ICALs are performed when the method is first used and again whenever the continuing calibrations fail to meet their respective acceptance criteria. In addition, if the instrument undergoes significant maintenance, the ICAL must be repeated. Calibration of all equipment will be performed in accordance with the on-site laboratory's SOPs.

Continuing calibrations verify that the instrument performance has remained within the limits set at the time of the ICAL. The frequency of continuing calibrations is specified in referenced methods.

7.2.3.3 Instrument Blanks

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Instrument backgrounds are run to ensure that contaminants from previous runs are out of the system and do not contaminate succeeding runs. Instrument backgrounds are performed before sample analyses are performed and after samples containing high concentrations of potentially interfering materials are found, in accordance with the NWT SOP.

7.2.3.4 Method Blanks

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Method backgrounds are performed on a daily basis in the same manner as the samples, using the same container geometry used for samples. The purpose of the method backgrounds is to ensure that the equipment is free of contaminants that could interfere with the analysis.

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7.2.3.5 Preventative Maintenance

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All instruments must be maintained in accordance with the manufacturers' recommended procedures. The laboratory must define in its QA plan the frequency and type of maintenance for each instrument. The laboratory must also record all maintenance activities in an instrument logbook. The laboratory must maintain the instruments in working condition required by the methods specified for the analyses. Sufficient redundancy in equipment must be available in the laboratory to handle downtime situations. Method substitution because of instrumental failure will not be permitted without approval from the Project Chemist or RSOR.

In addition to preventive maintenance, the laboratory must keep a sufficient supply of replacement parts on hand for those parts known to require frequent changes due to wear and tear or contamination. Whenever preventive or corrective maintenance is applied to an instrument, the laboratory must demonstrate the instrument's return to operating conditions and must recalibrate the instrument prior to resumption of sample analyses.

7.2.3.6 Selection of Samples for Off-site Analysis for Quality Assurance Purposes

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Samples are selected for quality assurance purposes to ensure that the QLs are being met by the on-site laboratory. The selection process is designed to be "blind" so that the process also applies to samples with activities less than MDA. A minimum of ten percent of samples for each type of analysis will be sent to the off-site laboratory for independent verification of results. Quality assurance sample selection criteria will include:

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- Ten percent of all samples, for each type of analysis, across all projects; and
- Ten percent of samples used to recommend unrestricted release of a survey unit, namely samples associated with the FSS sampling event

Samples will be selected based on indications of activity that are generally near the action level for the particular project. It will also ensure that at least one sample per isotope per batch will be run for samples above the quantification limit. This objective ensures that the on-site laboratory will meet the DQOs specified.

In addition, a performance evaluation (PE) sample of known activity concentrations, in an appropriate matrix will be obtained an analyzed by both laboratories. The radionuclides for this sample will be selected by the Program Chemist, and the concentrations will not be made available to either laboratory until they are both finished with the analysis. The PE analysis will be considered satisfactory if the laboratory indicated activity within the specified tolerance range.

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Naval Facilities Engineering Command SW
Ms. Beatrice Appling, AQE.BA
Building 127, Room 108
1220 Pacific Highway
San Diego, CA 92132-5190

DATE: 06/16/08
CTO: 0028
LOCATION: Alameda, CA

FROM: A. N. Bolt

A. N. Bolt, Program Manager

DESCRIPTION: *Response to Comments on Draft Project Work Plan (Dated May 29, 2007) *Response to Additional Comments on and Additional Changes to Draft Project Work Plan (Dated May 29, 2007). *Additional Changes to the Final Sampling & Analysis Plan (Date June 10, 2008)

TYPE: ☐ Contract/Deliverable ☒ CTO Deliverable ☐ Notification ☐ Other

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