Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

FINAL

Work Plan

Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12
Former Naval Station Treasure Island
San Francisco, CA
March 2021

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DCN: GLBN-0005-F5271-0007

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Acronyms and Abbreviations

^{226}Ra	radium-226
uR/hr	microroentgens per hour
AHA	activity hazard analysis
APP	Accident Prevention Plan
APTIM	Aptim Federal Services
ASTM	American Society for Testing and Materials
bgs	below ground surface
BMP	best management practice
BRAC	Base Realignment and Closure
CB&I	CB&I Federal Services
CCSF	City and County of San Francisco
CDPH	California Department of Public Health
COC	chemical of concern
COR	Contracting Officer Representative
CQCP	Contractor Quality Control Plan
CSO	Treasure Island Caretaker Site Office
DoD	U.S. Department of Defense
DCP	Dust Control Plan
DTSC	California Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
ESS	Explosives Safety Submittal
Gilbane	Gilbane Federal
IR	Installation Restoration
LLRO	low-level radioactive object
LLRW	low-level radioactive waste
MDAS	material documented as safe
MEC	munitions and explosives of concern
MPPEH	material potentially presenting an explosive hazard
MRS	Munitions Response Site
Navy	U.S. Department of the Navy

NSTI	Naval Station Treasure Island
NTCRA	non-time critical removal action
OSHA	U.S. Occupational Health and Safety Administration
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCSR	post-construction summary report
PMO	Program Management Office
PPE	personal protective equipment
QA	quality assurance
QC	quality control
RASO	Radiological Affairs Support Office
RCA	radiologically controlled area
ROICC	Resident Officer in Charge of Construction
RPM	BRAC Remedial Project Manager
RPP	Radiation Protection Plan
RSY	radiological screening yard
SAP	Sampling and Analysis Plan
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SWDA	solid waste disposal area
SWMP	Storm Water Management Plan
TIDA	Treasure Island Development Authority
TPH	total petroleum hydrocarbons
UFGS	United Facilities Guide Specification
USACE	U.S. Army Corps of Engineers
UXO	unexploded ordnance
UXOSO	Unexploded Ordnance Safety Officer
VOC	volatile organic compound
WMP	Waste Management Plan

1.0 Introduction

This work plan describes the implementation of the last phase of a non-time critical removal action (NTCRA), known as Phase IV, to remove contaminated soil stockpiles and radiological screening yard (RSY) pads that remain from the Phase III NTCRA at Solid Waste Disposal Area (SWDA) Westside in Installation Restoration (IR) Site 12 at the former Naval Station Treasure Island (NSTI) on Treasure Island in San Francisco, California (see **Figure 1**). This work plan was prepared by Gilbane Federal (Gilbane) for the U.S. Department of the Navy (Navy) Base Realignment and Closure (BRAC) Program Management Office (PMO) West under Radiological Environmental Multiple Award Contract N62473-17-D-0005, Contract Task Order N62473-18-F5271, with the Naval Facilities Engineering Command Southwest.

1.1 Purpose and Scope

The Navy's decision to undertake an NTCRA at SWDA Westside, formerly known as SWDA A&B, was documented in the *Action Memorandum/Interim Remedial Action Plan: Non-Time Critical Removal Action for Solid Waste Disposal Areas Installation Restoration Site 12 Old Bunker Area Naval Station Treasure Island San Francisco, California* (Action Memorandum; Navy, 2007). The purpose of the NTCRA was to address potential human health risk to a resident or utility worker from direct contact with soil near the ground surface under the current land use and utility configuration. The NTCRA reduces potential risks to human health by removing contaminated soil from SWDA Westside. By doing this, the removal action substantially eliminates identified pathways of exposure to hazardous substances for current and future residents and utility workers to the chemicals of concern (COCs). The COCs at IR Site 12 include dioxins, lead, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs) in soil.

This Phase IV project is considered an extension of the Phase I, Phase II, and Phase III of the NTCRA. The Phase IV-specific objectives are to:

1. Remove existing contaminated soil stockpiles and RSY pads that remain from the Phase III NTCRA; and
2. Restore SWDA Westside areas excavated during Phase I and Phase III of the NTCRA to the pre-excavation grade (at which the adjacent housing is constructed).

The *Final Post-Construction Summary Report, Non-Time Critical Removal Action for Solid Waste Disposal Areas Westside Drive, Bayside Drive, and North Point Drive, Radiological Characterization, Building Demolition, and Remediation, Installation Restoration Site 12 (Phase III), Former Naval Station Treasure Island, San Francisco, California* (Aptim Federal Services [APTIM], 2019) documents the soil stockpiles and RSY pads generated during the excavation of debris and contaminated soil in Phase III that remain in place.

Following the removal of the soil stockpiles and RSY pads, SWDA Westside will be restored to its pre-excavation elevation and graded to implement proper drainage. Clean imported fill will be brought onto the site, compacted, and seeded to return the site to a safe and stable condition.

1.2 Site Location and Description

The former NSTI is located on Treasure Island, which is a 403-acre man-made island located adjacent to Yerba Buena Island, in San Francisco Bay (see **Figure 1**). Treasure Island was constructed with sediments (hydraulic fill) dredged from the San Francisco Bay from 1936 to 1937 for the Golden Gate International Exposition of 1939 and 1940. In 1940, the Navy began leasing the island from the City and County of San Francisco (CCSF) and constructed NSTI. Later, during World War II, the Navy gained full ownership. In 1993, NSTI was designated for closure under the Base Realignment and Closure Act of 1990. It was closed on September 30, 1997.

1.2.1 IR Site 12

IR Site 12 is located on the northwest portion of the former NSTI on a relatively flat 93-acre area (see **Figure 1**). The site consists of multiplex housing units with private backyards and common area front yards, side yards, and surrounding greenbelts. The area was originally used as a parking lot during the Golden Gate International Exposition of 1939 and 1940. After Navy occupation of the island in 1940, the area was used for bunker storage of munitions and other materials, vehicle and equipment storage, recreational playing fields, and disposal and burning of waste. Beginning in the 1960s, areas of IR Site 12 were incrementally developed into housing for Navy personnel and their dependents. Currently, IR Site 12 is proposed for reuse as residential, open space, and publicly-oriented uses.

1.2.2 SWDA Westside

SWDA Westside is an approximately 4.5-acre area on the west side of IR Site 12 abutting Perimeter Road (see **Figure 2**) which includes areas previously excavated and partially backfilled during earlier NTCRA phases. SWDA Westside has nine former residential buildings within its boundary:

- Buildings 1119, 1121, 1123, 1125, and 1127 around Lester Court;
- Building 1317 on Gateview Drive; and
- Buildings 1319, 1321, and 1323 facing Westside Drive and Perimeter Road

With the exception of Building 1317, which is still standing but unoccupied, these buildings were demolished during earlier NTCRA phases to facilitate the excavation of debris and contaminated soil. The buildings were radiologically surveyed and abated for asbestos and lead prior to their demolition. Building 1317 was subject to radiological survey of its interior.

- Phase I: Buildings 1123 and 1321

- Phase II: Buildings 1121 and 1323
- Phase III: Buildings 1119, 1125, and 1319
- Post-Phase III: Building 1127 (fire damaged and subsequently demolished)

Previous phases of the NTCRA found that debris and contaminated soil in SWDA Westside is co-located with low-level radioactive objects (LLROs) containing radium-226 (^{226}Ra; e.g., foils, deck markers, instrument gauges, and metal fragments also referenced as radioactive "commodities/objects" in project documentation); and associated localized ^{226}Ra contaminated soil. Additionally, portions of SWDA Westside may contain discreet munitions-related items based on past findings. Consequently, radiological and munitions screening of the soil stockpiles is required for disposal purposes.

1.3 Statutory Framework

This work is being performed pursuant to the National Oil and Hazardous Substances Pollution Contingency Plan and in accordance with Navy guidance, based on the findings of potential exposure of current and future residents and utility workers to the COCs. As the lead federal agency, the Navy works with the California Department of Toxic Substances Control (DTSC), the San Francisco Regional Water Quality Control Board, and other regulatory agencies under the terms of the 1992 Federal Facility Site Remediation Agreement. In addition, the California Department of Public Health (CDPH), specifically the Environmental Management Branch, works with DTSC to provide technical support on the radiological clean-up. Also within CDPH, the Radiologic Health Branch performs inspection, compliance, and enforcement related to Gilbane's State of California radioactive material license. Other public agencies and organizations also provide support to the environmental clean-up program, including the Treasure Island Development Authority (TIDA), and the Treasure Island Community Development.

Work activities will be coordinated with the BRAC Remedial Project Manager (RPM) and other appropriate Navy points of contact, including the Radiological Affairs Support Office (RASO), the Resident Officer in Charge of Construction (ROICC), and the Treasure Island Caretaker Site Office (CSO), to ensure proper work oversight. This includes identifying, establishing, and maintaining temporary facilities for the storage and handling of radioactive material, if any is recovered.

Navy policy requires the contractor performing radiological work to maintain independent license authority. Gilbane possesses a current radioactive material license from the State of California (License No. 7948-07).

Munitions and explosives of concern (MEC) and material potentially presenting an explosive hazard (MPPEH) have been encountered during previous NTCRA phases. Therefore, munitions-related work will be conducted in accordance with the approved *Explosives Safety Submission, Phase IV Non-Time Critical Removal Action for Solid Waste Disposal Area Westside, Installation Restoration Site 12, Former Naval Station*

Treasure Island, San Francisco, California (ESS; Gilbane, 2020b). The ESS complies with U.S. Department of Defense (DoD) requirements and policies for the handling of MPPEH/MEC, and the certifying of material documented as safe (MDAS) by qualified unexploded ordnance (UXO) technicians. The ESS (Gilbane, 2020b) was developed using guidance issued by the Naval Ordnance Safety and Security Activity and the DoD Explosives Safety Board.

1.4 Work Plan Organization

This work plan is organized into the following:

- **Section 1.0, Introduction** – introduces the objectives of the project, the site location and description, and the statutory framework of the project.
- **Section 2.0, Site Background** – describes the previous investigations and removal actions; site characteristics; and the source, nature, and extent of contamination.
- **Section 3.0, Non-Time Critical Removal Action Implementation** – describes the implementation of the NTCRA activities from work planning through final inspection and site close-out.
- **Section 4.0, Environmental Protection** – introduces measures that will be taken to manage storm water, and to monitor air and dust during execution of the work.
- **Section 5.0, Traffic Control** – describes the traffic control measures for the NTCRA.
- **Section 6.0, Health and Safety** – describes the health and safety measures that will be implemented for the NTCRA.
- **Section 7.0, Quality Control** – references the Contractor Quality Control Plan (CQCP) that will be implemented for quality control (QC) during the NTCRA.
- **Section 8.0, Post-Construction Summary Report** – describes the Post-Construction Summary Report (PCSR) that will be prepared after completion of the NTCRA to document the removal action.
- **Section 9.0, References** – includes a list of documents used to compile this work plan.
- **Figures** – includes figures referenced in the main text of this work plan.
- **Appendix A, Radiation Protection Plan** – addresses radiation protection activities such as personnel dosimetry, radiation monitoring, contamination control, air sampling, and respiratory protection.
- **Appendix B, Data Management Plan** – describes how environmental data will be named, stored, and managed.

- **Appendix C, Sampling and Analysis Plan** – details soil sampling requirements, analytical methods, and quality assurance (QA)/QC procedures for implementation of the NTCRA.
- **Appendix D, Waste Management Plan** – describes anticipated procedures applicable to the generation, storage, characterization, transportation, and disposal of waste generated from the NTCRA activities.
- **Appendix E, Site Backfill and Grading Plan** – details how previously excavated areas will be backfilled and import fill placed to restore the site to its pre-excavation grade.
- **Appendix F, Environmental Protection Plan** – describes the measures that will be implemented to manage storm water and monitor air and dust during work execution.
- **Appendix G, Traffic Plan** –addresses road closures and/or restrictions, routing, other relevant traffic disruptions, and controls for traffic into/out of SWDA Westside.
- **Appendix H, Contractor Quality Control Plan** – addresses lines of communication, technical review procedures, activity documentation, definable work features, QC staff and their responsibilities, proposed outside organizations (vendors, subcontractors) and their responsibilities and reporting requirements, project inspection requirements, required submittals, and other procedures to be followed to ensure quality throughout the project.
- **Appendix I, Response to Comments** – includes the responses to regulatory comments on the draft work plan.

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2.0 Site Background

This section presents a general description of previous investigations, removal actions, and the waste delineation investigation which form the basis of this NTCRA.

2.1 Previous Investigations and Removal Actions

Several investigations and removal actions have been conducted to delineate and remove contamination in the area of IR Site 12 that is included in the footprint covered by this work plan (i.e., SWDA Westside).

2.1.1 Previous Investigations and Interim Measures

In 1992 and 1995, several remedial investigations were conducted throughout IR Site 12 to identify suspect debris disposal areas. These investigations, which included aerial photograph interpretation and subsurface sampling and analysis, identified several areas of suspected debris disposal (i.e., SWDAs), one of which was SWDA Westside. In 2003, an investigation that included the excavation of nearly 600 exploration trenches, step-out trenches, and step-out hand auger locations was conducted to characterize contamination and to make decisions about further remedial efforts at IR Site 12. The results of the trenching investigation, documented in the *Final Data Summary Report, Site 12 Housing Area, Sitewide Investigation, Treasure Island, San Francisco, California* (Shaw Environmental, 2004) were used to further refine the boundaries of SWDA Westside.

In October 2000, the Navy worked with DTSC to develop a plan for interim measures in IR Site 12 around four identified SWDAs, including SWDA Westside, addressing solid waste, dioxin, lead, PCBs, PAHs, and soil gas sampling that showed localized soil contamination within the SWDAs. The interim measures are documented in the *Revised Engineering Evaluation and Cost Analysis, Solid Waste Disposal Areas, Installation Restoration Site 12, Old Bunker Storage Area, Naval Station Treasure Island, San Francisco, California* (SulTech, 2006). A remedial action objective was established to reduce the potential for human contact with chemically contaminated soil near the ground surface within the four SWDAs at IR Site 12 under the then-current land and utility configuration (i.e., current and future resident and utility worker exposure scenarios).

2.1.2 NTCRA Phase I

Known as Phase I of the NTCRA, portions of SWDA Westside were subject to removal actions which began in March 2007 and continued through September 2014. The results of these actions are documented in the *Final Post-Construction Summary Report, Installation Restoration Site 12, Solid Waste Disposal Area Westside, Naval Station Treasure Island, San Francisco, California* (CB&I Federal Services [CB&I], 2014). Soil was excavated to a pre-determined maximum depth of 4 feet bgs, and extending to pre-planned excavation boundaries. Radiological screening for ^{226}Ra

contaminated soil was performed, and excavation floor and sidewall soil samples were collected and analyzed for COCs and ^{226}Ra. Material potentially presenting an explosive hazard (MPPEH) was encountered during the soil excavation and screening process. Work had to be paused and secured in order for an ESS to be prepared and implemented during the removal of the remaining soil. Only a small portion of the excavated area was backfilled under Phase I. Additional excavation, radiological soil screening, radiological survey, munitions oversight and screening, and confirmation sampling were identified as needing to be completed during Phase III to address the specific areas with residual elevated sample results, and to fully address the remaining extent of the SWDA Westside footprint.

2.1.3 NTCRA Phase II

Phase II of the NTCRA included the demolition of two buildings (Buildings 1121 and 1323) at SWDA Westside, which is documented in the *Final Post Construction Summary Report for Solid Waste Disposal Area A&B, Non-Time Critical Removal Action Phase II, and Radiological Removal near Buildings 1128, 1303, and 1306, Former Naval Station Treasure Island, San Francisco, California* (TetraTech EC, 2014). Phase II did not include additional excavation at SWDA Westside. Rather, its focus was on activities primarily outside of SWDA Westside. Consequently, there was no progress toward the NTCRA goal of contaminated soil removal.

2.1.4 NTCRA Phase III

Phase III of the NTCRA (APTIM, 2019) was conducted beginning in August 2014 through May 2016. Its goal was to substantially eliminate the identified exposure pathways by removing chemically- and radiologically-contaminated material from SWDA Westside (and other SWDAs). Incorporated within its scope was to complete the unfinished activities from Phase I, including addressing the remaining areas identified with residual elevated sample results. Buildings 1119, 1125, and 1319 were radiologically surveyed, sampled, abated for asbestos and lead, and demolished. Excavation within the building footprints and other areas within SWDA Westside was performed to determine extent of debris and contamination and to complete remediation.

As a result of the historical encounters of MPPEH at SWDA Westside during Phase I, Phase III was executed under the provisions of an ESS. MRS 1 (see **Figure 2**) was identified to include the portions of SWDA Westside where munitions-related items were likely to be encountered. These areas included the footprints of former Buildings 1123 and 1321 and the area east and northeast of Building 1321 (reference: *After Action Report, Non-Time Critical Removal Action for Solid Waste Disposal Areas Westside, Bayside, and North Point, Radiological Characterization, Building Demolition, and Remediation Installation Restoration Site 12 (Phase III), Former Naval Station Treasure Island, San Francisco, California* [APTIM, 2018]). Excavated material was screened for MPPEH, munitions and explosives of concern (MEC), and LLROs. Large amounts of heavy industrial debris such as large cables and metal pieces such as vehicle bumpers

were encountered down to approximately 15 feet bgs from an area at the northwest corner of former Building 1321 and removed. MPPEH and LLROs also were identified and recovered during the excavation.

Phase III NTCRA activities at SWDA Westside were halted in May 2016 following the discovery of two MEC objects that exceeded the limitations of the project ESS. As a result of safety limitations, the excavations were not completed. Instead, the work area was backfilled only enough to prevent surface water ponding, BMPs (e.g., straw waddles, privacy fencing, signage, etc.) were installed and contractor-owned equipment and materials were removed from the site. Additional excavation of debris and contaminated soil, radiological soil screening, radiological survey, munitions oversight and screening, and sampling were identified as needing to be completed during Phase IV, in addition to screening and disposing of existing Phase III stockpiled soil and RSY pads.

2.2 Site Characteristics

The following describes the site characteristics at Treasure Island based on information from the Action Memorandum (Navy, 2007).

2.2.1 Land Use

Portions of IR Site 12 are leased to TIDA, who subsequently subleases select housing units. Currently, IR Site 12 contains residential buildings (about 900 housing units) that are two-story structures constructed with slab-on-grade foundations with four to eight residential units per building. Buildings within the subject construction area were not subject to lease.

Following environmental restoration of the site, the entirety of IR Site 12 will be transferred to the CCSF for residential/open space/publicly oriented uses. The surrounding land use includes various commercial/industrial uses.

2.2.2 Geology/Soil

Treasure Island is a relatively flat man-made island, consisting primarily of sand dredged from the San Francisco Bay and retained by a perimeter of rock and sand dikes. Treasure Island was constructed on the Yerba Buena Shoals, a sand spit extending north and northwest of Yerba Buena Island. Treasure Island ranges in elevation from 9 to 12 feet above mean sea level. Subsurface materials at Treasure Island are composed of dredged sand fill, Yerba Buena shoal sands, and Bay mud.

2.2.3 Hydrogeology

The estimated depth to groundwater at IR Site 12 ranges from about 2.5 to 7.5 feet bgs. The water table is unconfined. The groundwater flow is radial from the center of Treasure Island toward the shoreline. Groundwater recharge occurs primarily from infiltration of precipitation, with some contribution from landscape irrigation. Perched

groundwater conditions may exist locally above the shallow water table because of the presence of relatively impermeable silt and clay lenses.

2.2.4 Climate and Meteorology

The climate on Treasure Island is dominated by the Pacific Ocean, which produces a maritime climate characterized by little temperature variation. The average annual temperature is 56 to 58 degrees Fahrenheit, with an annual frost-free period ranging from 300 to 330 days.

The prevailing wind direction for the San Francisco Bay Area is from the northwest. Wind speed is less than 6 miles per hour for more than 50 percent of the time and exceeds 12 miles per hour for approximately 10 percent of the time. The strongest winds are associated with winter storms. In the winter, winds from the north and east sometimes bring low temperatures to the San Francisco Bay Area. Westerly winds predominate during the summer, when cool marine air flows east toward the warm Central Valley region of California. These winds are strongest in the late afternoon and early evening.

The average annual precipitation is about 25 to 30 inches. Approximately 90 percent of the annual precipitation occurs from November to April. Localized showers are infrequent, and storms are moderate in duration and intensity. Mean annual evaporation is 48 inches. The greatest evaporation occurs during July.

Relative humidity during the winter is approximately 50 to 60 percent during the day, increasing to approximately 80 to 90 percent at night. Humidity decreases in spring; however, by summer, it increases, particularly at night or in the morning, when frequent fogs occur. Humidity is lowest in the fall, ranging from approximately 50 percent during the day to 70 percent at night.

2.3 Source, Nature, and Extent of Contamination

The NTCRA was implemented to remediate chemicals in soil associated with chemical/fuel storage and disposal or burning of waste in SWDAs on the western portion of IR Site 12.

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3.0 Removal Action Implementation

The Phase IV NTCRA consists of activities in preparation for and the conduct of: (1) screening of existing Phase III stockpiled soil and RSY pads, and (2) site restoration. The project schedule is found in **Figure 3**.

3.1 Work Planning

Work planning includes preparing work plans, obtaining appropriate authorizations, making notifications, and conducting community outreach.

3.1.1 Work Plan Preparation

This work plan presents the overall approach, requirements, and methods for executing the work and achieving the project objectives. Supporting documents include the stand-alone ESS (Gilbane, 2020b) and the *Site Safety and Health Plan, Phase IV Non-Time Critical Removal Action for Solid Waste Disposal Area Westside, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California* (SSHP; Gilbane, 2020a). Additional supporting documents are included as appendices. Together, the supporting documents are designed to protect workers, the public, and the environment.

Once approved by the Navy and regulatory agencies, changes to this work plan and/or its supporting documents will require a field change request, which may include both text and figures based on the nature of the plan change. The Navy, with technical assistance from Gilbane, will coordinate field change requests with the regulatory agencies, as required, and provide notification of any other additional requirements to facilitate regulatory agency coordination.

3.1.2 Authorizations and Notifications

Appropriate authorizations will be obtained and notifications made prior to mobilization. The Navy complies with the substantive requirements of applicable and relevant permits. Necessary authorizations will be obtained from the ROICC and the CSO for implementing and completing the work. The appropriate Navy personnel, including the RPM, RASO, and the CSO will be notified regarding the planned schedule prior to mobilization. On-site activities (i.e., personnel and equipment mobilization) will begin once notice to proceed is received from the Navy.

Permits will be obtained, as needed, for connections to necessary services provided by utility companies serving the project. Air monitoring data will be provided to DTSC on a monthly basis.

3.1.3 Community Outreach

Community outreach will be conducted to keep the public informed of activities related to the NTCRA. Regular updates will be provided to the Navy on the progress of field work at a frequency and in such a manner as to foster Navy communication with its stakeholders. Communications with parties outside of the Navy will be coordinated through the Navy. Community interaction and support will include work notice flyers, monthly updates and pictures provided to project stakeholders, and public presentations made as part of the quarterly Restoration Advisory Board meetings.

Work notices will be prepared in English, Spanish, and Cantonese and distributed door-to-door to the IR Site 12 residents in the vicinity of SWDA Westside to make them aware of the nature of work, exact location, and time constraints. Extraordinary work-arounds (i.e., non-routine work evolutions impacting island residents) caused by utility disruptions, severe weather, and other events will be coordinated with the Navy to minimize their impact on island residents. Environmental monitoring data (air and dust) will be made available to the public via the BRAC website.

3.2 Mobilization and Site Set-Up

Mobilization and site set-up include establishing temporary facilities, instituting site and work area security, completing a pre-construction environmental survey, completing an underground utility clearance, and setting up munitions-related engineering controls.

3.2.1 Temporary Facilities

Temporary field facilities will be established at Building 570 (see **Figure 1**) and the associated secured fenced area will be used as a material and equipment storage area. A shipping container, if needed, will be staged at SWDA Westside as a working space and for storage of tools, small equipment, and materials. Private vehicles of workers will be parked around Building 570 and only Gilbane and subcontractor vehicles will be used at work areas. Residential parking areas will be avoided.

3.2.2 Pre-Construction Environmental Survey

Prior to starting work, a pre-construction environmental survey will be performed with the Contracting Officer Representative (COR), CSO, and Field Safety Navy Technical Representative. Photos will be taken showing existing environmental conditions on and adjacent to the site. The results of the survey will be submitted in accordance with the applicable Contract Data Requirements List.

3.2.3 Munitions-Related Engineering Controls

Munitions-related engineering controls will be instituted in accordance with the ESS (Gilbane, 2020b). Prior to conducting any munitions-related field work, empty metal shipping containers (e.g., Sealand containers or Conex boxes) will be positioned and

used as blast barriers to mitigate the potential explosive hazard (see example illustration in **Figure 2**). The shipping containers will be placed in a linear fashion and abutted in a protective manner around the proposed munitions-related field work boundaries. The actual positioning of the shipping containers as barriers will be established based on where the munitions-related work is occurring within the site. This approach essentially reduces the exclusion zone (see **Section 3.3.2**) to within the boundaries formed by the shipping containers. Additionally, the adjacent Perimeter Road and Gateview Avenue will be closed to public vehicular traffic and recreational use and monitored respectively during business hours and/or ground disturbing activities. See **Figure 2** for road closure and entry control point locations.

Mechanized equipment will be shielded using no less than 1.68 inches of acrylic sheet (e.g., PlexiGlas) to provide full frontal fragmentation penetration protection for equipment operators. This will provide full fragmentation shielding during soil movement activities.

3.2.4 Monitoring Well Decommissioning

Existing groundwater monitoring wells are located in SWDA Westside, though outside of the areas to be excavated. Efforts will be made to preserve and protect the wells to the extent possible. These may include placing a steel plate over the well heads to mitigate damage posed by excavator buckets and vehicles that may compromise the structural integrity of the wells. The monitoring wells will be marked and access to them retained during site grading and backfilling activities. In the event they are damaged or compromised, they will be decommissioned and replaced in consultation with the Navy and regulatory agencies.

If needed, well decommissioning (and replacement) activities will be performed by a California-licensed drilling subcontractor in accordance with California Department of Water Resources regulations. The well will be destroyed by extracting the casings and screens. A hollow-stem auger will be used to drill out the annular materials from the ground surface to well depth. If not over-drilled to depth, the remaining well casing will be pressure-grouted. The well will be replaced in coordination with the Navy following appropriate permitting procedures. Replacement well specifics will be discussed with and approved by regulatory agencies in advance. The well will be installed using a hollow-stem auger drill rig and will be completed using Schedule 40 polyvinyl chloride (PVC) casing and screens. Screen slots will be machine cut to 0.01-inch to 0.02-inch sized openings. Wells will be constructed with screen at the same depth intervals as the original wells. The sand pack at each well will consist of sand sized appropriately relative to the screen from the bottom of each borehole to approximately 1 foot above the screened interval. The sand will be topped with bentonite chips that are allowed to hydrate using either formation water or potable water for one hour. The well will be completed as a surface flush mount and developed no sooner than 48 hours after well construction is completed. The well will be surveyed following installation.

3.3 Field Support Activities

Field support activities include site security, explosives safety, UXO construction support, radiation protection, mitigating odor impacts, site housekeeping, and data management. Radiological controls, dust mitigation, air monitoring, and other measures appropriate to mitigate potential contamination will be instituted and maintained during soil handling activities.

3.3.1 Site Security

Security will be provided for both workers and equipment and material before, during, and after working hours. Six-foot high fencing with privacy fabric will be installed around work areas, including equipment laydown and storage areas where needed and not presently existing. As a general rule, material and equipment in danger of theft will be stored inside the secured fenced area. After-hours security will be provided by a contract security company.

3.3.2 Explosives Safety

Explosives safety measures will be instituted in accordance with the ESS (Gilbane, 2020b). The ESS is designed to provide the maximum possible protection to people and property considering past findings of MPPEH/MEC at the site and its close proximity to occupied housing and public areas. A trained and qualified UXO Safety Officer (UXOSO) will be dedicated to the project whose sole responsibility will be to establish and ensure compliance with site-specific explosives safety requirements.

An exclusion zone will be in place while UXO clearance activities involving munitions-impacted soil are being performed. Operational areas will be fenced and personnel entry will be controlled. Access to the exclusion zone will be limited to personnel essential to the operation being conducted and authorized visitors on a case-by-case basis, granted access by the UXOSO or a qualified designee. Based on the risk posed by the munitions response operation underway, the UXOSO may determine that access to the exclusion zone is unsafe for visitors.

3.3.3 UXO Construction Support

As a precaution, UXO personnel will observe munitions-impacted soil handling activities and respond should suspected MPPEH/MEC be encountered. UXO technicians will observe operations from behind a 1.68-inch acrylic sheet barrier and double hearing protection will be used. A minimum distance of 12 feet (or other appropriate distance specified in the ESS) will be maintained between soil handling activities and the observer, as well as the distance from the equipment operator. The UXO team will be in constant communication with equipment operators during the handling of munitions-impacted soil.

Roads, parking lots, and public access points that are affected by operations and the exclusion zone will be monitored by UXO personnel and will be marked and/or manned according to the ESS (Gilbane, 2020b). In the event of an emergency, the Navy will be notified and will coordinate public notification and emergency response actions. High traffic areas will be controlled by flaggers and stationary blockades and barriers with signage and contact information.

3.3.4 Radiation Protection

Radiological controls will be instituted in accordance with the Radiation Protection Plan (RPP) provided in **Appendix A**. The RPP addresses radiation protection activities such as personnel dosimetry, radiation monitoring, contamination control, air sampling, and respiratory protection, as well as measures to maintain exposures to radiation and radioactive material as low as reasonably achievable. Personnel surveys, equipment and material surveys, and decontamination are also addressed in the RPP. Corporate-level radiation safety procedures provide controls necessary for radiologically safe operations that will be followed for implementation of field work.

A trained and qualified Project/Site Radiation Safety Officer will ensure that radiological hazards are identified during work planning, and that appropriate controls are implemented to maintain worker exposure to these hazards.

Existing fencing and radiological postings at SWDA Westside will be maintained for the duration of the project. A series of routine radiological surveys will be performed. Weekly surveys of the SWDA Westside radiologically controlled area (RCA) boundary will be performed. Office areas, break rooms, restrooms/portable toilets, etc., used by workers who work within the RCA will be surveyed as least monthly. Quarterly surveys of radioactive sources and work vehicles will be performed per the RPP. Surveys will be documented and available on-site for inspection.

Work activities within an RCA will be conducted in accordance with a radiation work permit that details the radiological requirements and protective measures to be applied to the job. Trucks, machinery, and equipment will be radiologically surveyed prior to initial use and upon release from the project or before leaving the site.

3.3.5 Housekeeping

Work areas will be kept tidy and free from litter or trash and material and equipment stored in designated locations. Routine clean-up will be performed as needed (but weekly at a minimum) to keep the buildings, site, and adjacent properties free from accumulations of waste materials, rubbish, and windblown debris. Sidewalks and streets, especially common areas, affected by the work will be swept clean and returned to a condition that is acceptable to the Navy.

Routine inspections of SWDA Westside will be performed to ensure fencing around the RCA is maintained and repaired as needed, and storm water controls are in place and effective. These activities will include fence panel repair, locks (as needed), placement

and maintenance of straw waddles or equivalent measures to prevent storm water runoff from SWDA Westside.

3.3.6 Data Management

Data management will be performed in accordance with the Data Management Plan provided in **Appendix B**, which describes how environmental data will be named, stored, and managed. The plan addresses the type of database to be used, software programs, sample tracking, and how the data will be analyzed and displayed. In addition, the plan elaborates on the proposed method to efficiently manage data and information collected from all phases of the work process from the soil screening, laboratory analysis, backfilling, and reporting. Data will be reported to the Navy on a routine (daily) basis as it is generated and field activities are completed.

3.4 Screening of Existing Phase III Stockpiled Soil and RSY Pads

Approximately 3,300 cubic yards of stockpiled soil and RSY pads remain on-site following the Phase III NTCRA work (APTIM, 2019). Off-site disposal was not completed due to the halting of munitions screening following the discovery of MEC not addressed in the ESS. Therefore, this material is being addressed under Phase IV. The estimated volumes of the stockpiled soil and RSY pads are listed in **Exhibit 1**.

The stockpiled soil was radiologically cleared by RASO for disposal as non-low-level radioactive waste (LLRW) during Phase III, though munitions screening is still required (APTIM, 2019; specifically, Table 12). The RSY pads require radiological screening, but not munitions screening. Once Navy concurrence is received, the screened material will be transported offsite for disposal.

Exhibit 1: Stockpiled Phase III Soil and RSY Pads Requiring Screening

Phase III Material	Location Description[a]	Estimated Volume (cubic yards)
Stockpiled Soil[b]	RSY 1	1,310
	RSY 3	842
	Stockpiles 1, 2, and 3	956
	Stockpile 4	55
RSY Pads[c]	RSY 1	150
	RSY 3	150

Notes:
[a] refer to **Figure 2** for approximate locations
[b] requires munitions screening
[c] requires radiological screening

3.4.1 Munitions Screening

The remaining stockpiles from the Phase III NTCRA will be screened for munitions per the ESS (Gilbane, 2020b). Munitions screening will be performed through the use of visual inspection and hand-held detectors such as Schonstedt GA-52Cx Magnetic Locator and/or Whites DXF-300 All Metals Locator in accordance with the ESS

(Gilbane, 2020b). The soil will be cleared in lifts no thicker than 10 inches to ensure a measurable response with the hand-held instruments.

Debris separated from the soil, including dirt and clay clumps, will be visually inspected for MPPEH/MEC and checked using the Schonstedt GA-52Cx (or equivalent) if metallic debris is indicated. Larger debris that could mask or hide MPPEH/MEC (e.g., pipes, hoses, containers) will be mechanically separated (e.g., using a wet saw) and classified as MDAS so that the contents can be inspected to ensure there are no hazardous components. If determined safe to move, the MPPEH/MEC will be manually removed and hand carried to the temporary safe holding area or the intentional consolidated shot detonation area for disposition.

Recovered MPPEH/MEC will be securely stored and dispositioned in accordance to the ESS so not to be accidentally comingled with MDAS. Stockpiled soil cleared as MDAS will be labeled or posted as such. MPPEH/MEC and related debris will be logged and tracked from origin to final disposition. Any MPPEH/MEC identified will be logged into the project database via a smart phone data collection application. The data will include origin, type, status, depth, storage and disposition. It also will include information pertaining to demolition activities of MPPEH/MEC (see ESS [Gilbane, 2020b]).

3.4.2 Radiological Screening

Radiological screening will be performed to identify and remove any potential LLROs. The soil will be laid out and screened in approximately 9-inch thick lifts. The radiological screening will be performed using a Radiation Solutions, Inc. RS-700 self-contained mobile gamma-ray detection system. The RS-700 consists of a digital gamma-ray spectrometer/multi-channel analyzer coupled to a sodium iodide gamma scintillation detector. The RS-700 system is mounted on a cart pulled behind a small tractor. The detectors are mounted at a height of 4 inches above the surface and moved over the surface at a speed of 18 inches per second, with each pass overlapping the previous pass to assure 100-percent coverage of the area being surveyed. Changes to the scan height or scan rate may be made to improve detection response, if necessary, to accommodate field conditions, such as soil composition and moisture content. Instrument calibration and maintenance checks will be conducted prior to use in accordance with the Radiation Protection Plan (see **Appendix A**).

The RS-700 automatically captures gamma scan data at one-second intervals and position-correlates the data by means of a global positioning system mounted to the unit. Pre-set regions of interest within the energy spectrum programmed into the RS-700 will be used to identify and track specific gamma-ray emissions associated with the gamma-emitting progeny of ^{226}Ra. The RS-700 data will be used to aid in field investigations of radiation anomalies as well as to facilitate the selection of biased soil sample locations.

Recovered LLROs will be removed and stored for disposal as LLRW. Waste information will be compiled for each LLRO to detail the analytical information about the source to

include photographs of the source, radionuclide identification, estimated curie content, and radiological survey information.

A minimum of 20 samples will be collected for each 600 cubic yards of soil. Sample results will be used to confirm the soil can be disposed as non-LLRW. The samples will be collected in a random-start systematic pattern across each 9-inch thick lift of soil spread out over an area no larger than 21,500 square feet. Up to five samples also will be collected at biased locations identified for further investigation by radiological screening.

3.4.3 Sampling and Analysis

Sampling and analysis will be performed according to the Sampling and Analysis Plan (SAP) provided in **Appendix C**. The SAP, prepared in the *Uniform Federal Policy for Quality Assurance Project Plans* (EPA et al, 2005) format, describes how sampling will be performed and details the laboratory operations that will support the sampling activities, including checks to ensure the quality of laboratory work performed. The SAP includes data quality objectives for sampling and analysis activities and provides guidelines for data evaluation.

The SAP describes the sample collection methodology to be used. Each sample will be labeled and assigned a unique sample identification number. Samples will be turned over to a laboratory accredited under the DoD Environmental Laboratory Accreditation Program and the California State Environmental Laboratory Accreditation Program, using proper chain-of-custody procedure. Samples will be prepared and analyzed using accepted methods listed in the SAP.

3.4.4 Data Package

A data package will be prepared for radiologically screened soil once survey and sampling activities are complete and the resulting data are assessed. Data packages are designed as stand-alone documents to allow independent review and verification of survey results. As a minimum, they will include radiological screening data and soil sample chemical and radiological analytical results, including instrument and related QC data. Data packages will be provided to the Navy for review and concurrence prior to soil disposal.

3.4.5 Waste Management

Once screened for munitions and LLROs, waste material will be handled, stored, and disposed of in a manner protective of human health and the environment and in accordance with applicable regulatory requirements as described in the Waste Management Plan (see **Appendix D**). The WMP outlines the day-to-day management of waste materials in support of the removal action, including storage and transportation of LLRW. The WMP covers both removal action and investigation-derived waste, for example: personal protective equipment (PPE), plastic sheeting, decontamination

water, disposable sampling equipment and other assorted waste such as petroleum free product (floating petroleum) that may be generated during this project. Samples will be collected as necessary to characterize the waste for disposal.

3.5 Site Restoration

SWDA Westside will be cleared of vegetation and debris, grubbed, and graded in preparation for backfilling, and site grading. Trees, shrubs, and bushes existing pre-excavation will be left in place to the extent possible as part of site restoration.

3.5.1 Site Clearing, Grubbing, and Debris Removal

Chain saws, power trimmers, pole saws, and other manually operated cutting tools in addition to heavy equipment may be used to cut vegetation. Shrubs/bushes will be removed using appropriately sized construction equipment (e.g., backhoe, loader, and/or excavator) by pulling them from the ground and/or digging them out. Large shrubs and trees will be cut down using saws with smaller vegetation removed by blade scraping. Mature trees and shrubbery will be left in place whenever possible.

Remnant roots will be loaded into dump trucks and transported to a waste soil/debris staging area for off-site disposal with the associated contaminated soil. The main body of the vegetation also may be loaded into dump trucks and transported to the waste soil/debris staging area for eventual off-site disposal. The wood and larger organic debris will be sampled and analyzed for radioactive material uptake prior to disposal.

3.5.2 Backfilling and Site Grading

Backfill material will meet the standards described in the *Information Advisory Clean Imparted Fill* (DTSC, 2001). The analyses to be performed of imported fill material are listed in SAP (see **Appendix C**). The fill material will be placed into the previously excavated areas and compacted up to the ground surface. The fill material will be compatible with the existing material and allow for adequate compaction (90% standard proctor) for areas above and below the water table. Recycled materials such as well graded crushed concrete may be used for backfill in deeper fills, as appropriate.

Once previously excavated areas are backfilled, import fill soil will be placed over the SWDA Westside footprint (**Figure 2**) as needed to match the grade at which the adjacent housing is constructed, and to provide proper site drainage utilizing the existing storm drain infrastructure. Fill will be placed in 1-foot lifts under the observation of the project engineer and compacted via mechanical means. Field density testing will be required at the project engineer's discretion and must meet or exceed a minimum of 90-percent relative compaction based on the American Society for Testing and Materials (ASTM) Standard D698, *Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))* (ASTM, 2012). Further details are provided in the Site Backfill and Grading Plan (**Appendix E**).

Existing roadways, sidewalks, curbs, gutters, drainage culverts, and utilities will remain and be modified as needed to transition to open space allowing for vegetation growth. An approved seed mix will be applied by hydro-seeding to restore the area in coordination with project stakeholders. The seed mix will be consistent with that previously used at Treasure Island and will be submitted to the Navy for concurrence prior to application.

3.5.3 Final Inspection

A pre-final inspection will be held with the Navy to verify that field work has been completed in accordance with the approved work plan. Any concerns noted by the Navy that do not conform to specifications and any other requirements will be documented and presented to Gilbane. Gilbane will be responsible to correct any findings prior to a follow-on final inspection. Sign-off on the final inspection will serve as acceptance of site work and task completion.

4.0 Environmental Protection

Environmental protection measures will be implemented according to the Environmental Protection Plan provided in **Appendix F** and be maintained during soil handling activities. The Environmental Protection Plan includes a Storm Water Management Plan (SWMP), a Dust Control Plan (DCP), and an Air Monitoring Plan that meet the substantive requirements for storm water and dust mitigation as well as the unique needs encountered based on the public's concerns regarding work at Treasure Island.

4.1 Storm Water Management

The SWMP describes the BMPs to be implemented, including erosion and sediment control, waste management and disposal spill responses, post-removal/remediation controls, site inspection and monitoring programs, responsible personnel, training requirements, and certifications and compliance requirements. The SWMP implements the substantive provisions of the California State Water Resources Control Board National Pollutant Discharge Elimination System General Permit for discharge to surface water.

Appropriate perimeter BMPs will be installed along the perimeter of work areas prior to the start of soil handling activities. Fiber rolls, silt fences, and/or sandbags will be installed along the fenced perimeter to prevent storm water from entering or leaving project work zones. The BMPs will minimize or prevent sediment entrainment in run-off entering the San Francisco Bay.

4.2 Dust Control

Dust control will be performed in accordance with the DCP. The DCP describes the dust mitigation requirements, along with dust control practices and integrating air monitoring requirements for soil/debris handling. The DCP addresses the substantive requirements of air quality for construction and environmental remediation operations and Title 17, California Code of Regulations, Section 93105, *Asbestos Airborne Toxic Control Measures for Construction, Grading, Quarrying, and Surface Mining Operations*.

Wind speed will be monitored using an anemometer mounted on a wind pole or otherwise available to measure wind speed near the work site. Work involving the handling of impacted soil will be stopped any time the wind speed is sustained over 25 miles per hour. If a warning of gale force winds is issued, precautions will be taken to minimize any danger to persons, and to protect the work and any nearby Government property.

Water will be applied to the soil surfaces any time soil movement activities have the potential to create airborne dust. Soil stockpiles will be sprayed with a soil stabilizing agent to help prevent airborne dust due to wind when piles are not being moved during the work week or over weekends. A water truck or water buffalo will be used to wet down road surfaces in and around the work area.

4.3 Air Monitoring

Air monitoring will be performed in accordance with the Air Monitoring Plan. The Air Monitoring Plan describes the air monitoring measures that will be implemented to ensure worker safety and provide reasonable assurance of the protection of the surrounding residents in accordance with National Institute for Occupational Safety and Health approved air sampling methodology.

Air monitoring will be performed at upwind and downwind locations during impacted soil handling activities with the potential for generating dust (e.g., backfilling and transporting). Dust action levels established for the site are found in **Appendix F** (specifically Attachment 3, Table 2).

A rigorous air sampling program with upwind and downwind monitoring will be performed and consist of both real-time monitoring of work zones, as well as work area perimeters. Monitoring will be performed for dust (particulate matter less than 10 microns in diameter) and VOCs. The collection and analysis of air samples for lead, PCBs, PAH, and ^{226}Ra, and dioxin also will be performed to confirm dust mitigation activities are effective.

5.0 Traffic Control

Traffic control will be implemented in accordance with the Traffic Plan provided in **Appendix G**. The Traffic Plan addresses road closures and/or restrictions, routing, other relevant traffic disruptions, and controls for traffic into/out of SWDA Westside. It identifies approved truck routes, truck holding and queuing areas, possible lay-down areas for construction materials, and wash-down and dust control areas as needed. In addition, it contains sufficient detail to ensure that impact to street traffic from site work will be minimized, and that there is safe traffic flow in the construction areas. The plan includes methods of maintaining traffic circulation such as lane reductions, shifts and alterations, traffic-pattern changes (flow directions, detours, and speed limits), signage, barricades, and signals. The Traffic Plan will be updated as needed in response to Treasure Island development detours.

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6.0 Health and Safety

Health and safety measures will be implemented in accordance with the SSHP (Gilbane, 2020a). The SSHP is a stand-alone document that includes an Accident Prevention Plan (APP). An activity hazard analysis (AHA) for tasks to be performed is included in the APP. The SSHP will be immediately accessible to workers at the site at all times during the project. A trained and qualified Site Safety and Health Officer (SSHO) will be dedicated to the project whose sole responsibility will be site safety during all site activities. In accordance with the SSHP, the SSHO has full authority to stop work immediately if conditions warrant and will immediately report any accidents to the ROICC, CSO, and the COR.

The SSHP will be maintained as a “living” document, with field changes documented and added/amended to the AHA and the APP as appropriate. Using information gathered as part of the AHA, engineering controls, work practices, PPE, or a combination of these will be implemented to protect workers by eliminating or effectively controlling the identified hazards. Engineering controls and work practices will be used to the greatest extent possible, supplemented by PPE as appropriate, to maintain a safe work site. References used to develop the SSHP include, but are not limited to Title 29, Code of Federal Regulations, Section 1910.120 (Hazardous Waste Operations and Emergency Response), the U. S. Army Corps of Engineers (USACE) *Safety and Health Requirements*, Manual No. 385-1-1 (USACE, 2014), and United Facilities Guide Specification (UFGS) 01 35 26, *Governmental Safety Requirements* (UFGS, 2017a).

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7.0 Quality Control

QA/QC will be performed according to the CQCP provided in **Appendix H**. The CQCP, prepared in accordance with United Facilities Guide Specification (UFGS) 01 45 00.00 20, *Quality Control* (UFGS, 2017b), describes:

- The QA/QC organization, including a chart showing lines of authority;
- The name, qualifications, duties, authorities, and responsibilities of each person assigned a QC function; and
- A schedule for managing submittals, testing, inspections, and other QA functions (including those of subcontractors, fabricators, suppliers, purchasing agents, etc.) that involve assuring quality workmanship, verifying compliance with the plans and specifications, and other QC objectives.

A QA surveillance plan with a list of definable features of the work will be implemented by conducting inspections to verify compliance with work elements and planning document requirements. Reporting includes summary reports of field work with corresponding site photos, a schedule of data submissions, inspection data sheets, problem identification and corrective measures reports, evaluation reports, acceptance reports, and final documentation.

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8.0 Post-Construction Summary Report

A PCSR summarizing the activities conducted for the removal action will be prepared following the completion of the field work. The PCSR will document a detailed narrative of the NTCRA, including sample data, data validation results, radiological survey data, copies of manifests and daily monitoring logs. The PCSR will also include site restoration activities and achievements of the NTCRA objectives.

The PCSR will, at a minimum, include the following sections:

- Overview - This section will include a very brief discussion of site characteristics, conceptual site model, contaminants of concern, major findings, and results of previous site investigation and NTCRA activities.
- Removal Action Objectives -This section will detail the removal action objectives specified in the Action Memorandum (Navy, 2007), and subsequent modifications, if any.
- Removal Actions - This section will summarize actions taken to meet the objectives.
- Demonstration of Completion - This section will include information needed to demonstrate attainment of objectives (e.g., final sampling report, visual inspection report).
- Ongoing Activities - This section will describe the activities, if any, still being performed or to be performed.
- Community Relations - This section will briefly summarize the public outreach activities conducted at the Site (e.g., community relations plan), and provide the dates of public meetings.
- Certification Statement - This section will have a statement by a service representative authorized to sign decision documents, certifying that the PCSR memorializes the completion of the NTCRA.

The appendices will include, but not be limited to, the record drawings (survey), photographs, waste manifests, field sampling logs, laboratory analytical results, radiological data packages, permits, and response to agency comments on the draft report. A copy of load tickets for construction material, including fill soil, and waste disposal also will be provided.

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9.0 References

American Society for Testing and Materials (ASTM) Standard D698, 2012. *Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))*.

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FIGURES

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Phase IV NTCRA for SWDA Westside at IR Site 12
Former Naval Station Treasure Island
San Francisco, CA

Figure 1
IR Site 12
SWDA Westside
Location Map

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NAVFAC Naval Facilities Engineering Command

Phase IV NTCRA for SWDA Westside at IR Site 12
Former Naval Station Treasure Island
San Francisco, CA

Figure 2

Existing Soil Stockpiles and RSY Pads

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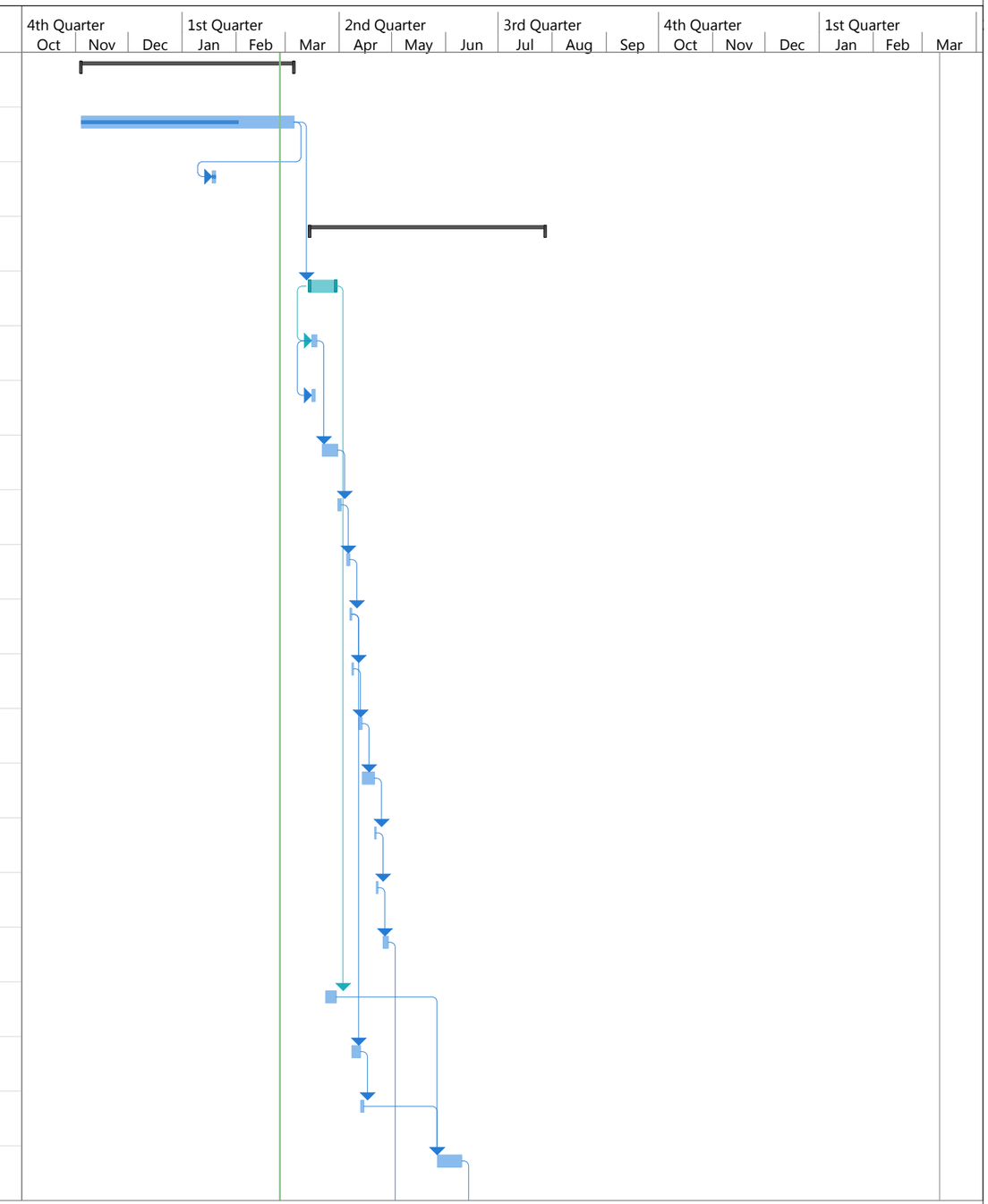
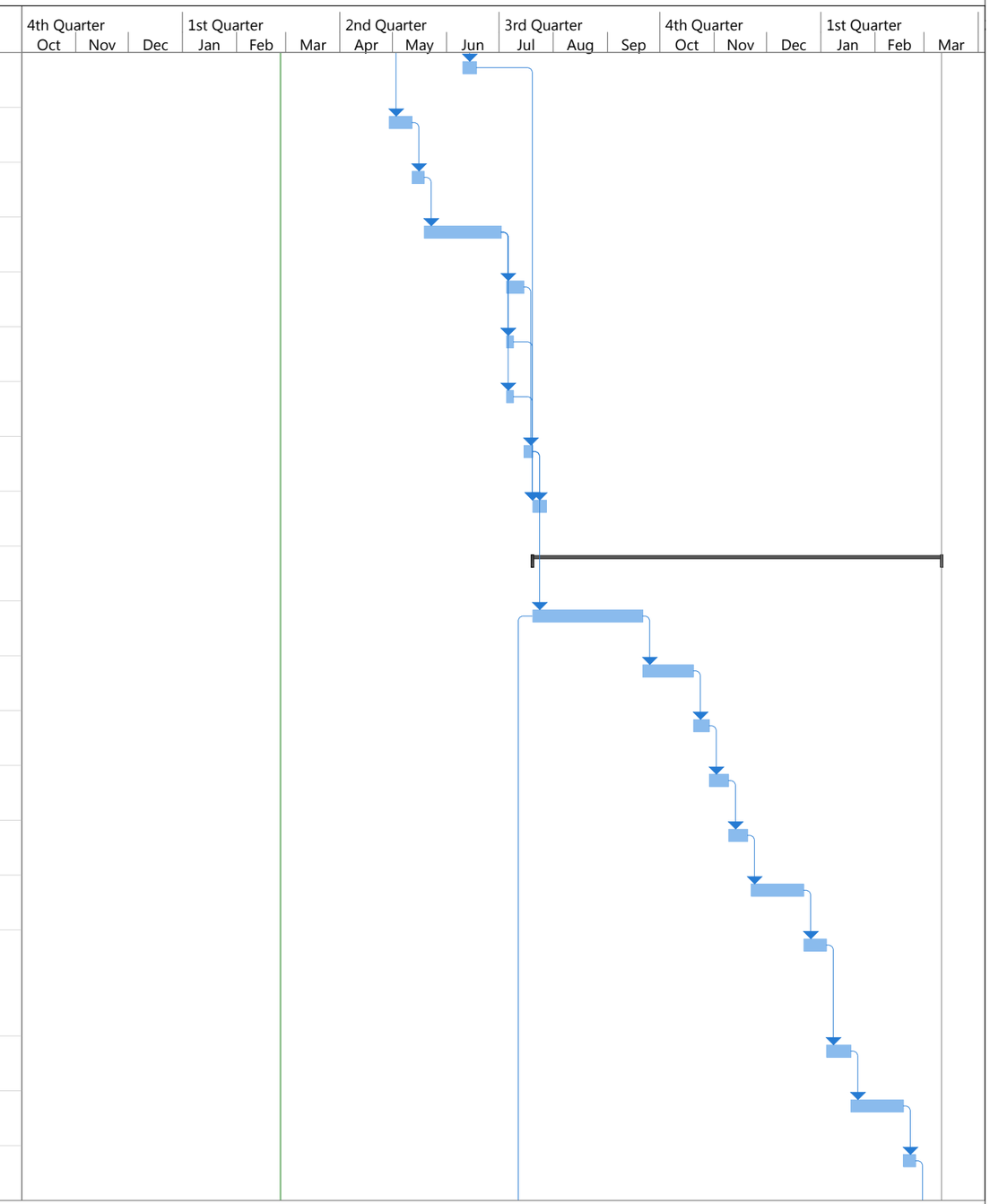
CONTRACT N62473-17-D-0005-N6247318F5271
PHASE IV NON-TIME CRITICAL REMOVAL ACTION
FOR SOLID WASTE DISPOSAL AREA WESTSIDE, IR SITE 12

ID	Task Name	Duration (Work Days)	% Complete	Start	Finish
29	**Pre-Mobilization Activities**	**88 days**	**73%**	**Wed 11/4/20**	**Fri 3/5/21**
30	Prepare Work Notices	88 days	73%	Wed 11/4/20	Fri 3/5/21
31	Environmental Conditions Site Walk and Report	2 days	100%	Mon 1/18/21	Tue 1/19/21
32	**Field Work**	**97 days**	**0%**	**Mon 3/15/21**	**Tue 7/27/21**
33	Mobilization/Clear & Grub	9 days	0%	Mon 3/15/21	Mon 3/29/21
34	Place UXO Shielding SP 1	3 days	0%	Tue 3/16/21	Thu 3/18/21
35	Build Consolidation Stockpile	2 days	0%	Tue 3/16/21	Wed 3/17/21
36	Clear SP 1 - Layers 1 to 6	6 days	0%	Mon 3/22/21	Tue 3/30/21
37	Move Shielding to SP 3	2 days	0%	Wed 3/31/21	Thu 4/1/21
38	Clear SP 3 Layers 1 to 8	2 days	0%	Mon 4/5/21	Tue 4/6/21
39	Move Shielding to SP 4	1 day	0%	Wed 4/7/21	Wed 4/7/21
40	Clear SP 4 (no layers)	1 day	0%	Thu 4/8/21	Thu 4/8/21
41	Move Shielding to SP 2	2 days	0%	Mon 4/12/21	Tue 4/13/21
42	Clear SP 2 Layers 1 to 5	4 days	0%	Wed 4/14/21	Tue 4/20/21
43	Remove Vegetation MRS 1	1 day	0%	Wed 4/21/21	Wed 4/21/21
44	Surface Clear MRS 1	1 day	0%	Thu 4/22/21	Thu 4/22/21
45	Demob UXO Equipment	3 days	0%	Mon 4/26/21	Wed 4/28/21
46	SP Waste Characterization	3 days	0%	Wed 3/24/21	Mon 3/29/21
47	RAD Rollover SP 1	2 days	0%	Thu 4/8/21	Mon 4/12/21
48	RAD Rollover SP 3	2 days	0%	Tue 4/13/21	Wed 4/14/21
49	Transport and Dispose of Waste Soil	8 days	0%	Thu 5/27/21	Wed 6/9/21



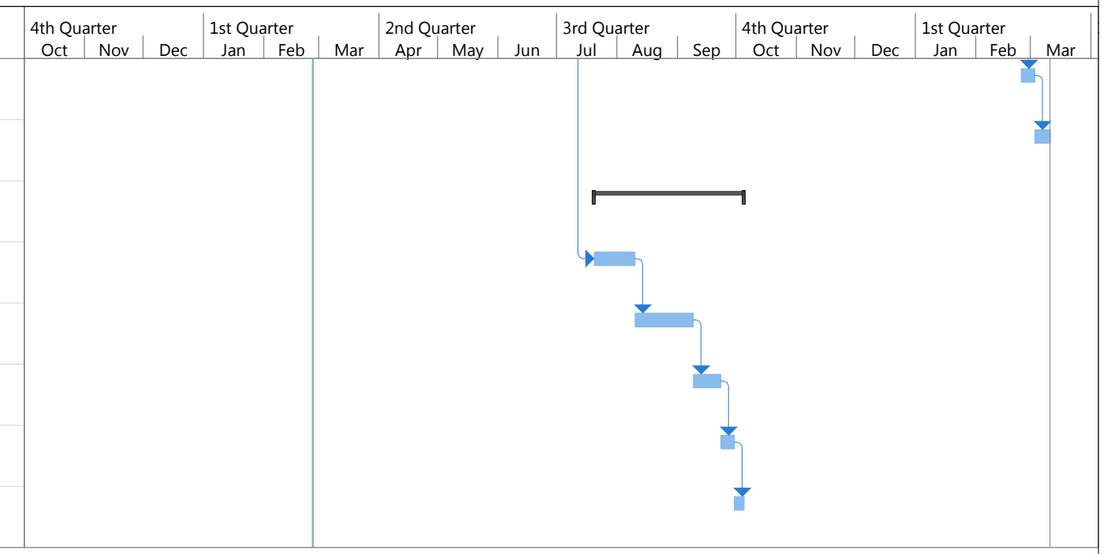
CONTRACT N62473-17-D-0005-N6247318F5271
PHASE IV NON-TIME CRITICAL REMOVAL ACTION
FOR SOLID WASTE DISPOSAL AREA WESTSIDE, IR SITE 12

ID	Task Name	Duration (Work Days)	% Complete	Start	Finish
50	Downposting	5 days	0%	Thu 6/10/21	Thu 6/17/21
51	Clear Vegetation	7 days	0%	Thu 4/29/21	Tue 5/11/21
52	Bed Exposed Pipes	4 days	0%	Wed 5/12/21	Tue 5/18/21
53	Place Fill (400 CY/day)	26 days	0%	Wed 5/19/21	Thu 7/1/21
54	Finish Grade (428 CY/day)	7 days	0%	Mon 7/5/21	Wed 7/14/21
55	Repair Storm Drains	4 days	0%	Mon 7/5/21	Thu 7/8/21
56	T&D LLRW and Vegetation	4 days	0%	Mon 7/5/21	Thu 7/8/21
57	Hydroseed	2 days	0%	Thu 7/15/21	Mon 7/19/21
58	Demobilization	5 days	0%	Tue 7/20/21	Tue 7/27/21
59	**Work Element 7 - Prepare Post Construction Summary Report**	**169 days**	**0%**	**Tue 7/20/21**	**Thu 3/10/22**
60	Internal Draft Post Construction Summary Report	45 days	0%	Tue 7/20/21	Mon 9/20/21
61	Navy Comments	22 days	0%	Tue 9/21/21	Tue 10/19/21
62	Draft RTCs on Internal Draft	7 days	0%	Wed 10/20/21	Thu 10/28/21
63	Navy Acceptance of RTCs	7 days	0%	Fri 10/29/21	Mon 11/8/21
64	Draft Post Construction Report	9 days	0%	Tue 11/9/21	Fri 11/19/21
65	Regulatory Review of Draft Post Construction Report	22 days	0%	Mon 11/22/21	Tue 12/21/21
66	Draft Final Post Construction Report Incorporating Regulatory Comments	9 days	0%	Wed 12/22/21	Mon 1/3/22
67	Navy Review of Draft Final	10 days	0%	Tue 1/4/22	Mon 1/17/22
68	Regulatory Review of Draft Final Post Construction Report	22 days	0%	Tue 1/18/22	Wed 2/16/22
69	Approval to Release Final Post Construction Report	5 days	0%	Thu 2/17/22	Wed 2/23/22



CONTRACT N62473-17-D-0005-N6247318F5271
PHASE IV NON-TIME CRITICAL REMOVAL ACTION
FOR SOLID WASTE DISPOSAL AREA WESTSIDE, IR SITE 12

ID	Task Name	Duration (Work Days)	% Complete	Start	Finish
70	Release Final Post Construction Report	5 days	0%	Thu 2/24/22	Wed 3/2/22
71	Update NIRIS	6 days	0%	Thu 3/3/22	Thu 3/10/22
72	**After-Action Report**	**55 days**	**0%**	**Tue 7/20/21**	**Mon 10/4/21**
73	Draft After-Action Report	15 days	0%	Tue 7/20/21	Mon 8/9/21
74	NOSSA/DDESB Review	22 days	0%	Tue 8/10/21	Wed 9/8/21
75	RTCs and final for Navy Review	10 days	0%	Thu 9/9/21	Wed 9/22/21
76	Navy Acceptance of RTCs	5 days	0%	Thu 9/23/21	Wed 9/29/21
77	Final After-Action Report	3 days	0%	Thu 9/30/21	Mon 10/4/21



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APPENDIX A

RADIATION PROTECTION PLAN

(Provided on CD)

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Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

FINAL
Radiation Protection Plan

Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12
Former Naval Station Treasure Island
San Francisco, CA
March 2021

DCN: GLBN-0005-F5271-0007

Prepared for:

Department of the Navy
Naval Facilities Engineering Command Southwest
BRAC PMO West
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Prepared by:

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Concord, California 94520
Contract Number: N62473-17-D-0005; Task Order No. N6247318F5271

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Attachment 1 Radiation Safety Manual

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Acronyms and Abbreviations

ALARA	as low as reasonably achievable
ALI	Annual Limit on Intake
CDE	committed dose equivalent
CEDE	committed effective dose equivalent
CFR	Code of Federal Regulations
cm	centimeter(s)
cm^2	square centimeter(s)
DAC	Derived Air Concentration
DDE	deep dose equivalent
dpm	disintegrations per minute
in	inch(es)
IR	Installation Restoration
Gilbane	Gilbane Federal
LDE	lens dose equivalent
mg/cm^2	milligram per square centimeter
M&E	material and equipment
mrem	millirem
N/A	not applicable
NaI(Tl)	sodium iodide (thallium activated)
NIST	National Institute of Standards and Technology
NRC	U.S. Nuclear Regulatory Commission
NTCRA	non-time critical removal action
PPE	personal protective equipment
RASO	Naval Sea Systems Command Detachment, Radiological Affairs Support Office
RCA	Radiologically controlled area
RPP	Radiation Protection Plan
RSO	Radiation Safety Officer
RWP	radiation work permit
SWDA	solid waste disposal area

TEDE	total effective dose equivalent
TODE	total organ dose equivalent
ZnS(Ag)	zinc sulfide (silver activated)

1.0 Introduction

This Radiation Protection Plan (RPP) describes the radiation protection measures to be applied in support of the Phase IV non-time critical removal action (NTCRA) for radioactive contaminants at Solid Waste Disposal Area (SWDA) Westside in Installation Restoration (IR) Site 12 at the former Naval Station Treasure Island in San Francisco, California. The RPP will be implemented consistent with the Gilbane Federal (Gilbane) Radiation Safety Program governing work performed in accordance with the requirements of Gilbane's State of California Radioactive Materials License 7948-07: Part 20 of Title 10 of the Code of Federal Regulations (10 CFR 20), *Standards for Protection Against Radiation*; and California Code of Regulations, Title 17, Division 1, Chapter 5, Subchapter 4, *Radiation*.

This RPP was prepared by Gilbane Federal (Gilbane) for the U.S. Department of the Navy (Navy) Base Realignment and Closure Program Management Office West under Radiological Environmental Multiple Award Contract N62473-17-D-0005, Contract Task Order N62473-18-F-5271, with the Naval Facilities Engineering Command Southwest.

1.1 Policy

Work with radioactive materials must be purposeful; performed in a manner that protects project staff, members of the general public, and the environment; and implemented in a manner that reduces health or safety risks associated with radioactive materials and ionizing radiation to levels that are as low as is reasonably achievable (ALARA). No activities will be conducted that could result in an occupational exposure of individuals to ionizing radiation without the expectation of an overall benefit from the activity causing the exposure. Both individual and collective exposures should be maintained as far below regulatory limits as social, technical, economic, practical, and public policy considerations permit.

1.2 Scope

The radiation protection measures described in this RPP apply to operational radiological activities performed by Gilbane under its radioactive materials license in support of the Phase IV NTCRA at SWDA Westside in IR Site 12. Gilbane possesses a current radioactive material license from the State of California (License No. 7948-07). Radioactive material possessed by Gilbane under its radioactive materials license will consist primarily of accumulated contaminated material and equipment (M&E), soil, and debris generated by remediation activities. The acceptable surface contamination levels given in this RPP (**Exhibit 5**) apply to tools, equipment, and materials.

1.3 Implementation

IR Site 12 is radiologically impacted as documented in the *Final Historical Radiological Assessment Supplemental Technical Memorandum, Naval Station Treasure Island, San*

Francisco, California (TriEco-Tt, 2014). Potential sources of radioactivity in SWDA Westside are discrete radioactive objects containing radium-226 such as deck markers, foils coated with radium salts, instrument gauges, and soil contamination from degraded objects.

Radiological controls will be applied to M&E and personnel involved in remediation and survey activities. Restricted areas around each work area will be established as needed with temporary fencing, warning placards, and controlled access. Where the potential for contamination exists, equipment will be surveyed before being brought into a restricted area. M&E and personnel will be surveyed for contamination before leaving a restricted area. Restricted areas may be de-posted and released from radiological controls once acceptable surface contamination levels given in **Exhibit 5** are met.

2.0 Program Administration

The Gilbane Radiation Safety Program will be implemented for this project through competent individuals who are trained in the program requirements and execute program requirements according to approved written plans and procedures approved by the Naval Sea Systems Command Detachment, Radiological Affairs Support Office (RASO).

2.1 Organization and Responsibilities

Qualified and experienced individuals will staff the positions described below to ensure consistent and successful implementation of radiation protection measures. Individuals will have the requisite skills necessary to perform the functions of their position. Specific duties and responsibilities are delineated in Gilbane's Radiation Safety Manual (see **Attachment 1**).

2.1.1 Corporate Radiation Safety Officer

The Gilbane Corporate Radiation Safety Officer (RSO) is responsible for the implementation and oversight of the Radiation Safety Program, under which this RPP provides guidance for radiation protection measures. The Corporate RSO may delegate the project-specific management of the Radiation Safety Program to a qualified individual; however, the responsibility for implementation of and compliance with the Radiation Safety Program remain with the Corporate RSO. The Corporate RSO will issue a letter of designation indicating the scope of the actions and decisions for which the individual is authorized to act on behalf of the Corporate RSO.

2.1.2 Gilbane Project Manager

The Gilbane Project Manager, with the support of the Project/Site RSO, will ensure that work is planned and conducted in accordance with the RPP and complies with radiation protection requirements.

2.1.3 Project/Site RSO

The Project/Site RSO reports to the Corporate RSO and is responsible for implementing the RPP and directing all project-related radiological activities in support of the Gilbane Project Manager. The Project/Site RSO will ensure that radiological hazards are identified during work planning, and that appropriate controls are implemented to maintain worker exposure to these hazards ALARA. The Project/Site RSO is responsible for providing on-site radiation protection support to the Gilbane Project Manager, implementing the RPP in the field, and ensuring that qualified personnel perform radiological work using adequate radiological controls according to the Radiation Safety Manual (**Attachment 1**).

The Project/Site RSO is the designated Authorized User under the radioactive materials license and will supervise and ensure the proper use of licensed materials. In accordance with RASO requirements, the Project/Site RSO or a qualified designee will be on-site during radiological work activities.

2.1.4 Radiation Safety Technicians

Radiation safety technicians will function as part of the field teams reporting to the Project/Site RSO and are responsible for assisting and guiding workers in the radiological aspects of their jobs. Radiation safety technicians are responsible for the protection of workers and the general public by implementing RPP requirements and the Radiation Safety Manual (**Attachment 1**) as directed by the Project/Site RSO.

2.1.5 Radiation Safety Professionals

Radiation safety professionals (e.g., radiation safety managers, radiological engineers, and/or health physicists) will be assigned to assist the Project/Site RSO in implementing the RPP, as appropriate. Such assistance may include:

- Providing health physics guidance on an as-needed basis.
- Conducting required radiological safety training.
- Conducting radiation incident investigations, project inspections, and program audits.

These individuals will be designated by the Corporate RSO based on their experience and education.

2.1.6 Radiation Workers (Field Personnel)

Radiation workers (i.e., field personnel who access restricted areas to perform work) are responsible for following RPP requirements and the Radiation Safety Manual (**Attachment 1**) to the best of their ability and knowledge. This responsibility includes proper use of protective and personnel monitoring equipment, notifying management of any potential or real radiation hazards or improper practices, and maintaining the individual radiation exposure of themselves and others ALARA. Radiation workers will use licensed materials under the supervision of the Project/Site RSO.

2.2 Training and Qualifications

Radiation protection personnel identified above will possess the technical competence and experience required to establish, implement, and maintain their applicable functional areas of the Radiation Safety Program, and the management skills to direct aspects of the Radiation Safety Program within their range of responsibility. Project-specific training will be provided commensurate with the anticipated duties and assignments of these personnel.

Radiation workers will be trained in radiation awareness commensurate with the requirements of Title 17, California Code of Regulations, Section 30255, *Notices, Instructions, and Reports to Personnel*. Visitors and escorted persons will receive a site briefing and will be assigned to a qualified radiation worker when in a restricted area.

2.2.1 Qualifications

The Corporate RSO will evaluate the qualifications of radiation protection personnel. Qualifications for each position will be based on the following factors as they apply to each individual's duties:

- The level of radiological hazard.
- The extent to which the individual must be able to work independently to ensure his or her own radiation safety.
- The extent to which the individual must be able to provide radiation protection guidance to others.

The resume for the Project/Site RSO will be submitted to RASO upon request. RASO will be notified of any changes in Project/Site RSO.

2.2.2 Radiation Worker Training

Radiation workers will be trained in radiation safety commensurate with their assigned duties and the radiological hazards the individual is expected to encounter during his/her work. Individuals will receive the appropriate training prior to assuming job duties involving radioactive materials.

The following radiation safety topics will be included in training, as applicable, commensurate with the individual's assigned tasks:

- Fundamentals of radiation safety,
- Radiation detection instruments,
- Radiation protection equipment and its use,
- U. S. Nuclear Regulatory Commission (NRC) and State of California regulations (as applicable),
- Operating and emergency procedures, and
- Case histories and lessons learned related to operations.

Training may be delivered as formal classroom instruction, videotape, or self-study. Methods of evaluation may include classroom examinations, on-the-job training and practical examinations, and discussion and/or drills on emergency procedures. Retraining may be required on topics where an individual is found to be deficient in the practical and/or classroom areas. Additional training will be provided whenever there is

a significant change in duties, regulations, or the terms and conditions of the license. Refresher training will be provided annually for on-site personnel.

Training will be conducted by qualified individuals (e.g., individuals whom the Corporate RSO determines are qualified by their experience and education). Training records will be maintained on-site.

2.2.3 Site Briefing

An RPP site briefing is designed for an escorted person and is presented when access to a restricted area is needed. Specific to the area(s) of concern where access is needed, the RPP brief will cover at a minimum:

- Applicable portions of 10 CFR 19.12, the RPP, the Radiation Safety Manual (**Attachment 1**) or other written procedures, and specific radiation work permits (RWPs) relevant to the radiological hazards associated with the restricted area(s).
- A description of radiation exposure risks and monitoring requirements.
- Access/egress protocol specific to the restricted area(s).

2.3 Procedures and Work Instructions

The policy and procedures that implement Gilbane's radiation safety program are referred to collectively as the Radiation Safety Manual (**Attachment 1**), which describes how Gilbane complies with regulatory requirements. Additional guidance, where appropriate, may be developed in the form of task-specific work instructions that are outside of, but supplement, the Radiation Safety Manual (**Attachment 1**). Work instructions will be approved by the Corporate RSO and captured and maintained as project records.

3.0 Dose Limits

The dose received by radiation workers assigned to complete activities involving exposure to radiation and/or to radioactive material from licensed and unlicensed radiation sources will be managed within regulatory and administrative limits defined for occupational doses. Occupational doses for radiation workers do not include any dose received from background radiation, medical practice/service, or as a member of the public.

3.1 Regulatory Limits

The occupational dose received by occupationally exposed individuals will be controlled such that the regulatory limits in **Exhibit 1**, specified in millirem (mrem), are not exceeded in a single year. Regulatory limits are specified for the total effective dose equivalent (TEDE) and the total organ dose equivalent (TODE) for occupationally exposed individuals. The TEDE is the sum of the deep dose equivalent (DDE) from external exposures and the committed effective dose equivalent (CEDE) from internal exposures. The TODE is the sum of the DDE and the committed dose equivalent (CDE) to any individual organ and tissue.

Exhibit 1: Regulatory Dose Limits

Exposure Type	Monitoring Required (mrem)	Annual Regulatory Dose Limits(1) (mrem)
TEDE (DDE + CEDE)	500	5,000
TODE (DDE + CDE) to any Organ(2)	5,000	50,000
Lens (of the Eye) Dose Equivalent (LDE)	1,500	15,000
Shallow-Dose Equivalent to the Skin	5,000	50,000
Shallow-Dose Equivalent to any Extremity	5,000	50,000

Notes:

(1) from 10 CFR 20.1201

(2) except lens of the eye because unique monitoring requirements and annual legal exposure limits exist for this organ; see subsequent table row

3.1.1 Unborn Child/Declaration of Pregnancy

The dose to an embryo/fetus during the entire pregnancy will not exceed 500 mrem due to the occupational exposure of a declared pregnant woman. Declaration of pregnancy will be entirely at the discretion of the woman (medical proof is not required). To declare pregnancy, the woman must inform her supervisor or the Project/Site RSO, in writing, of the pregnancy and an estimated date of conception so that the estimated

dose to the embryo/fetus prior to declaration can be determined. A woman may withdraw her declaration of pregnancy at any time and for any reason by notifying her supervisor or the Project/Site RSO in writing. Any woman who does not declare her pregnancy will be subject to the normal occupational dose limits and will not be subject to special controls or treatment with respect to work assignments involving exposure to radiation even if she is pregnant.

3.1.2 Planned Special Exposures

No anticipated event within the work scope subject to this RPP will require use of a planned special exposure. In the event it is necessary to initiate such a need, an activity-specific work instruction including a formal ALARA review and an RWP will be prepared by the Project/Site RSO and approved by the Corporate RSO prior to submittal to RASO for acceptance.

3.1.3 Minors

The dose to a minor will be controlled administratively so that exposure does not exceed 10% of the dose limits for occupationally exposed adults.

3.1.4 Members of the General Public

The dose to individual members of the general public will not exceed 100 mrem in a year, excluding background and medical exposures, and will not exceed 2 mrem in any one hour in any unrestricted area.

3.2 Administrative Limits

Administrative limits for occupationally exposed adults, shown in **Exhibit 2**, will be used to control doses to ensure that regulatory limits are not exceeded and that occupational exposures are maintained ALARA. The administrative limits also serve to alert radiation protection personnel to practices or trends in the work environment that are resulting in additional or excessive exposure to individuals. Gilbane’s goal is that no individual will exceed the administrative limits.

Extensions to the administrative limits will be considered on a case-by-case basis when written justification for the need to extend the individual's dose limit is provided by the individual's supervisor. Approval by the Corporate RSO is required if the quarterly or annual administrative limits will be exceeded. Extensions will be permitted only after an individual’s accrued dose for the current year has been determined.

Exhibit 2: Administrative Dose Limits

Exposure Type	Annual Administrative Limit (mrem)
TEDE	1,000
LDE[1]	3,000
Skin Dose	10,000
TODE	10,000

Notes:

[1] Dose equivalent to the lens of the eye

3.3 Dose Investigations

A dose investigation will be performed for individuals whose exposure exceeds the levels in **Exhibit 3**.

Exhibit 3: Dose Investigation Levels

Quarterly Dosimeter Reading	Investigation Level (% of Administrative Limit)
<3 months	>25%
3 to 6 months	>50%
6 to 9 months	>75%
9 to 11 months	>90%

The Corporate RSO or designee will work with the individual’s supervisor to determine if action is required to minimize the individual's dose, to monitor future dose closely, or to pursue an extension to the administrative limits.

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4.0 Dose Monitoring

An individual's exposure to internal and/or external sources of radiation will be monitored if the occupational dose is likely to exceed 10% of the administrative limit, as listed in **Exhibit 2**. Dose monitoring requirements will be specified in the RWP.

4.1 Internal Exposure Monitoring

Monitoring of internal exposure normally will be conducted by use of air samples, particularly samples collected within the breathing zone. When a potential or actual condition exists in which an individual could have received an unmonitored intake of radioactive material, the intake will be determined by measurements of quantities of radionuclides excreted from or retained in the body (e.g., in-vitro bioassay and/or in-vivo bioassay monitoring). The measurements and methods used will be directed by the Corporate RSO.

Internal exposure does not include exposure due to medical administration of radionuclides. Therefore, individuals will inform the Project/Site RSO prior to entering a restricted area when medical treatments involving radionuclides have been administered. Where possible, individuals will be reassigned to work in areas outside of restricted areas until the administered radionuclide is eliminated from the body to the extent that it will not significantly affect dosimeter or radiation detection measurements.

4.2 External Exposure Monitoring

External exposure monitoring will be accomplished using a thermoluminescent dosimeter or optically-stimulated luminescence dosimeter worn on the front of the upper torso. Radiological surveys may be performed to supplement personnel monitoring when work is being performed in areas where individuals are required to be monitored. Before a dosimeter is issued to an individual, the individual to be monitored will satisfactorily complete radiation worker training. Satisfactory completion is based on receiving a passing score on a competency exam administered by a qualified individual.

Personnel dosimetry will be processed and evaluated at least quarterly by a dosimetry processor holding current accreditation from the National Voluntary Laboratory Accreditation Program of the National Institute of Standards and Technology (NIST) for the type(s) of radiation for which the individual wearing the dosimeter is monitored.

4.3 Determination of Prior Occupational Exposure

The occupational dose during the current year will be determined for individuals who are likely to receive a dose in excess of 10% of the administrative limit. The individual's dose histories for prior years will be obtained and documented on NRC Form 4 or equivalent. The record will show each period in which the individual received an occupational dose, and will be signed by the individual who received the exposure.

4.4 Records and Reports

Records of occupational exposure monitoring results will be maintained for the duration of Gilbane's radioactive materials license. Reports of individual monitoring results will be made available to monitored individuals on an annual basis. Quarterly exposure reports will be generated to alert the Project/Site RSO of doses to individual workers that are approaching the administrative limits.

5.0 Instruments and Equipment

Commercially available portable and laboratory instruments and equipment will be used to perform three general types of measurements: (1) radiation, (2) contamination, and (3) airborne radioactivity. Instrumentation will be used only by individuals qualified in the use of the instrument. Instrument and equipment records are maintained in hardcopy and/or electronic form and will be available on-site for inspection.

5.1 Selection

Radiation detection and measurement instrumentation will be selected based on reliable operation, detection sensitivity, operating characteristics, and expected performance in the field. As a general rule, instruments will be capable of detecting radiation at levels anticipated to be present. Typical instrumentation that may be used is identified in **Exhibit 4**.

Exhibit 4: Typical Survey Instrumentation

Measurement Type	Detector Type	Effective Detector Area and Window Density	Instrument Model	Detector Model
Gamma Scan	NaI(Tl) scintillation	2 in (5.1 cm) dia x 2 in length N/A	Ludlum 2221	Ludlum 44-10
Alpha/Beta Scan/Static	Gas flow proportional	582 cm^2 3.4 mg/cm^2 aluminized Mylar	Ludlum 2360	Ludlum 43-37
	Dual phosphor scintillation	100 cm^2 1.2 mg/cm^2 aluminized Mylar	Ludlum 2360	Ludlum 43-93
Alpha/Beta Smears	ZnS(Ag) scintillation	5.1cm diameter 0.4 mg/cm^2	Protean WPC-9550	N/A
	Dual phosphor scintillation	5.1 cm diameter 0.4 mg/cm^2	Ludlum 2929	Ludlum 43-10-1
Exposure Rate	Na(Tl) scintillation	1 in (2.5 cm) dia x 1 in length N/A	Ludlum 19	N/A

Notes:

cm^2 – square centimeter
cm – centimeter
in – inches
mg/cm^2 – milligrams per square centimeter
ZnS(Ag) – zinc sulfite (silver activated)
NaI(Tl) – sodium iodide (thallium activated)
N/A – not applicable

5.2 Inventory and Control

A sufficient inventory and variety of operable and calibrated portable, semi-portable, and fixed radiation detection and measurement instrumentation will be established and maintained to satisfy the following considerations:

- Effective measurement of radiation exposure and control of radioactive material with instrumentation appropriate to enable the assessment of alpha, beta, and gamma radiation at the energies and intensities anticipated;
- Maximum number of personnel and separate work areas requiring surveillance;
- Frequency and types of surveys or measurements required to support normal and anticipated activities;
- Allowance for repair and calibrations; and
- Efforts to minimize delays in personnel access to and egress from radiological areas.

5.3 Calibration and Maintenance

Instruments and detectors will be calibrated for the radiation types and energies of interest using NIST-traceable sources and maintained to manufacturers' specifications. Anticipated radionuclide mixture ratios and varying energies will be accounted for during calibration by using a calibration source with a conservative and/or representative average energy as compared to the weighted average energy of the anticipated radionuclide mixture.

Each instrument will be inspected prior to use to ensure that it is in proper working condition. Instruments will be protected against inclement weather conditions in the field. Sufficient instrumentation redundancy will be maintained to preclude the need for repair and maintenance in the field. Maintenance and/or repair of equipment will be performed by the equipment manufacturer or authorized representative.

Calibration records will include the type of instrument and manufacturer; instrument model and serial number, date of calibration, calibration due date, and the name of the worker performing the calibration.

5.4 Response Checks

Instrument response checks will be conducted to assure constancy in instrument response, to verify that the detector is operating properly, and to demonstrate that measurement results are not the result of detector contamination.

Instrument response will be checked before the instrument is used each day, using a check source that emits the same type(s) of radiation (i.e., alpha, beta, and/or gamma) to be measured and that gives a similar instrument response. The check source does not necessarily use the same radionuclide as the radionuclide being measured. The

response check will be performed in a specified location using a specified source-detector alignment that can be repeated easily. Response check records include background and source count data to verify instrument response falls within the acceptable range and the initials of the radiation safety technician who performed the check, and are periodically reviewed, signed off, and dated by the Project/Site RSO or designee.

Prior to the initial use of a scaler instrument, a minimum of 20 measurements will be made using the source, and another 20 measurements will be made without the source to determine the instrument's expected response to ambient background. An acceptable range for both source and background instrument response will be developed using the chi-squared test. Response checks will be performed and evaluated against the acceptance criteria. If instrument measurements fall outside the acceptance criteria, the response check may be repeated or the instrument will be removed from service. If the instrument is removed from service, it will not be used until the problem is resolved or repaired.

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6.0 Radiological Monitoring

Radiological monitoring will be performed to identify, quantify, and evaluate the potential hazards associated with the radiological conditions in and around work areas. The survey data will be used to minimize the potential for exposure of personnel and to evaluate the effectiveness of site controls.

6.1 Radiological Surveys

Survey information will be used to inform individuals of the radiological conditions/hazards in the area, to determine any required area postings, to determine the type(s) of personal protective equipment (PPE) necessary, and to ensure that personnel exposures to radiation and radioactive materials are maintained ALARA. Surveys to assess radiation and contamination levels may be performed separately or jointly as warranted by expected radiological conditions and job requirements.

6.1.1 Radiation Surveys

General area surveys will be used to assess the nominal radiation fields, to verify that radiological conditions have not changed, and to establish specific radiological controls for work to be performed. Contact dose rate surveys will be used to locate and identify (1) the maximum radiation levels to which personnel could be exposed and (2) localized sources of radiation that present unique radiological concerns.

6.1.2 Contamination Surveys

Contamination surveys will be performed to measure fixed and removable levels of surface contamination. Removable contamination surveys will be performed to detect and quantify removable alpha/beta surface contamination using one of two methods:

- Smear Surveys - A smear is obtained by using an absorbent filter disk to wipe with moderate pressure across the area or item to be evaluated. The smear usually is wiped over an area of 100 cm^2 to quantify the level of removable contamination in units of disintegrations per minute (dpm) per 100 cm^2.
- Wipe Surveys - A wipe is obtained by wiping an absorbent pad or towel over a large area or the entire surface of the item being surveyed. Loose-surface contamination surveys (i.e., large area wipes) are performed periodically as a qualitative measure to ensure that contamination has not spread.

Both smear and wipe samples will be evaluated for gross alpha/beta activity, unless otherwise directed by the Project/Site RSO.

6.1.3 Survey Frequencies

A routine survey program consisting of daily, weekly, and monthly surveys will be implemented to monitor radiological conditions in designated work areas. Surveys will be conducted at a frequency commensurate with the hazard(s) present and the personnel occupancy in a given area. The performance frequency and detail level of surveys will consider the likelihood of changing conditions, the radiological hazards of specific areas, and the personnel occupancy within various areas, in order to anticipate personnel radiation doses and to ensure and verify that personnel exposure to radiation or radioactive materials is adequately controlled and monitored.

Routine survey frequencies will be augmented with additional surveys, under the direction of the Project/Site RSO, when any of the following conditions apply:

- Contamination above action levels is found outside of a restricted area.
- Unexpected, significant increases in radiation levels, contamination levels, or airborne radioactivity levels occur.
- Increased maintenance activities or changes in work scope may change radiological conditions (i.e., operations that may increase area dose rates, loose surface contamination, airborne radioactivity, etc.).

If conditions warrant, temporary changes to established survey frequencies will be approved by the Project/Site RSO.

6.1.4 Survey Documentation and Review

Surveys will be documented legibly, accurately, and timely. Survey documents will include the following information at a minimum:

- Date, time, and location of the survey.
- Instrument(s) used, including serial number and calibration date.
- Name and signature of the surveyor.
- Name and signature of the Project/Site RSO or designee reviewing the survey.
- Results of the measurements and analyses.
- Maps and drawings indicating the area(s) and items surveyed, as appropriate.

Documentation of surveys performed by trainees (i.e., non-qualified personnel) will be reviewed and approved by a qualified individual. Documentation methods, supervisory reviews, and the distribution of data will be standardized.

6.2 Air Sampling

Air sampling of general and localized areas will be performed when and/or where the generation of airborne radioactive material is possible. These samples will be used to

verify that radioactive material is being confined effectively and to provide warning of elevated concentrations for planning or response actions. The sampling points will be located in the airflow pathway near the known or suspected release point(s). As necessary, more than one air sample location may be used in order to provide a reasonable estimate of the general concentration of radioactive material in air. Breathing-zone air samples will be the primary method for monitoring workers' potential inhalation intake of radioactive material. The samples will be collected under known physical conditions (e.g., filter type, sample time, flow rate). The flow meters of air samplers will be calibrated annually at a minimum. Calibration will also be performed after repair or modification of the flow meter.

The limit for airborne radioactivity is based on radium-226 and will be 3×10^{-10} microcuries per milliliter, which represents a derived air concentration (DAC) of 1.0 (reference 10 CFR 20, Appendix B, Table 1). In the event the airborne levels reach a DAC of 0.1, the use of PPE (respirators) will be considered and/or work practices will be evaluated and modified if necessary to ensure the limit is not reached. DAC-hour tracking will be performed for individuals with breathing zone air sample results of 1 DAC or higher (see Section 7.7 for further discussion regarding DACs). A breathing-zone air sample result of 10 DAC-hours or higher without respiratory protection will result in the individual being restricted from work involving potential exposure to airborne radioactive material unless approved by the Project/Site RSO.

6.3 Monitoring Dose to the Public

Based on the scope of planned work, the limited activity of radionuclides expected, and the low concentrations of naturally occurring radioactive material anticipated, a public dose associated with tasks performed under this RPP is not anticipated.

To protect members of the public, survey and sampling protocols will be implemented in areas of intrusive work. Intrusive work locations that require monitoring (e.g., areas where soil excavations and/or handling, etc., may disturb sources of radioactive material) will be posted in conspicuous locations, and access will be restricted. Survey and sampling results and frequencies will be reviewed with RASO to ensure that the established controls are effective.

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7.0 Postings

Areas to which access should be limited for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials will be restricted areas and will be posted as such.

7.1 General Requirements

Postings will consist of standardized signs or labels bearing the standard radiological trefoil symbol in magenta, purple, or black on a yellow background. Postings will provide information concerning a specific radiological hazard and include the wording: "Caution: Radiologically Controlled Area." These postings will also contain a contact telephone number. Supplemental information as specified by the Project/Site RSO may also be included as magenta (preferred), purple, or black markings on a yellow (preferred) or white background.

Barriers, signs, gates, doors, fences, etc., will be used to identify the boundaries of restricted areas and to control access of personnel into those areas. A minimum of one sign will be posted on each straight run of the boundary of a restricted area. Additional signs will be placed at approximately 30-meter (100-feet) intervals on long runs of the boundary. For waterfront areas, signs will be posted at areas accessible by watercraft. Areas not typically accessed by pedestrians (e.g., windows) do not requiring posting.

An access control area will be established to provide control over the entry to and exit from the restricted area. The access control point allows for the accountability of personnel, tools, and equipment that pass into and out of the area and also may function as a contamination control boundary between zones of differing contamination levels. During periods of inactivity, the access control point will be secured.

7.2 Radiologically Controlled Area

Any area accessible to individuals in which radiation levels could result in an individual receiving a dose equivalent of 100 mrem or more in a single year (excluding natural background and medical exposures) will be posted as a radiologically controlled area (RCA). For external sources, the RCA typically will be posted when the exposure rate exceeds 50 microroentgens per hour at a distance of 30 centimeters (cm) from the radiation source or from any surface that the radiation penetrates. However, this dose rate may be modified at the discretion of the Project/Site RSO based on accurately assessed occupancy factors.

7.3 Radiation Area

Any area accessible to individuals in which radiation levels could result in an individual receiving a dose equivalent in excess of 5 mrem in 1 hour at a distance of 30 cm from

the radiation source or from any surface that the radiation penetrates will be posted as a Radiation Area.

7.4 High Radiation Area

Any area accessible to individuals in which radiation levels could result in an individual receiving a dose equivalent in excess of 100 mrem in 1 hour at a distance of 30 cm from the radiation source or from any surface that the radiation penetrates will be posted as a High Radiation Area.

7.5 Contamination Area

Any area accessible to individuals in which removable surface contamination levels exceed the average acceptable surface contamination levels specified in Table 3 of Regulatory Guide 8.23, *Radiation Safety Surveys at Medical Institutions* (NRC, 1981), but do not exceed 100 times those values, will be posted as a Contamination Area. Regulatory Guide 8.23 values are reproduced in this document as **Exhibit 5**.

7.6 High Contamination Area

Any area accessible to individuals in which removable surface contamination levels exceed or are likely to exceed 100 times the average acceptable surface contamination levels specified in Table 3 of Regulatory Guide 8.23 (NRC, 1981) will be posted as a High Contamination Area. Regulatory Guide 8.23 values are reproduced in this document as **Exhibit 5**.

7.7 Airborne Radioactivity Area

A room, enclosure, or area will be posted as an Airborne Radioactivity Area if airborne radioactive materials composed wholly or partly of licensed material are present at the following concentrations:

- In excess of the DAC specified in state and federal regulatory documents, or
- At such a level that an individual present in the area without respiratory protective equipment could exceed an intake of 0.6 percent of the annual limit on intake (ALI) or 12 DAC-hours during the hours an individual is present in one week.

An ALI is defined as the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year that results in a CEDE of 5,000 mrem, or a CDE of 50,000 mrem to any individual organ or tissue. A DAC is defined as the product of the concentration of radioactive material in air (expressed as a fraction or multiple of the derived air concentration for each radionuclide) and the time of exposure to that radionuclide, in hours. One ALI is represented by 2,000 DAC-hours. DAC values are specified in Appendix B of 10 CFR 20.

7.8 Radioactive Materials Area

An area or room in which licensed material is used or stored, and in which the quantity of radioactive material exceeds 10 times (100 times for natural uranium or thorium) the quantity of such material specified in Appendix C of 10 CFR 20, will be posted as a Radioactive Materials Area.

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8.0 Work Planning and Performance

Radiological work activities will be planned in consultation with the Project/Site RSO and other radiation protection personnel tasked with oversight responsibilities. Work performed in restricted areas will require an RWP that details radiologically-based requirements and protective measures commensurate with the hazards associated with the specific activities being conducted.

8.1 Radiation Work Permits

RWPs will be used to inform individuals of the radiological conditions that exist in a restricted area and to detail the protective measures and controls needed to perform tasks in the restricted area. The RWP will describe the scope of work, including supporting tasks that must be performed in a restricted area, and will include, as necessary, supporting information and documentation such as work procedures, drawings, and diagrams. RWPs will be approved by the Project/Site RSO.

General RWPs will be used for the performance of routine activities such as observation, inspection, operator rounds, or tours where radiological conditions are stable. A general RWP normally will be valid for one calendar year, and will be rewritten at the end of the calendar year if necessary. Specific RWPs will be used for the performance of defined activities in specific locations and normally are valid for the duration of the activity or until the end of the calendar year in which they are written.

Work supervisors will review the provisions of specific RWPs with their workers before the related work begins. The Project/Site RSO may conduct a briefing prior to the start of the job to explain special requirements, engineering controls, or work restrictions. If the scope of the job changes due to any unexpected conditions, the work supervisor will notify the Project/Site RSO so that the impact on the provisions of the job can be evaluated. Workers or supervisors also will notify the Project/Site RSO of any unexpected or unusual conditions.

A copy of the RWP will be available at the entry/exit point of the restricted area or other location deemed appropriate by the Project/Site RSO. Individuals will read and sign the RWP before entering the restricted area or performing the tasks covered by the RWP.

8.2 ALARA Review

An ALARA review will be performed for any work involving radioactive material. The ALARA review will ensure that industry-recognized principles are applied to the radiological work so that exposure to ionizing radiation is purposeful; performed in a manner sufficient to ensure the protection of staff, members of the public, and the environment; and is maintained ALARA.

The ALARA review will include a review of the description of the scope, the sequence of events for the job evolution, and the radiological controls necessary to ensure the safety of the workers and the environment. The ALARA review will not only consider radiation safety requirements, but engineering and administrative controls that may be applied to reduce internal and/or external doses. The ALARA review will ensure that basic dose reduction strategies are employed using the ALARA concepts of time, distance, and shielding. The ALARA review may be conducted and/or documented as part of the RWP review and approval process.

8.3 Stop Work Authority

All radiation workers have the authority and responsibility to stop work when controls are inadequate or imminent danger exists. Radiation protection personnel will be responsible for stopping work whenever work being performed is outside the scope of the RWP, when workers are not complying with the provisions of an RWP, or when conditions vary from those described on the RWP and pose an immediate hazard to individuals in the area.

When work has been stopped, the work area will be placed in a safe configuration and work will not be resumed until proper controls have been established. Work re-start will be authorized by the Project/Site RSO with RASO concurrence.

8.4 Atypical Work Site Conditions

Radiological work will be suspended immediately where any of the following atypical work site conditions is encountered.

- An individual TEDE exceeds 500 mrem.
- The collective TEDE for the job exceeds 1,000 mrem.
- Airborne radioactivity above the minimum detectable concentration is identified/verified on an air sample.
- Conditions warrant the radiological posting of an area as a High Radiation Area or a High Contamination Area.

RASO will be notified immediately, who pass on information to stakeholders, as appropriate. The Corporate RSO, with concurrence from RASO, will authorize work resumption.

9.0 Radiation and Contamination Control

Wherever possible, radiation and contamination will be controlled at the source. Administrative procedures (e.g., establishing restricted areas) and engineering controls (e.g., shielding, containment, ventilation) will be used.

9.1 Restricted Areas

Restricted areas will be established for the purpose of protecting individuals against unnecessary risks from exposure to radiation and radioactive materials.

9.1.1 Access Control

Restricted area boundaries will be demarcated using yellow and magenta floor tape, rope, ribbon, barricades, or other suitable identifiers. Hoses or electrical leads which cross restricted area boundaries will be secured to prevent the hose or lead from being pulled into or out of area inadvertently and spreading contamination. An entry/exit control point (e.g., a swing gate or rope between two stanchions) will be established. Suitable radiation detection instruments will be provided at or near the entry/exit point.

9.1.2 Tools, Equipment, and Materials

Tools, equipment, and materials entering and exiting restricted areas will be controlled to ensure that unnecessary items are not brought into the restricted area and that contaminated items are not removed from the restricted area inadvertently.

Only tools, equipment, and material necessary to accomplish the planned task will be allowed into a restricted area. Work activities will be pre-planned to minimize the number of tools and/or equipment items and the quantity of material taken into restricted areas. Personal items will not be allowed. Container wrappings, packing, and similar materials will be segregated from essential items before the items are brought into a restricted area. The use of wooden pallets and other materials difficult to survey and decontaminate will be minimized inside restricted areas.

Non-radioactive materials will not be stored in a restricted area. Tools or equipment present within a restricted area will be fully used, rather than introducing additional tools or equipment to the restricted area. Containers of temporarily stored restricted area tools and equipment, such as toolboxes and crates, will be labeled as radioactive materials. Items brought into a restricted area will be removed as soon as practical to reduce the likelihood that the items will become contaminated inadvertently.

9.1.3 Housekeeping

Good housekeeping practices will be used at all times. Work areas will be cleaned up and housekeeping performed after each task is completed.

9.2 Contamination Areas

Contamination Areas will be established to minimize the spread of contamination during work activities, minimize the need for respiratory protection devices, and maintain internal personnel exposures ALARA. The number and size of Contamination Areas will be limited to reduce the amount of material that may become contaminated during use and to reduce the resources that are expended to decontaminate contaminated items and areas.

9.2.1 Set-Up

Surface coverings using plastic sheets or absorbent material, strippable coatings, containers to collect leakage of radioactive materials, and similar measures will be used based on the type of work to be performed and the location of the work.

An entry/exit point will be established at the boundary of the Contamination Area. Placement of the entry/exit point will take into consideration radiation levels in the area. A step-off-pad will be provided at the entry/exit control point. Step-off pads will be treated as non-contaminated. Protective clothing will be removed before the individual exits onto the step-off pad. In areas where more than one set of protective clothing is used (e.g., High Contamination Area), additional step-off pads may be used to prevent the spread of contamination. Appropriate receptacles will be provided to collect used protective clothing. Radioactive or contaminated trash will not be allowed to accumulate to avoid potential contribution to increased ambient radiation levels. The appropriate radiation detection instruments will be provided at or near the step-off-pad or work area and at the entry/exit point in a manner that will facilitate their use by radiation workers.

9.2.2 Access/Egress

Appropriate PPE will be donned prior to entry into and removed prior to egress from a Contamination Area. Individuals will be monitored for contamination upon exit. Individuals with open wounds or sores generally will not be granted access to a Contamination Area. Entry may be authorized by the Project/Site RSO on a case-by-case basis, if appropriate protection of the wound or sore is verified, planned work activities are unlikely to compromise the protection, and there is no other medical reason to restrict entry.

9.2.3 Tools and Equipment

Tools or equipment will be bagged, sleeved, covered, or coated, as appropriate, before being taken into a Contamination Area. Contaminated or unmonitored items will be bagged and properly labeled before being removed from a Contamination Area unless otherwise directed by radiation protection personnel. Bags will indicate the presence of contaminated or potentially contaminated materials.

9.3 Contamination Control Measures

Surfaces, tools, equipment, and materials will meet the acceptable surface contamination levels given in **Exhibit 5** or will be controlled as contaminated. **Exhibit 5** values are from Table 3 of Regulatory Guide 8.23 (NRC, 1981).

9.3.1 Surveys of Tools and Equipment

Where the potential for contamination exists, incoming surveys will be performed on equipment before it is put into service in a restricted area. Where surface contamination above the limits in **Exhibit 5** is identified, the equipment will be returned to the supplier for replacement or decontamination.

Tools and equipment will be surveyed for contamination prior to removal from a restricted area to minimize the spread of contamination. Survey extent will be established by the Project/Site RSO as appropriate to site and work conditions. Potentially contaminated tools and equipment will be wrapped or bagged until it is determined by survey that the surface contamination limits in **Exhibit 5** are not exceeded.

A contamination survey will be performed and documented for tools and equipment being released from the project. Where the surface contamination limits in **Exhibit 5** are exceeded, the items will be decontaminated before leaving the radiological work area or stored for disposal as radioactive waste. If decontamination methods are unsuccessful, a contaminated item may be retained for future use within the restricted area. If it is not feasible or cost-effective to control or decontaminate an item, the item will be disposed of as radioactive waste.

Exhibit 5: Acceptable Surface Contamination Limits

Nuclide [a]	Average [b,c]	Maximum [b,d]	Removable [b,e]
U-nat, U-235, U-238, and associated decay products	5,000 dpm α/100 cm^2	15,000 dpm α/100 cm^2	1,000 dpm α/100 cm^2
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm^2	300 dpm/100 cm^2	20 dpm/100 cm^2
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1,000 dpm/100 cm^2	3,000 dpm/100 cm^2	200 dpm/100 cm^2
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5,000 dpm β-γ/100 cm^2	15,000 dpm β-γ /100 cm^2	1,000 dpm β-γ/100 cm^2

Notes:

[a] Where surface contamination by both alpha- and beta-gamma emitting nuclides exists, the limits established for alpha and beta-gamma emitting nuclides should be applied independently.

[b] As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[c] Measurements of average contamination level should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each object.

[d] The maximum contamination level applies to an area of not more than 100 cm^2.

[e] The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

9.3.2 Survey of Vehicles and Materials

Vehicles will be surveyed upon exit from a restricted area. These surveys will include any material conveyed by the vehicle. In some cases, stockpiles of soil, debris, and miscellaneous materials may not be surveyed because the likelihood of contamination is very low. Such exceptions, if any, will be approved by the Project/Site RSO.

9.3.3 Personnel Monitoring

Individuals will be monitored for contamination on their person and on hand-carried items when exiting a restricted area. The nature and extent of the monitoring will be dictated by the radiological posting and/or the RWP. Individuals who are not qualified to self-monitor will be monitored by a radiation safety technician. No level of detectable contamination is acceptable on individuals. Hand-carried items leaving a restricted area will meet the limits in **Exhibit 5** or will be decontaminated as described in the following secction. RASO will be notified of any personnel contamination incident.

9.3.4 Decontamination

Appropriate decontamination techniques may include low pressure spray (power wash), high-pressure spray, ultra-high pressure spray, scabbling, scarification, abrasive blast methods, needle gun, and removal of strippable coatings.

Contaminated equipment and tools will be brought to a designated area for decontamination. The amount of detergent or other decontamination agent used will be limited to the minimum required for the task. Decontamination agents will be collected, monitored, and properly disposed.

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10.0 Radioactive Material Control

Radioactive material controls will be established to provide positive control of radioactive material, prevent inadvertent release of radioactive material to unrestricted areas, ensure protection of members of the public and workers, and minimize the amount of radioactive waste generated during survey and remediation activities.

10.1 Discrete Radioactive Source Control

It is anticipated that discrete radioactive sources (e.g., radioactive objects that have high specific activity and localized dose rates) may be encountered during excavation and material screening activities. Enhanced radiation protection measures, such as shielding, remote handling (e.g., tongs), and extremity dosimetry, will be evaluated for use in the retrieval and handling of these sources. Discrete radioactive sources will be inventoried and assayed radiologically to characterize for disposal. Information such as a description of the item and exposure rates on contact and at distances of 10 cm and 30 cm will be recorded. Sources will be stored in locked container.

10.2 Sealed Radioactive Sources

It is not anticipated that field projects will receive radioactive material shipments other than exempt-quantity radioactive check sources, which will be controlled, stored, posted, and managed as radioactive material. Check sources will be used on field projects only for the period of time necessary to execute the planned work, will not be introduced onto a project location prior to project initiation, and will be returned to the provider immediately following the completion of planned field activities. Radioactive check sources will be packaged and shipped in accordance with U.S. Department of Transportation regulations via commercial carriers. Off-site shipment of radioactive materials other than exempt-quantity radioactive check sources by Gilbane is not anticipated.

10.3 Containment and Ventilation

Operations that routinely produce airborne radioactivity will utilize engineered containment and ventilation systems to minimize airborne releases. Containment and ventilation systems will be designed to accommodate the work area and operating conditions. Ventilation systems will be checked routinely for proper operation and airflow.

10.4 Spills

Steps will be taken to prevent and promptly clean up spills of radioactive material in either solid or liquid form. SWIM is an easy acronym that outlines the immediate actions to be taken:

- Stop the leak (e.g., shut off the valve, shut off ventilation)

- Warn others
- Isolate the area (e.g., rope off the spill site, divert flow from catch basin or drain)
- Minimize personnel exposure with PPE and safe practices

The ALARA principles of time, distance, and shielding will be used. Supplementary actions will include performing radiological surveys in the immediate and adjacent areas, including downwind. RASO will be notified of any spills involving radioactive material that occur outside an RCA.

11.0 Personal Protective Equipment

The primary level of PPE, Modified Level D, historically has been sufficient for radiological work activities. Any additional requirements will be specified in activity-specific RWPs based on the radiological conditions and field tasks required to perform planned activities.

11.1 Protective Clothing

Individuals will wear PPE commensurate with contamination hazards associated with the work area and the planned activity. Activities that require heavy physical effort or that have an increased potential for damage to PPE may require additional layers or different PPE materials, even in areas of low contamination. Protective clothing will be required for work in Contamination Areas. Site- or task-specific PPE requirements beyond the minimum traditionally used will be detailed in a corresponding RWP.

11.2 Respiratory Protection

The use of respiratory protection is not anticipated. However, in the event respiratory protection equipment is used to control inhalation of radioactive material, respiratory protection requirements and the selection of equipment will be made by the Project/Site RSO. Respiratory protection devices will be permitted for jobs where an ALARA review has been conducted and has determined that respirator use is compliant with ALARA principles.

11.2.1 Training, Medical Clearance, and Fit Testing

Before using a respirator, individuals will have (1) been trained in the proper use respiratory protection equipment and its limitations, (2) received medical clearance to wear a respirator, and (3) been respirator fit-tested within the last 12 months.

11.2.2 Respirator Selection and Use

Respirators will be selected from those approved by the National Institute for Occupational Safety and Health and or the Mine Safety and Health Administration for the contaminant(s) or situation to which the worker may be exposed. Selection will be based on the physical, chemical, and physiological properties of the contaminant, the contaminant concentration likely to be encountered, and the likely physical conditions of the workplace environment in which the respirator will be used. The potential or observed airborne radioactivity concentration also will be considered in selecting the type of respiratory protection equipment to be issued.

11.2.3 Respirator Inspection, Cleaning, and Maintenance

Each respirator will be inspected with regard to operability before, and routinely after, each use, and after cleaning. Respiratory protection equipment will be cleaned and

disinfected before being reissued. Replacement or repair will be done only by experienced persons, with parts specifically designed for the brand and model of the respirator requiring repair.

12.0 References

Gilbane (Gilbane Federal), 2020. *Phase IV Non-Time Critical Removal Action for Solid Waste Disposal Area Westside, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California*. Tentatively December.

NRC (U.S. Nuclear Regulatory Commission), 1981. *Radiation Safety Surveys at Medical Institutions*. Regulatory Guide 8.23, Revision 1. January.

TriEco-Tt, 2014. *Final Historical Radiological Assessment – Supplemental Technical Memorandum, Naval Station Treasure Island, San Francisco, California*. July.

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APPENDIX B

DATA MANAGEMENT PLAN

(Provided on CD)

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Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

FINAL
Data Management Plan

Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12
Former Naval Station Treasure Island
San Francisco, CA
March 2021

DCN: GLBN-0005-F5271-0007

Prepared for:

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List of Attachments

Attachment 1 Electronic Data Deliverable (EDD) Specification for Upload into eDMS

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Acronyms and Abbreviations

ADR	automated data review
COC	chain-of-custody
DMP	Data Management Plan
EDD	electronic data deliverable
eDMS	environmental data management system
EPA	U.S. Environmental Protection Agency
Esri	Environmental Systems Research Institute, Inc.
PQCM	Project QC Manager
Gilbane	Gilbane Federal
GIS	geographic information system
LAN	local area network
PM	Program Manager
QA	quality assurance
QC	quality control
SOP	standard operating procedure
WAN	wide area network

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1.0 Introduction

This Data Management Plan (DMP) is designed to provide guidelines for managing both historical information and new environmental information gathered as part of environmental activities at various project sites. This DMP addresses requirements for data management systems, including tracking, storing, and retrieving data in project files and in the Gilbane Federal (Gilbane) environmental data management system (eDMS).

The processes described in this DMP expand on those included in project-specific documents that might include sampling and analysis plans, site-specific work plans, or Uniform Federal Policy Quality Assurance Project Plans. This DMP serves as a companion document to these project documents.

1.1 Purpose And Objectives

This document outlines the processes that will be followed to establish the site database, incorporate historical data from previous activities at various project work sites, and establish procedures for incorporating future information from ongoing activities. A systematic approach to data management will ensure that required data are collected and available for current and future reporting requirements.

The following data management objectives are critical to the success of the data management process.

- **Standardize and systematize data collection.** Use standard field forms, and provide guidance for formatting, reviewing, and transferring data collected in the field to the project files and eDMS—a centralized project database.
- **Monitor and ensure quality of the dataset.** Implement quality assurance (QA) and quality control (QC) measures to ensure the quality and accuracy of the data collected and stored in the project files and eDMS. QA/QC procedures include manual review of field forms used to collect field parameters, periodic audits of field activities, and Project Chemist review of both field parameters and laboratory data for completeness and accuracy. Electronic QA/QC measures are incorporated by subjecting electronic data deliverables (EDDs) from the contracted analytical laboratories to automated data review (ADR) against the project document QC requirements when uploaded to eDMS.
- **Provide data that are well documented.** Documentation relating to the proper collection of field parameters and analytical samples support the technical and legal defensibility of the data. This includes transport of analytical samples to the laboratory and proper analysis of the analytical samples by the laboratories. This documentation will be maintained in the project files, on eDMS, and/or on shared project-specific Web-based data portals.

- **Provide staff and client access to the data.** Access to the data from a single source for tabular report generation and geographic information system (GIS) mapping will be provided including screening against project screening criteria, statistical analyses, and waste-management activities.

1.2 Scope of Data Management Plan

This DMP outlines the processes and guidelines for tracking, storing, accessing, delivery, and reporting of analytical and spatial data generated during field investigations and other environmental data collection events at various work sites. This DMP also identifies software to be used, minimum data requirements, data formats, and backup data management. This DMP includes the following information.

- Definitions of roles and responsibilities.
- Process flow diagram for collecting, reviewing, and entering environmental data into eDMS. The process flow diagram is presented as Figure 1 in the Sample Tracking and Electronic Data Management standard operating procedure (SOP) (Gilbane, 2016).
- EDD format used by commercial laboratories to transfer analytical data electronically for incorporation into eDMS (**Attachment 1**).
- Description and use of GIS devices and data.
- Management and archiving procedures for hard-copy and electronic project documentation.

1.3 Organization

Project team members involved in the collection, analysis, and/or reporting of analytical results and field parameters all have a role in the proper execution of this DMP. The SOP flow diagram outlines the flow of sample information and laboratory results from initial sampling through reporting the validated results. Responsibilities, by role, for managing the accurate collection and reporting of the data are discussed below.

1.3.1 Project Manager

The Project Manager (PM) is responsible for:

- Establishing the goals and objectives of the sampling event and communicating them to the team;
- Providing specifics regarding the number and type of samples, analytical methods, and any special reporting requirements;
- Working with the Data Manager and Project Chemist to develop a list of required reporting elements (tables, figures, diagrams, custom queries, and reports); and
- Managing technical evaluation of the data.

1.3.2 Project QC Manager

The Project QC Manager (PQCM) or designee is responsible for:

- Reviewing the project plans;
- Planning and executing field activities, including ensuring that the field team has the equipment necessary to complete the work consistent with the requirements of the project documents and SOPs;
- Ensuring the collection of QC samples consistent with the project documents;
- Ensuring that the sampling crew has the proper type and number of sample containers for the scheduled sampling activities, as identified in the project document;
- Tracking the samples from time of collection through laboratory acceptance;
- Reviewing field forms and chain-of-custody (COC) forms for accuracy and completeness;
- Reconciling the cooler inventory against COC forms before transfer to the laboratory;
- Submitting samples to the laboratory;
- Sending COC forms, sample collection logs, and other field forms to the PM, Project Chemist, and Quality Control Manager;
- Resolving completeness issues with the laboratory and/or Project Chemist (e.g., broken bottles, missing samples, etc.); and
- Completing and submitting daily production and QC paperwork packages to the PM, Project Chemist, and Quality Control Manager.

1.3.3 Field Personnel

Field personnel are responsible for:

- Reviewing the project plans;
- Collecting environmental samples in a manner consistent with the approved project document and SOPs; and
- Completing accurate, defensible documentation of sample collection consistent with project documents and SOPs.

1.3.4 Project Chemist

The Project Chemist or designee will be responsible for:

- Reviewing the project plans;

- Establishing the planned sample table in conjunction with the project team;
- Configuring the site in eDMS, loading QC requirements from the project plans into eDMS, and establishing the sample schedule in eDMS;
- Serving as the primary point of contact for laboratories;
- Reviewing and approving COC and field information in eDMS;
- Ensuring sufficient QC samples were collected;
- Reviewing laboratory information system login reports, and updating sample tracking logs once samples are in the laboratory and for subsequent activities (e.g., data validation);
- Resolving analytical issues with laboratories;
- Reviewing and approving results/validation qualifiers; and
- Releasing data for use.

1.3.5 Data Manager

The Data Manager or designated data management staff will be responsible for:

- Establishing and maintaining the project database;
- Importing historical datasets;
- Working with the Project Chemist to configure the project setup;
- Establishing any new user accounts needed based on staffing of the project team and stakeholders;
- Working with the Project Chemist to designate sample IDs (and new location IDs, if required);
- Helping the laboratories upload EDDs;
- Running completeness tests on EDDs against COC forms to verify that all data have been received;
- Working with the PM, Project Chemist, GIS Analyst, and other assigned technical staff to develop custom queries, tabular reports, trend graphs, and other tools for accessing, reviewing, and publishing project data; and
- Exporting data to or sharing data with federal or regulatory agencies if needed.

1.3.6 GIS Analyst

The GIS Analyst will be responsible for:

- Creating and maintaining geospatial data, project maps, and figures;

- Acquiring or digitizing maps and features (buildings, roads, property boundaries, surface waters, topography), and formatting and editing the spatial database;
- Using survey data to locate and check the placement of surveyed features;
- Combining spatial data with attribute data from the project database to display features with their attributes;
- Customizing maps to include color, tabular information, and interpretive features (such as buffer zones and isoconcentration lines);
- Producing customized figures and maps according to the needs of the project, and supervising final maps submitted in deliverables;
- Working with the PM, PQCM, Project Chemist, and Data Manager to update data displayed on maps and figures; and
- Working with the Data Manager to implement QC procedures to ensure high-quality and accurate maps and figures.

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2.0 Management of Environmental Data

Data management tasks will follow a defined work flow, starting with planning activities and ending with the release of fully reviewed and validated data to team members for use in reports, maps, and other project deliverables. Data management tasks are shown on the Gilbane SOP.

2.1 Management of Field Data

Field data entered into eDMS will be managed as follows.

- **Activity Setup—**Features (e.g., monitoring wells, sample ports) identified as part of the scope of work for a specific activity that are not already in eDMS are added to eDMS by creating a new location ID file for each feature. The location ID files are created by the data management staff using available information (e.g., boring logs, well completion diagrams, and survey results) provided by the project team. These files are then reviewed against the source files and certified. A location map is then prepared in GIS using data directly from eDMS to visually confirm the identification of each feature and its location relative to previous site maps.
- **QC of Activity Setup—**The identification and location of each new feature is then reviewed by the PM or PQCM, and the other information on the location ID files is checked against the source information. If accurate, the new features are then approved and available for use.
- **Planning—**The individual features needed for each new field activity are identified, appropriate actions for each feature are selected and input into the planning module (such as groundwater sample collection with specific analyses designated), and appropriate field forms are identified and pre-populated where possible.
- **Field Event—**Field data are collected on the field forms, reviewed by the field team members, and submitted to the PQCM (for data relating to the collection of environmental samples and for other forms of data).
- **QC of Field Data—**The PQCM reviews the field forms for legibility, completeness, and technical accuracy.
- **Entry of Field Data—**Once reviewed and approved, the associated data are entered into eDMS, reviewed against the field forms to ensure accurate entry of the data, and approved by the data management team.
- **QC of Entered Field Data—**The Project Chemist reviews the data on the field forms against the entries in eDMS for completeness and accuracy, use of appropriate valid values, and proper units. If the entries accurately reflect the data provided on the field forms, the Project Chemist then approves the data.

- **Data Use—** Once approved by the Project Chemist, the data are available in eDMS for use. The data manager notifies the project team that the data are available for use in reports, figures, maps, risk assessments, modeling, and other project deliverables.

Although most field data are entered into eDMS for ready availability to the project team, some information collected in the field may not need to be entered into eDMS (e.g., waste profiles and transportation and disposal records for spent carbon). These field data that will not be entered into eDMS will be managed as follows.

- **Planning—**The required activities are reviewed and appropriate field forms are identified.
- **Field Event—**Field data are collected on the field forms, reviewed by the field team members, and forwarded to the PQCM.
- **QC Checking—**The field forms are reviewed for legibility, completeness, and technical accuracy by the PQCM.
- **Data Retention—**Electronic copies of the field forms are created and uploaded to the project server, and the hard-copy field sheets are stored in the project file.
- **Data Use—**The PQCM notifies the project team that the data are available for use in reports and other project deliverables.

2.2 Management of Chemical Analytical Data

Analytical data to be entered into eDMS will be managed as follows.

- **Activity Setup—**Features (e.g., newly installed monitoring wells) identified as part of the scope of work for a specific activity not already in eDMS, and not added into eDMS as part of the field data setup activities, are added to eDMS by creating a new location ID file for each feature. The location ID files are created by the data management staff using available information (e.g., boring logs, well completion diagrams, and survey results) provided by the project team. These files are reviewed against the source files and certified. A location map is then prepared in GIS using data directly from eDMS to visually confirm the identification of each feature and its location relative to previous site maps.
- **QC of Activity Setup—**The identification and location of each new feature is then reviewed by the PM or PQCM, and the other information on the location ID files is checked against the source information. If the information is accurate, the new features are then approved and available for use.
- **Planning—**The individual features needed for each new field activity are identified, appropriate actions for each feature are selected and input into the planning module (such as groundwater sample collection with specific analyses designated), and appropriate sample collection forms (i.e. COC forms) and sample labels are identified and pre-populated where possible.

- **Field Event—**Samples, including any required QC samples (e.g., matrix spike/matrix spike duplicate) are collected in proper containers as specified in the project document and placed in an iced cooler. Samples are immediately entered on a COC form and analyses are assigned as specified in the project document.
- **QC of Sample Information—**The PQCM reviews the COC for completeness and technical accuracy against the planned sample table from the project documents.
- **Entry and QC of Sample Information—**Once reviewed and approved, the sample information (e.g., sample ID, date and time collected, analyses requested) is entered into eDMS, and reviewed against the COC and the laboratory login receipt by the data management staff to ensure accurate entry of the sample information.
- **Laboratory Coordination—**The Project Chemist resolves any discrepancies between the COC information and the laboratory login receipt documentation with the laboratory.
- **Upload of Sample Results—**Once login issues are resolved by the Project Chemist and sample analyses are complete, laboratory results may be loaded and associated with the samples. The laboratory directly uploads the EDD into eDMS through a secure Web portal.
- **QC of Sample Results—**Upon upload, eDMS performs ADR, comparing the results against the QC criteria set up in eDMS as part of the initial activity setup. Once the laboratory data successfully pass through the ADR, the data are available for use, that is, validated to an equivalent of stage 2B electronic data review (U.S. Environmental Protection Agency [EPA], 2009) or for further validation, depending on the criteria established in the project document.
- **Data Use—**Once the sample results have successfully passed through the required data validation steps, the Project Chemist or data management staff will notify the project team that the data are available for use in reports, figures, maps, and other project deliverables.

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3.0 Reporting of Environmental Data

Once the environmental data (e.g., well stabilization parameters, water levels, analytical results) have been fully reviewed and approved, the information is available to the project team in a variety of ways.

- Preformatted summary tables and trend graphs will be developed consistent with previous report formats for ease of review by regulatory agencies and other stakeholders. These will be available as reports that are run from within eDMS. The advantage of such preformatted documents is that once the template is developed and gone through QC processes, the data in any specific report will be both accurate and consistent. Also, there is a potential for errors to be introduced if the data are imported into another software program for development of presentation tables and graphs, increasing QC requirements on the end product. These preformatted tables and graphs will be available directly via eDMS to the end user of the data, typically the technical staff developing the periodic reports, but available to all team members with appropriate permissions.
- GIS maps will be developed consistent with previous formats, again for ease of review by regulatory agencies and other stakeholders. The GIS maps are live-linked with the data in eDMS, assuring that only the latest validated and approved data are used to generate maps for the periodic reports.
- The preformatted summary tables, trend graphs, and GIS maps are available through the eDMS secure Web portal to those with appropriate permissions.

Development of unique data presentations and/or the use of specialty software (e.g., ProUCL) that requires data in specific formats will be closely coordinated with both the Data Manager and Project Chemist to ensure that the latest data are used and that the correct fields are pulled from the database (this is especially important relative to detection/reporting limits). Use of data outside eDMS carries a requirement of greater QC to ensure transfer of the correct data and units, and preservation of appropriate significant figures.

The historical dataset will be georeferenced in the GIS system, and coordinates referenced in the project-required coordinate system.

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4.0 Structure of the Data Management System

The data management system for the various project work sites is designed to provide routine and secure access to data while being flexible to accommodate periodic customized needs. The data management system for the works sites will consist of the following:

- A database in Gilbane's enterprise-wide eDMS that can store many types of data;
- Importing and exporting capabilities that allow any format required;
- Project-specific reporting capabilities that meet reporting and document style requirements;
- Enterprise-wide GIS capabilities with live links to eDMS;
- Remote access to project work site data through a secure Web-based portal; and
- A hard-copy filing system that will allow easy retrieval of project records and provide secure storage.

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5.0 Data Administration and Security

5.1 Database Administration

The Data Manager will oversee the administration of eDMS and will implement and maintain the project work site database and electronic data management processes. Database maintenance will consist of the following:

- Adding, altering, and deleting users, roles, and privileges;
- Providing routine backup of eDMS to online storage and tape backup;
- Maintaining an approved list of valid values for data consistency; and
- Assisting with custom queries for unique data needs.

Valid values are critical to relational databases. Inconsistencies in naming conventions, analyte or method spelling differences, and the use of non-standard abbreviations can result in misclassified data and potentially incorrect conclusions. Most tables and forms in eDMS use look-up tables for acceptable valid values and will not allow the entry of data that do not conform. A current list of valid values is available from the Data Manager on request.

Data from third-party sources may use alternative valid values and require conversion prior to use in eDMS. In this case, the original data are stored in eDMS, and the conversion occurs in interim tables, converting the stored information into the appropriate valid values consistent with the information stored in eDMS. This provides the ability to audit third-party information back to the raw source.

5.2 Data Management and Archiving Procedures

The PQCM, Project Chemist, and Data Manager will collect hard-copy and electronic data and verify that the incoming records are legible and are in suitable condition for storage. Project-related information generated during implementation of the scope of work will be managed and stored within Gilbane's offices. Record storage will be performed in two stages:

- Storage during the project; and
- Permanent storage of project records.

Physical records, including copies of field documents (e.g., completed traffic reports, COCs, field forms, site photographs), written communications (e.g., letters, telephone conversation logs), and other project-related documents will be secured in steel file cabinets labeled with the project identification.

Electronic data consists of plans, reports, and other documents created in Microsoft Office and other office productivity software packages, and electronic versions or scans of

physical data saved in adobe acrobat format. These files are stored on Gilbane servers located in a Class 4 data center in Culpepper Virginia (for older projects), or in Bluebeam Studio, a cloud-based storage system hosted on Amazon Elastic Compute Cloud (EC2) and accessed through Bluebeam Revu desktop application (for newer projects). Electronic data also consists of chemical data, provided as electronic data deliverables (EDDs), and other field-generated raw electronic data Chemical data are stored in eDMS.

5.3 Data Security Procedures

Site data will be stored in secure locations. Physical data is stored in steel file cabinets located within Gilbane's offices. Each office has key card access control during the day, and key card and passcode access control for after hours. Access is logged by each individual's key card, and video surveillance covers the entrance and work areas.

Access to Gilbane's servers is controlled by domain security for both access to Gilbane's local area network (LAN), and for access via the LAN to the wide-area network (WAN) and the data center. For remote users, access to the servers located on Gilbane's WAN is via a secure virtual private network (VPN). Access to Bluebeam Studio is controlled through the Bluebeam Revu application, with each user entering their unique username and password to initiate connectivity with the Bluebeam Studio cloud. The user password is transmitted in an encrypted form, and communications between Revu and the Studio cloud is via encrypted HTTPS protocol. Electronic access to eDMS is controlled by both domain-level security for overall access, and by application-level granular security within the Microsoft SQL database based on individual user permissions established on the basis of the individual's assigned role. Only users with explicit permission (typically the Data Manager only) can alter records in eDMS, and all changes to stored data are logged regarding what changed and who made the changes.

5.4 Data Backup and Recovery

Electronic data files, whether stored on Gilbane's servers (such as eDMS) or on Bluebeam Studio, are backed up to online storage nightly.

6.0 References

EPA, 2009. *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. EPA 540-R-08-005.* January.

Gilbane Federal, 2016. *Standard Operating Procedure: Sample Tracking and Electronic Data Management, PR-TC-02.12.02.00 v 2.2.* October.

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APPENDIX C

SAMPLING AND ANALYSIS PLAN

(Provided on CD)

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SAP Worksheet #1 – Title and Approval Page

FINAL
Sampling and Analysis Plan
(Field Sampling Plan and Quality Assurance Project Plan)
Naval Station Treasure Island Phase IV Non-Time Critical Removal Action (NTCRA) Solid Waste Disposal Area (SWDA) Westside Site 12
March 2021

Prepared for:
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Executive Summary

Introduction

This Sampling and Analysis Plan (SAP) provides guidance to Gilbane Federal (Gilbane) and its project subcontractors in the performance of sampling and analysis during Phase IV of the Non-Time Critical Removal Action (NTCRA) activities to be performed in the Solid Waste Disposal Area (SWDA) Westside within Installation Restoration (IR) Site 12 at the former Naval Station Treasure Island (NSTI) in San Francisco, California (Figure 1). This SAP was prepared by Gilbane, as requested by the United States Department of the Navy (Navy) under the Radiological Multiple Award Contract (RADMAC II) Number N62473-17-D-0005, Contract Task Order (CTO) N6247318F5271, based on the Performance Work Statement (PWS) received from the Navy on August 9, 2018.

This Phase IV project is considered an extension of the Phase I, Phase II, and Phase III of the NTCRA. The Phase IV-specific objectives are to:

1. Remove existing soil stockpiles and radiological screening yard (RSY) pads that remain from the Phase III;
2. Restore SWDA Westside areas excavated during Phase I and Phase III of the NTCRA to the pre-excavation grade (at which the adjacent housing is constructed

The primary objectives include performing munitions screening and disposing of munitions-impacted soil (see Figure 2) from previously excavated Phase III soil stockpiles within SWDA Westside; and down-posting the radiologically controlled area (RCA) at SWDA Westside. This SAP will provide guidance for the sampling associated with the import material characterization. Radiological screening, munitions screening, and waste characterization will be described in the Work Plan (Gilbane, 2020).

This SAP (Appendix C of the Work Plan [Gilbane, 2020]) addresses critical requirements such as project organization and responsibilities, data quality objectives (DQOs), sampling design, field and analytical procedures, quality control (QC), and quality assurance (QA) for sampling at the former NSTI. The QA/QC elements in this SAP were prepared in accordance with the U.S. Environmental Protection Agency (EPA) *Uniform Federal Policy for Quality Assurance Project Plans* (UFP-QAPP; EPA, 2005) and *Requirements for Quality Assurance Project Plans, EPA QA/R-5* (EPA, 2001) to ensure that all data collected are precise, accurate, representative, complete, and comparable to meet their intended use.

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Attachment 4: Laboratory DoD ELAP Certificates

Acronyms and Abbreviations

ºC	degrees Celsius
°F	degrees Fahrenheit
%R	percent recovery
µg/kg	micrograms per kilogram
ACM	asbestos-containing material
amu	atomic mass unit
BaP	benzo(a)pyrene
BAP(eq)	benzo(a)pyrene equivalency
bgs	below ground surface
BCT	Base Closure Team
BCY	bank cubic yard
BMP	best management practice
BRAC	Base Realignment and Closure
BSC	Background Subtraction Count
CA	corrective action
CARB	California Air Resources Board
CAS	Chemical Abstracts Service
CCB	continuing calibration blank
CCSF	City and County of San Francisco
CCV	continuing calibration verification
CDPH	California Department of Public Health
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
COC	chain of custody; chemical of concern
CSO	Caretaker Site Office
CTO	Contract Task Order
CVAA	cold vapor atomic absorption
D	difference
DER	Duplicate Error Ratio
DL	detection limit

DoD	Department of Defense
DOE	Department of Energy
DOT	Department of Transportation
dpm	disintegrations per minute
DQI	data quality indicator
DQO	data quality objective
DTSC	California Department of Toxic Substances Control
EDD	electronic data deliverable
EDL	estimated detection limit
ELAP	Environmental Laboratory Accreditation Program
EPA	United States Environmental Protection Agency Region 9
EPM	Environmental Program Manager
ESS	Explosives Safety Submission
EWI	Environmental Work Instruction
FCR	Field Change Request
FWHM	Full width at Half Maximum
g	gram(s)
GC	gas chromatograph
Gilbane	Gilbane Federal
GPS	Global Positioning System
HASL	Health and Safety Laboratory
HERO	Human and Ecology Risk Office
HHRA	Human Health Risk Assessment
HRA	Historical Radiological Assessment
HRA-STM	Historical Radiological Assessment – Supplemental Technical Memorandum
ICAL	initial calibration
ICB	initial calibration blank
ICC	Instrument Contamination Check
ICP	inductively coupled plasma spectrophotometer
ICP/MS	inductively coupled plasma/mass spectrometer
ICS	interference check solution

ICV	initial calibration verification
IR	Installation Restoration
IS	internal standard
IUPAC	International Union of Pure and Applied Chemistry
keV	kilo-electron volt(s)
L	liter
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LDR	Linear Dynamic Range
LLRO	Low-level radiological object
LOD	limit of detection
LOQ	limit of quantitation
LRPM	Lead Remedial Project Manager
m	meter(s)
MARLAP	Multi-Agency Radiological Laboratory Analytical Protocols
MB	method blank
MDC	minimum detectable concentration
MDL	method detection limit
mg/kg	milligrams per kilogram
mL	milliliters
MRS 1	Munitions Response Site 1
MS	mass spectrometer
MS/MSD	matrix spike/matrix spike duplicate
NA	not applicable
NAVFAC SW	Naval Facilities Engineering Command Southwest
Navy	United States Department of the Navy
NCR	Nonconformance Report
NEDD	Navy Electronic Data Deliverable
NIRIS	Naval Installation Restoration Information Solution
NL	not listed
NSTI	Naval Station Treasure Island
NTCRA	Non-time critical removal action

OSHA	Occupational Safety and Health Organization
oz.	ounce(s)
Pace National	Pace Analytical National Center for Testing and Innovation
PAH	polycyclic aromatic hydrocarbon
PARCCS	precision, accuracy, representativeness, completeness, comparability, and sensitivity
PCB	polychlorinated biphenyl
pCi/g	picocuries per gram
PLM	polarized light microscopy
PM	Project Manager
PMO-W	Program Management Office - West
PPE	personal protective equipment
PQCM	Project Quality Control Manager
PSL	project screening limit
PT	performance testing
PWS	performance work statement
QA	quality assurance
QAO	Quality Assurance Officer
QC	quality control
QCPM	Quality Control Program Manager
QCSR	Quality Control Summary Report
QL	quantitation limit
QSM	Quality Systems Manual
Ra-226	Radium-226
RAB	Restoration Advisory Board
RADMAC	Radiological Multiple Award Contract
RASO	Radiological Affairs Support Office
RCA	radiologically controlled area
RER	relative error ratio
ROICC	Resident Officer in Charge of Construction
RPD	relative percent difference
RPM	Remedial Project Manager

RSD	relative standard deviation
RSL	regional screening level
RSO	Radiation Safety Officer
RT	retention time
RO	radioactive object
SAP	Sampling and Analysis Plan
SDG	sample delivery group
Shaw	Shaw Environmental, Inc.
SOP	standard operating procedure
SSHO	Site Safety and Health Officer
SVOC	semivolatile organic compounds
SWDA	Solid Waste Disposal Area
TBD	to be determined
TI	Treasure Island
TICD	Treasure Island Community Development
TIDA	Treasure Island Development Authority
TPH	total petroleum hydrocarbons
TPH-e	total petroleum hydrocarbons - extractable
TPH-p	total petroleum hydrocarbons – purgeable
TSA	technical systems audit
UFP-QAPP	Uniform Federal Policy for Quality Assurance Project Plans
UXO	unexploded ordnance
Validata	Validata Chemical Services, Inc.
VOA	volatile organic analysis
VOC	volatile organic compounds
Water Board	San Francisco Bay Regional Water Quality Control Board

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SAP Worksheet #2 – SAP Identifying Information

Site Name/Number:	**Former Naval Station Treasure Island**
Operable Unit:	**Installation Restoration Site 12**
Contractor Name:	**Gilbane Federal**
Contract Number:	**N62473-17-D-0005**
Contract Title:	**RAD MAC II**
Work Assignment Number (optional):	**CTO N6247318F5271**

1. This SAP was prepared in accordance with the requirements of the *Uniform Federal Policy for Quality Assurance Project Plans* (UFP-QAPP; EPA, 2005) and *EPA Guidance for Quality Assurance Project Plans, EPA QA/G-5* (EPA, 2002). Additional guidance taken from the following sources:

- *Quality Systems Manual for Environmental Laboratories, Version 5.1* (QSM; U.S. Department of Defense [DoD]/Department of Energy [DOE], 2017)
- *Quality Systems Manual for Environmental Laboratories, Version 5.1.1* (QSM; DoD/DOE, 2018)
- *Guidance on Systematic Planning Using the Data Quality Objectives Process* (EPA, 2006)
- Environmental Work Instruction (EWI) #2, *Review, Approval, Revision, and Amendment of Sampling and Analysis Plans* EV3.2 (NAVFACSW, 2011)

2. Identify regulatory program: Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)

3. This SAP is a: Project-Specific SAP.

4. List dates of scoping sessions that were held:

Scoping/kickoff meeting	10/16/2018

5. List dates and titles of any SAP documents written for previous site work that are relevant to the current investigation.

Title	Date
Final Sampling and Analysis Plan Site 12 Final Remedy Removal Action, Treasure Island, San Francisco, California (Shaw Environmental, Inc. [Shaw], 2007)	2/26/2007
Final Sampling and Analysis Plan Non-Time Critical Removal Action Solid Waste Disposal Areas, Westside, Bayside, and North Point, Former Naval Station Treasure Island, San Francisco (CB&I, 2015)	6/9/2015

SAP Worksheet #2 – SAP Identifying Information (Continued)

6. List organizational partners (stakeholders) and connection with lead organization: Oversight by the California Department of Toxic Substances Control (DTSC); California Department of Public Health (CDPH),Environmental Management Branch; the California Regional Water Quality Control Board-San Francisco Bay Region (Water Board); and the United States Environmental Protection Agency (EPA), and the Treasure Island Development Authority (TIDA)

7. Lead organization: U.S. Department of the Navy (Navy)

8. If any required SAP elements or required information are not applicable to the project or are provided elsewhere, then note the omitted SAP elements and provide an explanation for their exclusion below: No SAP elements are omitted or provided elsewhere; therefore, no crosswalk is provided.

SAP Worksheet #3 – Distribution List

Name of SAP Recipient	Title/Role	Organization	Telephone Number	E-mail Address or Mailing Address
David Clark	Navy Lead Remedial Project Manager (LRPM)	Base Realignment and Closure (BRAC) PMO West	619-524-6870	david.j.clark2@navy.mil
Brandon Mills	Navy Remedial Project Manager (RPM)	BRAC PMO West	619-524-5887	brandon.s.mills1@navy.mil
Teresie Walker	Navy Quality Assurance Officer (QAO)	NAVFAC LANT	757-322-4699	teresie.walker@navy.mil
Kimberly Noble	Navy Environmental Program Manager (EPM)	Navy Radiological Affairs Support Office (RASO)	714-606-7226	Kimberly.k.noble1@navy.mil
Izzat Amadea	Navy Resident Officer in Charge of Construction (ROICC)	Navy San Francisco Bay Area	510-749-5947	Izzat.amadea@navy.mil
Glenwood “Thomas” Ivey	Point of Contact	Navy Caretaker Site Office (CSO)	415-743-4729	glenwood.ivey@navy.mil
Sheetal Singh	Regulatory Agency Representative	CDPH	916-449-5691	sheetal.singh@cdph.ca.gov
Matthew Wright	Regulatory Agency Representative	CDPH	916-449-5687	Matthew.wright@cdph.ca.gov
Peyton Ward	Regulatory Agency Representative	DTSC	510-540-3798	peyton.ward@dtsc.ca.gov
Kimberly Walsh	Regulatory Agency Representative	DTSC	510-540-3773	kimberly.walsh@dtsc.ca.gov
Nadia Hollan Burke	Regulatory Agency Representative	EPA	415-972-3187	burke.nadiahollan@epa.gov
Celina Hernandez	Regulatory Agency Representative	Regional Water Board	510-622-2447	celina.hernandez@waterboards.ca.gov
Robert P. Beck	Treasure Island Director	TIDA	415-274-0662	bob.beck@sfgov.org
John Baur	Project Manager (PM)	Gilbane	925-946-3212	jbaur@gilbaneco.com

SAP Worksheet #3 – Distribution List (Continued)

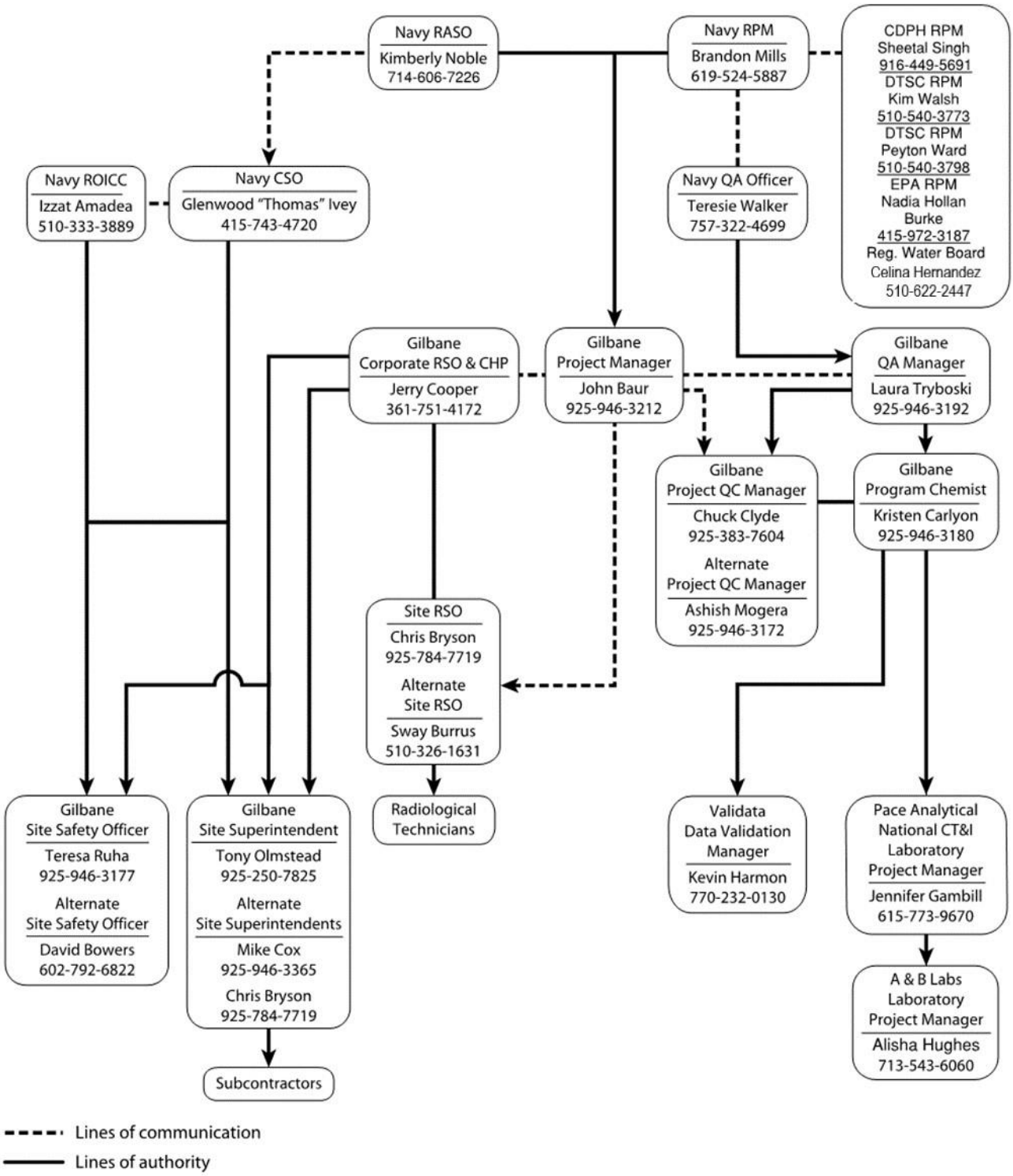
Laura Tryboski	Quality Control Program Manager (QCPM)	Gilbane	925-946-3192	ltryboski@gilbaneco.com
Christopher Bryson	Site Radiation Safety Officer (RSO)	Envirachem	925-784-7719	chris.bryson@envirachem.com
Chuck Clyde	Project Quality Control Manager (PQCM)	Gilbane	925-383-7604	cclyde@gilbaneco.com
Kristen Carlyon Peyton	Program/Project Chemist	Gilbane	925-946-3180	kcarlyon@gilbaneco.com
Tony Olmstead	Site Superintendent	Gilbane	925-946-3365	tolmstead@gilbaneco.com
Teresa Ruha	Site Health & Safety	Gilbane	925-946-3177	truha@gilbaneco.com

SAP Worksheet #4 – Project Personnel Sign-Off Sheet

Name	Organization/Title/Role	Telephone Number (optional)	Signature/email receipt	SAP Section Reviewed	Date SAP Read
John Baur	Gilbane/PM	925-946-3212		All	
Chris Bryson	Envirachem/Site RSO	925-784-7719		All	
Tony Olmstead	Gilbane/Site Superintendent	925-946-3365		All	
Chuck Clyde	Gilbane/PQCM	925-383-7604		All	
Jennifer Gambill[1]	Pace Analytical National Center for Testing and Innovation (Pace National) – Mt. Juliet and Minnesota /Laboratory PM	615-773-9670		All	
Alisha Hughes	A&B Environmental Services, Inc. (A&B Labs) / Laboratory PM	713-453-6060		All	
Kevin Harmon	Validata Chemical Services, Inc. (Validata)/Data Validator (3rd Party)	770-232-0130		All	
TBD[2,3]	Gilbane/Field Crew	Various		All	
TBD[2,3]	Gilbane/Field Crew	Various		All	
TBD[2,3]	Gilbane/Field Crew	Various		All	

Note:
[1]Subcontracted Laboratory PMs will be provided SAP and will sign off; however, primary communication will be through the Pace National Laboratory PM.
[2]To be determined. The indicated team member has yet to be selected. These fields will be completed before submission of the Final SAP.
[3] Field crew members will be selected at task startup. Persons identified by the PQCM will read the SAP and sign this worksheet as required. Their identities and the number of required personnel have not been determined at the time of publication.

SAP Worksheet #5 – Project Organizational Chart



SAP Worksheet #6 – Communication Pathways

Communication Drivers	Responsible Affiliation	Name	Phone Number and/or e-mail	Procedure
Approvals	Navy QAO Navy RPM RASO	Teresie Walker Brandon Mills Kimberly Noble	teresie.walker@navy.mil brandon.a.mills1@navy.mil Kimberly.k.noble1@navy.mil	Gilbane PM to request approval of SAP from QAO and approval of Work Plan from Navy RPM via email, with radiological review and concurrence of both plans to be obtained from RASO. Draft WP/Appendices to be submitted as hard copy to regulatory agencies for comments via email in 30 days. Gilbane PM to respond to regulatory comments via email within 2 weeks and revise as necessary to obtain concurrence on WP/Appendices. PM to acquire approval to initiate field work from Navy RPM and QAO after appropriate agency concurrence has been obtained.
Project management	Gilbane PM	John Baur	jbaur@gilbaneco.com	If changes are necessary, the PM communicates the changes via phone and/or email to the project staff and is authorized to stop work, if necessary. PM to provide Navy RPM and ROICC with all project-required notifications within 24 hours.

SAP Worksheet #6 – Communication Pathways (Continued)

Communication Drivers	Responsible Affiliation	Name	Phone Number and/or e-mail	Procedure
SAP review	Gilbane Program Chemist Gilbane QCPM	Kristen Carlyon Peyton Laura Tryboski	kcarlyon@gilbaneco.com ltryboski@gilbaneco.com	The SAP is written by the Program Chemist and reviewed by the QCPM prior to submittal to the Navy QAO for review.
SAP procedure revision during field activities	Gilbane Project Chemist	Kristen Carlyon Peyton	kcarlyon@gilbaneco.com	The Project Chemist (or designee) will prepare a Field Change Request (FCR) for any changes that occur due to conditions in the field or laboratory that do not affect DQOs. FCRs affecting the SAP will be loaded to NIRIS for QAO review/approval.
SAP amendments	Gilbane Project Chemist	Kristen Carlyon Peyton	kcarlyon@gilbaneco.com	Significant changes to the SAP that affect DQOs, will require that the Project Chemist prepare an addendum, which will be reviewed and approved by the Navy QAO prior to initiating the affected field activities. Any SAP addendum also will be submitted to the regulatory agencies for review. Regulatory agencies will be notified via email within 1 week of all significant changes to the SAP that do not require approval.

SAP Worksheet #6 – Communication Pathways (Continued)

Communication Drivers	Responsible Affiliation	Name	Phone Number and/or e-mail	Procedure
Notification of non-usable analytical data	Gilbane Project Chemist	Kristen Carlyon Peyton	kcarlyon@gilbaneco.com	If significant problems are identified by the laboratory or the project team that impact the usability of the data (i.e., the data is rejected or the DQOs are not met), the Project Chemist will notify the PM; Navy RPM and Navy QAO will be notified within 24 hours or the next business day.
Coordination of laboratory supplies for field sampling activities	Gilbane Project Chemist	Kristen Carlyon Peyton	kcarlyon@gilbaneco.com	The Project Chemist will contact the subcontract laboratory to provide necessary sample containers and appropriate shipping materials (such as coolers and bubble wrap) to be delivered to the site prior to commencement of field sampling activities and throughout the course of the project.
Reporting laboratory data quality issues or analytical corrective actions	Pace National – Mt. Juiet & Minnesota/ Laboratory PM A&B Labs/Laboratory PM	Jennifer Gambill Alisha Hughes	jgambill@pacenational.com ahughes@ablabs.com	Data quality issues will be reported to the Project Chemist within 24 hours. Any corrective actions will be documented and verified by the Project Chemist, who will notify the PQCM, Site RSO (if applicable) and the PM in writing. The PM will notify the BRAC RPM and RASO (if applicable).

SAP Worksheet #6 – Communication Pathways (Continued)

Communication Drivers	Responsible Affiliation	Name	Phone Number and/or e-mail	Procedure
Stop work issues	All Gilbane and Navy Staff and visitors	Various	Various	The initiator of a stop work order verbally notifies Navy ROICC and Gilbane PM immediately. For stop work initiated by the Navy, the Contracting Officer must be verbally notified within 24 hours.
Field corrective actions	Gilbane PQCM	Chuck Clyde	cclyde@gilbaneco.com	Field corrective actions will be documented in writing by the PQCM, who will notify the Site RSO (if applicable) and PM in writing. The PM will notify the BRAC RPM and RASO (if applicable). Regulatory agencies will be notified via email within one week of all substantive field corrective actions.

SAP Worksheet #7 – Personnel Responsibilities and Qualifications Table

(UFP-QAPP Manual Section 2.4.3)

Name	Title/Role	Organizational Affiliation	Responsibilities
Brandon Mills	Navy RPM	BRAC PMO	Oversees project execution and coordination with site representatives, regulatory agencies, and Navy management. Actively participates in the DQO process, and provides management and technical oversight during data collection. Is notified of delays in or changes to field work and has authority to stop work and initiate corrective action at any time.
Teresie Walker	Navy QAO	NAVFAC LANT	Responsible for QA issues for all Navy work; provides government oversight of the QA program for contractors. Reviews and approves the SAP and any significant SAP modifications or amendments; has the authority to suspend project activities if Navy quality requirements are not met.
Kimberly Noble	Navy EPM	RASO	Reviews radiological laboratory on a routine basis. Performs on-site reviews of all radiological site operations. Reviews and approves final reports. Performs quality reviews on chains of custody (COCs) to ensure samples are handled in accordance with the Work Plan (WP) and SAP. Provides review and concurrence on data for proposed radiological actions. Ensures that all necessary sample results are provided and are consistent with proposed radiological actions.
Laura Tryboski	QC Program Manager (QCPM)	Gilbane	Reviews QC processes, issues corrective action orders; assures adherence to requirements of the QC program, including the QA/QC Plan, and SAP, as appropriate. Can receive communication from the PM, Program Chemist, PQCM, and field staff. Has the authority to stop work and initiate corrective action.

SAP Worksheet #7 – Personnel Responsibilities and Qualifications Table (Continued)

Name	Title/Role	Organizational Affiliation	Responsibilities
Chuck Clyde	PQCM	Gilbane	Implements field-related quality control activities, issues nonconformance reports (NCRs), initiates necessary rework and/or corrective actions, and communicates with the PM, QCPM, Superintendent, and Project Chemist.
John Baur	Project Manager	Gilbane	Develops and implements all Task Order documents and activities. Assures overall project quality, implementation of three-phase quality control activities, and compliance with project schedule; and performs contract management, technical oversight, and report generation. Responsible for notifying the RPM of significant project information, including (but not limited to) project progress, schedule compliance, modifications to work, delays, analytical data quality issues, and safety-related issues.
Kristen Carlyon Peyton	Program/Project Chemist	Gilbane	Assists the QC Program Manager and assesses the propriety of the proposed analytical methodology; assists in the preparation of the SAP and with management of project tasks associated with sampling; reviews preservation requirements; coordinates SAP review/approval and other QA issues with the Navy QAO; conducts general oversight of and communication with the field personnel in relation to sampling activities; coordinates sample collection and analysis with the analytical laboratory; implements appropriate quality control activities and corrective actions; coordinates data validation activities and the uploading of data to appropriate databases. Coordinates third-party data validation of all definitive laboratory data. Reviews data validation reports.

SAP Worksheet #7 – Personnel Responsibilities and Qualifications Table (Continued)

Name	Title/Role	Organizational Affiliation	Responsibilities
Jerry Cooper	Corporate RSO/Certified Health Physicist	Gilbane	Oversees overall radiological operations. Insures that Site RSO and filed sampling personnel have adequate training in radiological sample collection. Oversees the preparation of remediation plans and the performance of remediation activities when sampling activities indicate the presence of radioactive materials at levels above the release criteria. Acts as a technical resource for radiological data collection for analysis, and technical discussions with stakeholders. Reviews radiological data to ensure the DQOs have been met. Provides critical analysis and interpretation of radiological data.
Chris Bryson	Site RSO	Envirachem	Supervises day-to-day radiological operations. Oversees performance of radiological static surveys. Collects and maintains records of instrument calibration and maintenance. Collects and maintains completed survey forms, chain of custody records, field log sheets, and other field data. Integrates field, graphical information system (GIS), and global positioning system (GPS) data and plot data on maps.
Tony Olmstead	Superintendent	Gilbane	Conducts oversight of all field activities; ensures implementation of individual elements of site or task-specific work plans; oversees the work of subcontractors performing field-related tasks; and oversees the collection of samples and coordinates shipments with laboratories. Ensures that the sampling protocol is followed in accordance with the SAP.

SAP Worksheet #7 – Personnel Responsibilities and Qualifications Table (Continued)

Name	Title/Role	Organizational Affiliation	Responsibilities
Jennifer Gambill Alisha Hughes	Laboratory PM	Pace National (Mt. Juliet and Minnesota) A&B Labs	Performs chemical analyses; assures compliance with project requirements regarding performance of analytical procedures; supplies sample containers; handles and preserve samples in accordance with project-specified protocols.
Kevin Harmon	Data Validator	Validata	Performs data validation on analytical data used for project decisions.

SAP Worksheet #8 – Special Personnel Training Requirements Table

Project Function	Specialized Training by Title or Description of Course	Training Provider	Training Date	Personnel / Groups Receiving Training	Personnel Titles / Organizational Affiliation	Location of Training Records / Certificates
Radiation-impacted area screening	Radiation Safety Awareness Training	Gilbane	Prior to field work	All project field personnel	Gilbane / Field Subcontractors	Gilbane, Concord, CA
UXO-impacted area screening	Military Munitions Hazards Training	Gilbane	Prior to field work	All project field personnel	Gilbane / Field Subcontractors	Gilbane, Concord, CA

Training Requirements

Project personnel are required to meet the U.S. Occupational Safety and Health Organization (OSHA) training requirements defined in Title 29 Code of Federal Regulations (Title 29 CFR) Part 1910.120(e). These requirements are: (1) 40 hours of formal off-site instruction; (2) a minimum of 3 days of actual on-site field experience under the supervision of a trained and experienced field supervisor; and (3) 8 hours of annual refresher training. In addition, training will be provided to all field team members working in radiation-impacted areas according to the requirements of 10 Code of Federal Regulations (CFR) 19.12, Instructions to Workers.

SAP Worksheet #9 – Project Scoping Session Participants Sheet

Project Name:	Phase IV Non-Time Critical Removal Action for Solid Waste Disposal Area Westside
Site Name:	Installation Restoration Site 12
Site Location:	Former Naval Station Treasure Island, San Francisco, California
Projected Date(s) of Sampling:	June 2019 through November 2019
Project Manager:	John Baur
Date of Scoping Session:	October 16, 2018
Scoping Session Purpose:	Describe scope of work

Scoping Session Participants:

Name	Title	Affiliation	Phone	E-mail Address	Project Role
Chris Yantos	RPM	Navy BRAC	619-524-6870	Christopher.yantos@navy.mil	RPM
Kimberly Noble	EPM	RASO	714-606-7226	kimberly.k.noble1@navy.mil	RASO EPM
Patricia McFadden	CSO	Navy CSO	415-743-4720	Patricia.a.mcfadden@navy.mil	CSO
Glennwood Ivey	CSO	Navy CSO	415-743-4729	Glennwood.ivey@navy.mil	CSO
Doug Delong	CSO	Navy CSO	510-220-1894	Douglas.delong.ctr@navy.mil	CSO
Izzat Amadeya	ROICC	Navy ROICC	510-749-5947	Izzat.amadeya@navy.mil	ROICC
John Baur	Project Manager	Gilbane	925-946-3212	jbaur@gilbaneco.com	PM
Tony Olmstead	Site Superintendent	Gilbane	925-250-7875	Aolmstead@gilbaneco.com	Site Super-intendent
Jerry Grose	UXO Operations Manager	Gilbane	303-256-6142	jgrose@gilbaneco.com	UXO Operations Manager
Ed Palser	Radiological Operations Manager	Gilbane	505-400-4076	ePSLser@gilbaneco.com	Rad Operations Manager
Arvind Acharya	Program Manager	Gilbane	510-719-6858	aacharya@gilbaneco.com	Program Manager

SAP Worksheet #9 – Project Scoping Session Participants Sheet (Continued)

Comments/Decisions:

No decisions were made at the scoping meeting. The following issues were discussed:

- Community relations logistics will need to be worked out and closely coordinated by Gilbane and Navy.
- Project Schedule and sequencing of field work.
- Submittal of Project Plans.
- Logistics of dewatering, unexploded ordnance (UXO) clearance, odor suppression during excavation of petroleum products.

Action Items:

(1) Gilbane to update project schedule to provide more detailed information relative to field work and planning documents.

(2) Gilbane to submit internal draft work plans by end of November 2018.

Consensus Decisions:

No consensus decisions were reached at the meeting.

SAP Worksheet #10 – Problem Definition

Environmental investigation and remediation activities are conducted at Treasure Island under the U.S. Department of Defense (DoD) IR Program in accordance with CERCLA and National Oil and Hazardous Substances Pollution Contingency Plan (NCP) requirements in Title 40 Code of Federal Regulations, Part 300.415(b)(2). Under Executive Order 12580, the Navy is the lead agency responsible for implementation of the IR Program and removal actions.

As the lead federal agency, the Navy, including RASO, is working with DTSC and the Water Board to implement Phase IV of the NTCRA at SWDA Westside. These entities make up the planning group. The Navy coordinates activities at NSTI with the regulatory agencies under the terms of the 1992 Federal Facility Site Remediation Agreement. Navy, DTSC, and Water Board representatives are collectively referred to as the BRAC Cleanup Team (BCT) for NSTI. In addition, the CDPH works with DTSC to provide technical support on the radiological program. Other agencies and organizations also provide support to the BCT and the environmental program, including TIDA, the Treasure Island Community Development (also known as TICD), the Restoration Advisory Board (also known as RAB), the EPA, and other public groups.

10.1 Site Description and History

IR Site 12 is located on the northwest portion of Treasure Island on a relatively flat 93-acre area (see Figure 1). The site consists of multi-plex housing units with private backyards and common area front yards, side yards and surrounding greenbelts. The area was originally used as a parking lot during the Golden Gate International Exposition. After the Navy gained full ownership of the island in 1940, the area was developed for bunker storage of munitions and other materials, vehicle and equipment storage, recreational playing fields, and disposal and burning of waste. Beginning in the 1960s, areas of IR Site 12 were incrementally developed into housing for Navy personnel and their dependents.

IR Site 12 was included in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process in 1988 because of findings documenting the potential for soil and groundwater contamination from debris that may not have been entirely removed during housing construction. In 2002, the IR Site 12 boundary was expanded to include all existing residential areas. The environmental restoration at IR Site 12 is ongoing in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and CERCLA.

A historical radiological assessment (HRA) was conducted at Naval Station Treasure Island in 2006 (Weston, 2006), and updated in the Historical Radiological Assessment – Supplemental Technical Memorandum (HRA-STM) in 2014 (TriEco-Tt, 2014). The HRA recommended radiation monitoring during excavation of the identified SWDAs due to

SAP Worksheet #10 – Problem Definition (Continued)

the contamination potential from solid waste disposal or incineration. Low level radiological objects (LLROs) or objects containing Ra-226 were discovered in the SWDAs. All of IR Site 12, with the exception of Building 157, has been radiologically impacted due to grading activities.

The focus of the initial work within IR Site 12 was the removal of chemicals that exceeded clean-up goals. However, during chemical investigation and remediation activities, radioactive material in the form of discrete radioactive objects (ROs) and associated localized radium-226 (Ra-226) contamination in adjacent soil was identified, as discussed above. Generally, the presence of radioactive material in IR Site 12 has been found to be co-located with chemical contaminants and visible debris.

10.2 Previous Investigations and Removal Actions

SWDA Westside is an approximately 4.5-acre area on the west side of IR Site 12 abutting Perimeter Road (see Figure 2) and includes previously excavated and backfilled areas west of Building 1133 (Mason Court) and west of Buildings 1323 and 1325. SWDA Westside contained chemical contaminants (predominantly lead) which were co-located with radiological objects (ROs) containing Ra-226 (e.g., foils, deck markers, instrument gauges, metal debris; also referenced as radioactive “commodities” in project documentation) and associated localized Ra-226 contaminated soil. Additionally, portions of SWDA Westside contain munitions-impacted soil labeled as Munitions Response Site 1 (MRS 1) shown on Figure 2.

A NTCRA was initiated at the SWDA Westside, then known as SWDA A/B, in May 2006. Phase I was initiated to remediate chemicals in soil associated with chemical/fuel storage and disposal or burning of waste on the western portion of IR Site 12. A remedial action objective was established to reduce the potential for human contact with chemically contaminated soil near the ground surface within the four SWDAs at IR Site 12 under the then-current land and utility configuration (i.e., current and future resident and utility worker exposure scenarios). Excavation and chemical confirmation sampling were performed around Buildings 1119, 1121, 1123, 1125, 1319, 1321, 1323, and 1325. Phase II consisted of radiological surveys of two buildings (Buildings 1121 and 1323) and their subsequent demolition. The foundations from those buildings were removed during Phase III. Other Phase III activities included the radiological survey, demolition, and foundation slab removal of Buildings 1119, 1125, and 1319. Excavation within the building footprints and other areas within SWDA Westside was performed as required to determine extent of debris and contamination and to complete remediation. Phase III NTCRA activities at SWDA Westside were halted in May 2016 following the discovery of MEC not included in the ESS. Excavations were not completed. Instead, the work area was backfilled only enough to prevent ponding, best management practices (BMPs; straw waddles, privacy fencing, signage, etc.) were installed, and contractor-owned equipment and materials were removed from the site.

SAP Worksheet #11 – Project Quality Objectives/Systematic Planning Process Statements

Step 1	State the Problem
Environmental investigations for Site 12 (Figure 1) identified several areas of suspected debris disposal. After further site investigations and Phases I, II, and III of the NTCRA, additional activities are required in SWDAs Westside as part of Phase IV of the NTCRA. Approximately 3,300 cubic yards of stockpiled soil is left from the previous Phase III NTCRA work (APTIM, 2019). Munitions screening of the soil was halted following the discovery of munitions and explosives of concern (MEC) that could not be handled under the Phase III ESS. This resulted in existing soil stockpiles generated during the Phase III NTCRA being left in place that now require disposal under this Phase IV NTCRA. The existing stockpiles will be screened for munitions under an ESS approved for Phase IV and scanned for radioactive contamination under the work plan. They cannot be moved without proper engineering controls (ECs), but once cleared, will be transported offsite for disposal. In addition, the SWDA Westside areas excavated during Phase I and Phase III of the NTCRA require restoration to the pre-excavation grade (at which the adjacent housing is constructed) with imported fill material.	
Step 2	**Identify the Goals of the Study**
The goals of the sampling activities are: • Confirm imported fill materials meet sampling and acceptance criteria per the Information Advisory Clean Imported Fill Material (DTSC, 2001). The Study Questions Are: • Do imported fill materials meet the acceptance criteria presented on SAP Worksheet #15.1 through #15.9?	
Step 3	**Identify Information Inputs**
The following inputs will be used to make decisions for this project: • Sampling of imported fill material per DTSC guidance (dependent on source of fill).	
Step 4	**Define the Boundaries of the Study**
Figure 2, “Excavation Areas,” shows the boundaries of the Phase I and Phase III NTCRA excavations. The project duration for the field activities is approximately 5 months, with excavation expected to begin in January 2021 and end in May 2021.	

SAP Worksheet # 11 – Project Quality Objectives/Systematic Planning Process Statements (Continued)

Step 5	Develop the Analytical Approach
The decision rules for this RA are: • If the required sampling frequency meets the requirements outlined in the DTSC *Information Advisory Clean Imported Fill Material* and the results meet the acceptance criteria presented in Worksheets #15-1 through #15-9, then the source will be considered suitable for backfill. • If the required sampling frequency does not meet the requirements outlined in the DTSC Information Advisory Clean Imported Fill Material, and/or results do not meet the acceptance criteria presented in Worksheets #15.1 through #15.9, then the source will not be considered suitable for backfill, and another source will be evaluated.	
Step 6	**Specify Performance or Acceptance Criteria**
To limit uncertainty in obtained environmental data, criteria for the precision, accuracy, representativeness, completeness, comparability, and sensitivity parameters and reporting limits for the chemicals of concern have been developed to meet the PSLs for the RA. Measurement errors will be controlled by using appropriate sampling and analytical methods, adhering to the Department of Defense (DoD) Quality Systems Manual (QSM) (versions 5.3), following established SOPs, and having third-party data validation to verify laboratory processes. The field crews will review the SAP before sample collection to limit sample collection errors. The subcontract analytical laboratory will have a copy of the SAP and will adhere to DoD QSM guidance to limit measurement errors.	
Step 7	**Develop Plan for Obtaining Data**
A resource-effective plan for collecting data sufficient to fulfill study objective developed in Steps 1 through 6 of the DQO process is described in SAP Worksheet #17.	

SAP Worksheet #12 – Measurement Performance Criteria Table

Measurement Performance Criteria Table – Field QC Samples

Matrix: Soil

QC Sample[1]	Analytical Group	Frequency	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample (Assesses Error for Sampling [S], Analytical [A] or both [S&A])
Field Duplicate[1]	All	Not Applicable	Precision	Not Applicable	S & A
Equipment Rinse Blanks	VOCs, SVOCs/PAHs, TPH, Pesticides, PCBs, Metals	None if disposable sampling equipment used; 1 per day if using non-disposable sampling equipment	Accuracy/Bias – Contamination	< ½ limit of quantitation (LOQ)	S
Matrix Spikes[2]	Metals, VOCs, SVOCs/PAHs, PCBs, Pesticides, TPH	5%; one per 20 samples collected	Precision/Accuracy	Laboratory statistically derived control limits	A
Temperature Blanks[3]	Mercury, VOCs, SVOCs, PCBs, Pesticides, TPH	Every cooler shipped to the laboratory	Representativeness	< 6 degrees Celsius (^{o}C)	S

Notes:

[1] Due to the heterogeneous distribution of contaminants typically found in soil matrix, field duplicates for soil samples are not considered reliable for determining precision and will not be collected for this project. Sample data are not qualified based on field duplicate precision; matrix spike duplicate or lab replicate data will be used to access sample precision.

[2]Per DoD QSM 5.3 Table B-17 matrix spikes are not required for gamma spectroscopy.

[3]There are no temperature preservation requirements for metals, radionuclides, or asbestos; therefore, no temperature blanks are required.

SAP Worksheet #13 – Secondary Data Criteria and Limitations Table

Secondary Data	Data Source (originating organization, report title and date)	Data Generator(s) (originating organization, data types, data generation / collection dates)	How Data Will Be Used	Limitations on Data Use
Not Applicable				

SAP Worksheet #14 – Summary of Project Tasks

14.1 Major Project Tasks

Tasks applicable to sampling activities performed by Gilbane for this project at will include the following:

- Screening of remnant Phase III soil per the Work Plan and Explosives Safety Submission (ESS; Appendix A to the Work Plan) for munitions and/or low-level radioactive objects.
- Construction of laydown pads per the Work Plan (Gilbane, 2020).
- Implementation and maintenance of BMPs in accordance with the Storm Water Management Plan provided as part of the Environmental Protection Plan (Appendix F to the Work Plan)
- Backfilling of excavated areas with clean imported fill.
- Soil cover installation and site restoration per the Work Plan.
- Waste characterization and disposal per the Waste Management Plan (Appendix F of the Work Plan).
- Validation of data and completion data quality assessment.

14.1.1 Sample Collection Procedures

The following sections provide the sampling procedures for collection of samples associated with field activities for this project. Samples will be labeled, documented, and packaged in accordance with the procedures in **SAP Worksheets #27 and 29**. The types of samples to be collected are listed below:

Import Fill Material Samples

Samples will be collected at the frequency defined in the *Information Advisory, Clean Imported Fill Material* (DTSC, 2001) from representative locations throughout the borrow source area or borrow source stockpile.

1. Only soil and fine materials (i.e., sand) will be sampled.
2. Sample locations will be defined using a sampling grid (i.e., sample quadrants).
3. Sampling personnel will don a new pair of disposable nitrile gloves immediately before collecting soil samples at each location.
4. A hand auger, disposable scoop, or equivalent will be used to access each location and collect the sample.

Soil will be placed into sample containers that will be filled completely. Sample containers are listed in **SAP Worksheet #19**. For VOCs or TPH-p analysis, TerraCore® samples will be collected as described in SOP PR-TC-02.02.01.05 (**Attachment 1**). All

SAP Worksheet #14 – Summary of Project Tasks (Continued)

samples will be documented, handled, and shipped in accordance with the provisions set forth by **Worksheet #27**.

14.1.2 Decontamination Procedures

Prior to decontamination, non-disposable sampling equipment will be wiped down and radiologically surveyed. Total radioactivity will be measured using a hand-held alpha/beta survey meter. A smear sample will be collected and analyzed for removable radioactivity. If radioactivity exceeding the release limits shown below in Table 14-1 is detected, the sampling equipment will be wiped down again and re-surveyed.

Table 14-1

Type of Radiation	Removable (disintegrations per minute [dpm]/100cm^2	Total (dpm/100cm^2)
Alpha	20	100
Beta	1,000	5,000

Note: To eliminate the need for isotopic identification, alpha radioactivity is assumed to be Ra-226. An industry-standard default value is used for beta radioactivity since there are no beta-emitting ROCs.

Once radioactivity is below the release limits, the non-disposable sampling equipment that comes into contact with samples will be decontaminated between uses and sample locations to prevent the introduction of extraneous material into samples, and to prevent cross-contamination between samples. All equipment will be decontaminated by steam cleaning or by washing with a non-phosphate detergent such as Liquinox™ or equivalent. Decontamination water will be collected in 55-gallon U.S. Department of Transportation (DOT)-approved drums or a poly tank and handled as liquid waste in accordance with the Waste Management Plan.

The following procedures will be used to decontaminate non-disposable sampling equipment:

1. If mud or soil is adhering to the sampling equipment, first rinse with potable water. This step will decrease the gross contamination and reduce the frequency at which the non-phosphate detergent and water solution need to be changed.
2. Wash with the non-phosphate detergent and water solution. This step will remove remaining contamination from the equipment. Dilute the non-phosphate detergent as directed by the manufacturer.
3. Rinse with potable water. Change the water frequently.

SAP Worksheet #14 – Summary of Project Tasks (Continued)

4. Rinse twice with deionized water. This step will rinse any detergent solution and potable water residues. Rinsing will be done by applying the deionized water from a clean squeeze bottle (or equivalent) while holding equipment over a bucket.
5. Store unused decontaminated equipment in plastic or designated storage container to prevent contamination until next use.

14.4 Post-Screening Field Tasks

Waste characterization and disposal will be performed as detailed in the Waste Management Plan (Appendix B of the RAWP). Site restoration and surveying will be performed as detailed in Section 8.1, and Section 6.0, respectively, of the project RAWP.

14.2 Analytical Tasks

The handling of the samples and transferring of custody must be well documented given the evidentiary nature of the analytical data. The integrity and traceability of samples from the time they are collected through the time the data are reported are essential in any sampling and analysis program. Sample custody and procedures are described in WS #27. Sampling locations and analytical methods are described further in WS #18 through #20.

14.3 Quality Control Tasks

Analytical methods will require the applicable QC tasks described in the respective methods and DoD QSM 5.3, including initial calibrations, continuing calibrations, tuning, reagent blanks, surrogates, replicates, control spikes, and others, as necessary.

Media-specific field quality control samples (as described on **SAP Worksheet #12**) include matrix spikes and matrix spike duplicates to assess sampling and analytical precision, as well as and equipment blanks (when non-disposable sampling equipment is used) to assess sampling and analytical accuracy.

14.4 Data Management and Review Tasks

Analytical data generated by the fixed analytical laboratory will be reviewed by the laboratory using three levels of document review and reporting. Review processes will be documented using appropriate checklists, forms, or logbooks, which will be signed and dated by the reviewers. Field surveying data, field forms, and chain-of-custody (COC) records will be reviewed by the PQCM and/or the Project Chemist and maintained in the Gilbane project file in accordance with Gilbane standard operating procedure (SOP) PR-TC-01.04.01.00, Field Documentation.

The Site Superintendent or PQCM will e-mail a copy of the COC records to the Project Chemist the day any samples are sent to the laboratory. The Project Chemist will

SAP Worksheet #14 – Summary of Project Tasks (Continued)

maintain a copy of the COC record until submitted to the Navy Administrative Record along with the hard-copy packages as described in **SAP Worksheet #29**. The laboratory will e-mail definitive analytical results within the turnaround time to the Project Chemist. This submittal will include surrogates, and matrix spike/matrix spike duplicates (MS/MSDs). The Project Chemist will review prior to distribution to the project team. Following this submittal, the laboratory will be required to submit a DoD Stage 4-suitable data packages package within 10 business days of the sample collection date as described in **SAP Worksheet #29**.

Information from the COC records for samples analyzed by the laboratory will be uploaded into a database following the procedures outlined in Gilbane SOP PC-TR-02.12.02.00, Sample Tracking and Electronic Data Management. The laboratories will provide electronic data deliverables (EDDs) to upload analytical results into the Gilbane database. The EDD will be checked for required values and project-specific requirements. Any discrepancies in the EDD will be corrected by the laboratory. Validated results will be exported for upload to NIRIS in accordance with Environmental Work Instruction (EWI) #6, Environmental Data Management and Required Electronic Delivery Standards (Naval Facilities Engineering Command Southwest [NAVFAC SW], 2005). The database will be backed up on electronic media or an independent server.

Survey data will be recorded by on-site personnel for all sample locations. Horizontal control information for upload into the database will be captured in the State Plane Coordinate System in feet, and vertical control standards will be in mean sea level. Survey data for upload into the NIRIS will be in accordance with EWI #6, (NAVFAC SW, 2005).

DoD Stage 4 hard-copy data packages will be stored until subsequent submittal to the Navy Administrative Record as described in **SAP Worksheet #29**.

14.5 Third Party Data Validation

Analytical results that represent definitive data will be validated by a third-party data validation service provider. The validation report is described in **SAP Worksheet #29**, and the validation qualifiers will be entered electronically in the Gilbane project database by the validator to the EDDs loaded by the laboratory.

SAP Worksheet #15.1 – Reference Limits and Evaluation Table

Matrix: Soil (testing of imported fill material)
Analytical Group: Radium-226 by HASL 300 GA-01-R

Analyte[1]	CAS Number	Project Screening Limit[2] (pCi/g)	Project Screening Limit Reference	Project Quantitation Limit Goal (pCi/g)	Laboratory-specific MDC (pCi/g)
Radium-226	13982-63-3	1.69	Sitewide Radiation Protection Plan[3]	0.5	0.5

Notes:
[1] Radium-226 will be reported based on the 609 keV bismuth-214 gamma energy peak after 21-day in-growth.
[2]Project Screening level is background plus the derived concentration guideline level (DCGL).
[3]*Sitewide Radiation Protection Plan – Revision 1, Treasure Island, San Francisco, California* (CB&I, 2014)
keV = kilo-electron volts
MDC = minimum detectable concentration
NA = not applicable
pCi/g = picocuries per gram

SAP Worksheet #15.2 – Reference Limits and Evaluation Table

Matrix: Soil (testing of import fill material)
Analytical Group: VOCs by EPA Method 8260B

Analyte	CAS Number	Project Screening Limit[4] (mg/kg)	Project Screening Limit Reference	Project Quantitation Limit Goal (mg/kg)	Laboratory-specific		
					LOQ (mg/kg)	LOD (mg/kg)	DL (mg/kg)
1,1,1,2-Tetrachloroethane	630-20-6	2.0	HERO HHRA Note 3[2]	1	0.0025	0.00125	0.0005
1,1,1-Trichloroethane	71-55-6	1,700	HERO HHRA Note 3[2]	800	0.0025	0.00125	0.000275
1,1,2,2-Tetrachloroethane	79-34-5	0.60	EPA Residential RSL[1]	0.3	0.0025	0.00125	0.00039
1,1,2-Trichloroethane	79-00-5	1.1	EPA Residential RSL[1]	0.5	0.0025	0.00125	0.00883
1,1-Dichloroethane	75-34-3	3.6	EPA Residential RSL[1]	1.3	0.0025	0.00125	0.000575
1,1-Dichloroethene	75-35-4	83	HERO HHRA Note 3[2]	41	0.0025	0.00125	0.0005
1,2,3-Trichlorobenzene	87-61-6	40	HERO HHRA Note 3[2]	20	0.0025	0.00125	0.000625
1,2,4-Trichlorobenzene	120-82-1	7.8	HERO HHRA Note 3[2]	3.9	0.0125	0.00625	0.00482
1,2,4-Trimethylbenzene	95-63-6	300	EPA Residential RSL[1]	150	0.005	0.0025	0.00116
1,2-Dibromo-3-chloropropane	96-12-8	0.0043	HERO HHRA Note 3[2]	0.004	0.0025	0.0125	0.0051
1,2-Dibromoethane (EDB)	106-93-4	0.036	EPA Residential RSL[1]	0.018	0.0025	0.00125	0.000525
1,2-Dichlorobenzene	95-50-1	1,800	EPA Residential RSL[1]	900	0.005	0.0025	0.00145
1,2-Dichloroethane	107-06-2	0.46	EPA Residential RSL[1]	0.23	0.0025	0.00125	0.000525
1,2-Dichloropropane	78-87-5	2.5	EPA Residential RSL[1]	1.2	0.005	0.0025	0.00127
1,3,5-Trimethylbenzene	108-67-8	270	EPA Residential RSL[1]	130	0.005	0.0025	0.00108
1,3-Dichloropropane	142-28-9	410	HERO HHRA Note 3[2]	200	0.005	0.0025	0.00175
1,3-Dichlorobenzene	541-73-1	16	TI SSC[3]	8	0.005	0.0025	0.0017
1,4-Dichlorobenzene	106-46-7	2.6	EPA Residential RSL[1]	1.3	0.005	0.0025	0.00197
2-Butanone	78-93-3	27,000	EPA Residential RSL[1]	13,000	0.025	0.0125	0.00025
2-Chlorotoluene	95-49-8	470	HERO HHRA Note 3[2]	230	0.0025	0.00125	0.000793
2-Hexanone	591-78-6	200	EPA Residential RSL[1]	100	0.025	0.0125	0.01
4-Chlorotoluene	106-43-4	440	HERO HHRA Note 3[2]	200	0.005	0.0025	0.00113
4-Methyl-2-pentanone	108-10-1	33,000	EPA Residential RSL[1]	15,000	0.025	0.0125	0.01
Acetone	67-64-1	61,000	EPA Residential RSL[1]	30,000	0.025	0.0188	0.0137

SAP Worksheet #15.2 – Reference Limits and Evaluation Table (Continued)

Matrix: Soil (testing of imported fill material)
Analytical Group: VOCs by EPA Method 8260B

Analyte	CAS Number	Project Screening Limit[4] (mg/kg)	Project Screening Limit Reference	Project Quantitation Limit Goal (mg/kg)	Laboratory-specific		
					LOQ (mg/kg)	LOD (mg/kg)	DL (mg/kg)
Benzene	71-43-2	0.33	HERO HHRA Note 3[2]	0.015	0.001	0.0005	0.0004
Bromobenzene	108-86-1	290	EPA Residential RSL[1]	150	0.0125	0.00625	0.00104
Bromochloromethane	74-97-5	150	EPA Residential RSL[1]	75	0.005	0.0025	0.00113
Bromodichloromethane	75-27-4	0.29	EPA Residential RSL[1]	0.15	0.0025	0.00125	0.000788
Bromoform	75-25-2	19	EPA Residential RSL[1]	10	0.025	0.0125	0.00598
Bromomethane	74-83-9	6.8	EPA Residential RSL[1]	3.4	0.0125	0.00625	0.0037
Carbon disulfide	75-15-0	770	EPA Residential RSL[1]	330	0.0125	0.00625	0.00406
Carbon tetrachloride	56-23-5	0.65	EPA Residential RSL[1]	0.32	0.005	0.0025	0.00107
Chlorobenzene	108-90-7	280	EPA Residential RSL[1]	140	0.0025	0.00125	0.000573
Chloroform	67-66-3	0.32	EPA Residential RSL[1]	0.15	0.0025	0.00125	0.000415
Chloromethane	74-87-3	110	EPA Residential RSL[1]	50	0.0125	0.00625	0.00139
cis-1,2-Dichloroethene	156-59-2	18	HERO HHRA Note 3[2]	10	0.0025	0.00125	0.00069
cis-1,3-Dichloropropene	10061-01-5	1.8	EPA Residential RSL[1]	0.9	0.0025	0.00125	0.000678
Dibromochloromethane	124-48-1	0.94	HERO HHRA Note 32	0.47	0.0025	0.00125	0.00045
Dibromomethane	74-95-3	24	EPA Residential RSL[1]	12	0.005	0.0025	0.001
Dichlorodifluoromethane (Freon 12)	75-71-8	87	EPA Residential RSL[1]	43	0.0025	0.00125	0.000818
Ethylbenzene	100-41-4	5.8	EPA Residential RSL[1]	2.0	0.0025	0.00125	0.00053
Hexachlorobutadiene	87-68-3	1.2	EPA Residential RSL[1]	0.6	0.025	0.00125	0.000425
Methyl tert-Butyl ether (MTBE)	1634-04-4	47	EPA Residential RSL[1]	23	0.001	0.0005	0.000295
Methylene chloride	75-09-2	2.2	HERO HHRA Note 3[2]	1.1	0.025	0.0125	0.00664
m,p-Xylenes	179601-23-1	550	EPA Residential RSL[1]	275	0.004	0.002	0.0015
o-Xylene	95-47-6	650	EPA Residential RSL[1]	325	0.0025	0.00125	0.001
Styrene	100-42-5	5,600	HERO HHRA Note 3[2]	2,800	0.0125	0.00625	0.00273
Tetrachloroethene	127-18-4	0.59	HERO HHRA Note 3[2]	0.30	0.0025	0.00125	0.0007

SAP Worksheet #15.2 – Reference Limits and Evaluation Table (Continued)

Matrix: Soil (testing of imported fill material)
Analytical Group: VOCs by EPA Method 8260B

Analyte	CAS Number	Project Screening Limit[4] (mg/kg)	Project Screening Limit Reference	Project Quantitation Limit Goal (mg/kg)	Laboratory-specific		
					LOQ (mg/kg)	LOD (mg/kg)	DL (mg/kg)
Toluene	108-88-3	1,100	HERO HHRA Note 3[2]	500	0.005	0.0025	0.00125
trans-1,2-Dichloroethene	156-60-5	130	HERO HHRA Note 3[2]	65	0.005	0.0025	0.00143
Trichloroethene	79-01-6	0.94	EPA Residential RSL[1]	0.45	0.001	0.0005	0.0004
Trichlorofluoromethane	75-69-4	1,200	HERO HHRA Note 3[2]	600	0.0025	0.00125	0.0005.
Vinyl chloride	75-01-4	0.0082	HERO HHRA Note 3[2]	0.005	0.0025	0.00125	0.0005

Notes:
[1] Values are from the EPA Region 9 Regional Screening Level for Residential Soil as presented in Regional Screening Level (RSL) Summary Table (TR=1E-6, HQ=1) November 2020.
[2] Values are from the Human and Ecological Risk Office (HERO) Human Health Risk Assessment (HHRA) Note 3 (DTSC, 2020).
[3] TI SSC established for TI remediation projects (Shaw Environmental, Inc., 2005).
[4]Results will be reported on a dry-weight basis for comparison to the project screening limits.
DL = detection limit
LOD = limit of detection
LOQ = limit of quantitation
mg/kg = milligram per kilogram
RSL = Regional Screening Level

SAP Worksheet #15.3 – Reference Limits and Evaluation Table

Matrix: Soil (testing of imported fill material)
Analytical Group: SVOCs by EPA Method 8270C with PAHs by 8270CSIM

Analyte	CAS Number	Project Screening Limit[4] (mg/kg)	Project Screening Limit Reference	Project Quantitation Limit Goal (mg/kg)	Laboratory-specific		
					LOQ (mg/kg)	**LOD** (mg/kg)	**DL** (mg/kg)
2,4,5-Trichlorophenol	95-95-4	6,300	EPA Residential RSL[1]	3,200	0.333	0.167	0.0104
2,4,6-Trichlorophenol	88-06-2	7.8	HERO HHRA Note 3[2]	3.9	0.333	0.167	0.00779
2,4-Dichlorophenol	120-83-2	190	EPA Residential RSL[1]	95	0.333	0.167	0.00746
2,4-Dimethylphenol	105-67-9	1,300	EPA Residential RSL[1]	650	0.333	0.167	0.047
2,4-Dinitrophenol	51-28-5	130	EPA Residential RSL[1]	65	0.333	0.167	0.098
2,4-Dinitrotoluene	121-14-2	1.7	EPA Residential RSL[1]	0.85	0.333	0.167	0.00607
2,6-Dinitrotoluene	606-20-2	0.36	EPA Residential RSL[1]	0.33	0.333	0.167	0.00737
2-Chloronaphthalene	91-58-7	4,100	HERO HHRA Note 3[2]	2,000	0.033	0.0167	0.00639
2-Chlorophenol	95-57-8	340	HERO HHRA Note 3[2]	170	0.333	0.167	0.00831
2-Methylnaphthalene	91-57-6	190	HERO HHRA Note 3[2]	95	0.333	0.167	0.00861
2-Methylphenol	95-48-7	3,200	EPA Residential RSL[1]	1,600	0.333	0.167	0.00986
2-Nitroaniline	88-74-4	630	EPA Residential RSL[1]	310	0.333	0.167	0.00755
3,3'-Dichlorobenzidine	91-94-1	0.45	HERO HHRA Note 3[2]	0.33	0.333	0.167	0.0794
3/4-Methylphenol	15831-10-4	3,200	EPA Residential RSL[1]	1,600	0.333	0.167	0.00783
4-Chloroaniline	106-47-8	2.7	EPA Residential RSL[1]	1.3	0.333	0.167	0.0352
4-Nitroaniline	100-01-6	27	EPA Residential RSL[1]	13	0.333	0.167	0.00639
Acenaphthene (PAH)	83-32-9	3,300	HERO HHRA Note 3[2]	1600	0.006	0.003	0.0006
Anthracene (PAH)	120-12-7	17,000	HERO HHRA Note 3[2]	8,500	0.006	0.003	0.0006
Benzo(a)anthracene (PAH)	56-55-3	1.1	EPA Residential RSL[1]	0.5	0.006	0.003	0.0006
Benzo(a)pyrene (PAH)	50-32-8	0.11	EPA Residential RSL[1]	0.05	0.006	0.003	0.0006
Benzo(b)fluoranthene (PAH)	205-99-2	1.1	EPA Residential RSL[1]	0.5	0.006	0.003	0.0006
Benzo(k)fluoranthene (PAH)	207-08-9	11	EPA Residential RSL[1]	5.5	0.006	0.003	0.0006
Benzoic acid	65-85-0	250,000	EPA Residential RSL[1]	125,000	1.67	0.835	0.111
Benzyl alcohol	100-51-6	6,300	EPA Residential RSL[1]	3,000	0.333	0.167	0.0075

SAP Worksheet #15.3 – Reference Limits and Evaluation Table (Continued)

Matrix: Soil (testing of imported fill material)
Analytical Group: SVOCs by EPA Method 8270D with PAHs by 8270CSIM

Analyte	CAS Number	Project Screening Limit[4] (mg/kg)	Project Screening Limit Reference	Project Quantitation Limit Goal (mg/kg)	Laboratory-specific		
					LOQ (mg/kg)	LOD (mg/kg)	DL (mg/kg)
bis(2-Chloroethoxy)methane	111-91-1	190	EPA Residential RSL[1]	95	0.333	0.167	0.0077
bis(2-Chloroethyl)ether	111-44-4	0.1	HERO HHRA Note 3[2]	0.33[5]	0.333	0.167	0.00896
bis(2-Ethylhexyl)phthalate	117-81-7	39	EPA Residential RSL[1]	19	0.333	0.167	0.012
Chrysene (PAH)	218-01-9	110	EPA Residential RSL[1]	55	0.006	0.003	0.0006
Dibenz(a,h)anthracene (PAH)	53-70-3	0.028	HERO HHRA Note 3[2]	0.014	0.006	0.003	0.0006
Dibenzofuran	132-64-9	66	HERO HHRA Note 3[2]	33	0.333	0.167	0.00518
Diethylphthalate	84-66-2	51,000	EPA Residential RSL[1]	25,000	0.333	0.167	0.00691
Dimethylphthalate	131-11-3	100,000	TI SSC[3]	50,000	0.333	0.167	0.0054
Di-n-butylphthalate	84-74-2	6,300	EPA Residential RSL[1]	3,200	0.333	0.167	0.0109
Di-n-octylphthalate	117-84-0	6,300	EPA Residential RSL[1]	3,200	0.333	0.167	0.00907
Fluoranthene (PAH)	206-44-0	2,400	EPA Residential RSL[1]	1,200	0.006	0.003	0.0006
Fluorene (PAH)	86-73-7	2,300	HERO HHRA Note 3[2]	1,100	0.006	0.003	0.0006
Hexachlorobenzene	118-74-1	0.19	HERO HHRA Note 3[2]	0.33[5]	0.333	0.167	0.00856
Hexachloroethane	67-72-1	1.8	EPA Residential RSL[1]	0.9	0.333	0.167	0.0134
Indeno(1,2,3-cd)pyrene (PAH)	193-39-5	1.1	EPA Residential RSL[1]	0.5	0.006	0.003	0.0006
Isophorone	78-59-1	570	EPA Residential RSL[1]	280	0.333	0.167	0.00522
Naphthalene (PAH)	91-20-3	2.0	HERO HHRA Note 3[2]	1.9	0.02	0.01	0.002
Nitrobenzene	98-95-3	5.1	EPA Residential RSL[1]	2.5	0.333	0.167	0.00695
n-Nitrosodiphenylamine	86-30-6	110	EPA Residential RSL[1]	55	0.333	0.167	0.00594
Pentachlorophenol	87-86-5	1.0	EPA Residential RSL[1]	1.6[5]	0.333	0.167	0.048
Phenol	108-95-2	19,000	EPA Residential RSL[1]	9,500	0.333	0.167	0.00695
Pyrene (PAH)	129-00-0	1,800	EPA Residential RSL[1]	900	0.006	0.003	0.0006

SAP Worksheet #15.3 – Reference Limits and Evaluation Table (Continued)

Notes:

[1] Values are from the EPA Region 9 Regional Screening Level for Residential Soil as presented in Regional Screening Level (RSL) Summary Table (TR=1E-6, HQ=1) November 2020.

[2] Values are from the Human and Ecological Risk Office (HERO) Human Health Risk Assessment (HHRA) Note 3 (DTSC, 2020).

[3] TI SSC established for TI remediation projects (Shaw Environmental, Inc., 2005).

[4]Results will be reported on a dry-weight basis for comparison to the project screening limits.

[5]The LOQ does not meet the PSL; however, the LOD and DL are sufficient to meet the PSL. Non-detects will be reported to the LOD.

DL= detection limit
EPA = U.S. Environmental protection Agency
LOD = limit of detection
LOQ = limit of quantitation
mg/kg = milligram per kilogram
PAH = polycyclic aromatic hydrocarbons
RSL = regional screening level

SAP Worksheet #15.4 – Reference Limits and Evaluation Table

Matrix: Soil (testing of imported fill material)
Analytical Group: PCBs by EPA Method 8082

Analyte	CAS Number	Project Screening Limit[2] (mg/kg)	Project Screening Limit Reference	Project Quantitation Limit Goal (mg/kg)	Laboratory-specific		
					LOQ (mg/kg)	LOD (mg/kg)	DL (mg/kg)
Aroclor 1016	12674-11-2	4.1	EPA Residential RSL[1]	2.0	0.017	0.0085	0.003504
Aroclor 1221	11104-28-2	0.2	EPA Residential RSL[1]	0.1	0.017	0.0085	0.005367
Aroclor 1232	11141-16-5	0.17	EPA Residential RSL[1]	0.08	0.017	0.0085	0.004168
Aroclor 1242	53469-21-9	0.23	EPA Residential RSL[1]	0.12	0.017	0.0085	0.003176
Aroclor 1248	12672-29-6	0.23	EPA Residential RSL[1]	0.12	0.017	0.0085	0.003148
Aroclor 1254	11097-69-1	0.24	EPA Residential RSL[1]	0.12	0.017	0.0085	0.004722
Aroclor 1260	11096-82-5	0.24	EPA Residential RSL[1]	0.12	0.017	0.0085	0.004942

Notes:
[1] Values are from the EPA Region 9 Regional Screening Level for Residential Soil as presented in Regional Screening Level (RSL) Summary Table (TR=1E-6, HQ=1) November 2020.
[2]Results will be reported on a dry-weight basis for comparison to the project screening limits.
EPA = U.S. Environmental protection Agency
LOD = limit of detection
LOQ = limit of quantitation
mg/kg = milligram per kilogram
PCBs = polychlorinated biphenyls

SAP Worksheet #15.5 – Reference Limits and Evaluation Table

Matrix: Soil (testing of imported fill material)
Analytical Group: Pesticides by EPA Method 8081A

Analyte	CAS Number	Project Screening Limit[3] (mg/kg)	Project Screening Limit Reference	Project Quantitation Limit Goal (mg/kg)	Laboratory-specific		
					LOQ (mg/kg)	**LOD** (mg/kg)	**DL** (mg/kg)
4,4'-DDD	72-54-8	1.9	EPA Residential RSL[1]	0.9	0.02	0.01	0.00154
4,4'-DDE	72-55-9	2.0	EPA Residential RSL[1]	1.0	0.02	0.01	0.00156
4,4'-DDT	50-29-3	1.9	EPA Residential RSL[1]	0.9	0.02	0.01	0.002
Aldrin	309-00-2	0.039	EPA Residential RSL[1]	0.02	0.02	0.01	0.00135
alpha-BHC	319-84-6	0.086	EPA Residential RSL[1]	0.040	0.02	0.01	0.00136
beta-BHC	319-85-7	0.3	EPA Residential RSL[1]	0.02	0.02	0.01	0.0016
Chlordane (technical)	12789-03-6	1.7	EPA Residential RSL[1]	0.85	0.2	0.1	0.039
Dieldrin	60-57-1	0.034	EPA Residential RSL[1]	0.02	0.02	0.01	0.00152
Endosulfan I	959-98-8	470	EPA Residential RSL[1] for Endosulfan	235	0.02	0.01	0.00149
Endosulfan II	33213-65-9	470	EPA Residential RSL[1] for Endosulfan	235	0.02	0.01	0.0016
Endrin	72-20-8	19	EPA Residential RSL[1]	9	0.02	0.01	0.00157
gamma-BHC	58-89-9	0.57	EPA Residential RSL[1]	0.28	0.02	0.01	0.00145
Heptachlor	76-44-8	0.13	EPA Residential RSL[1]	0.065	0.02	0.01	0.00154
Heptachlor epoxide	1024-57-3	0.070	EPA Residential RSL[1]	0.035	0.02	0.01	0.00161
Methoxychlor	72-43-5	320	EPA Residential RSL[1]	160	0.02	0.01	0.00178
Toxaphene	8001-35-2	0.45	HERO HHRA Note 3[2]	0.24	0.4	0.2	0.036

Notes:
[1]Values are from the EPA Region 9 Regional Screening Level for Residential Soil as presented in Regional Screening Level (RSL) Summary Table (TR=1E-6, HQ=1) November 2020.
[2] Values are from the Human and Ecological Risk Office (HERO) Human Health Risk Assessment (HHRA) Note 3 (DTSC, 2020).
[3]Results will be reported on a dry-weight basis for comparison to the project screening limits.

DL= detection limit
EPA = U.S. Environmental Protection Agency
LOD = limit of detection
LOQ = limit of quantitation
mg/kg = milligram per kilogram
RSL = regional screening level

SAP Worksheet #15.6 – Reference Limits and Evaluation Table

Matrix: Soil (testing of imported fill material)
Analytical Group: Total Petroleum Hydrocarbons (TPH) by EPA Method 8015B

Analyte	CAS Number	Project Screening Limit[3] (mg/kg)	Project Action Limit Reference	Project Quantitation Limit Goal (mg/kg)	Laboratory-specific		
					LOQ (mg/kg)	**LOD** (mg/kg)	**DL** (mg/kg)
TPH as gasoline range organics (C6-C10)	-3544[1]	100	Water Board Tier 1 ESL[2]	1	0.1	0.055	0.0217
TPH as diesel range organics (C10-C28)	-3527[1]	260	Water Board Tier 1 ESL[2]	25	4	2	1.61
TPH as oil range organics (C28-C40)	-3528[1]	1,600	Water Board Tier 1 ESL[2]	25	10	5	1.07

Notes:
[1] CAS number listed is from the Navy Electronic Data Deliverable (NEDD) valid value list since a CAS number is not available for this analyte.
[2]Water Board Tier 1 Environmental Screening Level (ESL) based on residential land use (Jan. 2019, Rev. 2)
[3]Results will be reported on a dry-weight basis for comparison to the project screening limits.
DL = detection limit
LOD=limit of detection
LOQ=limit of quantitation
mg/kg = milligrams per kilogram

SAP Worksheet #15.7 – Reference Limits and Evaluation Table

Matrix: Soil (testing of imported fill material)
Analytical Group: Metals by EPA Method 6020/7471A

Analyte	CAS Number	Project Screening Limit[4] (mg/kg)	Project Screening Limit Reference	Project Quantitation Limit Goal (mg/kg)	Laboratory-specific		
					LOQ (mg/kg)	LOD (mg/kg)	DL (mg/kg)
Antimony	7440-36-0	31	EPA Residential RSL[1]	15	0.1	0.05	0.0316
Arsenic	7440-38-2	10	TI Ambient Level[3]	1.0	0.1	0.05	0.0025
Barium	7440-39-3	15,000	EPA Residential RSL[1]	7,500	0.2	0.1	0.032
Beryllium	7440-41-7	160	EPA Residential RSL[1]	800	0.1	0.05	0.012
Cadmium	7440-43-9	71	EPA Residential RSL[1]	1,000	0.1	0.05	0.016
Chromium	7440-47-3	120,000	EPA Residential RSL[1]	6,000	0.2	0.1	0.05
Cobalt	7440-48-4	23	EPA Residential RSL[1]	10	0.1	0.05	0.026
Copper	7440-50-8	3,100	EPA Residential RSL[1]	1,500	0.2	0.1	0.05
Lead	7439-92-1	80	HERO HHRA Note 3[2]	40	0.1	0.05	0.024
Mercury	7439-97-6	1	HERO HHRA Note 3[2]	0.5	0.02	0.01	0.0028
Molybdenum	7439-98-7	390	EPA Residential RSL[1]	190	0.2	0.1	0.014
Nickel	7440-02-0	820	HERO HHRA Note 3[2]	750	0.1	0.05	0.035
Selenium	7782-49-2	390	EPA Residential RSL[1]	190	0.1	0.05	0.038
Silver	7440-22-4	390	EPA Residential RSL[1]	190	0.1	0.05	0.031
Thallium	7440-28-0	0.78	EPA Residential RSL[1]	0.50	0.1	0.05	0.019
Vanadium	7440-62-2	390	EPA Residential RSL[1]	190	0.2	0.1	0.018
Zinc	7440-66-6	23,000	EPA Residential RSL[1]	11,000	1	0.5	0.256

Notes:

[1] Values are from the EPA Region 9 Regional Screening Level for Residential Soil as presented in Regional Screening Level (RSL) Summary Table (TR=1E-6, HQ=1) November 2020.

[2] Values are from the Human and Ecological Risk Office (HERO) Human Health Risk Assessment (HHRA) Note 3 (DTSC, 2020).

[3] Value is from the Technical Memorandum Estimation Background and Ambient Metal Concentrations in Soils (PRC Environmental Management, Inc., 1996)

[4] Results will be reported on a dry-weight basis for comparison to the project screening limits.

DL = detection limit
EPA = U.S. Environmental Protection Agency
LOD = limit of detection
LOQ = limit of quantitation
mg/kg = milligrams per kilogram

SAP Worksheet #15.8 – Reference Limits and Evaluation Table

(UFP-QAPP Manual Section 2.8.1)

Matrix: Soil (testing of imported fill material)
Analytical Group: Asbestos by CARB 435 or equivalent

Analyte	CAS Number	Project Screening Limit (%)	Project Screening Limit Reference	Project Quantitation Limit Goal (%)	Laboratory-specific	
					QL (%)	MDL
Asbestos	132207-33-1	0.25	Bay Area Air Quality Management District	0.25	0.25	1 fiber

Notes:
QL = quantitation limit
MDL = method detection limit

SAP Worksheet #15.9 – Reference Limits and Evaluation Table

(UFP-QAPP Manual Section 2.8.1)

Matrix: Soil (testing of imported fill material)
Analytical Group: pH by EPA Method 9045D

Analyte	CAS Number	Project Screening Limit (pH Units)	Project Screening Limit Reference	Project Quantitation Limit Goal (pH Units)	Laboratory-specific		
					LOQ (pH Units)	LOD (pH Units)	DL (pH Units)
pH	-9[1]	6.5 < pH < 8.5	Water Board[2]	0.1	0.1	NA	NA

Notes:
[1] CAS number listed is from the Navy Electronic Data Deliverable (NEDD) valid value list since a CAS number is not available for this analyte.
[2]Remediation goal from the *San Francisco Bay (Region 2) Water Quality Control Plan (Basin Plan)* (Water Board, 2011).
Water Board = San Francisco Bay Water Quality Control Board

SAP Worksheet #16 – Project Schedule /Timeline Table

(UFP-QAPP Manual Section 2.8.2)

The project schedule is included as Figure 3 of this SAP.

SAP Worksheet #17 – Sampling Design and Rationale

The following sections describe the sampling designed to meet the project objectives.

17.1 Import Material Sampling

All excavations will be backfilled with imported soil that meets the project's acceptance criteria. Imported fill material testing will include collection of samples for analysis of the site-specific chemicals of concern, and other contaminants based on the nature of the fill source at the frequency presented in the *Information Advisory Clean Imported Fill Material* (DTSC, 2001). The imported fill material acceptance criteria for the project are presented in Worksheets #15-1 through #15-9.

SAP Worksheet #18 – Sampling Locations and Methods/SOP Requirements Table

Sampling Location/ID Number[3]	Matrix	Depth (feet bgs)	Analytical Group	Estimated Number of Samples	Sampling SOP Reference
Import Material					
IF-YYY-ZZZ, where YYY indicates the source number, and ZZZ is the sequential sample number per WS # 27	Soil	Not Applicable	VOCs, SVOCS, PAHs, PCBs, Pesticides, Metals, TPH, Asbestos, pH, Ra-226	91 estimated	SAP Worksheet #17

SAP Worksheet #19 – Analytical SOP Requirements Table

Matrix	Analytical Group	Analytical and Preparation Method // SOP Reference	Containers (number, size, and type)	Sample volume[1] (units)	Preservation Requirements[2] (chemical, temperature, light protected)	Maximum Holding Time (preparation / analysis)
Soil	PAHs	EPA 8270C SIM/3550B// ENV-SOP-MTJL-0081	1 X 4-oz Jar	30 g	<6°C	14 days/40 days
Soil	Pesticide	EPA 8081A/3550B// ENV-SOP-MTJL-0079	1 X 4-oz Jar	30 g	<6°C	14 days/40 days
Soil	PCBs	EPA 8082/3550B// ENV-SOP-MTJL-0077	1 X 4-oz Jar	30 g	<6°C	None
Soil	Metals	EPA 6020/3050B// ENV-SOP-MTJL-0221	1 X 2-oz Jar	2 g	None	180 days[3]
Soil	Mercury	EPA 7471A// ENV-SOP-MTJL-0213			<6°C	28 days[3]
Soil	VOCs	EPA 8260B/5035// ENV-SOP-MTJL-0100	3 X 5-g TerraCore™ Samplers[4,5,7] or equivalent	5 grams (g)	<6°C	48 hours/14 days
Soil	SVOCs	EPA 8270C/3550B// ENV-SOP-MTJL-0081	1 X 4-oz Jar	30 g	<6°C	14 days/40 days
Soil	TPH-purgeable	EPA 8015B/5035// ENV-SOP-MTJL-0087	3 X 5-g TerraCore™ Samplers[4,5] or equivalent	5 g	<6°C	14 days
Soil	TPH-extractable	EPA 8015B/3550B// ENV-SOP-MTJL-0089	1 X 4-oz Jar	30 g	<6°C	14 days/40 days
Soil	Asbestos	CARB 435 or equivalent	1 X 8-oz Jar or plastic baggie	8 ounce (oz.)	None	Not Applicable

SAP Worksheet #19 – Analytical SOP Requirements Table (Continued)

Matrix	Analytical Group	Analytical and Preparation Method // SOP Reference	Containers (number, size, and type)	Sample volume[1] (units)	Preservation Requirements[2] (chemical, temperature, light protected)	Maximum Holding Time (preparation / analysis)
Soil	pH	EPA 9045D// ENV-SOP-MTJL-0163	1 X 2-oz Jar	10 g	<6°C	7 days
Soil	Gamma Spectroscopy	HASL 300 GA-01-R//ENV-SOP-MTJL-0324	Gallon Ziploc bag	~1,000g (bag)	None	None

Notes:

[1] Minimum sample volume or mass requirement if different from the container volume.

[2]Temperature compliance will be measured using temperature blanks included in the coolers used to ship the samples to the laboratory.

[3] The time listed is the maximum holding time for the analysis. Preparation time is included in the analytical method holding time.

[4] If TerraCore samplers cannot be used due to saturated soil, then only the 8-ounce jar (which will be filled without headspace) will be used, and VOC analysis will be conducted from the jar sample.

[5]TerraCore samples will be immediately transferred to suitable vials for transportation to laboratory per SOP PR-TC-02.02.01.05.

[6]Percent moisture will only be collected in a separate container when samples are to be analyzed for VOCs or TPH-purgeable only.

[7]Terracore kits for VOCs will consist of two unpreserved and one methanol-preserved vial because acid preservation may cause the chemical breakdown of certain reactive VOC compounds in the soil sample, specifically styrene, acrylonitrile, vinyl chloride, and 2-chloroethylvinyl ether (SOP PR-TC-02.02.01.05).

SAP Worksheet #20 – Field Quality Control Sample Summary Table

Matrix	Analytical Group	No. of Sampling Locations[1]	No. of MS/MSDs	No. of Equipment Blanks	Total No. of Samples to Lab[3]
Soil Imported Fill Material	VOCs, SVOCS, PAHs, PCBs, Pesticides, Metals, TPH, pH, Ra-226	91	2	None or 1 per/day[2]	TBD
Soil Imported Fill Material	Asbestos	91	None	None	TBD

Notes:
[1]Actual sampling location (and thus the number of total samples to the laboratory) will be determined in the field based on the number of imported fill material sources sampled.
[2] None if disposable sampling equipment used; 1 per day if using non-disposable sampling equipment
[3]The total number shipped to lab does not include MS/MSDs.
PAH = polyaromatic hydrocarbons
PCB = polychlorinated biphenyl
PT = performance testing
Ra-226 = radium-226
TPH = total petroleum hydrocarbons
SVOC = semivolatile organic compound
VOA = volatile organic analysis
VOC = volatile organic compound

SAP Worksheet #21 – Project Sampling SOP References Table

Reference Number	Title, Revision Date and / or Number	Originating Organization	Equipment Type	Modified for Project Work? (Y/N)	Comments
PR-TC-01.04.04.00	Field Documentation	Gilbane	Not Applicable	N	Attachment 1 of SAP
PR-TC-02.12.02.00	Sample Tracking and Electronic Data Management	Gilbane	Not Applicable	N	Attachment 1 of SAP
PR-TC-02.04.01.01	Sample Handling, Packaging and Shipping	Gilbane	Not Applicable	N	Attachment 1 of SAP
PR-TC-04.01.00.00	Review, Verification, and Validation of Chemical Data	Gilbane	Not Applicable	N	Attachment 1 of SAP
PR-TC-04.01.02.00	Review, Verification, and Validation of Radiological Data	Gilbane	Not Applicable	N	Attachment 1 of SAP
PR-TC-02.02.01.05	Volatile Organic Compound (VOC) Sampling	Gilbane	Per EPA 5035	N	Attachment 1 of SAP
PR-TC-02.02.01.01	Surface Soil: Sampling with Trowel or Spoon	Gilbane	Various	N	Attachment 1 of SAP

SAP Worksheet #22 – Field Equipment Calibration, Maintenance, Testing, and Inspection Table

Field Equipment	Activity	Frequency	Acceptance Criteria	Corrective Action	Resp. Person	SOP Reference	Comments
Photoionization Detector (PID)	• Calibration Check • Daily cleaning during field use • Proper storage when not in use	Daily (prior to field use)	Within 10% of the calibration gas concentratio n true value	Recalibrate instrument, if still out, return instrument	Superintendent	(See Comments column)	Calibration procedure stated in the instrument manufacturer's operational instructions will be followed. Inoperable equipment will be removed from use and replaced.
Global Positioning System (GPS)	• No calibration Required • Charge batteries • Clean of dust, dirt, and grease • Store instrument in case when not in use	Daily (prior to field use)	± 10 mm horizontally and 15 mm vertically	If the instrument can not connect to satellites, then the secondary unit will be used to verify that there are no connections	Superintendent	(See Comments column)	Calibration procedure stated in the instrument manufacturer's operational instructions will be followed. Inoperable equipment will be removed from use and replaced.
Sodium Iodide Detector	Calibration Check	Daily (prior to field use)	Within 10% of the calculated activity isotope	Follow procedure as outlined in the manufacturer's instruction manaual or contact vendor for technical support.	Radiological Technician	(See Comments column)	Calibration procedure stated in the instrument manufacturer's operational instructions will be followed. Inoperable equipment will be removed from use and replaced.

SAP Worksheet #23 – Analytical SOP References Table

Lab SOP Number[1]	Title, Revision Date, and / or Number	Definitive or Screening Data	Matrix and Analytical Group	Instrument	Organization Performing Analysis	Variance from DoD QSM? (Y/N)
ENV-SOP-MTJL-0089	Method for Determination of Extractable Petroleum Hydrocarbons BY GC/FID With 1:1 Diesel/Motor Oil - Modified 8015B, 8015C & 8015D with provisions for: AZ, CA, IN (ERO), ND (TEH/TEM - client specific), OH, TN, and Waste Oil Analysis, 12/19/2019, Revision 03	Definitive	Soil /TPH-extractable	Gas Chromatograph (GC)	Pace National	N
ENV-SOP-MTJL-0087	BTEX (Method 8021B, 602, SM6200C 2th) and Gasoline Range Organics (Method 8015B, 8015C, 8015D) by GC (with provisions for Calif-Lo, NWTPH-Gx, OA1, WI GRO (synthetic), Wyoming LAUST Req., GRO Louisiana, AK101 GRO), 6/16/2020, Revision 2	Definitive	Soil /TPH-purgeable	GC	Pace National	N
ENV-SOP-MTJL-0077	Polychlorinated Biphenyls (PCBs),12/23/19, Revision 02	Definitive	Soil /PCBs	GC	Pace National	N
ENV-SOP-MTJL-0079	Pesticides, 10/23/2020, Revision 03	Definitive	Soil/Pesticides	GC	Pace National	N
ENV-SOP-MTJL-0081	Semi-Volatile Organic Compounds by GC/MS, 10/23/2020, Revision 02	Definitive	Soil/SVOCs & PAHs	GC/Mass Spectrometer (MS)	Pace National	N

SAP Worksheet #23 – Analytical SOP References Table (Continued)

Lab SOP Number	Title, Revision Date, and / or Number	Definitive or Screening Data	Matrix and Analytical Group	Instrument	Organization Performing Analysis	Variance from DoD QSM? (Y/N)
ENV-SOP-MTJL-0100	Volatile Organic Compounds by GC/MS (EPA 8260B, 8260C, 624, 624.1 and SM 6200B), 2/14/2019, Revision 01	Definitive	Soil/VOCs	GC/MS	Pace National	N
ENV-SOP-MTJL-0221	Metals by ICP/MS, 8/28/2020, Revision 08	Definitive	Soil /ICPMS Metals	ICP/Mass Spectrometer (MS)	Pace National	N
ENV-SOP-MTJL-0215	Metals by ICP/AES, 8/28/2020, Revision 08	Definitive	Soil/ICP Metals	Inductively Coupled Plasma (ICP) Spectrophotometer	Pace National	N
ENV-SOP-MTJL-0213	Mercury in Soil Samples, 7/20/2020, Revision 08	Definitive	Soil/Mercury	Cold Vapor Atomic Absorption (CVAA)	Pace National	N
ENV-SOP-MTJL-0163	pH, Revision 06, 5/17/2020	Definitive	Soil/pH	Probe	Pace National	N
ENV-SOP-MTJL-0324	Gamma Spec, 8/13/2020, Revision 02	Definitive	Soil/Gamma Spectroscopy	Gamma Spectrometer	Pace National	N
SOP 109	Asbestos Bulk Sample Analysis, PLM, Version 12, Effective: 9/17/20	Definitive	Soil/Asbestos	Polarized Light Microscopy (PLM)	A&B Labs	N

Notes:
[1]Laboratory SOPs are provided as Attachment 3 to this SAP.

SAP Worksheet #24- Analytical Instrument Calibration Table

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
Gamma Spectrometer	Initial Calibration Verification (ICAL) for Energy, Efficiency, and FWHM peak resolution	Prior to initial use, following repair or loss of control and upon incorporation of new or changed instrument settings	The energy difference should be within 0.05% for all calibration points or within 0.2 keV. Peak energy difference is within 0.1 keV of reference energy for all points. Peak Full width at Half Maximum (FWHM) < 2.5 keV at 1332 keV. The efficiency difference should be within 8% of the true value for each point unless T.C.C calibration is performed.	Correct problem, then repeat ICAL.	Analyst and/or Supervisor	ENV-SOP-MTJL-0324
Gamma Spectrometer	Initial Calibration Verification (ICV)	After ICAL for energy/efficiency and prior to analysis of samples.	Observed peaks of second source standard fall within ± 10% of initial calibration value relative to the true value.	Verify second source standard and repeat ICV to check for errors. If that fails, identify and correct problem and repeat ICV or ICAL and ICV as appropriate.	Analyst and/or Supervisor	ENV-SOP-MTJL-0324
Gamma Spectrometer	Continuing Calibration Verification (CCV) (Daily Check)	Daily or prior to use. When working with long count times or batch sequences that run more than a day, CCV is performed at the beginning and end of each analytical batch; but no less than once per week.	Energy: ±0.5 keV at 60 keV; ± .75 keV at 1332 keV. FW HM: ±1.2x at 60 keV; ±1.8x at 662 keV; ±2.3x at 1332 keV. Activity Difference: %difference between the source activity and the reported activity ±5%	Correct problem, rerun CCV. If that fails, then repeat ICAL. Reanalyze all samples since the last successful calibration verification.	Analyst and/or Supervisor	ENV-SOP-MTJL-0324

SAP Worksheet #24- Analytical Instrument Calibration Table (Continued)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
Gamma Spectrometer	Background Subtraction Count Measurement (BSC) (Long count for subtracting background from blanks or test sources)	Immediately after ICAL and then performed on at least a monthly basis.	Background count rate of the entire spectrum with ±3σ of the average.	Recount and check control chart for trends. Determine cause, correct problem, re-establish BSC. If background activity has changed, re-establish BSC and reanalyze or qualify all impacted samples since last acceptable BSC.	Analyst and/or Supervisor	ENV-SOP-MTJL-0324
Gamma Spectrometer	Instrument Contamination Check (ICC) (Short count for controlling gross contamination)	Daily or when working with long count times before and after each analytical batch. Check after counting high activity samples.	No extraneous peaks identified (i.e., no new peaks in the short background spectrum compared to previous spectra); background count rate of the entire spectrum with ±3σ of the average.	Recount the background. If still out of control, locate and correct problem; reanalyze or qualify all impacted samples since last acceptable ICC. If background activity has changed, re-establish BSC and reanalyze samples.	Analyst and/or Supervisor	ENV-SOP-MTJL-0324

SAP Worksheet #24- Analytical Instrument Calibration Table (Continued)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
GC/MS	Tune Check	Prior to ICAL and prior to each 12-hour period of sample analysis	Specific ion abundance criteria of BFB or DFTPP from method.	Retune instrument and verify.	Analyst and/or Supervisor	ENV-SOP-MTJL-0081 & ENV-SOP-MTJL-0100
GC/MS	Performance Check (Method 8270 only)	At the beginning of each 12-hour period, prior to analysis of samples.	Degradation ≤ 20% for DDT. Benzidine and pentachlorophenol shall be present at their normal responses and shall not exceed a tailing factor of 2.	Correct problem, then repeat performance checks.	Analyst and/or Supervisor	ENV-SOP-MTJL-0081 & ENV-SOP-MTJL-0100
GC/MS	Initial Calibration (ICAL) – Minimum 5 levels for linear and 6 levels for quadratic.	Initial calibration prior to sample analysis for all analytes including surrogates	Each analyte must meet one of the three options below: Option 1: RSD for each analyte ≤ 15%; Option 2: linear least squares regression for each analyte: r2≥ 0.99; Option 3: non-linear least squares regression (quadratic) for each analyte: r2 ≥ 0.99.	Repeat calibration	Analyst and/or Supervisor	ENV-SOP-MTJL-0081 & ENV-SOP-MTJL-0100
GC/MS	Initial Calibration Verification (ICV)	Once after each initial calibration, analysis of a second source standard prior to sample analysis.	All reported analytes within ±20% of true value	Rerun initial calibration verification (ICV) one time, second failure requires recalibration.	Analyst and/or Supervisor	ENV-SOP-MTJL-0081 & ENV-SOP-MTJL-0100

SAP Worksheet #24- Analytical Instrument Calibration Table (Continued)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
GC/MS	Continuing Calibration Verification (CCV)	Daily before sample analysis; after every 12 hours of analysis time; and at the end of the analytical batch run.	All reported analytes and surrogates within ± 20% of true value. All reported analytes and surrogates within ± 50% for end of analytical batch CCV.	Immediately analyze two additional consecutive CCVs. If both pass, samples may be reported without reanalysis. If either fails or if two consecutive CCVs cannot be run, perform corrective action(s) and repeat CCV and all associated samples since last successful CCV. Alternately, recalibrate if necessary; then reanalyze all associated samples since the last acceptable CCV.	Analyst and/or Supervisor	ENV-SOP-MTJL-0081 & ENV-SOP-MTJL-0100
GC/MS	Retention Time window position establishment	Once per ICAL and at the beginning of the analytical sequence	Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. On days when ICAL is not performed, the initial CCV is used.	N/A	Analyst and/or Supervisor	ENV-SOP-MTJL-0081 & ENV-SOP-MTJL-0100
GC/MS	Evaluation of Relative Retention Times (RRT)	With each sample.	RRT of each reported analyte within ± 0.06 RRT units.	Correct problem, then rerun ICAL.	Analyst and/or Supervisor	ENV-SOP-MTJL-0081 & ENV-SOP-MTJL-0100

SAP Worksheet #24- Analytical Instrument Calibration Table (Continued)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
GC	Breakdown check (Endrin/DDT Method 8081 only)	Before sample analysis and at the beginning of each 12-hour shift.	Degradation of DDT and Endrin must each be ≤ 15%.	Correct problem, then repeat breakdown checks.	Analyst and/or Supervisor	ENV-SOP-MTJL-0079
GC	Initial Calibration (ICAL) Minimum 5 levels for linear and 6 levels for quadratic. Quantitation for multicomponent analytes such as chlordane, toxaphene, and Aroclors must be performed using a 5-point ICAL Results may not be quantitated using a single point.	Initial calibration prior to sample analysis	ICAL must meet one of the three options below: Option 1: RSD for each analyte ≤ 20%; Option 2: linear least squares regression for each analyte: r2≥ 0.99; Option 3: non-linear least squares regression (quadratic) for each analyte: r2 ≥ 0.99.	Correct problem then repeat ICAL	Analyst and/or Supervisor	ENV-SOP-MTJL-0077, ENV-SOP-MTJL-0079, ENV-SOP-MTJL-0087, & ENV-SOP-MTJL-0089
GC	Retention Time window position establishment	Once per ICAL and at the beginning of the analytical sequence	Position shall be set using the midpoint standard of the ICAL curve when ICAL is performed. On days when ICAL is not performed, the initial CCV is used.	N/A	Analyst and/or Supervisor	ENV-SOP-MTJL-0077, ENV-SOP-MTJL-0079, ENV-SOP-MTJL-0087, & ENV-SOP-MTJL-0089

SAP Worksheet #24- Analytical Instrument Calibration Table (Continued)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
GC	Retention Time (RT) window width	At method set-up and after major maintenance (e.g. column change)	RT width is ± 3 times standard deviation for each analyte RT from the 72-hour study or 0.03 minutes, whichever is greater.	N/A	Analyst and/or Supervisor	ENV-SOP-MTJL-0077, ENV-SOP-MTJL-0079, ENV-SOP-MTJL-0087, & ENV-SOP-MTJL-0089
GC	Initial Calibration Verification (ICV)	Once after each initial calibration, analysis of a second source standard prior to sample analysis.	All reported analytes within established RT windows. All reported analytes within ±20% of true value	Rerun initial calibration verification (ICV) one time, second failure requires recalibration	Analyst and/or Supervisor	ENV-SOP-MTJL-0077, ENV-SOP-MTJL-0079, ENV-SOP-MTJL-0087, & ENV-SOP-MTJL-0089
GC	Continuing Calibration Verification (CCV)	Before sample analysis, after every 10 field samples, and at the end of the analysis sequence, except for CCVs for Pesticide multicomponent analytes (i.e., Toxaphene, Chlordane and Aroclors other than 1016 and 1260), which are only required before sample analysis.	All reported analytes within established RT windows. All reported analytes within ±20% of true value	Immediately analyze two additional consecutive CCVs. If both pass, samples may be reported without reanalysis. If either fails, or if two consecutive CCVs cannot be run, perform corrective action(s) and repeat CCV and all associated samples since last successful CCV. Alternately, recalibrate if necessary; then reanalyze all associated samples since the last acceptable CCV.	Analyst and/or Supervisor	ENV-SOP-MTJL-0077, ENV-SOP-MTJL-0079, ENV-SOP-MTJL-0087, & ENV-SOP-MTJL-0089

SAP Worksheet #24- Analytical Instrument Calibration Table (Continued)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
GC	Confirmation of positive results (second column)	All results > the DL must be confirmed (except for single column methods such as TPH by Method 8015 where confirmation is not an option or a requirement).	Calibration and QC criteria for second column are the same as for initial or primary column analysis. Results between primary and secondary column RPD ≤40%.	Evaluate data, then report the higher result with a flag to denote RPD > 40%. Narrate obvious matrix issues.	Analyst and/or Supervisor	ENV-SOP-MTJL-0077, ENV-SOP-MTJL-0079, ENV-SOP-MTJL-0087, & ENV-SOP-MTJL-0089
ICP/AES	Linear Dynamic Range (LDR) or high-level check standard	At initial set up and checked every 6 months high a high standard at the upper limit of the range	Within ± 10% of true value	Dilute samples within the calibration range, or re-establish/verify the LDR	Analyst and/or Supervisor	ENV-SOP-MTJL-0215
ICP/AES	Initial Calibration (ICAL) – minimum one high standard and a calibration blank	Daily initial calibration prior to sample analysis	If more than one calibration standard is used, r2 ≥ 0.99.	Recalibrate	Analyst and/or Supervisor	ENV-SOP-MTJL-0215
ICP/AES	Initial Calibration Verification (ICV)	Once after each ICAL, analysis of a second source standard prior to sample analysis.	All reported analytes within ±10% of true value.	Correct problem. Rerun ICV. If that fails, repeat ICAL.	Analyst and/or Supervisor	ENV-SOP-MTJL-0215

SAP Worksheet #24- Analytical Instrument Calibration Table (Continued)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
ICP/AES	Continuing Calibration Verification (CCV)	After every 10 samples and at the end of the analysis sequence	All analytes within ± 10% of expected value	Immediately analyze two additional consecutive CCVs. If both pass, samples may be reported without reanalysis. If either fails or if two consecutive CCVs cannot be run, perform corrective action(s) and repeat CCV and all associated samples since last successful CCV. Alternately, recalibrate if necessary; then reanalyze all associated samples since the last acceptable CCV.	Analyst and/or Supervisor	ENV-SOP-MTJL-0215
ICP/AES	Low-level Calibration Check Standard ≤ LOQ	Daily	All analytes within ± 20% of true value	Correct problem and repeat ICAL	Analyst and/or Supervisor	ENV-SOP-MTJL-0215

SAP Worksheet #24- Analytical Instrument Calibration Table (Continued)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
ICP/AES	Calibration Blanks (ICB/CCB)	Immediately after the ICV and immediately after every CCV.	The absolute values of all analytes must be < ½ LOQ or < 1/10th the amount measured in any sample.	ICB: Correct problem and repeat ICV/ICB analysis. If that fails, rerun ICAL. All samples following the last acceptable Calibration Blank must be reanalyzed. CCBs may not be reanalyzed without reanalysis of the associated samples and CCV(s).	Analyst and/or Supervisor	ENV-SOP-MTJL-0215
ICP/AES	Interference Check Solutions (ICS)	After ICAL and prior to sample analysis	ICS-A: Absolute value of concentration for all non-spiked project analytes <1/2 LOQ (unless they are a verified trace impurity from one of the spiked analytes); ICS-AB: Within ± 20% of true value.	Terminate analysis; locate and correct problem; reanalyze ICS, reanalyze all samples	Analyst and/or Supervisor	ENV-SOP-MTJL-0215
ICP-MS	Linear Dynamic Range (LDR) or high-level check standard	At initial set-up and checked every 6 months with a high standard at the upper limit of the range.	Within ± 10% of true value	Dilute samples within the calibration range, or re-establish/verify the LDR	Analyst and/or Supervisor	ENV-SOP-MTJL-0221
ICP-MS	Tuning	Prior to ICAL	Mass calibration < 0.1 atomic mass unit (amu) from the true value; resolution < 0.9 amu full width at 10% peak height	Retune instrument and verify	Analyst and/or Supervisor	ENV-SOP-MTJL-0221

SAP Worksheet #24- Analytical Instrument Calibration Table (Continued)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
ICP-MS	Initial Calibration (ICAL) – minimum one high standard and a calibration blank	Daily initial calibration prior to sample analysis	If more than one calibration standard is used, r2 ≥ 0.99	Recalibrate	Analyst and/or Supervisor	ENV-SOP-MTJL-0221
ICP-MS	Initial Calibration Verification (ICV)	Once after each ICAL, analysis of a second source standard prior to sample analysis.	All reported analytes within ±10% of true value.	Correct problem. Rerun ICV. If that fails, repeat ICAL.	Analyst and/or Supervisor	ENV-SOP-MTJL-0221
ICP-MS	Continuing Calibration Verification (CCV)	After every 10 samples and at the end of the analysis sequence	All reported analytes within ±10% of true value.	Immediately analyze two additional consecutive CCVs. If both pass, samples may be reported without reanalysis. If either fails or if two consecutive CCVs cannot be run, perform corrective action(s) and repeat CCV and all associated samples since last successful CCV. Alternately, recalibrate if necessary; then reanalyze all associated samples since the last acceptable CCV.	Analyst and/or Supervisor	ENV-SOP-MTJL-0221
ICP-MS	Low-level Calibration Check Standard ≤ LOQ	Daily	All reported analytes within ±20% of the true value.	Correct problem and repeat ICAL	Analyst and/or Supervisor	ENV-SOP-MTJL-0221

SAP Worksheet #24- Analytical Instrument Calibration Table (Continued)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
ICP-MS	Calibration Blanks (ICB/CCB)	Immediately after the ICV and immediately after every CCV.	The absolute values of all analytes must be < ½ LOQ or < 1/10th the amount measured in any sample.	ICB: Correct problem and repeat ICV/ICB analysis. If that fails, rerun ICAL. All samples following the last acceptable Calibration Blank must be reanalyzed. CCBs may not be reanalyzed without reanalysis of the associated samples and CCV(s).	Analyst and/or Supervisor	ENV-SOP-MTJL-0221
ICP-MS	Interference Check Solutions (ICS)	After ICAL and prior to sample analysis	ICS-A: Absolute value of concentration for all non-spiked project analytes <1/2 LOQ (unless they are a verified trace impurity from one of the spiked analytes); ICS-AB: Within ± 20% of true value.	Terminate analysis; locate and correct problem; reanalyze ICS, reanalyze all samples	Analyst and/or Supervisor	ENV-SOP-MTJL-0221
Cold Vapor AA	Initial Calibration (ICAL) – Minimum of 5 standards	Daily initial calibration prior to sample analysis	R2 ≥ 0.99	Correct problem, then recalibrate.	Analyst and/or Supervisor	ENV-SOP-MTJL-0213
Cold Vapor AA	Initial Calibration Verification (ICV)	Once after each ICAL, analysis of a second source standard prior to sample analysis.	All reported analytes within ±10% of the true value.	Correct problem. Rerun ICV. If that fails, rerun ICAL.	Analyst and/or Supervisor	ENV-SOP-MTJL-0213

SAP Worksheet #24- Analytical Instrument Calibration Table (Continued)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
Cold Vapor AA	Low-level Calibration Check Standard ≤ LOQ	Daily	All reported analytes within ±20% of the true value.	Correct problem and repeat ICAL.	Analyst and/or Supervisor	ENV-SOP-MTJL-0213
Cold Vapor AA	Continuing Calibration Verification (CCV)	After every 10 samples and at the end of the analysis sequence.	All reported analytes within ±10% of the true value.	Immediately analyze two additional consecutive CCVs. If both pass, samples may be reported without reanalysis. If either fails or if two consecutive CCVs cannot be run, perform corrective action(s) and repeat CCV and all associated samples since last successful CCV. Alternately, recalibrate if necessary; then reanalyze all associated samples since the last acceptable CCV.	Analyst and/or Supervisor	ENV-SOP-MTJL-0213

SAP Worksheet #24- Analytical Instrument Calibration Table (Continued)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
Cold Vapor AA	Calibration Blanks (ICB/CCB)	Immediately after the ICV and immediately after every CCV.	The absolute values of all analytes must be < ½ LOQ or < 1/10th the amount measured in any sample.	ICB: Correct problem and repeat ICV/ICB analysis. If that fails, rerun ICAL. All samples following the last acceptable Calibration Blank must be reanalyzed. CCBs may not be reanalyzed without reanalysis of the associated samples and CCV(s).	Analyst and/or Supervisor	ENV-SOP-MTJL-0213
pH Probe	Initial Calibration (ICAL)	Daily initial calibration prior to sample analysis	The slope must be 95-105%	Recalibrate	Analyst and/or Supervisor	ENV-SOP-MTJL-0163

SAP Worksheet #24- Analytical Instrument Calibration Table (Continued)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
pH Probe	Continuing Calibration Verification (CCV)	After every 10 samples and at the end of the analysis sequence.	The measured concentration must be within 0.1su of the true value.	Immediately analyze two additional consecutive CCVs. If both pass, samples may be reported without reanalysis. If either fails or if two consecutive CCVs cannot be run, perform corrective action(s) and repeat CCV and all associated samples since last successful CCV. Alternately, recalibrate if necessary; then reanalyze all associated samples since the last acceptable CCV.	Analyst and/or Supervisor	ENV-SOP-MTJL-0163

SAP Worksheet #24- Analytical Instrument Calibration Table (Continued)

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
Polarized Light Microscope (PLM)	a) The substage condenser and iris diaphragm are centered in the optic axis; b) Set microscope for Kohler illumination (when applicable); c) The substage analyzer and polarizer are oriented at 90 degrees to each other; d) The ocular crosshairs coincide with the privileged directions of the polarizer and analyzer; e) The objectives are centered to prevent any grains from leaving the field of view during stage rotation.	Daily before use	a) The substage condenser and iris diaphragm are centered in the optic axis; b) Set microscope for Kohler illumination (when applicable); c) The substage analyzer and polarizer are oriented at 90 degrees to each other; d) The ocular crosshairs coincide with the privileged directions of the polarizer and analyzer; e) The objectives are centered to prevent any grains from leaving the field of view during stage rotation;	Maintenance	PLM Supervisor	SOP 109; §6.1.1
PLM	Refractive index liquids must be calibrated with an accuracy of 0.004.	Monthly	+/- 0.004	Purchase new RI liquids	PLM Supervisor	SOP109; §6.1.2

SAP Worksheet #25 – Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table

Instrument / Equipment	Activity (Maintenance / Testing / Inspection)	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference
Gamma Spectrometer	Clean cave; fill dewar with N2	Weekly	Acceptable background	Recalibrate	Analyst and/or Supervisor	ENV-SOP-MTJL-0324
Gamma Spectrometer	QA Check of background and source (check deviation)	Daily	Within 3 sigma of measured population	Instrument maintenance and consult with Technical director	Analyst and/or Supervisor	ENV-SOP-MTJL-0324
GC-MS	Change septum, clip column, clean the detector, changing injection port liners, etc.	As needed	Method dependent	Perform needed maintenance and recalibrate the instrument	Analyst and/or Supervisor	ENV-SOP-MTJL-0081 & ENV-SOP-MTJL-0100
GC	Change septum, clip column, clean the detector, changing injection port liners, etc.	As needed	Method dependent	Perform needed maintenance and recalibrate the instrument	Analyst and/or Supervisor	ENV-SOP-MTJL-0077, ENV-SOP-MTJL-0079, ENV-SOP-MTJL-0087, & ENV-SOP-MTJL-0089
ICP/MS	Change pump tubing, replace torch, clean the nebulizer, etc.	As needed	Method dependent	Perform needed maintenance and recalibrate the instrument	Analyst and/or Supervisor	ENV-SOP-MTJL-0221
ICP/AES	Change pump tubing, replace torch, clean the nebulizer, etc.	As needed	Method dependent	Perform needed maintenance and recalibrate the instrument	Analyst and/or Supervisor	ENV-SOP-MTJL-0215
CVAA	Change pump tubing, clean optical cell, replace lamp, etc.	As needed	Method dependent	Perform needed maintenance and recalibrate the instrument	Analyst and/or Supervisor	ENV-SOP-MTJL-0213

SAP Worksheet #25 – Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table (Continued)

Instrument / Equipment	Activity (Maintenance / Testing / Inspection)	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference
pH probe	Clean or replace electrode	As needed	Method dependent	Perform needed maintenance and recalibrate the instrument	Analyst and/or Supervisor	ENV-SOP-MTJL-0163
PLM	Microscope physical check	Annual	Acceptable functionality	Maintenance or purchase new microscope	QA Dept /Approved vendor	SOP 109

SAP Worksheet #26 – Sample Handling System

SAMPLE HANDLING SYSTEM

SAMPLE COLLECTION, PACKAGING, AND SHIPMENT
Sample Collection (Personnel/Organization): Sampler / Gilbane
Sample Packaging (Personnel/Organization): Sampler / Gilbane
Coordination of Shipment (Personnel/Organization): Sampler / Gilbane
Type of Shipment/Carrier: Overnight shipping service such as FedEx or Laboratory Courier
SAMPLE RECEIPT AND ANALYSIS
Sample Receipt (Personnel/Organization): Laboratory receipt clerk / Pace National/A&B Labs
Sample Custody and Storage (Personnel/Organization): Laboratory technician or custodian / Pace National/A&B Labs
Sample Preparation (Personnel/Organization): Laboratory technician / Pace National/ A&B Labs
Sample Determinative Analysis (Personnel/Organization): Analyst / Pace National/A&B Labs
SAMPLE ARCHIVING
Field Sample Storage (No. of days from sample collection): 90 calendar days
Sample Extract/Digestate Storage (Number of days from extraction/digestion): Up to 40 calendar days depending on method holding times
Biological Sample Storage (Number of days from sample collection): NA
SAMPLE DISPOSAL
Personnel/Organization: Sample Custodian / Pace National/A&B Labs
Number of Days from Analysis: 90 calendar days

Notes:
NA = Not applicable

SAP Worksheet #27 – Sample Custody Requirements Table

Field Sample Custody Procedures (sample collection, packaging, shipment, and delivery to laboratory):
Standardized sample custody procedures will be followed from sample collection, through transfer, storage, and analysis, to ultimate disposal in accordance with SOP PR-TC-02.04.01.01. Sample containers will be properly labeled, and collected samples will be stored on ice if required. Temperature blanks will be used in coolers containing samples requiring preservation at reduced temperature. Samples will be accompanied by a chain-of-custody record. When samples are transferred, both the individual relinquishing and the individual receiving the samples will sign, date, and note the transfer time on the COC record. Samples will be packaged for shipment with completed sample labels for each sample container, sample containers carefully packed upright and on ice (as required), and with a COC record in a Ziploc bag.

Custody seals will be used and will be placed on the cooler so that the seals must be broken before the cooler can be opened. The seals will be signed and dated. Samples will be shipped to the laboratory(s) using an overnight shipper.

Laboratory Sample Custody Procedures (receipt of samples, archiving, disposal):
A designated laboratory sample custodian will accept custody of the samples and verify that the information on the sample labels matches that on the chain-of-custody form(s). Pertinent information as to sample condition, shipment, pickup, and courier will also be checked on the chain-of-custody form. The temperature inside the cooler will be measured immediately after the cooler is opened by measuring and recording the temperature of the temperature blank, as required. Information on the date and time of receipt, method of shipment, and sample condition will also be recorded on a sample receipt form. The custodian will then enter the appropriate data into the laboratory sample tracking system. The sample custodian will use the sample numbers on the sample labels for tracking and assign a unique laboratory number to each sample. The custodian will then transfer the samples to the proper analyst(s) or store the samples in the appropriate secure area. A login verification sheet which includes the sample receipt form will be forwarded to the Gilbane Project Chemist within 48 hours of sample receipt. Data sheets and laboratory records will be retained by the laboratory as part of the permanent documentation for a period of at least three years. Samples and extracts will be retained by the analytical laboratory for a minimum of 90 days after the laboratory reports the data. Unless notified otherwise, samples may be disposed of by the laboratory in a manner consistent with local government regulations.

Chain-of-Custody Procedures:
A COC form will be completed for every group of samples sent to the analytical laboratory, to document sample possession from the time of collection to sample receipt by the laboratory; and a copy of the form will accompany the shipment. Each completed COC form will contain the following information: sample identification number(s); name(s) and signature(s) of collectors, samplers, or recorders; Gilbane project number, project name, and location of project; project manager’s name and contact information; date and time of

SAP Worksheet #27 – Sample Custody Requirements Table (Continued)

collection; sample type(s) and analyses requested; and signatures of persons relinquishing and receiving the samples. When samples are transferred, the individuals relinquishing and receiving the samples will sign, date, and note the transfer time on the COC form.

In addition to providing a custody exchange record for the samples, the COC record serves as a formal request for sample analysis. The COC records will be completed, signed, and distributed as described in SOP PR-TC-02.12.02.00, *Sample Handling and Electronic Data Management*.

Sample Numbering
The sample number will be recorded in the field logbook, on the labels, and on the chain-of-custody 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.

Samples will be uniquely designated using a numbering system that identifies the CTO number, location/type of sample, and a sequential number as follows:

- Soil samples collected from imported fill material sources: **IF-YYY-ZZZ**, where:
  IF – represents Import Fill
  YYY- three-character consecutive number (begins with 001) to designate the number of the source
  ZZZ – three-character consecutive number (begins with 001) to designate the number of the sample collected from the specific source

- RSY Survey Pads (provided for use in waste characterization only): **RSY-QQQQ-UU**, where:
  QQQQ – Four-character consecutive pad number 0001; continues consecutively throughout the CTO with no repeated numbers
  UU – Two-character consecutive sample number starting with 01 (number of samples collected from each pad)

Sample Packaging – Chemical Samples
Chemical samples will be packaged and shipped in accordance with SOP PR-TC-02.04.01.01, *Sample Handling, Packaging, and Shipping*.

Sample Packaging - Radiological Samples
Samples will be delivered for analysis to the laboratory via cooler, box, or other similar container (ice is not required if only radiological analyses will be performed), along with the completed COC. Samples to be sent off site will be packaged in accordance with applicable Department of Transportation (DOT) and International Air Transport Association (IATA) procedures. At a minimum, sample containers will be placed in a box, cooler, or similar container for shipment and packaged with bubble wrap or other materials as necessary to prevent container breakage.

SAP Worksheet #27 – Sample Custody Requirements Table (Continued)

For samples transported via commercial carrier, two custody seals will be taped across the lid of the box or cooler: one seal in the front and one seal on the side. The COC will include the air bill number, and the “Received By” box will be labeled with the commercial courier’s name. The COC will be sealed in a resealable bag and then taped to the inside of the sample cooler lid or placed inside the box. A copy of the COC will be maintained on site and a copy will be e-mailed to the Project Chemist. The box/cooler will be taped shut as necessary. The airbill will be completed for priority overnight delivery and placed in the pouch, which then will be secured to the box/cooler. If multiple boxes/coolers are being shipped, the original COC will be placed in one of the boxes/cooler, and copies of the COC will be placed in the other boxes/coolers. The number of packages should be included on each airbill (e.g., 1 of 2, 2 of 2). Prepared packages will be surveyed prior to shipment.

SAP Worksheet #28 – Laboratory QC Samples Table

(UFP-QAPP Manual Section 3.4)

Matrix	Soil
Analytical Group	Gamma Spectroscopy
Analytical Method / SOP Reference[1]	HASL 300 Ga-01-R/ ENV-SOP-MTJL-0324

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank (MB)	One per preparation batch	No analytes detected > target detection limit	Correct problem. If required, re-prepare and reanalyze MB and all samples processed with the contaminated blank.	Analyst, Supervisor	Representativeness	Acceptable results per stated QC Acceptance Limits
Laboratory Control Sample (LCS)	One per preparation batch	Recovery limits: 87-120% for Cs-137, 87-115% for Co-60, 87-116% for Am-241	Correct problem, then re-prepare and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes, if sufficient sample material is available.	Analyst, Supervisor	Accuracy	Acceptable QC Acceptance Limits
Sample Duplicate	One per preparation batch	RPD limit of 40% or Relative Error Ration <1	Correct problem, then re-prepare and reanalyze all samples in the associated preparatory batch, if not excursion not caused by sample matrix.	Analyst, Supervisor	Precision	Acceptable QC Acceptance Limits

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	VOCs
Analytical Method / SOP Reference[1]	EPA 8260B/ ENV-SOP-MTJL-0100

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Internal Standards (IS)	Every field sample, standard, and QC sample.	Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within – 50% to +100% of ICAL midpoint standard. On days when ICAL is not performed, the daily initial CCV can be used.	Inspect GC for malfunctions and correct problem. Reanalysis of samples analyzed while system was malfunctioning is mandatory.	Analyst and/or Supervisor	Accuracy	Acceptable recoveries per stated QC Acceptance Limits
Method Blank (MB)	One per preparation batch	No analytes detected > ½ LOQ or >1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater. Common contaminants must not be detected >LOQ.	Correct problem. If required, reprep and reanalyze MB and all QC samples and field samples processed with the contaminated blank.	Analyst and/or Supervisor	Accuracy / Sensitivity	Acceptable results per stated QC Acceptance Limits
Laboratory Control Sample (LCS)	One per preparation batch	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available.	Analyst and/or Supervisor	Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	VOCs
Analytical Method / SOP Reference[1]	EPA 8260B/ ENV-SOP-MTJL-0100

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
MS/MSD	One per preparation batch	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Evaluate the data to determine if the failed criteria are due to sample matrix or laboratory error.	Analyst and/or Supervisor	Precision/Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.
Surrogate	Every field sample and QC sample	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Correct problem, then reprep and reanalyze all failed samples for all surrogates in the associated preparatory batch if sufficient sample material is available. If obvious chromatographic interference is present, reanalysis may not be necessary.	Analyst and/or Supervisor	Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.
IS	Every field sample, standard, and QC sample.	Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within – 50% to +100% of ICAL midpoint standard. On days when ICAL is not performed, the daily initial CCV can be used.	Inspect GC for malfunctions and correct problem. Reanalysis of samples analyzed while system was malfunctioning is mandatory.	Analyst and/or Supervisor	Accuracy	Acceptable recoveries per stated QC Acceptance Limits

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	SVOCs
Analytical Method / SOP Reference[1]	EPA 8270C/ ENV-SOP-MTJL-0081

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
IS	Every field sample, standard, and QC sample.	Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within –50% to +100% of ICAL midpoint standard. On days when ICAL is not performed, the daily initial CCV can be used.	Inspect GC for malfunctions and correct problem. Reanalysis of samples analyzed while system was malfunctioning is mandatory.	Analyst and/or Supervisor	Accuracy	Acceptable recoveries per stated QC Acceptance Limits
MB	One per preparation batch	No analytes detected > ½ LOQ or >1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater. Common contaminants must not be detected >LOQ.	Correct problem. If required, reprep and reanalyze MB and all QC samples and field samples processed with the contaminated blank.	Analyst and/or Supervisor	Representativeness	Acceptable results per stated QC Acceptance Limits
MS/MSD	1 per twenty field samples	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Evaluate the data to determine if the failed criteria are due to sample matrix or laboratory error.	Analyst and/or Supervisor	Precision/Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	SVOCs
Analytical Method / SOP Reference[1]	EPA 8270C/ ENV-SOP-MTJL-0081

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
LCS/LCSD	One LCS or LCS/LCSD pair per preparation batch per matrix	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available.	Lab Manager/ Analyst	Precision/ Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.
Surrogate	Every field sample and QC sample	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Correct problem, then reprep and reanalyze all failed samples for all surrogates in the associated preparatory batch if sufficient sample material is available. If obvious chromatographic interference is present, reanalysis may not be necessary.	Lab Manager/ Analyst	Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	PAHs
Analytical Method / SOP Reference[1]	EPA 8270CSIM/ ENV-SOP-MTJL-0081

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
IS	During acquisition of calibration standard, samples, and QC check samples	Retention time within ± 10 seconds from retention time of the midpoint standard in the ICAL; EICP area within - 50% to +100% of ICAL midpoint standard. On days with the ICAL is not analyzed, use the initial CCV.	Inspect GC for malfunctions and correct problem. Reanalysis of samples analyzed while system was malfunctioning is mandatory.	Analyst and/or Supervisor	Accuracy	Acceptable recoveries per stated QC Acceptance Limits
MB	One per preparation batch	No analytes detected > ½ LOQ or >1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater. Common contaminants must not be detected >LOQ.	Correct problem. If required, reprep and reanalyze MB and all QC samples and field samples processed with the contaminated blank.	Analyst and/or Supervisor	Representative-ness	Acceptable results per stated QC Acceptance Limits
MS/MSD	1 per twenty field samples	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Evaluate the data to determine if the failed criteria are due to sample matrix or laboratory error.	Analyst and/or Supervisor	Precision/Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	PAHs
Analytical Method / SOP Reference[1]	EPA 8270CSIM/ ENV-SOP-MTJL-0081

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
LCS/LCSD	One LCS or LCS/LCSD pair per preparation batch per matrix	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available.	Analyst and/or Supervisor	Precision/Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.
Surrogate	Every field sample and QC sample	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Correct problem, then reprep and reanalyze all failed samples for all surrogates in the associated preparatory batch if sufficient sample material is available. If obvious chromatographic interference is present, reanalysis may not be necessary.	Analyst and/or Supervisor	Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	PCBs
Analytical Method / SOP Reference[1]	EPA 8082/ ENV-SOP-MTJL-0077

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
MB	One per preparation batch	No analytes detected > ½ LOQ or >1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater.	Correct problem. If required, reprep and reanalyze MB and all QC samples and field samples processed with the contaminated blank.	Analyst and/or Supervisor	Representativeness	Acceptable results per stated QC Acceptance Limits
MS/MSD	1 per twenty field samples	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Evaluate the data to determine if the failed criteria are due to sample matrix or laboratory error.	Analyst and/or Supervisor	Precision/ Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.
LCS/LCSD	One LCS or LCS/LCSD pair per preparation batch per matrix	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available.	Analyst and/or Supervisor	Precision/ Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	PCBs
Analytical Method / SOP Reference[1]	EPA 8082/ ENV-SOP-MTJL-0077

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Surrogate	Every standard and sample	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Correct problem, then reprep and reanalyze all failed samples for all surrogates in the associated preparatory batch if sufficient sample material is available. If obvious chromatographic interference is present, reanalysis may not be necessary.	Analyst and/or Supervisor	Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	PCBs
Analytical Method / SOP Reference[1]	EPA 8082/ ENV-SOP-MTJL-0077

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Internal Standards (IS)	Every field sample, standard, and QC sample.	Retention time within ±0.06 RRT UNITS from retention time of the midpoint standard in the ICAL; Internal standard signal (area or height) within -50% to +100% of ICAL midpoint standard. On days when ICAL is not performed, the daily initial CCV can be used.	Inspect GC for malfunctions and correct problem. Reanalysis of samples analyzed while system was malfunctioning is mandatory.	Analyst and/or Supervisor	Accuracy	Acceptable recoveries per stated QC Acceptance Limits

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	Pesticides
Analytical Method / SOP Reference[1]	EPA 8081A/ ENV-SOP-MTJL-0079

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
IS	One per preparation batch	RT within ± 0.06RRT units of RT of ICAL mid-point standard, Area within - 50% to +100% of ICAL midpoint standard. On days without ICAL, initial CCV may be used as reference.	Inspect GC for malfunctions and correct problem. Reanalysis of samples analyzed while system was malfunctioning is mandatory.	Analyst and/or Supervisor	Accuracy	Acceptable recoveries per stated QC Acceptance Limits
MB	One per preparation batch	No analytes detected > ½ LOQ or >1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater.	Correct problem. If required, reprep and reanalyze MB and all QC samples and field samples processed with the contaminated blank.	Analyst and/or Supervisor	Representativeness	Acceptable results per stated QC Acceptance Limits
MS/MSD	1 per twenty field samples	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Evaluate the data to determine if the failed criteria are due to sample matrix or laboratory error.	Analyst and/or Supervisor	Precision/Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.
LCS and/or LCSD	One LCS or LCS/LCSD pair per preparation batch per matrix	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available.	Analyst and/or Supervisor	Precision/Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	Pesticides
Analytical Method / SOP Reference[1]	EPA 8081A/ ENV-SOP-MTJL-0079

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Surrogate	Every field sample and QC sample	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Correct problem, then reprep and reanalyze all failed samples for all surrogates in the associated preparatory batch if sufficient sample material is available. If obvious chromatographic interference is present, reanalysis may not be necessary.	Analyst and/or Supervisor	Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	TPH
Analytical Method / SOP Reference[1]	EPA 8015B/ ENV-SOP-MTJL-0087 & -0089

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank (MB)	One per preparation batch	No analytes detected > ½ LOQ or >1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater.	Correct problem. If required, reprep and reanalyze MB and all QC samples and field samples processed with the contaminated blank.	Analyst and/or Supervisor	Accuracy / Sensitivity	Acceptable results per stated QC Acceptance Limits
Laboratory Control Sample (LCS)	One per preparation batch	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available.	Analyst and/or Supervisor	Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.
MS/MSD	One per preparation batch	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Evaluate the data to determine if the failed criteria are due to sample matrix or laboratory error.	Analyst and/or Supervisor	Precision/Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.
Surrogate	Every field sample and QC sample	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Correct problem, then reprep and reanalyze all failed samples for all surrogates in the associated preparatory batch if sufficient sample material is available. If obvious chromatographic interference is present, reanalysis may not be necessary.	Analyst and/or Supervisor	Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	Metals
Analytical Method / SOP Reference[1]	EPA 6010B & 6020/ ENV-SOP-MTJL-0215 & ENV-SOP-MTJL-0221

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Internal Standards (IS)	Every field sample, standard, and QC sample.	IS intensity in the samples within 30-120% of intensity of the IS in the ICAL blank.	If recoveries are acceptable for QC samples, but not field samples, the field samples may be considered to suffer from a matrix effect. Reanalyze sample at 5-fold dilutions until criteria is met. For failed QC samples, correct problem and rerun all associated failed field samples.	Analyst and/or Supervisor	Accuracy	Acceptable recoveries per stated QC Acceptance Limits
Method Blank (MB)	One per preparation batch	No analytes detected > ½ LOQ or >1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater.	Correct problem. If required, reprep and reanalyze MB and all QC samples and field samples processed with the contaminated blank.	Analyst and/or Supervisor	Accuracy / Sensitivity	Acceptable results per stated QC Acceptance Limits
Laboratory Control Sample (LCS)	One per preparation batch	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available.	Analyst and/or Supervisor	Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	Metals
Analytical Method / SOP Reference[1]	EPA 6010B & 6020/ ENV-SOP-MTJL-0215 & ENV-SOP-MTJL-0221

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
MS/MSD	One per preparation batch	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Evaluate the data to determine if the failed criteria are due to sample matrix or laboratory error.	Analyst and/or Supervisor	Precision/Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.
Dilution Test (ICP & ICP/MS only)	One per preparatory batch if MS or MSD fails.	Five-fold dilution must agree within ± 10% of the original measurement.	No specific CA. Qualify results appropriately.	Analyst and/or Supervisor	Accuracy	Acceptable recoveries per stated QC Acceptance Limits
Post Digestion Spike (ICP & ICP/MS only)	One per preparatory batch if MS or MSD fails.	Recovery within 80-120%.	No specific CA. Qualify results appropriately.	Analyst and/or Supervisor	Accuracy	Acceptable recoveries per stated QC Acceptance Limits

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

Matrix	Soil
Analytical Group	Metals
Analytical Method / SOP Reference[1]	EPA 7471A/ ENV-SOP-MTJL-0213

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank (MB)	One per preparation batch	No analytes detected > ½ LOQ or >1/10th the amount measured in any sample or 1/10th the regulatory limit, whichever is greater.	Correct problem. If required, reprep and reanalyze MB and all QC samples and field samples processed with the contaminated blank.	Analyst and/or Supervisor	Accuracy / Sensitivity	Acceptable results per stated QC Acceptance Limits
Laboratory Control Sample (LCS)	One per preparation batch	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available.	Analyst and/or Supervisor	Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.
MS/MSD	One per preparation batch	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.	Evaluate the data to determine if the failed criteria are due to sample matrix or laboratory error.	Analyst and/or Supervisor	Precision/Accuracy	Per DoD QSM/ laboratory limits as listed in Attachment 2 to this SAP.

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

(UFP-QAPP Manual Section 3.4)

Matrix	Soil
Analytical Group	pH
Analytical Method / SOP Reference[1]	EPA 9045D / ENV-SOP-MTJL-0163

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
LCS	One per preparation batch per matrix	The measured concentration must be within 0.1su of the true value.	Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available.	Analyst and/or Supervisor	Accuracy	Acceptable recoveries per stated QC Acceptance Limits
Duplicate	One per prep batch	RPD should be ≤ 1% for solid samples	Evaluate the data to determine if the failed criteria are due to sample matrix or laboratory error.	Analyst and/or Supervisor	Precision	Acceptable results per stated QC Acceptance Limits

SAP Worksheet #28 – Laboratory QC Samples Table (continued)

(UFP-QAPP Manual Section 3.4)

Matrix	Soil/Sediment
Analytical Group	PLM
Analytical Method / SOP Reference[1]	EPA 600/R-93/116 / SOP 109

QC Sample	Frequency / Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Friable Non-Asbestos Containing Material (ACM) blank	Daily, at beginning and end of day's work.	No asbestos fibers detected	Correct problem. If required, re-prepare and re-analyze Friable Non-ACM Blank and all samples processed with the contaminated blank.	Analyst, Supervisor	Accuracy/Bias/ Contamination	No asbestos fibers detected
Non-friable Non-ACM blank	Every 20 non-friable material samples	No asbestos fibers detected	Correct problem. If required, re-prepare and re-analyze Non-friable Non-ACM Blank and all samples processed with the contaminated blank.	Analyst, Supervisor	Accuracy/Bias/ Contamination	No asbestos fibers detected
Intra-analyst Duplicate	10% per month	Within one quantification range above or below that found on the initial analysis	Correct problem, then re-prepare and re-analyze all samples in the associated preparatory batch, if exceedance not caused by sample matrix.	Analyst, Supervisor	Precision/ Accuracy/Bias	Within one quantification range above or below that found on the initial analysis
Inter-analyst Duplicate	10% of Intra-duplicate analyses	Within one quantification range above or below that found on the initial analysis	Correct problem, then re-prepare and re-analyze all samples in the associated preparatory batch, if exceedance not caused by sample matrix.	Analyst, Supervisor	Precision/ Accuracy/Bias	Within one quantification range above or below that found on the initial analysis

SAP Worksheet #29 – Project Documents and Records Table

Document	Where Maintained
Work Plan, which includes this SAP	Project file, NAVFAC SW Administrative Record
Field forms	Project file
Chain-of-custody forms	Project file, laboratories; NAVFAC SW will receive a copy of definitive data chain-of-custody records
Shipping Records	Project file
Audit/assessment checklists/reports	Project file and laboratory (if applicable)
Corrective action forms/reports	Project file and laboratory (if applicable)
Field change request forms	Project file
Analytical laboratory data packages (DoD Stage 4)	Laboratory and project file; NAVFAC SW Administrative Record
Data validation reports	Validator and project file; NAVFAC SW Administrative Record

Field documentation associated with sampling activities includes field forms, sample labels, chain-of-custody records, sample shipping records, field surveillance reports, and Field Change Request (FCR) forms. In addition, laboratory and data validator documentation will be generated during this project. These types are described in the following sections.

Field Logbooks/Forms
Field forms (or logbooks) will be handled in accordance with SOP PR-TC-01.04.04.00, *Field Documentation* (included in Attachment 1 of this SAP).

Sample Labels
For radiological analysis of fill material, a resealable plastic bag will be used to collect soil samples. Sample labels will be generated at the time the chain-of-custody record is prepared, and affixed to the resealable plastic bag and the prepared sample container (if one is used during sample processing). The label will contain the following:

- Sample identification number.
- Sample collection date (month/day/year)
- Analytical method.
- Time of collection.
- Sampler's initials.

SAP Worksheet #29 – Project Documents and Records Table (Continued)

If containers are too small to fit all the sample information listed above, at a minimum the container will be labeled with the sample identification number, and the remaining information will be recorded on the chain of custody.

For chemical samples to be sent to the laboratory labels will be hand-written using indelible black or blue ink on a waterproof label and affixed to each sample container at the time of sample collection (or labels may be computer generated). The label will contain the following information:

- Sample identification number.
- Sample collection date (month/day/year).
- Time of collection (24-hour clock).
- Sampler's initials.
- Preservative (if any).

Chain of Custody
Chain-of-custody record information is described in SAP Worksheet #27.

Sample Shipping Records
For samples shipped via FedEx to the laboratory(s), the chain-of-custody record will be packaged within the cooler, and the sender's copy of the airbill will serve as custody documentation. The air bill number will be written on the COC, and the airbill will be maintained in the project file. Sample shipping procedures are detailed in SAP Worksheet #27.

Field Surveillance Reports
Field surveillances will be performed in accordance with the three phases of inspection as required by the QC program. A Preparatory Inspection will be performed by the PQCM prior to the first sampling activities. This will include a general orientation for health and safety. An Initial Inspection will be conducted at the beginning of field sampling activities for this project. Daily field inspections and subsequent surveillances will be performed at the discretion of the PQCM or the QCPM throughout the duration of the project. The PQCM will use the Initial Inspection Checklist during inspection.

Field Change Request
An FCR will be prepared by the Program Chemist, or a designee, if a change to the SAP is needed during sampling activities. Any changes will not result in a change DQOs for this project. The FCR will be reviewed and approved by the Navy QAO via NIRIS and will be acknowledged by the QCPM prior to field implementation.

SAP Worksheet #29 – Project Documents and Records Table (Continued)

Major changes to work scope affecting the DQOs or meeting criteria described in EWI #2, 3EVR.2, Review, Approval, Revision, and Amendment of Sampling and Analysis Plans (NAVFAC SW, 2006) will require preparation of a SAP Addendum. The SAP Addendum must be approved by the Navy QAO and the planning team identified on SAP Worksheet #10 prior to conducting sampling and analysis.

Laboratory Documentation
Relevant laboratory raw data and documentation, including but not limited to logbooks, data sheets, electronic files, and reports, will be maintained by the laboratory for at least 5 years. Gilbane must be notified 30 days before disposal of any relevant records. Laboratory data packages will be compliant the reporting requirements as described in Appendix A of the DoD QSM 5.3.

- Imported fill material used for backfill – 100 percent suitable for Stage 4.
- Waste Characterization samples – 100 percent suitable for Stage 2A.

For Stage 2A- or 4-suitable data packages, an EDD will be uploaded directly to Gilbane's web-based portal at http://edms.gilbaneco.com. The hard-copy data package also will be uploaded in PDF format to the portal. Both the EDDs and the hard-copy data package will present results to two or three significant figures. For radiological results, at least three significant figures will be used. For organic results, at least two significant figures will be used. For inorganic results, at least two significant figures will be used for results less than 10, and at least three significant figures will be used for results greater than 10. Results for QC analyses (method blanks, MS/MSDs, LCSs, and duplicates) will be reported up to 3 significant figures.

When revisions to Stage 2A- or 4-suitable data packages are required, the report will be resubmitted in its entirety to both the portal and the Project Chemist, with the notation "amended or revised report." If the revisions affect the EDDs, the revised EDD also will be uploaded to the portal.

Data Validation Reports
Samples are to be validated in accordance with **SAP Worksheet #36** and Gilbane SOP PR-TC-04.01.00.00 or PR-TC-04.01.02.00, as appropriate.

The validation report for definitive samples will include the data validation findings worksheets. Each laboratory sample delivery group (SDG) will have its own data validation report. The validation reports will contain the following information:

- Title page that contains project name, sample collection date, validator subcontractor name, report date, type of analysis, laboratory, sample delivery group (SDG), sample identifications (including MS/MSD, duplicate, reanalysis, or dilution samples), sample matrix (e.g., soil, water), and validation level (DoD Stage 2B or Stage 4).

SAP Worksheet #29 – Project Documents and Records Table (Continued)

- Introduction page including the number of samples per matrix, analytical method reference, validation guideline reference, section references to summary qualification flags, and identification of QC samples. The report body will include the acceptance criteria used to evaluate each QC parameter exceeding criteria, a list of all QC exceedances as well as the associated bias, the samples associated with each exceedance, and the qualifiers applied. Statements regarding flag classification (protocol/advisory) and whether a raw data check was performed also will be included.
- Evaluation and discussion of the following parameters:
  - Technical holding times.
  - GC/MS instrument performance check (tune) if applicable.
  - Calibration.
  - Laboratory blanks.
  - Accuracy and precision data for internal laboratory QC associated with each SDG.
  - Target compound identification.
  - System performance checks.
  - Analyte quantitation and quantitation limits (MDC and LOQs).
  - Field QC samples (if not applicable, report will note).
  - Overall assessment of data.
  - Qualifier classification.

The data validator will upload a PDF copy of the validation report to the project portal at http://edms.gilbaneco.com, and enter qualifiers directly to the database using the project portal.

The data validation subcontractor must maintain validation records for at least 5 years. Gilbane will be notified 30 days before disposal of any records.

SAP Worksheet #30 – Analytical Services Table

Matrix	Analytical Group	Sample Locations/ ID Number	Analytical Method	Data Package Turnaro und Time	Laboratory / Organization (name and address, contact person and telephone number)	Backup Laboratory / Organization (name and address, contact person and telephone number)
Soil	PAHs, Pb, Metals, PCBs, Pesticides, VOCs, SVOCs, TPH, pH	Samples as listed on SAP WS #18	EPA 8270CSIM, 6010B, 6020/7471A, 8082, 8081A,8260B, 8270C, 8015B, 9045D	10 Business Days	Pace National 12065 Lebanon Road Mt. Juliet, TN 37122 Jennifer Gambill 615-773-9670 jgambill@pacenational.com	GEL Laboratories, LLC 2040 Savage Road Charleston, SC 29407 Jake Crook 843-769-7390 jhc@gel.com
Soil	Ra-226	Samples as listed on SAP WS #18	HASL 300 GA-01-R	20 Business Days	Pace National 12065 Lebanon Road Mt. Juliet, TN 37122 Jennifer Gambill 615-773-9670 jgambill@pacenational.com	GEL Laboratories, LLC2040 Savage Road Charleston, SC 29407 Jake Crook 843-769-7390 jhc@gel.com

SAP Worksheet #30 – Analytical Services Table

Matrix	Analytical Group	Sample Locations/ ID Number	Analytical Method	Data Package Turnaround Time	Laboratory / Organization (name and address, contact person and telephone number)	Backup Laboratory / Organization (name and address, contact person and telephone number)
Soil	Asbestos	Samples as listed on SAP WS #18	EPA 600/R-93/116	10 Business Days	A&B Labs 10100 East Freeway, Ste. 100 Houston, TX 77029 Alisha Hughes 713-543-6060	NVL Laboratories, Inc. 4708 Aurora Ave N Seattle, WA 98103 206-547-0100

Selected laboratories will have successfully completed the DoD ELAP certification for the matrices and methods listed in SAP Worksheet #23 and will maintain current status throughout the duration of this project. Laboratories also will be certified by the California Water Board under the ELAP for all the analytical methods listed in SAP Worksheet #23. DoD and California ELAP certifications for the primary laboratory are presented in Attachment 4 of this SAP. Laboratories must provide the project QC and data deliverables required by this SAP and the DoD QSM for Environmental Laboratories version 5.3 or as applicable per the laboratory's certification. Status of laboratory certifications/ accreditations will be verified prior to fieldwork and before samples are delivered to lab. Updates to lab accreditation to ensure the laboratory is qualified to perform the analysis will be made prior to sample testing.

SAP Worksheet #31 – Planned Project Assessments Table

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment (title and organizational affiliation)	Person(s) Responsible for Responding to Assessment Findings (title and organizational affiliation)	Person(s) Responsible for Identifying and Implementing Corrective Actions (CA) (title and organizational affiliation)	Person(s) Responsible for Monitoring Effectiveness of CA (title and organizational affiliation)
Field Sampling Surveillance	Annually; at least one technical systems audit (TSA) at the start of field activities, with discretionary follow-ups	Internal	Gilbane	PQCM (Gilbane)	Project Manager (Gilbane)	Project Manager (Gilbane)	Project Manager and PQCM (Gilbane)
Management Review	Once during the project	Internal	Gilbane	QCPM (Gilbane)	Project Manager (Gilbane)	Project Manager (Gilbane)	PQCM (Gilbane)

SAP Worksheet #32 – Assessment Findings and Corrective Action Responses

Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings (name, title, organization)	Time-frame of Notification	Nature of Corrective Action Response Documentation	Individual(s) Receiving Corrective Action Response	Time-frame for Response
Field Sampling Surveillance	Surveillance Report	Project Manager, Gilbane	7 days after completion of report	Corrective Action Report	Project Manager and QCPM, Gilbane	5 days after notification
Management Review	Surveillance Report	Project Manager, Gilbane	7 days after completion of report	Corrective Action Report	Project Manager, Gilbane	14 days after notification

SAP Worksheet #33 – QA Management Reports Table

Type of Report	Frequency (daily, weekly monthly, quarterly, annually, etc.)	Projected Delivery Date(s)	Person(s) Responsible for Report Preparation (title and organizational affiliation)	Report Recipient(s) (title and organizational affiliation)
Field Sampling Surveillance Report	Once, at startup of sampling	Determined during the project	PQCM, Gilbane	Project Manager and QCPM, Gilbane
Management Review Report	Once, after management review is completed	Determined during the project	QCPM, Gilbane	Project Manager and Program Manager, Gilbane

SAP Worksheet #34 – Verification (Step I) Process Table

Verification Input	Description	Internal / External	Responsible for Verification (name, organization)
Field notes/logbook	Field notes will be reviewed internally, at intervals as needed during the project and at the completion of the work and placed in the project file. Radiological surveys will be reviewed in accordance with the Radiation Protection Plan (Gilbane, 2020). A copy of the field notes will be attached to the final report.	I	PQCM, Gilbane Site RSO or designee, Envirachem/Gilbane
Chain-of-custody forms	Chain-of-custody forms will be reviewed internally in the field upon completion and verified against the packed sample coolers they represent. The shipper's signature on the chain-of-custody form will be initialed by the reviewer. A copy of the form will be retained in the project file, and the original and remaining copies will be taped inside the cooler for shipment.	I I	PQCM, Gilbane Second-level review by Project Chemist, Gilbane
Sample receipt	For samples shipped to the lab via FedEx, the Project Chemist will verify receipt of samples by the laboratory the day following the shipment.	I	Project Chemist, Gilbane
Sample logins	Sample log-in information will be reviewed and verified for accuracy and completeness in accordance with the requirements in this SAP.	E[1]	Laboratory PM
Laboratory analytical results prior to release	Laboratory analytical results will be reviewed to verify that the requirements in this SAP have been met. Prior to release, results will be verified as follows:	E[1]	Laboratory PM
	• Analytical results (100 percent) comply with the method- and project-specific requirements, and any deviation or failure to meet criteria is documented for the project file.	E[1]	Laboratory PM
	• Manual entries (100 percent) are free of transcription errors, and manual calculations are accurate; computer calculations are spot-checked to verify program validity; results reported are compliant with method- and project-specific QC requirements; raw data and supporting materials are complete; spectral assignments are confirmed; descriptions of deviations from method or project requirements are documented; significant figures and rounding have been used appropriately; reported values include dilution factors; and results are reasonable.	E[1]	Analyst

SAP Worksheet #34 – Verification (Step I) Process Table (Continued)

(UFP-QAPP Manual Section 5.2.1)

Verification Input	Description	Internal / External	Responsible for Verification (name, organization)
Laboratory analytical results prior to release (Continued)	• Analytical results reported are compliant with method- and project-specific QC; analytical methods are implemented in compliance with approved SOPs. (This review may be conducted after release of results, since reviews are done only on 10 percent of the results.)	E[1]	Laboratory PM
Laboratory analytical results due at turnaround time listed on chain-of-custody record	Laboratory analytical results will be verified as having been obtained following the protocols in this SAP and being of sufficient quality to satisfy DQOs.	I	Project Chemist, Gilbane
Laboratory Data Packages	Screening data reports and Stage 3- or 4-equivalent laboratory data packages will be verified by the laboratory performing the work for completeness and technical accuracy prior to submittal, in accordance with the requirements described in SAP Worksheet #29.	E[1]	Laboratory PM
Field and electronic data	One-hundred percent of manual entries will be reviewed against the hard-copy information, and 5 percent of electronic uploads will be checked against the hard copy.	I	Project Chemist, Gilbane
Analytical Procedures	Ensure that the analytical methods and deliverable requirements described in this SAP were followed (including holding times, analyte lists, and QC criteria).	E[1]	Laboratory PM
Laboratory Data Reports	Ensure that data reports are validated by the laboratory performing the work for technical accuracy and for meeting the requirements listed in SAP Worksheet #29 prior to submittal.	E[1]	Laboratory PM

Notes:

[1]The Laboratory Project Manager may direct the use of a designee for verification inputs as needed.

SAP Worksheet #35 – Validation (Steps IIa and IIb) Process Table

Step IIa / IIb	Validation Input	Description	Responsible for Validation (name, organization)
IIa	Sample Collection	Ensure that the sampling procedures described in this SAP were used to collect samples and that any deviations from those procedures were documented in a FCR.	PQCM, Gilbane Project Chemist, Gilbane
IIa	Sample Handling	Ensure that the procedures described in this SAP for sample handling, packaging, and transport to the laboratory were followed.	PQCM, Gilbane Project Chemist, Gilbane
IIa	Sample Documentation	Ensure that the chain-of-custody record procedures described in this SAP were followed for sample collection, and that logbooks or field forms were completed as required.	PQCM, Gilbane Project Chemist, Gilbane
IIb	Sampling Procedures	Review sampling procedures to document any deviations that occurred and note any corrective actions required.	PQCM, Gilbane
IIb	Analytical Procedures	Review analytical procedures to document any deviations that occurred and note any corrective actions required.	Site RSO or designee, Envirachem/Gilbane Project Chemist, Gilbane Third Party Validator, Validata
IIb	Project Quantitation Limits and Laboratory QC Criteria	Ensure that project quantitation limits and laboratory QC criteria were followed and that any deviations were documented.	Site RSO or designee, Envirachem/Gilbane Project Chemist, Gilbane Third Party Validator, Validata

Notes:
The Laboratory PM may direct the use of a designee for verification inputs as needed.

SAP Worksheet #36 – Analytical Data Validation (Steps IIa and IIb) Summary Table

Step IIa / IIb	Matrix	Analytical Group	Validation Criteria	Data Validator (title and organizational affiliation)
IIa	All	All	In accordance with Laboratory SOPs listed in SAP Worksheet #23 and the DoD QSM 5.3	Site RSO or designee, Envirachem/Gilbane Project Chemist, Gilbane
IIb	All	Waste	In accordance with NAVFAC SW EWI #1, this SAP, and Gilbane SOP PR-TC-04.01.00.00 and PR-TC-04.01.02.00	Project Chemist, Gilbane
IIb	All	Definitive Data (Import Fill Material Sampling)	In accordance with NAVFAC SW EWI #1, this SAP, and Gilbane SOP PR-TC-04.01.00.00 and PR-TC-04.01.02.00	Third-Party data validator, Validata

The validation strategy for definitive data for this project is 90% Stage 2B and 10% Stage 4, in accordance with Step IIb above. The 10% will be randomly chosen on the chain-of-custody record. Waste samples will be validated at a Stage 2A.

DoD Stage 4 Data Validation

DoD Stage 4 data validation is a full validation that will be performed on the TI Phase IV NTCRA summary and raw data packages. The data reviewer will request any missing information from the laboratory and copy the Project Chemist when missing information is requested. The data reviewer will validate all components of the data package even when an individual QC element has been rejected. An overall final qualification of results will encompass the impact of individual findings and will be determined using the professional judgment of a senior data reviewer.

SAP Worksheet #36 – Analytical Data Validation (Steps IIa and IIb) Summary Table (continued)

Stage 4 Data Validation Elements

The QC elements to be reviewed for Stage 4 validation are listed below.

Radiological Analyses

- Chain of Custody
- Case Narrative
- Initial calibration.
- Continuing calibration.
- Blanks.
- Duplicate sample RPD, duplicate error ratio (DER), or relative error ratio (RER), as appropriate.
- Laboratory control sample recovery.
- Reporting limits and uncertainty.
- Review of reagent traceability summary, if applicable.
- Calculation checks of quantified analytical data and QC samples.
- Overall assessment of data in the SDG.

Chemical Analyses

- Chain of custody.
- Case narrative.
- Holding times and preservation.
- Blanks.
- Lab QC.
- Field QC, if applicable.
- Surrogates and internal standards, where applicable.
- Initial and continuing calibrations.
- Instrument performance checks.
- Review of raw data.
- Review of reagent traceability summary, if applicable.
- Calculation checks of quantified analytical data and QC samples.

SAP Worksheet #36 – Analytical Data Validation (Steps IIa and IIb) Summary Table (continued)

DoD Stage 2B Data Validation

Stage 2B data validation is a validation that will be performed on the summary packages only (i.e., not on raw data). The Stage 2B encompasses sample completeness/compliance, field QC, method QC, and instrument-related QC. The data reviewer will request any missing information from the laboratory and copy the client's project manager when missing information is requested. The data reviewer will validate all components of the summary data package, even when an individual QC element has been rejected. An overall final qualification of results will encompass the impact of individual findings and will be determined using the professional judgment of a senior data reviewer.

Stage 2B Data Validation Elements

The QC elements to be reviewed for Stage 2B validation are listed below.

Radiological Analyses

- Chain of custody.
- Case narrative.
- Initial calibration.
- Continuing calibration.
- Blanks.
- Duplicate sample RPD, DER, or RER, as appropriate.
- Laboratory control sample recovery.
- Reporting limits.
- Overall assessment of data in the SDG.

Chemical Analyses

- Chain of custody.
- Case narrative.
- Holding times and preservation.
- Blanks.
- Lab QC.
- Field QC, if applicable.
- Surrogates and internal standards, where applicable.
- Initial and continuing calibrations.
- Instrument performance checks

SAP Worksheet #36 – Analytical Data Validation (Steps IIa and IIb) Summary Table (continued)

DoD Stage 2A Data Validation

Stage 2A data validation is a cursory validation that will be performed on the summary packages only (i.e., not on raw data). The Stage 2A validation encompasses sample completeness/compliance, field QC, and method QC. The data reviewer will request any missing information from the laboratory and copy the client's project manager when missing information is requested. The data reviewer will validate all components of the summary data package, even when an individual QC element has been rejected. An overall final qualification of results will encompass the impact of individual findings and will be determined using the professional judgment of a senior data reviewer.

Stage 2A Data Validation Elements

The QC elements to be reviewed for Stage 2B validation are listed below.

Radiological Analyses

- Chain of custody.
- Case narrative.
- Blanks.
- Duplicate sample RPD, DER, or RER, as appropriate.
- Laboratory control sample recovery.
- Reporting limits.
- Overall assessment of data in the SDG.

Chemical Analyses

- Chain of custody.
- Case narrative.
- Holding times and preservation.
- Blanks.
- Lab QC.
- Field QC, if applicable.
- Surrogates, where applicable.

SAP Worksheet #36 – Analytical Data Validation (Steps IIa and IIb) Summary Table (continued)

The following documents will be used as guidance for validating chemical analytical results:

- *General Data Validation Guidelines* (DoD, 2019)
- *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*, EPA 540-R-2017-002 (EPA, 2017a).
- *Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review*, EPA 540-R-2017-001 (EPA, 2017b).
- EWI #1, 3EN2.1, Chemical Data Validation (NAVFACSW, 2001).
- *Test Methods for Evaluating Solid Waste, Physical Chemical Methods*, SW-846, Third Edition and final updates (EPA, 1986).
- QSM v. 5.3 (DoD/ DOE, 2019) or as applicable per the laboratory certification.
- QC criteria specified in this SAP.

Radiological analytical results will be validated using the QC criteria specified in the SAP and QSM v. 5.3 (DoD/DOE, 2019), Gilbane SOP PR-TC-04.01.02.00, and Chapter 8 of the *Multi-Agency Radiological Laboratory Analytical Protocols Manual* (MARLAP), EPA 402-B-04-001A (EPA et al., 2004).

SAP Worksheet #37 – Usability Assessment

After the analytical results have been reviewed, verified, and validated in accordance with **SAP Worksheets #34 through #36**, a Quality Control Summary Report (QCSR) will be prepared as an appendix to the Post Construction Summary Report to assess data quality and usability. The QCSR will include review of the following, and will include enough information to support the data usability conclusions:

- Sample collection and analytical methods to verify that these were performed as discussed in **SAP Worksheets #14 and #17**.
- Project-specific QLs as listed in **SAP Worksheets #15.1 through #15.9** to verify that project-specific remedial goals were met for each sample.
- DQOs to determine whether they have been achieved by the data collected.
- Project-specific data quality indicators for precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) parameters (including, but not limited to, assessment of analytical DQOs) as discussed below.

Precision

Precision is defined as the degree of mutual agreement between individual measurements of the same property under similar conditions, and provides a measurement of the reproducibility of an analytical result. Precision will be evaluated through the analysis of field duplicate samples, LCS and LCSD (if LCSD is run), and MS/MSD samples, as applicable (see SAP Worksheet #20). QC criteria failures will be documented in the case narrative and included in the Comprehensive Analytical Report from the analytical laboratory. The precision measurement will be determined using the RPD, RER between the duplicate sample results as follows:

$$RPD = \frac{|A-B|}{(A+B)/2} \quad x \quad 100\%$$

where: A = First duplicate concentration
B = Second duplicate concentration

$$DER = \frac{|(S-D)|}{\sqrt{(CSUs)^2-(CSUd)^2}}$$

=

SAP Worksheet #37 – Usability Assessment (Continued)

where: S = Sample result
D = Duplicate (or lab replicate) result
CSUs = Combined standard uncertainty of the sample
CSUd = Combined standard uncertainty of the duplicate
DER = Duplicate error ratio

RER = (result activity – duplicate activity)/(sample uncertainty + duplicate uncertainty)
using 2 sigma propagated uncertainty

As applicable, the RPD or RER limits for laboratory duplicates, MSDs, and LCSDs are presented in SAP Worksheet #28. Associated samples that do not meet the criteria will be evaluated by the validator.

Field duplicate precision will be evaluated for chemical and radiological analyses for those concentrations 5 times the reporting limit using the RPD presented on SAP Worksheet #12. For concentrations less than 5 times the reporting limit, the precision for chemical analyses will be evaluated by a “reporting limit check” in which the difference in concentration between the duplicate and the parent sample is compared to the reporting limit as the criterion. Field duplicate precision for gamma spectrometry with concentrations near the MDC will be evaluated using an RER criterion of less than or equal to 1.

For the MS and the MSD, sample heterogeneity and the presence of interfering compounds often negatively affect the precision of the analysis. Also, the presence of high levels of target compounds in the sample chosen for spiking may necessitate a dilution of the sample or may otherwise result in errors in spiked compound recovery. For these reasons, MS samples may not be truly representative of the precision of the analytical process. When the RPD obtained from the results of MS/MSD are out of criteria and the RPD of the LCS/LCSD is within criteria, the poor variance is attributed to the matrix of the sample and the effect on the project objectives must be considered.

The overall precision will be discussed in the QCSR. If the precision is poor, the impacted data will be qualified as described in the EPA National Functional Guidelines. The impact will be documented along with the rationale for re-sampling or the limited or unlimited use of the data.

Accuracy
Accuracy is the degree of agreement between an analytical measurement and a reference accepted as a true value. The accuracy of a measurement system can be affected by errors introduced by field contamination, sample preservation, sample handling, sample preparation, or analytical techniques. A program of sample spiking will be conducted to evaluate laboratory accuracy. Accuracy will be evaluated by the percent recovery of the spiked compounds in the LCS, LCS duplicate, and MS/MSD

SAP Worksheet #37 – Usability Assessment (Continued)

samples. LCS and MS samples will be spiked prior to extraction with the method target compounds indicated in this SAP. MS/MSD and LCS or blank spike samples will be analyzed at a frequency of 5 percent or one per sample delivery group/analytical batch (sample sets are about 10 samples). The results of the spiked samples will be used to calculate the percent recovery for evaluating accuracy, using the following equation:

$$\text{Percent Recovery} = \frac{S - C}{T} \times 100$$

where:

S	=	Measured spike sample concentration
C	=	Sample concentration
T	=	True or actual concentration of the spike

SAP Worksheet #28 presents accuracy goals for this investigation based on the percent recovery of matrix and surrogate spikes. Results that fall outside the accuracy goals will be further evaluated based on other QC samples.

For MS and MSD, sample heterogeneity and the presence of interfering compounds often negatively affect the accuracy and precision of the analysis. Also, the presence of high levels of target compounds in the sample chosen for spiking may necessitate a dilution of the sample, or may otherwise result in errors in spiked compound recovery. For these reasons, MS/MSD samples may not be truly representative of the accuracy and/or precision of the analytical process.

If MS/MSD analyses do not meet the specified recovery criteria, the recoveries from the LCS will be evaluated. If the LCS accuracy criteria are met, the failure of the MS/MSD will be attributed to interference from the sample matrix, and no corrective action will be required. If the LCS accuracy criteria are not met, the associated primary and QC samples will be re-prepared and re-analyzed.

In cases where re-preparation and re-analysis of the samples is not possible, the QC criteria failures will be documented in the case narrative and included in the Comprehensive Analytical Report. The affected data will be qualified as described the guidelines described in SAP Worksheet #36, and the impact of the QC failures on the DQOs for the project will be assessed in the final report.

Trend Analysis for Precision and Accuracy

For each analytical method, the laboratory uses the MS/MSD and LCS/LCSD data to track and analyze trends in the laboratory. From these trends they can recognize deficiencies in the method and create in-house acceptance criteria. For this project, the limits are based on the most recent version of the DoD QSM if available. For methods

SAP Worksheet #37 – Usability Assessment (Continued)

where the limits are not available, the project criteria default to the laboratory criteria based on their tracked trending.

The precision and accuracy of the entire data set is used to determine if any systemic problems have occurred during the sampling event that will result in deficiencies in the data set. The occurrence of systemic problems and the resulting consequences will be discussed in the QCSR. The data reviewer will make every effort to identify any critical elements or trends that would result in non-usability of data as early as possible.

Representativeness
Representativeness expresses the degree to which sample data accurately and precisely represent the characteristics of a population, variations in a parameter at a sampling point, or an environmental condition that they are intended to represent. For this project, representative data will be obtained through careful selection of sampling locations and analytical parameters. Representative data also will be obtained through proper collection and handling of samples to avoid interference and minimize cross-contamination. Representativeness of data will also be ensured through consistent application of the appropriate established field and laboratory procedures. To aid in evaluating the representativeness of the sample results, field and laboratory blank samples will be evaluated for the presence of contaminants. Laboratory procedures will be reviewed to verify that standard operating procedures were followed and method requirements were met during the analysis of project samples. Laboratory sample storage practices, holding times, sub-sampling procedures, method blanks, and evidence of matrix interference will be assessed for potential impacts on the representativeness of the data.

Data determined to be non-representative will be used only if accompanied by appropriate qualifiers and limits of uncertainty.

Representativeness as it relates to field procedures refers to the collection of samples that allow accurate conclusions to be made regarding the composition of the sample media at the entire site. Representativeness will be assessed qualitatively by evaluating whether the procedures described in this SAP were followed. The site-sampling layout, including sampling locations, frequency of sampling, and timing of sampling activities, will be reviewed.

Completeness
Completeness is a measure of the percentage of project-specific data that are valid. Valid data are obtained when samples are collected and analyzed in accordance with the QC procedures outlined in this SAP and when none of the QC criteria that affect data usability is exceeded. When data validation is completed, the percent completeness value will be calculated by dividing the number of useable samples by the total number of samples planned for this investigation to calculate field completeness.

SAP Worksheet #37 – Usability Assessment (Continued)

Completeness will be evaluated by reviewing the tasks that contribute to the sampling event, such as chain-of-custody procedures, adherence to the Work Plan, and adherence to this Sampling and Analysis Plan. The QC parameters to be evaluated in determining completeness include holding times, initial calibrations, continuing calibrations, surrogate recoveries, LCS recoveries, MS/MSD recoveries and RPDs, and laboratory duplicate RPDs. Analytical completeness will be calculated based on the number of individual results (i.e., per analyte). The evaluation of completeness will help determine whether any limitations are associated with the decisions to be made based on the data collected. The completeness goal for this project is 95%.

Comparability
Comparability expresses the confidence with which one dataset can be compared with another. Comparability of data will be achieved by consistently following standard field and laboratory procedures and by using standard measurement units in reporting analytical data. Analytical methods selected for this field investigation are consistent with the methods used during previous investigations of this type. To ensure the comparability of laboratory data, the contract laboratory will use standard test methods and means of sample preservation; standard units, detection limits, calculation procedures, and reporting formats; and standard measures of accuracy and precision. Only laboratories that have been approved by the DoD ELAP will perform chemical analyses of environmental samples to produce definitive data in support of this CTO.

Sensitivity
The DL, LOD, and LOQ will be evaluated by the project team prior to sample analysis to determine if the laboratory is able to attain the required sensitivity for the project. If project decision limits are too sensitive, it will be determined prior to sample analysis whether a sensitivity variance will be issued to the laboratory based on the method chosen and the technology available.

The DL is the minimum quantity of an analyte that can be reliably distinguished from background noise or from zero for a specific analytical method at a 99 percent confidence level. The DL protects against false positives. The LOD is the minimum quantity of an analyte that can be reliably detected for a specific analytical method at a 99 percent confidence level that the value is not a false negative. The LOD should be equivalent to the concentration of the DL verification standard. The LOQ represents the smallest quantity of an analyte that can be accurately and reproducibly quantified in a given sample matrix (e.g., three to five times the

LOD). For this project, the minimum detectable concentration (MDC) pertains only to radiological analyses, defined as follows in accordance with the Multi-Agency Radiological Laboratory Analytical Protocols: the MDC is calculated as a sample specific value and typically these values assume both a Type I (α) and Type II (β) error

SAP Worksheet #37 – Usability Assessment (Continued)

of 5 percent. The LOD and/or the LOQ and MDC should be sensitive enough to meet the project decision limits (e.g., PSLs). The LOD, LOQ and MDC will be evaluated after sample analysis to determine if there were any matrix effects, operator errors, or analytical process errors that interfered with the ability to compare the results to the project decision limits. The LOD and MDC (as applicable) will be used to determine if no detectable amounts of contaminants of concern are present. If no detectable amounts are reported and all data are acceptable from the verification and validation, then the data is usable. The DL will be used to determine if any detectable amounts of contaminants of concern are present. If detectable amounts are reported and the verification and validation are acceptable, then the data is usable. Any detection falling between the DL and LOQ are qualified as estimated. If anomalies in sensitivity are present, the rationale for use or non-use of the affected samples will be discussed in the QCSR. Worksheet #15 presents the laboratory DL, LODs, LOQs, and MDCs (as applicable) for the selected analytical method(s) used to support the project decision limits.

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FIGURES

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Phase IV NTCRA for SWDA Westside at IR Site 12
Former Naval Station Treasure Island
San Francisco, CA

Figure 1
IR Site 12
SWDA Westside
Location Map

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NAVFAC Naval Facilities Engineering Command

Phase IV NTCRA for SWDA Westside at IR Site 12
Former Naval Station Treasure Island
San Francisco, CA

Figure 2

Existing Soil Stockpiles and RSY Pads

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APPENDIX D

WASTE MANAGEMENT PLAN

(Provided on CD)

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Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

FINAL
Waste Management Plan

Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12
Former Naval Station Treasure Island
San Francisco, CA
March 2021

DCN: GLBN-0005-F5271-0007

Prepared for:

Department of the Navy
Naval Facilities Engineering Command Southwest
BRAC PMO West
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Contract Number: N62473-17-D-0005; Task Order No. N6247318F5271

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Attachment 1 Waste Inventory Log
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Acronyms and Abbreviations

BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSO	Caretaker Site Office
Gilbane	Gilbane Federal
ID	identification
IDW	investigative-derived waste
IR	Installation Restoration
LDR	Land Disposal Restriction
LLRO	Low-level radioactive object
LLRW	low level radiological waste
NAVFAC SW	Naval Facilities Engineering Command Southwest
Navy	United States Department of the Navy
NTCRA	non-Time Critical Removal Action
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl
PMO	Project Management Officer
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
ROICC	Resident in Charge of Construction
RPP	Radiological Protection Plan
SWDA	Solid Waste Disposal Area
T&D	transport and disposal
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compounds
WMP	Waste Management Plan

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1.0 Introduction

This Waste Management Plan (WMP) was prepared and will be implemented by Gilbane Federal (Gilbane), under Contract No. N62473-17-D-0005, Contract Task Order F5271. This WMP describes plans for the management of wastes anticipated during implementation of the remedial action activities to be performed in the Solid Waste Disposal Areas (SWDA) within Installation Restoration (IR) Site 12 and to continue the IR Site 12 non-time critical removal action (NTCRA) at the Westside SWDA at the former Naval Station Treasure Island in San Francisco, California. A secondary goal of this WMP is to ensure that waste minimization practices are followed, to the extent practicable, to reduce the volume of waste that will be generated, stored, and removed from the site for disposal.

This WMP covers both wastes to be remediated under this task order and investigative-derived waste (IDW) generated during the remediation activities. The wastes expected by types, generation, storage, sampling and analysis, waste profiling, transportation, and ultimate disposal of waste are documented in this WMP. The wastes generated at the site will be transported and disposed of in a cost-effective, timely, and compliant manner. Details regarding the transportation and disposal of Low-Level Radioactive Waste (LLRW) will be completed by the Navy's radiological waste broker under a separate contract. Gilbane will coordinate with the Navy's radiological waste broker.

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2.0 Types of Waste

The following wastes may be produced:

- Chemically and/or radioactively contaminated soil and debris
- Recovered material potentially presenting an explosive hazard / munitions and explosives of concern (handled in accordance with the Explosives Safety Submission)
- Recovered low-level radioactive objects (LLROs)
- Non-soil and/or construction debris (e.g., wood and organic debris, scrap metal, poly sheeting) screened and released as munitions-free and not radioactively contaminated
- Run-off from laydown pads, petroleum-contaminated water, and other wastewater

The excavated and/or stockpiled material will be radiologically screened in order to segregate it into radioactive and non-radioactive waste streams. LLRW and mixed wastes will be turned over to the Navy's LLRW contractor for transport and disposal. Gilbane is responsible for the transport and disposal of all other wastes.

Three types of wastes are not suitable for radiologically screening. They are: (1) wood and organic debris, (2) metal debris, and (3) plastic and poly debris. These wastes will be turned over directly to the Navy's LLRW contractor for disposal.

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3.0 Handling and Storage

Waste will be managed by type based on waste stream characteristics and disposal facility requirements. Measures will be taken to avoid comingling of waste types through handling and transport for disposal. Waste will be stored temporarily at Navy-designated locations for sampling and analysis, to accumulate sufficient quantities for economical transportation and disposal, or to coordinate transportation between the carrier and the disposal site. Access to handling and storage areas will be controlled. Waste accumulation areas, including soil stockpiles, will be enclosed and/or roped-off, and appropriately posted.

Stockpiled soil will remain separate and segregated (i.e., each stockpile will consist of soil from a single screening on a given laydown pad) from other screened soil to retain data integrity and ensure there is no cross-contamination. Environmental protection measures (e.g., run-off/erosion control) will be implemented and maintained in accordance with the Environmental Protection Plan (see Work Plan Appendix C) while the soil is stockpiled.

3.1 Waste Minimization

To minimize the volume of waste, the following general guidelines will be followed.

- Field personnel will be trained in decontamination of field sampling equipment and personal protective equipment (PPE), minimizing the generation of decontamination water.
- Field personnel will be trained in the proper use of PPE. Based on the anticipated low site exposures, work will largely be performed in Level D, thereby minimizing PPE.
- Materials will not be contaminated unnecessarily.
- Work will be planned, based on the work procedure to be used.
- Only the material (e.g., chemicals) needed to perform the work activity will be taken to the work location.
- Additional material can be brought to the work location if it is found to be necessary.
- Materials can be stored in large containers, but the smallest reasonable container will be used to transport the material to the location where it is needed.
- Cleaning and extra sampling supplies will be maintained outside any potentially contaminated area to keep them clean and to minimize additional waste generation.

- Mixing of detergents or decontamination solutions will be performed outside potentially contaminated areas.
- Containers will be used to minimize the spread of contamination.
- Contaminated materials will not be placed with clean materials.
- Material and equipment will be decontaminated and reused when practical.
- Volume reduction techniques will be used when practicable.
- Waste containers will be verified to ensure they are solidly packed to minimize the number of containers.
- Only waste containers with adequate size to contain the volume of waste generated will be used.
- Less hazardous substances will be used whenever possible (i.e., only the volume of standard solutions needed for testing will be brought; minimal amounts of decontamination water and solvent rinses will be used).

3.2 Waste Generation and Accumulation

Wastes will be segregated and accumulated into the categories outlined in Table 1. Wastes from different sources will be additionally segregated by each individual source. Attachment 1 provides the Waste Inventory Log that will be used to track project wastes. Attachment 2 provides the Waste Storage Area Inspection Checklist that will be used to inspect each waste storage area on a weekly basis.

Solid waste from field activities, including PPE, disposable supplies, and materials used during sampling activities, will be double-bagged and disposed of as waste appropriate to the conditions under which it was used (e.g., disposable supplies used to sample radioactively contaminated soil are disposed as LLRW).

Tanks and containers will be handled as potentially hazardous and an “Analysis Pending – Potentially Hazardous Waste” label will be used on the drums until analytical results are available. Solid waste and liquid waste containers will be labeled with the following information: date, project name and number, generator name, point of contact, applicable contact numbers, contents of drum, and the location identification for where the waste was generated. Empty containers will be labeled as such to avoid confusion. The method of disposal will be determined based on the analytical results.

3.2.1 Solid Waste

Solid waste includes excavated soil and debris, will be loaded into roll-off boxes, drums, or other appropriate containers at the point of generation and sampled to determine whether it is LLRW. If so, it will be disposed as LLRW. LLRW will be transferred to the custody and control of the Navy’s LLRW contractor to be stored on site pending packaging, labeling, transport, and disposal by a certified waste broker at a permitted

radioactive/mixed waste disposal facility. The Navy's LLRW contractor will provide brokerage services, including waste characterization sampling required by the disposal facility, waste containers, and transportation of the waste for disposal. Wastes not suitable for radiologically screening will be turned over directly to the Navy's LLRW contractor for disposal.

LLROs will be disposed as LLRW. A waste information fact sheet will be prepared for each LLRO that is recovered to detail the analytical information about the source to include photographs of the source, radionuclide identification, estimated curie content, and radiological survey information.

Non-LLRW solid waste will be chemically characterized in accordance the disposal facility requirements as California hazardous waste, RCRA hazardous waste, Class II non-hazardous waste, or construction debris (e.g., hay bales, straw wattles, plastic). IDW will be handled, characterized and disposed of and/or recycled at an appropriate off-site facility.

3.2.2 Liquid Waste

Liquid waste (waste water) generated from field work activities (e.g., run-off water, contaminated water from decontamination activities), if any, will be characterized both chemically and radiologically prior to disposal. Work activities will avoid the use of significant quantities of liquids requiring treatment and/or disposal. Minimal use of water is anticipated for dust control activities; however, the generation of free water will be avoided. The generated waste water will be stored within SWDA Westside. Collected water will be filtered or sampled to verify compliance with the release criteria prior to discharge. Filters/sediment from water treatment will be handled as solid waste.

Collected waste water will be filtered or otherwise treated and sampled to verify compliance permit and/or discharge requirements prior to discharge. If permission is granted from the City and County of San Francisco to discharge small quantities of waste water to the on-site waste water treatment plan, then drummed liquid waste will be disposed of on-site rather than being transported off-site. Water not suitable for discharge will be disposed as liquid waste. Gilbane will obtain acceptance of liquid waste for disposal at the Treasure Island wastewater treatment facility or utilize an appropriate offsite facility.

3.2.3 Investigative-Derived Waste

IDW (e.g., PPE, plastic sheeting, decontamination water, etc.) generated during this project will be handled separately from the contaminated soil in the stockpiles. Stockpiled soil will be segregated. Temporary stockpiles will be placed on plastic sheeting to protect the surface soil from possible cross-contamination. A four (4)-point composite soil sample will be collected at each stockpile for waste characterization. IDW will be handled, characterized and disposed of and/or recycled at an appropriate off-site facility.

3.3 Waste Inspection and Documentation Program

While waste accumulation areas will be informally inspected daily, formal inspections of accumulation areas will be conducted and recorded weekly at a minimum and documented. These inspections will address any areas of concern at the time they are found. Daily inspections will be conducted for any containers or tanks containing hazardous waste. Inspections will be logged in a bound, numbered field notebook. The container storage area will be inspected to ensure the following:

- Container labels and markings are present, complete, accurate, and legible.
- Containers are in good condition. If a container is not in good condition or appears to be leaking, the waste will be transferred to another container.
- Containers are made of materials that will not react with, and are otherwise compatible with, the hazardous waste to be stored.
- Containers are closed at all times, except when adding or removing waste.
- Containers are stored on-site less than 90 days.

4.0 Waste Characterization

Samples will be collected and analyzed chemically and radiologically to characterize waste for disposal according to waste disposal facility requirements.

4.1 Waste Analysis

Representative samples for waste characterization will be obtained and additional grab samples for comparison to applicable United States Environmental Protection Agency (USEPA)/California Department of Toxic and Substance Control land disposal restrictions may also be collected. Wastewater samples will be taken when accumulation of liquids is completed or no later than 90 days after accumulation of liquids commenced to verify hazardous waste has not been generated.

Analytical methods required by the receiving facility may include:

- Polycyclic aromatic hydrocarbons (PAHs) by SW3550B / EPA 8270-SIM;
- Total petroleum hydrocarbons as motor oil and as diesel by SW3550B / EPA 8015B;
- Polychlorinated biphenyl (PCBs) by EPA 8082;
- Dioxins by EPA SW8290;
- Metals by EPA 6010B / 6020 / 7471A; and
- Volatile organic compounds (VOCs) by EPA SW8260B.

Additional tests may be performed based on the results of the above tests and discussions with the receiving facilities. The IDW samples for laboratory analysis will be collected as follows.

1. The sampling crew will obtain: a sample cooler with ice; a new, disposable sampling scoop, and wide-mouth sample jars (for soil IDW), as needed for each analytical suite and media. Certified clean sample containers will be supplied by the analytical laboratory.
2. Samplers will don new disposable sampling gloves and other appropriate PPE.
3. A four (4)-point composite soil sample will be selected from four (4) random locations and depths within the stockpile for every one thousand (1,000) cubic yard of stockpile volume. Soil will be collected with a disposable scoop from each selected location. Soil will be placed in clean, wide-mouth sample jars with Teflon-lined lids (certified clean and supplied by the analytical laboratory). Each sample will be labeled with its assigned unique identification number.
4. Labeled sample containers will be carefully placed in the ice-chilled cooler(s) in an upright position. Coolers will be packaged and shipped under chain-of-custody control to the laboratory per the procedures.

Based on the results of the analysis, the waste will be properly profiled for disposal and an appropriate, licensed disposal facility will be selected.

4.2 Waste Profiling

Waste profiles will be completed for both hazardous and nonhazardous wastes, as applicable, once analytical results have been received and waste is characterized for disposal in accordance with applicable regulatory and disposal facility criteria. Blank profiles will be obtained from the specific disposal facility that will be used. They will be completed to accurately characterize the waste. Waste profiles will be signed by the preparer.

Waste may be classified as RCRA hazardous, non-RCRA hazardous, or Class II non-hazardous, and transported via dump truck to the appropriate waste disposal facility as shown in Table 2. Liquid wastes will be profiled to verify compliance with the discharge permit for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) contaminants for the onsite sanitary sewer treatment system. Non-compliant liquid waste will be disposed of off-site.

5.0 Transportation and Disposal

Transportation of waste off-island will be performed by a licensed contractor. Prior to leaving the SWDA Westside radiologically controlled area, loose dirt and debris will be cleaned off the dovetail and bed rail of the truck. The truck will then drive over a rumble strip to knock off any clumps of soil that may have attached to the truck. The truck tires and dovetail will be inspected for loose material, radiologically surveyed, and power-washed, if needed. The truck will then pass through a radiation portal monitor for final confirmation of successful radiological screening. Trucks will be tarped as well.

Waste designated as LLRW will be turned over to the Navy's LLRW contractor. Other waste will be disposed by Gilbane at appropriate off-site disposal facilities consistent with the waste characterization and classification. Waste manifests will be coordinated with the Residential Officer in Charge of Construction (ROICC) and Caretaker Site Officer (CSO).

5.1 Transport and Disposal Coordinator

A transport and disposal (T&D) Coordinator will manage waste T&D activities, including contacting and scheduling the trucking companies and coordinating profiles and manifests with the CSO. The T&D Coordinator will then review available information and determine whether the wastes from different sources can be commingled for both cost and handling efficiency. No shipments of waste will leave the site without a Navy signature. The T&D Coordinator will direct and track all shipments and provide a report to the Project Quality Control Manager detailing the specifics of the management of the waste, including tonnage and date of shipment on each day that materials are shipped. The T&D Coordinator will ensure that the Navy coordinator receives the proper copies of signed manifests (after generator and transporter have signed) as well as all waste acceptance letters and certificates of disposal/destruction. The T&D Coordinator will receive the waste acceptance letters from the disposal facilities for inclusion into the report.

5.2 Waste Manifest Package Preparation

The T&D Coordinator will prepare a manifest package for each waste stream. Each manifest package will be reviewed and signed by the Navy representative. A copy of the manifest will be provided to the Navy. Copies of manifests for waste generated at the site will be maintained in the project files. Non-hazardous waste manifests will include the following: generator name and address, generator emergency response number, generator USEPA ID, and analytical profiles.

Hazardous waste, if generated, transported from the site will be accompanied by a Hazardous Waste Manifest. The Navy representative will be responsible for reviewing and signing both the waste manifest and Land Disposal Restriction (LDR) notifications (manifest packages). Waste manifests will include the following: generator name and

address, generator emergency response number, generator USEPA identification (ID), and analytical profiles. An LDR form will accompany any shipments of RCRA hazardous waste to the treatment, storage, and disposal facility (TSDF). The TSDF will be notified prior to the waste being sent.

5.3 Radiological Entry/Exit Screening

Trucks will need to pass through a radiological portal monitor as they enter and exit SWDA Westside and will be weighed and pass through another portal monitor at the disposal facility. Haul trucks, whether loaded or empty, will pass through a four-step radiological screening process prior to leaving SWDA Westside. First, loose dirt and debris will be cleaned off the dovetail and bed rail of the truck. The truck will then drive over a rumble strip to knock off any clumps of soil that may have attached to the truck. The truck tires and dovetail will be inspected for loose material, radiologically surveyed, and power-washed, if needed. The truck will then pass through a radiation portal monitor for final confirmation of successful radiological screening. Trucks coming onto and off the island will be tarped.

The portal monitor will be provided by Gilbane. The weight of the truck at the disposal facility will be used to determine the reimbursement for disposal. All trucks leaving the site with excavated soil will be covered and the exterior of the vehicles and tires will be decontaminated. The truck weight at the disposal facility is intended to provide a basis for documenting the quantity of waste disposed of offsite.

6.0 References

California Code of Regulation, Title 22, Social Security, Division 4.5, *"Environmental Health Standards for the Management of Hazardous Waste,"* Chapter 12, "Standards Applicable to Generators of Hazardous Waste," current through April 10, 2009.

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TABLES

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Table 1: Waste Accumulation Methods and Times

Waste	Accumulation Method	Maximum Accumulation Times*
Soil. Class 1 (hazardous) contaminated with semivolatile organic compounds, dioxins, and/or heavy meatals	Temporary waste pile; roll-off container	90 days maximum
Soil. Class 2 (nonhazardous, no regulated contaminants)	Temporary waste pile; roll-off container	Not applicable for nonhazardous; 90 days maximum for hazardous
PPE	Roll-off container; plastic bag	Not applicable for nonhazardous; 90 days maximum for hazardous
Construction debris (metal, wood, plastic, paper, etc.)	Temporary waste pile; roll-off container	Not applicable for nonhazardous; 90 days maximum for hazardous
Concrete chunks (from demolition of sidewalk, walkways, etc.)	Temporary waste pile; roll-off container	Not applicable for nonhazardous; 90 days maximum for hazardous
Asphalt chunks (from demolition of roadway)	Temporary waste pile; roll-off container	Not applicable for nonhazardous; 90 days maximum for hazardous
Wastewater (from equipment decontamination, stormwater and/or dewater of excavations)	Temporary storage tank	Not applicable for nonhazardous; 90 days maximum for hazardous

Notes:
*California Code of Regulations (CCR), Title 22, Social Security; Division 4.5, Environmental Health Standards for Management of Hazardous Waste; Chapter 12, Standard Applicable to Generators of Hazardous Waste; current through April 10, 2009.

Table 2: T&D Facility Selection

Classification and Waste Profile for Disposal	Permitted Disposal Facility
Soil is nonhazardous by RCRA, but hazardous by CA Standards (Cal Haz)	• RCRA landfill, Buttonwillow, CA (Clean Harbors • Rail to EC/DC, Clive, Utah
Soil is nonhazardous containing TPH (Class II)	Keller Canyon Class II landfill, Baypoint, CA (Republic)
Construction Debris and Green Waste	Ox Mountain Landfill, Half Moon Bay, CA (Republic)
Liquid Waste	Small quantities anticipated; drum disposal to EBMUD (upon approval)

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ATTACHMENT 1
WASTE INVENTORY LOG

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WASTE INVENTORY LOG

Gilbane Federal
Contract No. N62473-17-D-0005; Contract Task Order F5271
Former Naval Station Treasure Island
San Francisco, California

Date of Inventory Inspection: _____ Inspected by: _____

Container Number	Container Type	Container Volume	Generation Date	Waste Description	Date Removed from Site

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ATTACHMENT 2

WASTE STORAGE AREA INSPECTION CHECKLIST

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WASTE STORAGE AREA INSPECTION CHECKLIST

Inspected by: _____ Date: _____ Time: _____

	Yes	No	Correction Action	Date Corrected
Area posted with appropriate hazard and cautionary signs?				
Area free of spills?				
All liquids stored in proper secondary containment?				
Secondary containment basins free of liquids and debris?				
Containers compatible with waste being stored?				
Containers properly sealed (lids on, rings in place, bins covered, etc.)?				
Containers properly labelled?				
Labels easily visible for inspection?				
Accumulation start date present on labels?				
Accumulation start dates with storage time limit (e.g. 90 days)?				
Information on labels legible not faded, and all required information is present?				
Adequate aisle space for drums (minimum 22 inches)?				
Aisles and doorways free of obstructions?				
Containers free of leaks, dents, or deterioration including structural defects and rusting?				
Adequate separation of incompatible materials?				
Tops of containers free of standing water?				
Notes:				

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APPENDIX E

SITE BACKFILL AND GRADING PLAN

(Provided on CD)

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Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

REVISED DRAFT FINAL
Site Backfill and Grading Plan

Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12
Former Naval Station Treasure Island
San Francisco, CA
March 2021

DCN: GLBN-0005-F5271-0007

Prepared for:

Department of the Navy
Naval Facilities Engineering Command Southwest
BRAC PMO West
33000 Nixie Way, Bldg. 50
San Diego, CA 92147

Prepared by:

Gilbane Federal
1655 Grant Street, Suite 1200
Concord, California 94520
Contract Number: N62473-17-D-0005; Task Order No. N6247318F5271

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Figure 2 Existing Conditions Topography
Figure 3 Conceptual Grading Plan

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Acronyms and Abbreviations

BMP	best management practices
BRAC	Base Realignment and Closure
DTSC	California Department of Toxic Substances Control
Gilbane	Gilbane Federal
Navy	U.S. Department of the Navy
PMO	Program Management Office
SWDA	Solid Waste Disposal Area

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1.0 Introduction

This plan describes site backfill and grading activities to be conducted in support of the Phase IV non-time critical removal action (NTCRA) at Solid Waste Disposal Area (SWDA) Westside in Installation Restoration (IR) Site 12 at the former Naval Station Treasure Island in San Francisco, California. The plan was prepared by Gilbane Federal (Gilbane) for the U.S. Department of the Navy (Navy) Base Realignment and Closure (BRAC) Program Management Office (PMO) West under Radiological Environmental Multiple Award Contract N62473-17-D-0005, Contract Task Order N62473-18-F-5271, with the Naval Facilities Engineering Command Southwest.

This plan details how clean import fill will be placed to restore previously excavated areas of the site to their pre-excavation grade. SWDA Westside includes areas that were excavated and only partially backfilled during earlier NTCRA phases. Under Phase IV, these areas will be restored to their pre-excavation grade.

Current site conditions include existing stockpile materials, concrete debris piles, and open excavations from earlier NTCRA activities (see **Figure 2**). The backfilling and final grading of the site will be done in a manner to prevent ponding. The final restored site will allow for vegetation growth and is planned by the Navy to be used as open space.

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2.0 Site Backfill

Backfilling activities include bringing the existing grades (see **Figure 2**) to original grades (see **Figure 1**). The backfill material needed to bring the excavated areas and other areas of site previously excavated to finished grades (see **Figure 3**) will be imported from offsite sources. The import fill material will meet California Department of Toxic Substances Control (DTSC) recommendations for clean fill material and consist of well graded materials compatible with existing soils to facilitate compaction and grading. Satisfactory fill material will be well graded soils with stones no larger than 8 inches. Imported fill will not contain any trash, refuse, roots, and other organic plant materials. The top two feet (to final grade) will be backfilled with soil capable of supporting vegetation. Prior to placing the topsoil, the backfill material will be compacted to 90% standard proctor using a wheeled roller.

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3.0 Site Grading

The post-construction planned use of site is to be open space with vegetation. The final site will be graded to match original grades and drainage patterns that existed prior to demolition of existing buildings and pavements. The proposed grading will have minimum slopes of 1% to ensure no ponding occurs on site. Original drainage patterns of the site consisted of stormwater runoff from the northern half of site draining to a pump station just north of the site and the southern half to an existing south pump station through surface sheet flow collected by curb and gutter, curb inlets, drain inlets and underground storm drainage pipes. The original site drainage patterns consisted of four overland discharge points which drained to existing drainage inlets outside of site boundary. Two surface discharge points on the east side of site along existing curb and gutter at Lester Court and Westside Drive at the intersection with Gateview Drive. Another surface discharge point along curb and gutter at the southwest corner of the site where Westside Drive originally existed and a surface discharge point located at the northwest corner of site which originally was a vegetated low point which overland released to a drain inlet located adjacent to the existing stormwater pump station located just to the north of the site.

Existing storm water drainage pipes, inlet and manholes located within site limits will be used to the maximum extent possible and will be unclogged, inspected and raised to proposed grades. Other existing underground and above ground utility infrastructure such as water lines, gas lines, power poles, light poles and electrical lines will be protected in place.

Clearing and grubbing of the existing site may include removal of trees to facilitate construction activities. Other existing vegetation will be removed down to bare ground and top six inches of existing site will be cleared of trash, refuse, debris and tree roots to provide a satisfactory subgrade for imported fill material. Existing roadways, sidewalks, curbs, gutters, drainage culverts, and utilities will be modified as needed to transition to open space allowing for vegetation growth.

After final grading has been completed, the top 6 inches of graded surface will be amended with topsoil and hydroseeded, using a seed mix that is comparable to existing vegetation to establish vegetative cover for sediment and erosion control. The seed mix will be consistent with that previously used at Treasure Island and will be submitted to the Navy for concurrence prior to application. Storm water best management practices (BMPs) such as straw wattles, silt fences and inlet protection will be installed to prevent erosion and sediment transport off site. The storm water BMPs will be maintained and replaced as needed for the entire 24-month duration of construction activities. Monitoring wells may need to be reinstalled, if well heads sustain sufficient damage, as determined by the Navy.

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FIGURES

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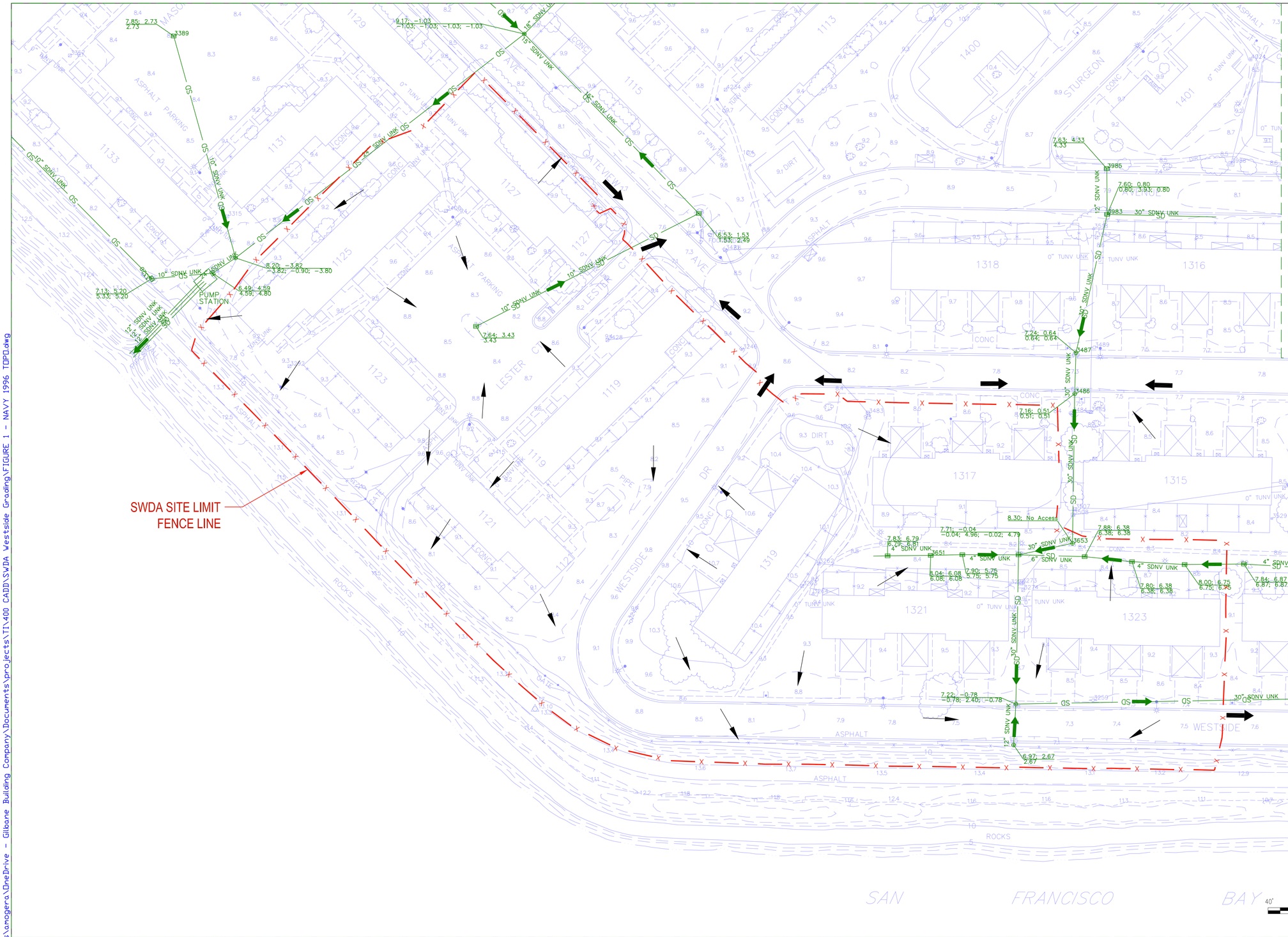

NOTES

1. EXISTING SURVEY SHOWN IS DATED 1996 PROVIDED BY NAVY.
2. CONTOUR INTERVAL FOR 1996 TOPOGRAPHIC SURVEY IS 1'.
3. THE HORIZONTAL AND VERTICAL DATUM ARE NAD83 AND NAVD88 RESPECTIVELY.

LEGEND

- SWDA SITE FENCE
- EXISTING CONTOURS
- EXISTING STORM DRAIN PIPE
- EXISTING STORM DRAIN INLET
- EXISTING STORM DRAIN MANHOLE
- EXISTING SURFACE DRAINAGE DIRECTION
- EXISTING SURFACE DRAINAGE DISCHARGE DIRECTION
- EXISTING STORM DRAIN PIPE FLOW DIRECTION

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY

Gilbane

TREASURE ISLAND, SAN FRANCISCO

NAVFAC

1996 EXISTING CONDITIONS AND DRAINAGE PATTERNS

FIGURE 1

FILENAME: C:\Users\anogera\OneDrive - Gilbane Building Company\Documents\projects\TI\400 CADD\SWDA Westside Grading\FIGURE 1 - NAVY 1996 TOPO.dwg

SAVED: Thursday, 14 May 2020 - 10:59AM PRINTED: 14-MAY-2020

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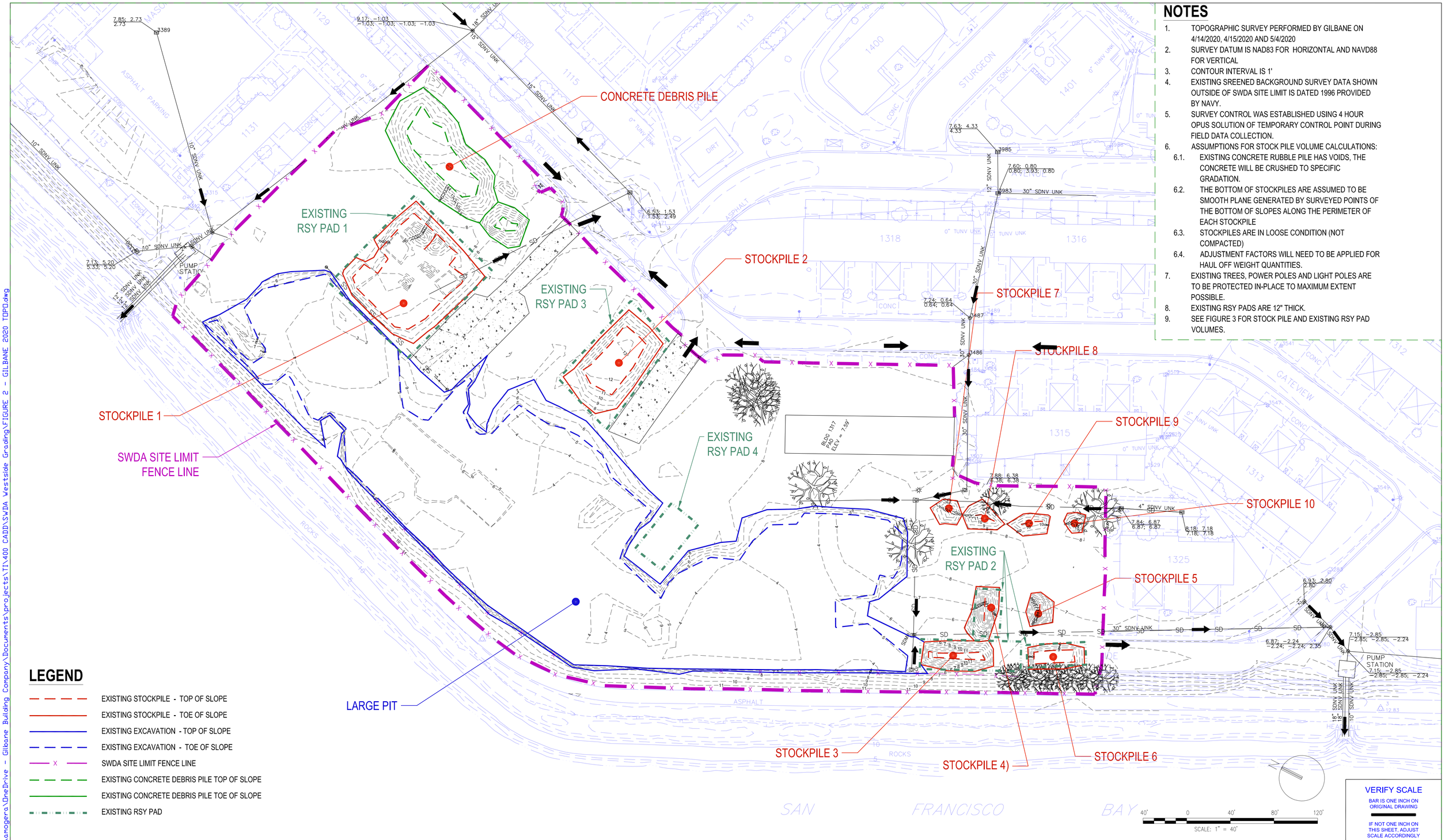


NOTES

1. TOPOGRAPHIC SURVEY PERFORMED BY GILBANE ON 4/14/2020, 4/15/2020 AND 5/4/2020
2. SURVEY DATUM IS NAD83 FOR HORIZONTAL AND NAVD88 FOR VERTICAL
3. CONTOUR INTERVAL IS 1'
4. EXISTING SREENED BACKGROUND SURVEY DATA SHOWN OUTSIDE OF SWDA SITE LIMIT IS DATED 1996 PROVIDED BY NAVY.
5. SURVEY CONTROL WAS ESTABLISHED USING 4 HOUR OPUS SOLUTION OF TEMPORARY CONTROL POINT DURING FIELD DATA COLLECTION.
6. ASSUMPTIONS FOR STOCK PILE VOLUME CALCULATIONS:
   - 6.1. EXISTING CONCRETE RUBBLE PILE HAS VOIDS, THE CONCRETE WILL BE CRUSHED TO SPECIFIC GRADATION.
   - 6.2. THE BOTTOM OF STOCKPILES ARE ASSUMED TO BE SMOOTH PLANE GENERATED BY SURVEYED POINTS OF THE BOTTOM OF SLOPES ALONG THE PERIMETER OF EACH STOCKPILE
   - 6.3. STOCKPILES ARE IN LOOSE CONDITION (NOT COMPACTED)
   - 6.4. ADJUSTMENT FACTORS WILL NEED TO BE APPLIED FOR HAUL OFF WEIGHT QUANTITIES.
7. EXISTING TREES, POWER POLES AND LIGHT POLES ARE TO BE PROTECTED IN-PLACE TO MAXIMUM EXTENT POSSIBLE.
8. EXISTING RSY PADS ARE 12" THICK.
9. SEE FIGURE 3 FOR STOCK PILE AND EXISTING RSY PAD VOLUMES.

LEGEND

- EXISTING STOCKPILE - TOP OF SLOPE
- EXISTING STOCKPILE - TOE OF SLOPE
- EXISTING EXCAVATION - TOP OF SLOPE
- EXISTING EXCAVATION - TOE OF SLOPE
- SWDA SITE LIMIT FENCE LINE
- EXISTING CONCRETE DEBRIS PILE TOP OF SLOPE
- EXISTING CONCRETE DEBRIS PILE TOE OF SLOPE
- EXISTING RSY PAD

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY

Gilbane

TREASURE ISLAND, SAN FRANCISCO

NAVFAC

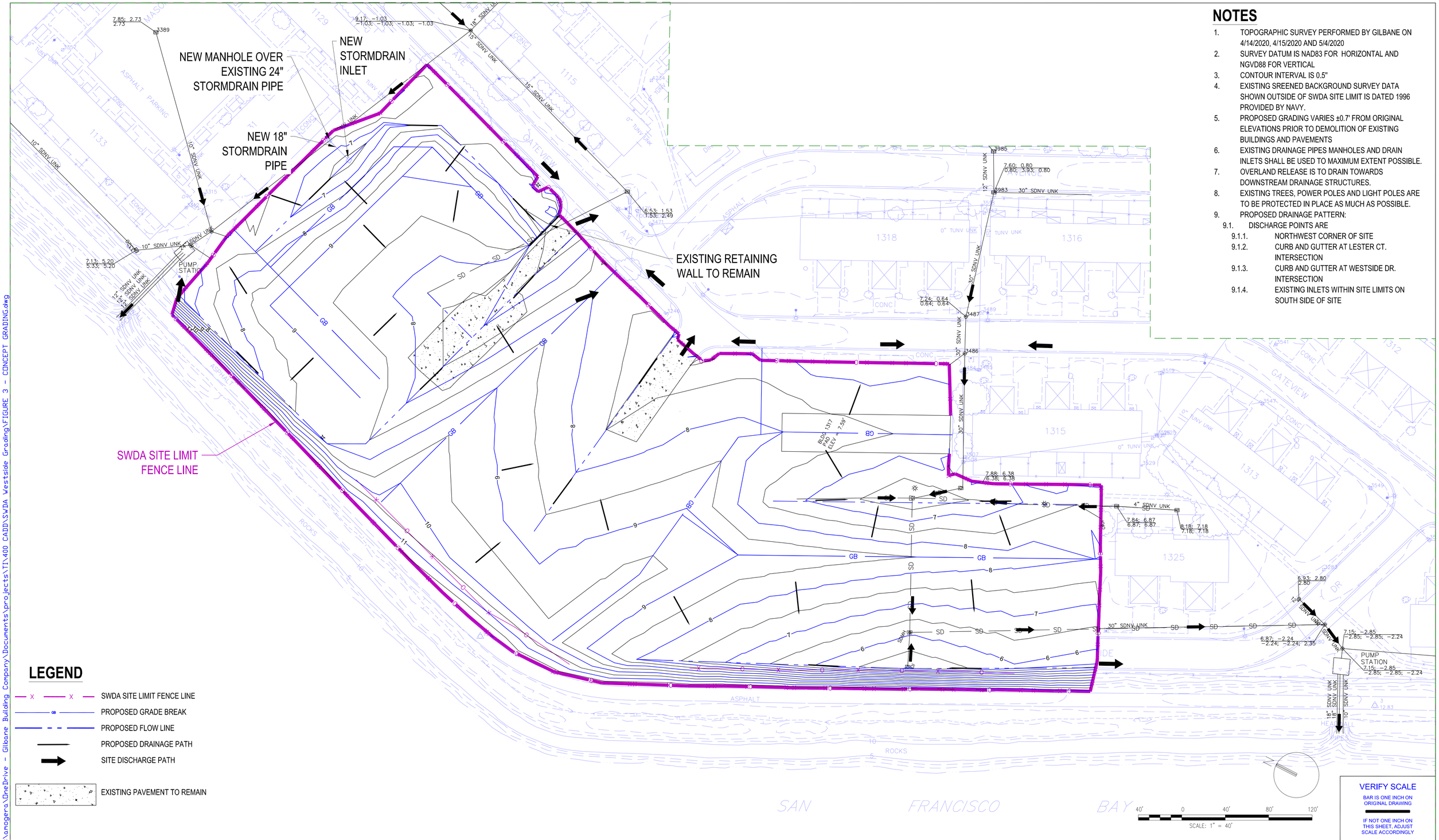
EXISTING CONDITIONS TOPOGRAPHY

FIGURE 2

FILENAME: C:\Users\amogera\OneDrive - Gilbane Building Company\Documents\projects\TI\400 CADD\SWDA Westside Grading\FIGURE 2 - GILBANE 2020 TOPO.dwg

SAVED: Friday, 29 May 2020 - 5:01PM PRINTED: 29-MAY-2020

C:\Users\amogera\OneDrive - Gilbane Building Company\Documents\projects\TI\400 CADD\SWDA Westside Grading\FIGURE 2 - GILBANE 2020 TOPO.dwg, 5/29/2020 5:01:20 PM, Bluebeam PDF



NOTES

1. TOPOGRAPHIC SURVEY PERFORMED BY GILBANE ON 4/14/2020, 4/15/2020 AND 5/4/2020
2. SURVEY DATUM IS NAD83 FOR HORIZONTAL AND NGVD88 FOR VERTICAL
3. CONTOUR INTERVAL IS 0.5"
4. EXISTING SREENED BACKGROUND SURVEY DATA SHOWN OUTSIDE OF SWDA SITE LIMIT IS DATED 1996 PROVIDED BY NAVY.
5. PROPOSED GRADING VARIES ±0.7' FROM ORIGINAL ELEVATIONS PRIOR TO DEMOLITION OF EXISTING BUILDINGS AND PAVEMENTS
6. EXISTING DRAINAGE PIPES MANHOLES AND DRAIN INLETS SHALL BE USED TO MAXIMUM EXTENT POSSIBLE.
7. OVERLAND RELEASE IS TO DRAIN TOWARDS DOWNSTREAM DRAINAGE STRUCTURES.
8. EXISTING TREES, POWER POLES AND LIGHT POLES ARE TO BE PROTECTED IN PLACE AS MUCH AS POSSIBLE.
9. PROPOSED DRAINAGE PATTERN:
   - 9.1. DISCHARGE POINTS ARE
     - 9.1.1. NORTHWEST CORNER OF SITE
     - 9.1.2. CURB AND GUTTER AT LESTER CT. INTERSECTION
     - 9.1.3. CURB AND GUTTER AT WESTSIDE DR. INTERSECTION
     - 9.1.4. EXISTING INLETS WITHIN SITE LIMITS ON SOUTH SIDE OF SITE

LEGEND

- SWDA SITE LIMIT FENCE LINE
- PROPOSED GRADE BREAK
- PROPOSED FLOW LINE
- PROPOSED DRAINAGE PATH
- SITE DISCHARGE PATH
- EXISTING PAVEMENT TO REMAIN

Gilbane

TREASURE ISLAND, SAN FRANCISCO

NAVFAC

CONCEPTUAL GRADING PLAN

FIGURE 3

FILENAME: C:\Users\amogera\OneDrive - Gilbane Building Company\Documents\projects\TI\400 CADD\SWDA Westside Grading\FIGURE 3 - CONCEPT GRADING.dwg

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C:\Users\amogera\OneDrive - Gilbane Building Company\Documents\projects\TI\400 CADD\SWDA Westside Grading\FIGURE 3 - CONCEPT GRADING.dwg, 5/29/2020 4:57:23 PM, Bluebeam PDF

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APPENDIX F

ENVIRONMENTAL PROTECTION PLAN

(Provided on CD)

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Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

FINAL
Environmental Protection Plan

Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12
Former Naval Station Treasure Island
San Francisco, CA
March 2021

DCN: GLBN-0005-F5271-0007

Prepared for:

Department of the Navy
Naval Facilities Engineering Command Southwest
BRAC PMO West
33000 Nixie Way, Bldg. 50
San Diego, CA 92147

Prepared by:

Gilbane Federal
1655 Grant Street, Suite 1200
Concord, California 94520
Contract Number: N62473-17-D-0005; Task Order No. N6247318F5271

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Attachment 2 Dust Control Plan
Attachment 3 Air Monitoring Plan

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Acronyms and Abbreviations

BMPs	best management practices
BRAC	Base Realignment and Closure
CSO	Caretaker Site Office
DCP	Dust Control Plan
EPP	Environmental Protection Plan
Gilbane	Gilbane Federal
IR	Installation Restoration
NAVFAC	Naval Facilities Engineering Command Southwest
Navy	U. S. Department of the Navy
NSTI	former Naval Station Treasure Island
NTCRA	non-Time Critical Removal Action
PMO	Project Management Office
ROICC	Resident Officer in Charge of Construction
SWDA	Solid Waste Disposal Area
SWMP	Storm Water Management Plan
Water Board	Regional Water Quality Control Board, San Francisco Bay Region

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1.0 Introduction

This Environmental Protection Plan (EPP) describes the environmental protection measures to be applied in support of the Phase IV non-time critical removal action (NTCRA) for chemical and radiological contaminants at Solid Waste Disposal Area (SWDA) Westside in Installation Restoration (IR) Site 12 at the former Naval Station Treasure Island in San Francisco, California. This EPP guides the abatement, control, and mitigation measures to be implemented to maintain the environment in its current state and enhancing or restoring the appearance of disturbed sites after construction activities are completed. It addresses protection of air, water, and land resources from chemical and radiological contaminants and includes a Storm Water Management Plan (SWMP), Dust Control Plan (DCP), and an Air Monitoring Plan.

This EPP was prepared by Gilbane Federal (Gilbane) for the U.S. Department of the Navy (Navy) Base Realignment and Closure Program Management Office West under Radiological Environmental Multiple Award Contract N62473-17-D-0005, Contract Task Order N62473-18-F-5271, with the Naval Facilities Engineering Command Southwest.

1.1 Purpose and Scope

This Phase IV project is considered an extension of the Phase I, Phase II, and Phase III NTCRAs. It focuses on the removal of existing soil stockpiles that were not removed during the Phase III NTCRA and restoration of the site.

The Gilbane Project Manager and Site Superintendent, supported by the Project Quality Control Manager, will be responsible for implementing and monitoring compliance with this EPP. Gilbane personnel and contracted employees working at SWDA Westside will be instructed on the detection and prevention of pollution on-site as well as procedures for responding to potential spills or contaminant releases. Workers also will be instructed on the installation and maintenance of dust and erosion control measures.

1.2 Existing Natural Resouces

SWDA Westside was a developed residential area. Most of the housing structures have been demolished. SWDA Westside interfaces with San Francisco Bay via a constructed seawall topped by Perimeter Road, which is a paved road open to the public.

The climate is generally constant and predictable, having a bimodal seasonal pattern with respect to temperature and rainfall. Summers are typically warm and dry except for morning and evening fog due to a marine inversion layer. Winters are wet and cool with most annual precipitation occurring between October and March.

No wetlands registered on the U.S. Fish and Wildlife Services Wetlands Inventory exist within SWDA Westside. The remedial activities are not located within a 100-year flood plain defined by the U.S. Geologic Survey.

No federally listed species are known to permanently reside in SWDA Westside. However, San Francisco Bay is a seasonal home for birds migrating along the Pacific Flyway and numerous species of migratory birds have been observed on Treasure Island.

1.3 Topography and Site Features

SWDA Westside formerly consisted of residential buildings and landscapes, asphalt, and concrete, much of which has been removed or destroyed by earlier phase NTCRAs. The site now consists of several excavated areas overgrown with weeds. Surface soils at SWDA Westside consist of imported dredged materials, primarily sands with some small gravels, silt, and clay. Soils encountered during previous drilling and excavation activities consisted of primarily fine- to coarse-grained loose sands and gravel. The estimated depth-to-groundwater at SWDA Westside ranges from approximately 3.5 to 5 feet. The water table is subject to tidal influence.

2.0 Environmental Protection

To accomplish environmental protection during radiological surveying and material removal activities at SWDA Westside, protection will be provided to air, water, and land resources. Measures will be implemented to control dust by adequately covering the extent of the excavation sites and monitoring upwind and downwind areas during the remedial action field activities. Precautions will be taken to ensure dust creation is minimized and dust monitoring levels are not exceeded. Zero visible dust will be present during the remedial action. Petroleum odors can be a nuisance to the nearby public; therefore, mitigation techniques to control petroleum odors will be implemented. Monitoring will be conducted to ensure that petroleum vapors are below health and safety criteria for the workers and nearby community.

2.1 Protection of Air Resources

Project activities will be conducted in a manner that minimizes the release of airborne particulates within or outside the project boundaries. The principal concern for site excavation activities associated with material removal involves controlling dust. Air monitoring for dust will be performed in accordance with the Air Monitoring Plan (see **Attachment 3**), the Site Safety and Health Plan (Gilbane, 2020a) and the Radiation Protection Plan (see Work Plan Appendix B). To accomplish this, air monitoring will be employed to encompass the entirety of remediation excavations, including downwind areas. Engineering controls and best management practices (BMP) will be employed in accordance with the SWMP and DCP to ensure that dust is not created in quantities greater than acceptable to regulation. Equipment operations and activities or processes performed during and related to remediation (e.g. stockpiled material) will be conducted according to Bay Area Air Quality District regulations and federal emissions and performance laws and standards.

2.2 Dust Control

The DCP (see **Attachment 2**) describes the dust control measures to be implemented as part of field work activities. The DCP supports the abatement, control, and mitigation measures to be used during the remedial action for soil. Dust control will be employed around stockpiles, waste areas, and other work areas to avoid hazardous or nuisance conditions. At the end of each workday, active work areas will be swept or washed as appropriate to minimize the potential for fugitive dust during non-working hours.

2.3 Burning and Hot Work

Burning and Hot Work refer to activities involving open flame or posing a potential fire hazard (e.g. welding). No hot work is anticipated at this time; however, if hot work is required, a permit to conduct this activity will be coordinated through the Navy Caretaker Site Office (CSO) / Resident Officer in Charge of Construction (ROICC) offices.

2.4 Noise

Engineering controls and BMPs will be employed to control excess noise generation. Construction activities will be monitored for excessive noise pollution. Noise control will comply with the provisions of the California Noise Control Regulation, applicable Occupational Safety and Health Administration, and local noise standards.

2.5 Protection of Surface and Groundwater Resources

Precautions will be taken to provide for the environmental integrity of surface water and groundwater resources at and around project work sites. Essential water protection practices that will be employed include:

- Transfer of respective wastes to the designated Navy waste transport and disposal contractors,
- Control of excavated materials to prevent the pollution of surface water or groundwater resources, and
- Not allowing water used in on-site processes (decontamination and dust suppression) to re-enter a surface water resource if it will adversely affect the water resources.

Remediation construction activities will be conducted in compliance with applicable federal, state, and local laws regarding potential and actual contamination of surface water and groundwater, and in a manner that will prevent the discharge of pollutants and minimize impacts to water resources. To comply with the substantive requirements of the State of California General Construction National Pollutant Discharge Elimination System Permit, a SWMP (see **Attachment 1**) has been prepared that describes the BMPs for erosion control that will be used during this project. The Erosion and Sediment Control Field Manual (California Regional Water Quality Control Board [Water Board], 2002) was used as guidance in developing the SWMP.

To reduce potential impacts to the quality of surface water and groundwater, construction personnel will not service vehicles or construction equipment outside designated staging areas, and all equipment will be inspected daily for fuel and/or hydraulic oil leaks. If they occur, leaks will be repaired immediately.

2.6 Protection of Land Resources

Activities at excavation sites will be conducted in a manner that minimizes impacts to land resources within and outside the project boundaries. Before and after photographs will document conditions for each excavation area. Unless such work is indicated on the drawings or specified in the scope of work, Gilbane will not remove, cut, deface, injure, or destroy trees, shrubs, grasses, topsoil, wetlands, or other land forms without prior approval from the Navy. Any vegetation scarred or damaged from work on this project

will be restored as nearly as possible to its original or better conditions. Site features such as roads and fences, if disturbed to facilitate excavations, will be restored.

Currently, there are no historical, archaeological, or cultural resources identified within the work area. If potentially important resources are found during this project, Gilbane will take every precaution to preserve them. Potential resources covered by this section that may trigger a site review or additional protections include human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rocks, pavings, walls, or other constructed features; and indications of agriculture or other human activities. If such resources are discovered, the Site Superintendent will immediately report the findings to the ROICC and Remedial Project Manager. Work in the area will be stopped and Gilbane will record, report, and preserve the finds in accordance with federal regulations covering the Protection of Archaeological Resources (43 Code of Federal Regulations Subtitle A Part 7) and the National Historical Preservation Act.

2.7 Landscape Protection

Gilbane will coordinate with the ROICC prior to excavation activities at each site to identify any land resources to be preserved within the work area. Gilbane personnel will mark any areas to be preserved and provide fencing, barriers, or other physical protection. Gilbane will minimize damage to land resources within and outside project work areas and will repair any damage caused to land resources.

2.8 Protection of Benchmarks, Monuments and Groundwater Monitoring Wells

Gilbane will locate benchmarks, monuments, and groundwater monitoring wells within the authorized work and staging areas. As part of site preparation prior to clearing and grubbing, benchmarks, monuments, and well locations will be demarcated with flags or another visible feature. Care will be taken during all field activities to protect existing wells. Bollards or steel plates may be installed as more effective protective/delineation measures at groundwater monitoring wells within the authorized work area/staging areas

2.9 Protection of Underground Utilities

Prior to beginning intrusive subsurface activities, underground utilities will be identified and, to the extent possible, located. Gilbane comprehends that utilities may be installed with plastic or clay pipe and may not be locatable using conventional geophysical methods. Therefore, in accordance with utility locating BMPs, utilities will be located by Underground Service Alert who will be notified of pending excavations 48 hours or more in advance of breaking ground. In addition, Gilbane will use Navy utility drawings to locate and demarcate underground utilities. Field observations of surface expressions (e.g., cleanouts, risers, manholes) will be used as guides during the utility marking work. Identified underground utilities will be demarcated using color-coded surveyor paint applied according to American Public Works Association-approved colors. To facilitate

utility locating, proposed excavation areas will be marked on the ground using white paint. The marked area will be larger than proposed excavation dimensions to provide coverage if actual excavations are larger than proposed excavations. Meetings or conference calls may be scheduled with all interested utility providers and consumers that may be affected by the excavation activities.

3.0 Post Construction Restoration and Clean-Up

Cleanup, demobilization, and restoration will be performed after completion of fieldwork. This restoration will be performed by Gilbane after the fieldwork phase is completed and will be accepted by the CSO and ROICC. Final site restoration and cleanup may include the following:

- Collecting and disposing of contractor-generated contaminated material, debris, disposable personal protective equipment, and rubbish
- Removing support area facilities
- Removing temporary fences and signs installed under this contract
- Mechanical broom sweeping of work areas and haul routes
- Hydroseeding disturbed areas as a storm water run-on run-off prevention measure

With the completion of site restoration and cleanup, field activities will be considered complete. Personnel will conduct pre-final and final inspections with the CSO and ROICC to identify, document and address deficiencies. Gilbane will notify the CSO and ROICC when corrections are completed.

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4.0 Updating the Environmental Protection Plan

This EPP will be updated as needed to reflect changing site conditions. A copy of the approved EPP will be kept on-site and be continually updated as regulations require reflecting current site conditions.

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5.0 References

California Regional Water Quality Control Board, (Water Board), 2002. Erosion and Sediment Control Field Manual

Dames and Moore, 1988. Final Preliminary Assessment /Site Inspection (PA/SI), Naval Station Treasure Island, California. Prepared for Department of the Navy, Facilities Engineering Command, Naval Energy and Environmental Support Activity. April

Gilbane Federal (Gilbane), 2020. Site Safety and Health Plan, Phase IV Non-Time Critical Removal Action for Solid Waste Disposal Area Westside, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California. December.

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ATTACHMENT 1

STORM WATER MANAGEMENT PLAN

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Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

FINAL
CERCLA Stormwater Management Plan

Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12
Former Naval Station Treasure Island
San Francisco, CA
March 2021
DCN: GLBN-0005-F5271-0007

Prepared for:

Department of the Navy
Naval Facilities Engineering Command Southwest
BRAC PMO West
33000 Nixie Way, Bldg. 50
San Diego, CA 92147

Prepared by:

Gilbane Federal
1655 Grant Street, Suite 1200
Concord, California 94520
Contract Number: N62473-17-D-0005; Task Order No. N6247318F5271

SWMP Preparation Date

March 2021

Estimated Project Dates:

Start of Construction	**February 2021**	Completion of Construction	**July 2021**

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Acronyms and Abbreviations

ug/L	micrograms per liter
ºC	degrees Celsius
ºF	degrees Fahrenheit
§	Section
bgs	below ground surface
BMPs	Best Management Practices
BRAC	Base Realignment and Closure
CASQA	California Stormwater Quality Association
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	chain of custody; contaminant of concern
CSMP	Construction Site Monitoring Program
CSO	Caretaker Site Office
CTO	contract task order
EPA	U.S. Environmental Protection Agency
FSS	Final Status Survey
Gilbane	Gilbane Federal
HCl	hydrochloric acid
HDPE	high density polyethylene
HNO3	nitric acid
IR	Installation Restoration
L	liter
LLMW	low-level mixed waste
LLRW	low-level radiological waste
MDL	method detection limit
mL	milliliter
NA	not applicable
NAL	numeric action level
Navy	United States Department of the Navy

NAVFAC SW	Naval Facilities Engineering Command Southwest
NAVSEA	Naval Sea Systems Command
NEL	Numeric Effluent Limitations
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NSTI	Naval Station Treasure Island
NTCRA	non-time critical removal action
NTU	nephelometric turbidity unit
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PM	Project Manager
PMO	Program Management Office
QA/QC	quality assurance and quality control
QSD	Qualified SWMPPP Developer
QSP	Qualified SWMPPP Practitioner
RADMAC	Radiological Multiple Award Contract
RASO	NAVSEA Detachment Radiological Affairs Support Office
RCRA	Resource Conservation and Recovery Act
REAP	Rain Event Action Plan
RL	risk level
ROICC	Resident Officer in Charge of Construction
RSY	radiological screening yard
RUSLE	Revised Universal Soil Loss Equation
RWQCB	Regional Water Quality Control Board
SAP	sampling and analysis plan
SFO	San Francisco International Airport
Site	IR Site 12, at former Naval Station Treasure Island, San Francisco, California
SSHP	Site-Specific Safety and Health Plan
SOW	scope of work
SVOC	semi-volatile organic compound
SWDA	solid waste disposal area

SWMP	Stormwater Management Plan
SWRCB	State Water Resources Control Board
TI	Treasure Island
TMDL	Total Maximum Daily Load
TPH	total petroleum hydrocarbons
TPH-g	TPH, gasoline range
TPH-d	TPH, diesel range
TPH-mo	TPH, motor oil range
VOA	volatile organic analysis
VOC	volatile organic compound
WDID	Waste Discharge Identification
WMP	Waste Management Plan
YBI	Yerba Buena Island

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Qualified SWMPPP Developer (QSD)

Approval and Certification of the CERCLA Stormwater Management Plan

Project Name:	*Phase IV NTCRA for SWDA Westside at IR Site 12* *Naval Station Treasure Island* *San Francisco, California*
Project Number/ID	*Contract #: N62473-17-D-0005* *Task Order #: N6247318F5271* *Gilbane Federal Project #: J310000800*

"This CERCLA Stormwater Management Plan and Appendices were prepared under my direction to meet the applicable requirements of the California Construction General Permit (State Water Resources Control Board [SWRCB] Orders No. 2009-009-DWQ as amended by Order 2010-0014-DWQ). I certify that I am a Qualified Stormwater Pollution Prevention Plan (SWMPPP) Developer (QSD) in good standing as of the date signed below."

QSD Signature	3/15/21 **Date**
Richard Perdue **QSD Name**	C42809 **QSD Certificate Number**
Chief Engineer, Gilbane Federal **Title and Affiliation**	925-946-3142 **Telephone Number**
RPurdue@GilbaneCo.com **Email**	

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Amendment Log

Project Name: *Phase IV NTCRA for SWDA Westside at IR Site 12*
Naval Station Treasure Island
San Francisco, California

Project Number/ID: *Contract #: N62473-17-D-0005*
Task Order #: N6247318F5271
Gilbane Federal Project #: J310000300

Amendment Number	Date	Brief description of amendment (include section and page number)	Prepared and approved by
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#

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1.0 CERCLA SWMP Requirements

1.1 Introduction

This Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Stormwater Management Plan (SWMP), presents the substantive measures that will be implemented to minimize sediment and other pollutants in stormwater runoff during remedial action activities to be performed at Solid Waste Disposal Area (SWDA) Westside in Installation Restoration Site 12 at the former Naval Station Treasure Island in San Francisco, California.

This SWMP has been prepared to specifically address the activities associated with the Radiological Multiple Award Contract (RADMAC II) under Contract Number N62473-17-D-0005, Contract Task Order (CTO) N6247318F5271, to the Naval Facilities Engineering Command Southwest (NAVFAC SW).

The project involves removal of soil excavated from SWDA Westside. The other activities include munitions and radiological screening, transportation and disposal, backfilling, and site restoration.

The total disturbed area due to the remediation activities included in the current scope of work (SOW) is less than an acre and the activities will be conducted under Section 121(e) of CERCLA. Therefore, this construction project is not covered by the *National Pollutant Discharges Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* issued by the California State Water Resources Control Board (SWRCB, 2012), and most of the requirements of the General Permit do not apply to this project. However, for the purpose of establishing a SWMP, Gilbane identified and addressed the applicable requirements of the General Permit, including Best Management Practices (BMPs) to be implemented for construction activities, BMPs to be implemented for erosion and sediment control, waste management and disposal spill responses, post-construction controls, site inspection and monitoring programs, responsible personnel, and training requirements.

This SWMP was designed to address the following objectives, which are to ensure that:

- Pollutants and their sources, including sources of sediment associated with construction, construction site erosion, and other sources or activities associated with construction are controlled.
- Where not otherwise required to be under a Regional Water Quality Control Board (RWQCB) permit, non-stormwater discharges are identified and either eliminated, controlled, or treated.

- Site BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity to the Best Available Technology/Best Control Technology standard.
- Stabilization BMPs, installed to reduce or eliminate pollutants after construction, are identified, implemented, and completed.

1.2 SWMP Availability and Implementation

This SWMP will be available at the project site office while construction and/or field activities are occurring, and will be made available upon request by a United States Department of the Navy (Navy), state, or municipal inspector. When the original SWMP is retained by a crew member in a construction vehicle and is not currently at the construction site, current copies of the BMPs, maps, and drawings will be left with the field crew, and the original SWMP will be made available via a request by radio or telephone. The SWMP will be implemented concurrently with the start of ground-disturbing activities, under the supervision of the SWMP Implementer.

1.3 SWMP Amendments

The SWMP will be amended or revised when:

1. There is a reduction or increase in total disturbed acreage.
2. BMPs do not meet the objectives of reducing or eliminating pollutants in stormwater discharges.
3. There is a change in construction or operations that may affect the discharge of pollutants to surface waters, groundwater, or a separate municipal storm sewer system.
4. There is a change in the project duration that changes the project's risk level.
5. Deemed necessary by the SWMP developer or implementer.

The following items will be included in each amendment:

- The name, project title, and certification number of the individual who prepared the amendment.
- The name and project title of the individual who requested the amendment.
- The location(s) of the proposed change(s).
- The reason for the change(s).
- The original BMP(s), if any.
- The new BMP(s) proposed, as applicable.

Amendments will be logged at the front of the SWMP. The SWMP text will be revised, replaced, and/or hand-annotated as necessary to properly convey the amendment.

1.4 Retention of Records

Paper or electronic records of documents required by this SWMP will be retained for a minimum of three years from the date generated or for the time frame required by Navy Contract N62473-17-D-0005, Contract Task Order (CTO)- N6247318F5271, whichever is longer.

These records will be available at the project site office until construction is complete. Records will be made available within a reasonable time to the RWQCB, SWRCB, or U.S. Environmental Protection Agency (EPA) upon request. Requests by the RWQCB for retention of records for a period longer than three years will be accommodated.

1.5 Notice of Termination

As the Navy contractor, Gilbane Federal (Gilbane) will prepare a final site map and take photographs to verify that SWMP requirements have been met. The final site map and photographs will be submitted as part of the final report following completion of the project, and within 90 days of meeting requirements for termination and final stabilization, including the following:

- The site will not pose any greater sediment discharge risk than the site did prior to construction activities.
- Construction-related equipment, materials, and any temporary BMPs no longer needed are removed from the site.
- Post-construction stormwater management measures (if required) are installed.

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2.0 Project Information

2.1 Project and Site Description

2.1.1 Site Location

NSTI is in San Francisco Bay, midway between San Francisco and Oakland, California (see **Figure 1**). The facility consists of two contiguous islands: the northern island is named Treasure Island (TI) and the southern island is named Yerba Buena Island (YBI). TI is a man-made island and was constructed of sediments dredged from San Francisco Bay. TI was constructed in 1936 and 1937 for the initial purpose of hosting the Golden Gate International Exposition held in 1939-1940. The Navy acquired TI by condemnation in 1942. Military activities at YBI date back to 1866 when the US Government took possession of YBI for defensive fortifications. The Navy operated the first West Coast Naval Training Station on YBI until 1923, when the center was transferred to San Diego. The project Site is located on the northeast corner of NSTI, as shown on **Figure 2**. The latitude and longitude of NSTI are 37°49'21.00"N and –122°21'53.85"W, respectively.

IR Site 12 is located along the north end of NSTI. IR Site 12 consists of the SWDAs on which military housing was built in 1968. IR Site 12 is predominantly a residential housing area, consisting of residential buildings with fenced back yards, open grassy areas between the buildings, common areas, and paved roads and parking areas.

SWDA Westside is an approximately 4.5-acre area on the west side of IR Site 12 abutting Perimeter Road (see **Figure 1** and **Figure 2**), and includes previously excavated and backfilled areas west of Building 1133 (Mason Court) and west of Buildings 1323 and 1325.

2.1.2 Existing Site Topography

TI is a 403-acre flat, man-made island that consists primarily of sand dredged from the Bay and retained by a perimeter of rock and sand dikes. TI ranges in elevation from 5 to 12 feet above mean sea level, based on the National Geodetic Datum (NGVD) of 1929. TI was constructed of sediments dredged from San Francisco Bay. The SWDA Westside existing ground elevations range from 5 to 9 feet above mean sea level.

2.1.3 Existing Drainage & Stormwater

The topography of the entire island is relatively flat and the stormwater is managed through storm drains installed throughout the island which direct water runoff towards the Bay.

2.1.4 Climate

In general, the climate of the area is marine and characterized by very little change in temperature. The average annual precipitation is about 25 to 30 inches. Most precipitation falls between October and April. Localized showers are infrequent and storms are moderate in duration and intensity. The average annual air temperature is 56 to 58 degrees Fahrenheit, and the average frost-free period is 300 to 330 days. The relative humidity in the winter is about 80 to 90 percent at night and 60 to 70 percent in the afternoon. Humidity is less in the spring, but increases at night in the summer. Humidity is lowest in the fall. It ranges from 50 percent during the day to 70 percent at night. Morning and evening fog frequently occur during the summer. The wind direction for the area is predominantly from the west-northwest throughout the year. The average wind speed ranges from 8 miles per hour to 14 miles per hour and annually averages 11 miles per hour. Winds from the north and east are sometimes accompanied by cold temperatures in winter and spring. Westerly winds in summer are generated by the cool marine air flowing to the warmer interior. These winds are strongest early in summer, mainly late in the afternoon and in the evening.

2.1.5 Geology and Groundwater

TI was constructed on the Yerba Buena Shoals, a sand spit that extends north and northwest of Yerba Buena Island. Subsurface materials at TI can be divided into the following five units, listed from the youngest to the oldest: (1) Fill (dredged sand fill), (2) Shoal Sands (Yerba Buena Shoal Sands), (3) Younger Bay Mud, (4) Older Bay Mud, and (5) Franciscan Assemblage.

TI and YBI are surrounded by the waters of the San Francisco Bay. Any surface drainage off the two islands flows into the Bay. Groundwater at TI is generally present at depths of 2.5 to 6 feet below ground surface (bgs). Subsurface water at TI has no beneficial use and is not currently used.

2.1.6 Project Description

The ground-disturbing site activities included in the scope of work for this CTO include the following:

- Backfilling, and
- Site restoration.

Site restoration will occur in two parts: (1) backfilling the previously excavated areas, and (2) installing soil cover over the entire SWDA Westside.

The project consists of the following work elements:

- Preparatory activities and meetings.
- Environmental resources surveying.

- Mobilization.
- Stormwater, sediment, and erosion control.
- Radiological survey and sampling.
- Backfill placement and compaction.
- Free-release survey and decontamination of equipment.
- Waste classification, storage, and disposal.
- Demobilization.

Detailed descriptions of the above activities are provided in the Work Plan. This CERCLA SWMP is an attachment to Appendix C, Environmental Protection Plan.

2.1.7 Developed Condition

Post-construction surface drainage will be unchanged from the pre-construction surface drainage because there will be no change in the percentage of permeable and impermeable covers or in the existing surface topography.

2.2 Stormwater Run-On from Offsite Areas

Run-on will be adequately managed or diverted upstream of the soil handling locations by utilizing diversion berms, such that the risk of erosion by upslope stormwater is eliminated.

2.3 Construction Schedule

The estimated schedule for planned work can be found in Figure 3 of the Work Plan. The QSP or the QSP representative will contact the Qualified SWMPPP Developer (QSD) if the schedule changes during land disturbance activities associated with the project to address potential impacts to the CERCLA SWMP.

2.4 Potential Construction Activity and Pollutant Sources

The project site is impacted by the following non-radiological constituents: lead, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and dioxins. It is also impacted by radium-226 (Gilbane, 2020a). Sediment and soil in project site locations may contain some of these analytes. The total disturbed area will not exceed 1 acre at any time during the project and storm runoff risk from the site will be eliminated by utilizing the proper BMPs listed in the SWMP. Therefore, the receiving water risk level for the project is low.

SWMP **Appendix A** includes a list of construction activities and associated materials that are anticipated to be used onsite. These activities and associated materials will or could potentially contribute pollutants, other than sediment, to stormwater runoff.

The anticipated activities and associated pollutants were used in **Section 3.0** to select the BMPs for the project. Locations of temporary BMPs are shown on **Figure 2** and **Figure 3**.

Collection of discharge samples for non-visible pollutant monitoring will be triggered when a breach, malfunction, leakage, or spill is observed. Collection of discharge samples for non-stormwater will be triggered when a release of non-stormwater running off the project site is observed. Sampling requirements for non-visible pollutants associated with construction activity for this project are discussed in **Section 7.7.1**. A chemical inventory of products used by on-site personnel is retained onsite at the construction trailer.

2.5 Identification of Non-Stormwater Discharges

Non-stormwater discharges consist of discharges that do not originate from precipitation events. When applicable, the General Permit provides allowances for specified non-stormwater discharges that do not cause erosion or carry other pollutants.

Non-stormwater discharges into storm drainage systems or waterways that are not authorized under the General Permit and listed in the CERCLA SWMP, or are not authorized under a separate NPDES permit, are prohibited.

Non-stormwater discharges that are authorized by the Navy for this project site include the following:

- Water to control dust.
- Discharges from emergency fire-fighting activities.

These authorized non-stormwater discharges will be minimized by implementing the stormwater and non-stormwater BMPs described in **Section 3.0** of this CERCLA SWMP.

The activities at this Site that may result in unauthorized non-stormwater discharges include:

- Diesel and gasoline fuel used for mechanical equipment.
- Fluids in vehicles and equipment, including fuels, coolants, non-fuel oil-based fluids, and lubricating and hydraulic oils.
- Use of portable toilets for field personnel.
- Decontamination of field equipment.

Steps - including the implementation of appropriate BMPs - will be taken to ensure that unauthorized discharges are eliminated, controlled, disposed, or treated onsite.

Discharges of construction materials and wastes, such as fuel or marking paint, resulting from dumping, spills, or direct contact with rainwater or stormwater runoff, are prohibited.

2.6 Required Site Map Information

The site layout map for the work actions to be performed is shown on **Figure 3**.

The map will be updated accordingly as changes occur in the field. **Figure 1** through **Figure 3** show the project location, surface water boundaries, geographic features, construction areas, site perimeter, drainage patterns, and selected best management practices (BMPs). **Table 2.1** identifies the figure(s) where required elements are illustrated.

Table 2.1: Required Map Information

Included on Figure Number[1]	Required Element
Figure 1	The project's surrounding area (project location and vicinity map)
Figure 2	Site layout
Figure 2, 3	Construction site boundaries
Figure 2, 3	Areas of soil disturbance (temporary or permanent)
Figure 3	Locations of runoff BMPs (as temporary BMPs)
Figure 3	Locations of erosion control BMPs (as temporary BMPs)
Figure 3	Locations of sediment control BMPs (as temporary BMPs)
Figure 2, 3	Vehicle storage areas
Figure 2, 3	Material storage areas (i.e., laydown area)
Figure 2, 3	Fueling Locations

Notes:

[1] Indicates figure on which specific information is included (e.g., Vicinity Map, Site Map, Drainage Plans, etc.)

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3.0 Best Management Practices

3.1 Schedule for BMP Implementation

In consideration of the objectives identified in **Section 1.1**, this CERCLA SWMP includes actions and practices to address the following.

- Identify potential pollution sources associated with stormwater, including soil-disturbing activities that increase the potential for erosion and transport of soil, discharges of polluting materials related to activities, and discharges of stored materials or wastes.
- Ensure that the potential impact of rainfall and surface water run-on from offsite are properly assessed and managed.
- Identify, construct, and implement BMPs in accordance with the project activity time schedule and maintain the BMPs for prevention of the potential discharges identified above, using appropriate levels of technology, field practices, and monitoring.
- Develop a maintenance schedule for BMPs installed during field activities designed to reduce or eliminate pollutants after site characterization is completed (post-construction BMPs).
- Establish an inspection and monitoring plan and program to ensure that the BMP prevention and control measures remain effective throughout the period of field activities.
- Include a Stormwater Site Monitoring Program designed to acquire and evaluate information related to the relative effectiveness of this CERCLA SWMP.

To achieve these actions and practices, BMPs as identified in **Table 3.1** will be implemented prior to initiation of land disturbance activities, and as appropriate for each drilling location.

Table 3.1: BMP Implementation Schedule

	BMP Fact Sheet Number, Title	Implementation	Duration
Erosion Control (EC)	EC-1, Scheduling	Start of Construction	Entirety of Project
	EC-2, Preservation of Existing Vegetation	Start of construction	Entirety of project
	EC-6, Straw Mulch	Start of construction	Entirety of project
	EC-9 Earth Dikes	Start of Construction	Entirety of Project

Table 3.1: BMP Implementation Schedule

	BMP Fact Sheet Number, Title	Implementation	Duration
Non-Stormwater (NS)	NS-1, Water Conservation Practices	Start of Construction	Entirety of Project
	NS-2 Dewatering Operation	Start of Construction	Entirety of Project
	NS-6 Illicit Connection- Illegal Discharge Connection	Start of Construction	Entirety of Project
	NS-8, Vehicle and Equipment Cleaning	Start of Construction	Entirety of Project
	NS-9, Vehicle and Equipment Fueling	Start of Construction	Entirety of Project
	NS-10, Vehicle/Equipment Maintenance	Start of Construction	Entirety of Project
Sediment Control (SE)	SE-1, Silt Fence	Start of Construction	Entirety of Project
	SE-5, Fiber Rolls	Start of Construction	Entirety of Project
	SE-6, Gravel Bag Berm	Start of Construction	Entirety of Project
	SE-7, Street Sweeping	Start of Construction	Entirety of Project
	SE-8, Sand Bag Barrier	Start of Construction	Entirety of Project
	SE-10, Storm Drain Inlet Protection	Start of Construction	Entirety of Project
Wind Erosion (WE)	WE-1, Wind Erosion Control	Start of Construction	Entirety of Project
Tracking Control (TC)	TC-1, Stabilized Construction Entrance and Exit	Start of Construction	Entirety of Project
	TC-3, Entrance Outlet Tire Wash	Start of Construction	Entirety of Project

Table 3.1: BMP Implementation Schedule

	BMP Fact Sheet Number, Title	Implementation	Duration
Temporary Materials (Waste) Management (WM)	WM-01 Material Delivery and Storage	Start of Construction	Entirety of Project
	WM-02 Material Use	Start of Construction	Entirety of Project
	WM-03 Stockpile Management	Start of Construction	Entirety of Project
	WM-04 Spill Preservation and Control	Start of Construction	Entirety of Project
	WM-05 Solid Waste Management	Start of Construction	Entirety of Project
	WM-06 Hazardous Waste Management	Start of Construction	Entirety of Project
	WM-07 Contaminated Soil Management	Start of Construction	Entirety of Project
	WM-09 Sanitary-Septic Waste Management	Start of Construction	Entirety of Project
	WM-10 Liquid Waste Management	Start of Construction	Entirety of Project

3.2 Erosion and Sediment Control

Erosion and sediment controls are required to provide effective reduction or elimination of sediment-related pollutants in stormwater discharges and authorized non-stormwater discharges from the site. Applicable BMPs are identified in this section for erosion control, sediment control, tracking control, and wind erosion control.

The field work is designed to prevent the spread of soil contamination during transportation of waste soil. BMPs such as sand bags or gravel bags will be implemented if heavy rain is predicted to slow the flow of any stormwater towards storm drain inlets.

3.2.1 Erosion Control

Erosion control, also referred to as soil stabilization, consists of source control measures designed to prevent soil particles from detaching and becoming transported in stormwater runoff. Erosion control BMPs protect the soil surface by covering and/or binding soil particles.

This project will implement the following practices to provide effective temporary and final erosion control during construction.

- Control the area where soil-disturbing operations take place such that the contractor can implement erosion control BMPs quickly and effectively.
- Stabilize non-active areas within 14 days of cessation of construction activities, or sooner if stipulated by local requirements.
- Control erosion in concentrated flow paths by applying sandbags, gravel bag berms, or equivalent methods.

Sufficient erosion control materials will be maintained onsite to allow implementation in conformance with this CERCLA SWMP.

The following temporary erosion control BMP selection table (**Table 3.2**) indicates the BMPs (including EC and WE BMPs) that will be implemented to control erosion for the field activities. Fact Sheets for temporary erosion control BMPs are provided in **Appendix B**.

Table 3.2: Temporary Erosion Control BMPs

CASQA Fact Sheet	BMP Name	Meets a Minimum Requirement[1]	BMP Used		If not used, state reason
			YES	NO	
EC-1	Scheduling	✓	✓		
EC-2	Preservation of Existing Vegetation	✓	✓		
EC-3	Hydraulic Mulch	✓[2]		✓	Straw mulch used for short term needs
EC-4	Hydroseed	✓[2]		✓	Straw mulch used for short term needs
EC-5	Soil Binders	✓[2]		✓	Straw mulch used for short term needs
EC-6	Straw Mulch	✓[2]	✓		
EC-7	Geotextiles and Mats	✓[2]		✓	Straw mulch used for short term needs
EC-8	Wood Mulching	✓[2]		✓	Straw mulch used for short term needs
EC-9	Earth Dike and Drainage Swales	✓	✓		
EC-10	Velocity Dissipation Devices			✓	Not Applicable to Construction Area conditions.
EC-11	Slope Drains			✓	Not Applicable to area of field activities
EC-12	Stream Bank Stabilization			✓	Not Applicable to area of field activities
EC-13	Polyacrylamide	✓		✓	Not Applicable to area of field activities
EC-14	Compost Blankets	✓[2]		✓	Not needed as majority of existing vegetation will remain intact
EC-15	Soil Preparation-Roughening			✓	Same as above
EC-16	Non-Vegetated Stabilization	✓[2]		✓	Same as above.
WE-1	Wind Erosion Control	✓	✓		
TC-1	Stabilized Construction Entrance and Exit	✓	✓		
TC-3	Entrance Outlet Tire Wash	✓	✓		
Alternate BMPs Used:					**If used, state reason:**

Notes:
[1] Applicability to a specific project will be determined by the QSD.
[2] The QSD will ensure implementation of one of the minimum measures listed or a combination thereof to achieve and maintain the risk level requirements.
CASQA = California Stormwater Quality Association

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3.2.2 Implementation of Erosion Control BMPs

BMPs will be deployed in a sequence to follow the progress of field activities and resulting soil disturbance. As the locations of field activities change, erosion controls will be adjusted accordingly to control stormwater runoff at the downgradient site perimeter, as necessary. BMPs will be mobilized as follows:

Throughout Construction:

- The SWMP implementer will monitor weather using National Weather Service reports to track conditions and alert crews to the potential onset of rainfall events.
- Soil-disturbing activities will not be performed during significant rainfall events (50% probability of 0.5 inches of precipitation per day or more). When the planned field activities are interrupted by a significant rainfall event, soil disturbance will not resume until Site soil conditions are suitable.
- Disturbed soil areas will be stabilized with temporary erosion control or with permanent erosion control as soon as practicable after field activity at each construction (remediation) location is completed.

During the Non-Rainy Season

- The project schedule will sequence field activities with the installation of both erosion control and sediment control measures in advance of a significant rainfall event.

During the Rainy Season:

- Disturbed areas will be stabilized with temporary or permanent erosion control before significant rainfall events.
- Prior to forecasted significant rainfall events, temporary erosion control BMPs will be deployed and the integrity and effectiveness of these BMPs will be inspected.

These temporary erosion control BMPs will be implemented in conformance with the following guidelines and as outlined in the BMP Fact Sheets provided in **Appendix B**. If there is a conflict between documents, the RAWP will prevail over narrative in the body of the CERCLA SWMP or guidance in the BMP Fact Sheets. The narrative in the body of the CERCLA SWMP prevails over guidance in the BMP Fact Sheets.

<u>Scheduling</u>

The trenching, removal of existing sewer and storm drain pipes, and backfilling will be sequenced to minimize the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking.

Preservation of Existing Vegetation

Preservation of existing vegetation will protect soil erosion while decreasing the number of BMPs required on site. Areas to be preserved from construction traffic will be marked. To the extent practical, temporary roadways, stockpile areas, and laydown areas will be located to avoid damaging existing vegetation.

Straw Mulch

Straw mulch will be used around the areas being backfilled.

Earth Dike and Berms

Berms will be built upstream of the work area by utilizing sandbags to divert and control stormwater runoff. Sandbag berms can divert sheet flow over slopes, prevent run-on into active construction zones, and control erosion along with transport of sediment.

Wind Erosion Control

Dust control measures will be used to stabilize soil from wind erosion and to reduce dust generated by clearing and grading activities, construction vehicle traffic on unpaved areas, and sediment tracking onto paved roads. Water spray will be used to control dust and wind erosion, with water application controlled to prevent surface runoff. Water trucks will be used for dust control. In addition to wet suppression (watering), preventive 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

3.2.3 Sediment Controls

Sediment controls are temporary or permanent structural measures that are intended to complement the selected erosion control measures and reduce sediment discharges from active construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water.

The following sediment control BMP selection table (**Table 3.3**) indicates the BMPs that will be implemented (including SE and TC BMPs) to control sediment on the construction site. Fact Sheets for temporary sediment control BMPs are provided in **Appendix B**.

Table 3.3: Temporary Sediment Control BMPs

CASQA Fact Sheet	BMP Name	Meets a Minimum Requirement[1]	BMP used		If not used, state reason
			YES	NO	
SE-1	Silt Fence	✓[2] [3]	✓		
SE-2	Sediment Basin			✓	Other methods used
SE-3	Sediment Trap			✓	Other methods used
SE-4	Check Dams			✓	No constructed drainage swales in area of field activities
SE-5	Fiber Rolls	✓[2][3]	✓		
SE-6	Gravel Bag Berm	✓[3]	✓		
SE-7	Street Sweeping	✓	✓		
SE-8	Sandbag Barrier		✓		
SE-9	Straw Bale Barrier			✓	Other methods used such as fiber rolls
SE-10	Storm Drain Inlet Protection	✓	✓		
SE-11	ATS			✓	Not applicable to the level of risk.
SE-12	Temporary Silt Dike			✓	Other methods used
SE-13	Compost Sock and Berm	✓[3]		✓	Other methods used
SE-14	Biofilter Bags	✓[3]		✓	Not required for this project
TC-1	Stabilized Construction Entrance and Exit	✓	✓		
TC-2	Stabilized Construction Roadway			✓	Not required for this project
TC-3	Entrance Outlet Tire Wash	✓	✓		
Alternate BMPs Used:					**If used, state reason:**

Notes:

[1] Applicability to a specific project will be determined by the QSD.

[2] The QSD will ensure implementation of one of the minimum measures listed or a combination thereof to achieve and maintain the risk level requirements.

[3] Risk Level 2 and 3 determinations will require linear sediment control along toes of slopes, faces of slopes, and at the grade breaks of exposed slopes.

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These temporary sediment control BMPs will be implemented in conformance with the following guidelines and in accordance with the BMP Fact Sheets provided in **Appendix B**. If there is a conflict between documents, the Work Plan will prevail over narrative in the body of the CERCLA SWMP or guidance in the BMP Fact Sheets. The narrative in the body of the CERCLA SWMP prevails over guidance in the BMP Fact Sheets.

During the Non-Rainy Season

- Temporary sediment controls will be implemented at the drainage perimeter of disturbed soil areas before significant rainfall events.
- Fiber rolls and gravel bags will be maintained onsite and deployed as barriers when needed.

During the Rainy Season

- Temporary sediment controls will be implemented at the drainage perimeter of disturbed soil areas.
- Fiber rolls will be deployed along the toes of slopes of the stockpiled soils to filter stormwater run-off.
- Fiber rolls and sandbags will be used on the ground surface around the area of backfilling and storm inlets during significant rainfall events (50 percent probability of 0.5 inches of precipitation per day or more).

Silt Fence

Silt fencing may be used as a temporary sediment trapping and filtering device downgradient of all disturbed areas where sheet flow might occur. Silt fences will be installed on a level contour receiving no more than 1 acre of runoff per 100 linear feet or 0.5 cubic foot per second of concentrated flow draining to any point along the silt fence.

Fiber Rolls

Fiber rolls can be used to control sediment by reducing flow velocity and allowing sediment to settle. Filter barriers will be installed on the ground surface around the storm drain inlets. In areas where heavy traffic occurs, filter fabric will be placed inside the inlets.

Filter barriers may be used at the following locations at the Site:

- Around stockpiles and stockpile staging areas.
- Downgradient of any active areas where soil disturbance may be expected.
- At operational storm drains as a form of inlet protection.

Sandbags

Sandbags will be used upstream of the active construction zones as a drainage diversion and for sediment trapping, stormwater velocity, and erosion control. The sandbags also will be installed around the stormwater inlets for protection purposes.

Sandbags may be used at the following locations at the site:

- Around and along the downgradient toes of all soil stockpiles.
- Below active construction areas.
- In concentrated drainage flow courses and in areas downgradient of active work areas, as needed.
- As a diversion berm to stormwater run-on upgradient of active work areas.

Gravel Bag Berms

Gravel bag berms allow for water to temporarily pond while allowing sediment to settle. Protection of storm inlets will be achieved utilizing gravel bag berms, as well as sandbags.

Storm Inlet Protection

Storm drain inlets adjacent to construction activities will be protected from any authorized or unauthorized non-stormwater discharges. Gravel and/or sand bags and/or fiber rolls will be applied.

Stabilized Construction Entrance/Exit

To reduce the tracking of mud and dirt onto public roads by haul trucks and construction vehicles, site entrances and exits not already asphalted will be stabilized using base rock and maintained throughout the construction period.

Entrance/Outlet Tire Wash

Vehicles will be free of loose dirt before exiting the site. Tires and undercarriages will be inspected and visible dirt identified during the inspection cleaned off the vehicle. Cleaning will be performed by first knocking dirt and mud off vehicles and equipment using shaker plates, brooms, and/or shovels. Where additional cleaning is needed, tires will be washed to prevent mud tracking to public roadways. Designated areas for vehicle and equipment cleaning will be established where runoff is not likely to be generated, and away from surface waters and existing storm drains. .

3.3 Non-Stormwater Controls and Waste and Materials Management

3.3.1 Non-Stormwater Controls

Non-stormwater discharges into storm drainage systems or waterways, which are not authorized under the General Permit, are prohibited. Non-stormwater discharges for

which a separate NPDES permit is required by the RWQCB are prohibited unless coverage under a separate NPDES permit has been obtained for the discharge. The selection of non-stormwater BMPs is based on the list of construction activities with a potential for non-stormwater discharges identified in **Section 2.5** of this CERCLA SWMP.

Non-stormwater wastewater generated on the Site may include water from decontamination of equipment. Wastewater may be stored on the Site as described in the Work Plan to prevent releases to the surface and storm drains and will be disposed of as described in the Work Plan. Wastewater will be sampled in accordance with the Work Plan and may be disposed into the sanitary sewer if it meets publicly owned treatment system acceptance limits. Water not meeting those requirements will be transported off site to the appropriate disposal facility.

Table 3.4 identifies the non-stormwater control BMPs that will be implemented (including NS BMPs) to control non-sediment discharges to stormwater drains at the Site. Fact Sheets for temporary non-stormwater control BMPs are provided in **Appendix B**.

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Table 3.4: Temporary Non-Stormwater BMPs

CASQA Fact Sheet	BMP Name	Meets a Minimum Requirement[1]	BMP used		If not used, state reason
			YES	NO	
NS-1	Water Conservation Practices	✓	✓		
NS-2	Dewatering Operation		✓		Not Applicable to field activities
NS-3	Paving and Grinding Operation			✓	Not Applicable to field activities
NS-4	Temporary Stream Crossing			✓	Not required for the field activities
NS-5	Clear Water Diversion			✓	Not required for the field activities
NS-6	Illicit Connection- Illegal Discharge Connection	✓	✓		
NS-7	Potable Water Irrigation Discharge Detection			✓	Not required for the field activities
NS-8	Vehicle and Equipment Cleaning	✓	✓		
NS-9	Vehicle and Equipment Fueling	✓	✓		
NS-10	Vehicle and Equipment Maintenance	✓	✓		
NS-11	Pile Driving Operation			✓	Not Applicable to field activities
NS-12	Concrete Curing			✓	
NS-13	Concrete Finishing			✓	
NS-14	Material and Equipment Use Over Water			✓	No field activities or materials/equipment use over water
NS-15	Demolition Removal Adjacent to Water			✓	No demolition activities adjacent to water in current SOW
NS-16	Temporary Batch Plants			✓	Not required for field activities
Alternate BMPs Used:					**If used, state reason:**

Notes:
[1] Applicability to a specific project will be determined by the QSD.

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Non-stormwater BMPs will be implemented in conformance with the following guidelines and in accordance with the BMP Fact Sheets provided in **Appendix B**. If there is a conflict between documents, the RAWP will prevail over narrative in the body of the CERCLA SWMP or guidance in the BMP Fact Sheets. The narrative in the body of the CERCLA SWMP prevails over guidance in the BMP Fact Sheets.

Water Conservation Practices

Appropriate water application and conservation practices will be followed to ensure that water used onsite does not create surface flow capable of carrying pollutants off the footprint area for field activities.

Illicit Connection- Illegal Discharge Connection

The Contractor will implement this BMP (identified as NS-6) throughout the duration of the project. Any identified illicit connection or discharge will be reported to the Navy and the RWQCB immediately.

Vehicle and Equipment Cleaning

Vehicle and equipment cleaning will occur in designated decontamination areas constructed with containment for decontamination water.

Vehicle and Equipment Fueling

Diesel Fuel

During construction, fuel will be stored at the Building 570 complex. Fueling will occur away from drainage courses to prevent run-on of stormwater and runoff of spills. If a spill occurs as equipment is fueled, the spill will be immediately contained with a spill kit. The individual noting the spill will be responsible for contacting the Project Superintendent, who will notify the Navy, which in turn is responsible for notifying the regulatory agencies as necessary, and for managing the cleanup and removal of contaminated soils in accordance with regulations.

Fuels for Equipment and Vehicle-Related Lubricants

Fueling of equipment at the project site will occur in designated areas at the Building 570 complex, which is located away from drainage courses, to prevent the run-on of stormwater and the runoff of spills. If a spill occurs as equipment is fueled, the spill will be contained immediately with spill kits. The individual noting the spill will be responsible for contacting the Project Superintendent, who will notify the Navy, which in turn is responsible for notifying the regulatory agencies as necessary and for managing cleanup and removal of contaminated soils in accordance with regulations.

A limited variety of vehicles and equipment will be used throughout the project, including excavators, steel plate compactors, backhoes, and trucks. BMPs NS-9 and NS-10 will be used to prevent discharges of fuel and other vehicle fluids on or near the site during the field activities. Vehicles will be fueled off site. Vehicle and equipment maintenance,

if necessary during field activities, will occur in the Building 570 complex. The proposed location for this activity will be at the Gilbane job-site trailer area.

Vehicle and Equipment Maintenance

Heavy Equipment and Vehicle-Related Lubricants

All heavy equipment and vehicles will be inspected prior to use onsite and at the beginning of each workday for oil, lubricant, and hydraulic leaks. Leaking equipment will be repaired or removed from service, and small leaks will be cleaned up immediately. Excessive application of grease during equipment maintenance will be avoided, and accumulated grease will be wiped off. Contaminated rags will be disposed properly offsite. All oil and lubricant supplies will be stored securely in drums or bins to prevent an uncontrolled discharge of spilled materials.

Passenger Vehicles and Trucks

Passenger vehicles and trucks will be inspected daily for possible leaks, but any major service will be performed off site at commercial facilities.

To the extent practical, routine vehicle and equipment maintenance will be performed in established and permanent maintenance facilities. When required in the field, drip pans or absorbent pads will be used for all vehicle and equipment maintenance activities that involve grease, oil, solvents, coolants, or other vehicle/equipment fluids.

3.3.2 Materials Management and Waste Management

Materials management control practices consist of implementing procedural and structural BMPs for handling, storing, and using construction materials to prevent the release of those materials into stormwater discharges. The materials may be used continuously, such as fuel for vehicles and equipment, or for a discrete period, such as soil binders for temporary stabilization.

Waste management consists of procedural and structural BMPs for handling, storing, and ensuring proper disposal of wastes, to prevent the release of those wastes into stormwater discharge points.

Materials and waste management pollution control BMPs will be implemented to minimize stormwater contact with construction materials, wastes, and service areas, and to prevent materials and wastes from being discharged off site. The primary mechanisms for stormwater contact will include:

- Direct contact with precipitation.
- Contact with stormwater run-on and run-off.
- Wind dispersion of loose materials.
- Direct discharge to the storm drain system through spills or dumping.

- Extended contact with some materials and wastes, such as asphalt cold mix and treated wood products, which can leach pollutants into stormwater.

A list of construction activities is provided in **Section 2.4**. **Table 3.5** identifies the BMPs that will be implemented (including WM BMPs) to handle materials and control construction site wastes associated with these construction activities. Fact Sheets for Materials and Waste Management BMPs are provided in **Appendix B**.

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Table 3.5: Temporary Materials Management BMPs

CASQA Fact Sheet	BMP Name	Meets a Minimum Requirement[1]	BMP used		If not used, state reason
			YES	NO	
WM-01	Material Delivery and Storage	✓	✓		
WM-02	Material Use	✓	✓		
WM-03	Stockpile Management	✓	✓		
WM-04	Spill Preservation and Control	✓	✓		
WM-05	Solid Waste Management	✓	✓		
WM-06	Hazardous Waste Management	✓	✓		
WM-07	Contaminated Soil Management		✓		
WM-08	Concrete Waste Management	✓		✓	No concrete work in current SOW
WM-09	Sanitary-Septic Waste Management	✓	✓		
WM-10	Liquid Waste Management		✓		
Alternate BMPs Used:					**If used, state reason:**

Notes:
[1] Applicability to a specific project will be determined by the QSD.

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Material management BMPs will be implemented in conformance with the following guidelines and in accordance with the BMP Fact Sheets provided in **Appendix B**. If there is a conflict between documents, the RAWP will prevail over narrative in the body of the CERCLA SWMP or guidance in the BMP Fact Sheets. The narrative in the body of the CERCLA SWMP prevails over guidance in the BMP Fact Sheets.

Material Delivery and Storage

Material deliveries will be coordinated with the Site Superintendent and stored in a manner specified by the manufacturer. To prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses, the following practices will be followed: minimize the storage of hazardous materials onsite, store materials in a designated area, install secondary containment for the storage area, conduct regular inspections, and train employees and subcontractors on material handling and storage. The materials will be stored at the onsite Gilbane office.

Material Use

Materials are to be used in the manner for which they were designed. Actions to prevent or reduce discharge of pollutants to the storm drain system or watercourses from material use include: using alternative products, minimizing hazardous material use onsite, and training employees and subcontractors.

To prevent chemical pollutants from entering the environment, hazardous materials will be stored in a central area at least 50 feet from surface waters. Containers will be stored properly when not in use and will be placed in the appropriate storage cabinet or secondary containment structure to reduce the risk of a fire or a release.

Stockpile Management

Stockpile management procedures and practices will be designed to reduce or eliminate air and stormwater pollution from stockpiles of soil. During backfilling and grading, soils may be stockpiled in areas adjacent to that activity. Prior to use, a 10-mil liner will be placed on the ground surface and wrapped and secured with hay bales or straw wattles. Because the soil will be stockpiled in a generally uncompacted condition, it is subject to erosion. In addressing stockpiling, BMPs may include diversion of drainage from the stockpiles, installation of filter barriers on the downgradient toe of stockpile slope, and dust control. In addition, large stockpiles will be sloped to reduce the infiltration of rainwater. Stockpiles will be covered with 10-millimeter plastic sheeting or soil stabilizing agent when not in use.

Spill Preservation and Control

The radiological surveys at NSTI will be conducted in accordance with the project-specific RAWP to which this SWMP is an attachment, and the project-specific Accident Prevention Plan/Site Safety and Health Plan (Gilbane, 2020b). These documents will be maintained on the Site, and outline the specific steps to be followed if a spill or

release occurs. If changes or revisions to these documents are made, the most recent version will supersede the previous iteration.

Field practices will be implemented to prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills.

The BMPs for spill prevention and control include the following.

- Train employees and subcontractors on how to reduce the chance and stop the source of the spills.
- Train employees and subcontractors on proper spill response procedures.
- Stop the source of a spill immediately, if safe to do so.
- If safe to do so, contain and clean up spills immediately and notify the Gilbane Superintendent immediately.
- Once contained train employees and subcontractors on proper disposal of spill material.
- Spills of hazardous materials that cannot be cleaned up or that have resulted in a release should be reported immediately to the Gilbane Superintendent, who will immediately notify the Navy, which in turn will be responsible for notifying the regulatory agencies as necessary and for managing cleanup.

Solid Waste Management

All construction waste generated from the building demolition such as scrap timber, steel, concrete, removed utility piping or demolished asphalt pavement, once surveyed for radiological contamination and cleared for release, will be disposed in dumpsters, roll-off bins, or other similarly approved containers in designated areas located throughout the Site. Specific procedures to handle all types of waste expected within Gilbane work areas at NSTI are included in the *Environmental Protection Plan, and Waste Management Plan*, which is part of the project-specific RAWP to which this SWMP is an attachment (Gilbane, 2020a). Copies of these plans will be maintained at the Site.

Solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

Hazardous Waste Management

Potentially hazardous wastes at the Site include contaminated soil and spills or releases of fuel, oil, and lubricants. Specific procedures to handle all types of waste expected at the Site have been developed by Gilbane and are included in the Waste Management Plan and Radiological Management and Demolition Plan, attached as Appendix B and Appendix E, respectively, to the RAWP.

Sanitary-Septic Waste Management

Proper sanitary and septic waste management practices, consisting of providing convenient, well-maintained facilities, and arranging for regular service and disposal, will be implemented to prevent the discharge of pollutants to stormwater from sanitary and septic waste.

3.4 Post Construction Stormwater Management Measures

Post-construction BMPs are permanent measures installed as part of the construction activities, and designed to reduce or eliminate pollutant discharges from the Site after construction is completed.

At the completion of construction activities at the SWDAs, the RSY pads will be demobilized and the SWDAs will be restored "in-kind" to grade and conditions equal to original conditions, unless noted otherwise.

For open areas previously covered with grass, an appropriate grass seed mix will be applied by hydroseeding or similar means to restore the area to compatible neighboring grasses. The seed mix will be consistent with those used previously at NSTI and will submitted to the Navy for concurrence prior to application.

The following source-control post-construction BMPs to comply with General Permit Section XIII.B and local requirements have been identified for the site:

- EC-2, Preservation of Existing Vegetation
- EC-4, Hydroseed

Open areas with disturbed soil will be hydroseeded (EC-4) to re-establish vegetation as necessary. No other stormwater management practices will be performed, as vegetation clearing and equipment movement will be minimized to maintain existing vegetation to the extent practical.

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4.0 BMP Inspection and Maintenance

4.1 BMP Inspection and Maintenance

The General Permit requires routine weekly inspections of BMPs, along with inspections before, during, and after qualifying rain events producing precipitation of 0.5 inch or more. A BMP inspection checklist will be filled out for inspections and maintained onsite with the CERCLA SWMP. The inspection checklist includes the necessary information covered in **Section 7.6**. A blank inspection checklist is included in **Appendix C**. Completed checklists will be kept in a binder onsite in the Gilbane field office.

Components of the BMPs will be maintained regularly to ensure proper and effective functionality. If necessary, corrective actions will be implemented within 72 hours of identified deficiencies, and associated amendments to the CERCLA SWMP will be prepared by the QSD.

Specific details for maintenance, inspection, and repair of Construction Site BMPs can be found in the BMP Factsheets in **Appendix B**.

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5.0 Training

Section 6.0 identifies the SWMP Implementer and QSD for the project. To promote stormwater management awareness specific to this project, periodic training of job site personnel will be included as part of routine project meetings (e.g., daily/weekly tailgate safety meetings) or task-specific training as needed.

The SWMP Implementer will be responsible for providing this information at the meetings, and subsequently completing the training logs provided in **Appendix D**, which identify the site-specific stormwater topics covered as well as the names of site personnel who attended the meeting. Specific stormwater management tasks may be delegated to trained employees by the SWMP Implementer, under the condition that adequate supervision and oversight is provided. Training will correspond to the specific task delegated, including CERCLA SWMP implementation, BMP inspection and maintenance, and recordkeeping.

Documentation of training activities (formal and informal) will be retained in a field binder located onsite in the Gilbane office.

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6.0 Responsible Parties and Operators

6.1 Responsible Parties

Table 6.1 lists the project site personnel who will be responsible for CERCLA SWMP activities, including the Project Manager, CERCLA SWMPPP developer, and CERCLA SWMPPP implementer.

Table 6.1: Responsible Parties for this CERCLA SWMP

CERCLA SWMPPP Development and Revision Contact		
Cenk Ergin, P.E., QSD	Gilbane Project Engineer	925-946-3260
CERCLA SWMPPP Implementer Contact		
Tony Olmstead, QSP	Gilbane Site Superintendent	925-250-7875
Project Manager		
John Baur	Gilbane Project Manager	925-382-3051

The CERCLA SWMPPP implementer identified for the project will have primary responsibility and significant authority for the implementation, maintenance, and inspection and monitoring of CERCLA SWMP requirements. The CERCLA SWMPPP implementer will be available at all times throughout the duration of the project. Duties of the CERCLA SWMPPP implementer include, but are not limited to, the following.

- Implementing all elements of the CERCLA SWMP, including, but not limited to:
    a. Ensuring that all BMPs are implemented, inspected, and properly maintained.
    b. Performing non-stormwater and stormwater visual observations and inspections.
    c. Performing routine inspections and observations.
    d. Directing non-stormwater management, and materials and waste management activities such as: monitoring discharges; general Site clean-up; vehicle and equipment cleaning, fueling, and maintenance; spill control; ensuring that no materials other than stormwater are discharged in quantities that will have an adverse effect on receiving waters or storm drain systems.
- Ensuring elimination of unauthorized discharges.
- Mobilizing crews to make immediate repairs to the control measures.
- Coordinating with the contractor(s) to assure all necessary corrections/repairs are made immediately and that the project complies with the CERCLA SWMP at all times.

- Notifying the QSP immediately of off-site discharges or other non-compliance events.

The implementer may delegate these inspections and activities to an appropriately trained employee, but will ensure adequacy of implementation and adequate deployment.

7.0 Construction Site Monitoring Program

7.1 Purpose

This Construction Site Monitoring Program (CSMP) was developed to:

Section 1 Determine whether non-visible pollutants are present at the construction site and are causing or contributing to exceedances of water quality objectives.

Section 2 Determine whether immediate corrective actions, additional BMP implementation, or CERCLA SWMP revisions are necessary to reduce pollutants in stormwater discharges and authorized non-stormwater discharges.

Section 3 Determine whether BMPs included in the CERCLA SWMP are effective in preventing or reducing pollutants in stormwater discharges and authorized non-stormwater discharges.

Gilbane will ensure that all specific monitoring requirements for the scoping activities at NSTI are implemented as stated in this Site-Specific CERCLA SWMP.

7.2 Applicability of Permit Requirements

This project is exempt under CERCLA Section 121(e); therefore, this SWMP identifies the following types of monitoring as being applicable for this project.

1. Visual inspections of BMPs.
2. Visual monitoring of the site related to qualifying storm events.
3. Visual monitoring of the site for non-stormwater discharges.
4. Sampling and testing in the event of breach of BMPs

7.3 Weather and Rain Event Tracking

Visual monitoring and inspection requirements are triggered by a qualifying rain event. The General Permit defines a qualifying rain event as any event that produces 0.5 inch of precipitation within a 24-hour period. A minimum of 48 hours of dry weather will be used to distinguish between separate qualifying storm events.

7.3.1 Weather Tracking

The implementer should consult the National Oceanic and Atmospheric Administration (NOAA) daily for the weather forecasts. These forecasts can be obtained at http://www.srh.noaa.gov/.

7.3.2 Rain Gauges

Rain gauge readings will be recorded in daily contractor quality control reports. The nearest appropriate governmental rain gauge is located at the San Francisco International Airport (SFO), approximately 10 miles south of NSTI. The SFO rain gauge is maintained by the National Weather Service and hourly readings can be found at: www.weather.gov/data/obhistory/KSFO.html.

7.4 Monitoring Locations

Monitoring locations will vary depending on where work is being performed at the time of monitoring. Monitoring locations are described in **Section 7.6.5** and **Section 7.7.5**.

7.5 Safety and Monitoring Exemptions

Safety practices for sample collection will be implemented in accordance with the *Site Safety and Health Plan* (Gilbane, 2020b). Trips, slips, and falls are the primary safety hazard for performing visual monitoring. If a significant rainfall event (50 percent probability of 0.5 inches of precipitation or more within a 24-hour period) is anticipated for a work day, stormwater monitoring will be discussed as part of the tailgate safety meeting at the beginning of the work day.

This project is not required to conduct visual observations (inspections) under the following conditions.

- During dangerous weather conditions, such as flooding and electrical storms.
- Outside of scheduled Site business (work) hours.

Scheduled Site business (work) hours are Monday through Friday 6:30 a.m. to 5 p.m.

If visual monitoring of the Site is unsafe because of the dangerous conditions noted above, then the implementer will document the conditions for why an exception to performing the monitoring was necessary. Field daily reports stating the reasons for an exception to performing the monitoring can be utilized as backup exemption documentation. The exemption documentation will be kept in a binder located at the Gilbane field office.

7.6 Visual Monitoring

Visual monitoring includes observations and inspections. Inspections of BMPs are required to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. Visual observations of the Site are required to observe stormwater drainage areas, and to identify any spills, leaks, or uncontrolled pollutant sources.

Table 7.1 identifies the required frequency of visual observations and inspections. Inspections and observations will be conducted at the locations identified in **Section 7.6.1** and **Section 7.6.2**.

Table 7.1: Summary of Visual Monitoring and Inspections

Type of Inspection	Frequency
Routine Inspections	
BMP Inspections	Weekly[1]
BMP Inspections – Tracking Control	Daily
Non-Stormwater Discharge Observations	Quarterly
Rain Event Triggered Inspections	
Site Inspections Prior to a Qualifying Event	Within 48 hours of a qualifying event[2]
BMP Inspections During an Extended Storm Event	Every 24-hour period of a rain event[2]
Site Inspections Following a Qualifying Event	Within 48 hours of a qualifying event[2]

Notes:
[1] BMPs must be inspected weekly, except for those identified to be inspected more frequently.
[2] Inspections are only required during scheduled Site operating hours.

7.6.1 Routine Observations and Inspections

Routine Site inspections and visual monitoring are necessary to ensure that the project is in compliance with the applicable requirements of a General Permit.

7.6.1.1 Routine BMP Inspections

Inspections of BMPs are conducted to identify and record:

- BMPs that are properly installed.
- BMPs that need maintenance to operate effectively.
- BMPs that have failed.
- BMPs that could fail to operate as intended.

7.6.1.2 Non-Stormwater Discharge Observations

Each drainage area will be inspected for the presence of, or indications of, prior unauthorized and authorized non-stormwater discharges. The following inspection findings will be recorded.

- Presence or evidence of any non-stormwater discharge (authorized or unauthorized).
- Pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.).

- Source of discharge.

7.6.2 Rain-Event Triggered Observations and Inspections

Visual observations of the Site and inspections of BMPs will be conducted prior to a qualifying rain event, following a qualifying rain event, and every 24-hour period during a qualifying rain event. Pre-rain inspections will be conducted after consulting NOAA and determining that a precipitation event with a 50 percent probability of 0.5 inch of precipitation or more within a 24-hour period has been predicted.

7.6.2.1 Visual Observations Prior to a Forecasted Qualifying Rain Event

Within 48 hours prior to a qualifying event, a stormwater visual monitoring Site inspection will include observations of the following locations:

- Stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources.
- Location of each BMP to verify proper installation or implementation, appropriate maintenance, and suitable integrity to perform as intended during the qualifying event.
- Any non-stormwater storage and containment areas to detect leaks and ensure maintenance of adequate height of the side of the containment.

7.6.2.2 BMP Inspections During an Extended Storm Event

During an extended rain event (multiple consecutive 24-hour periods with 0.5 inch or more of rain), BMP inspections will be conducted to identify and record:

- BMPs that are properly installed.
- BMPs that need maintenance to operate effectively.
- BMPs that have failed.
- BMPs that could fail to operate as intended.

If the construction site is not accessible during the rain event, the visual inspections will be performed at all relevant outfalls, discharge points, and downstream locations. The inspections should record any projected maintenance activities.

7.6.2.3 Visual Observations Following a Qualifying Rain Event

Within 48 hours following a qualifying rain event (0.5 inch of rain within a 24-hour period) a stormwater visual monitoring Site inspection is necessary to observe:

- Stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources.

- Location of each BMP to verify proper installation or implementation, appropriate maintenance, and suitable integrity to perform as intended during the qualifying event.
- Need for additional BMPs.
- Any non-stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard.
- Discharge of stored or contained rain water.

7.6.3 Visual Monitoring Procedures

Visual monitoring will be conducted by the Qualified SWMPPP Practitioner (QSP), or by staff trained by and under the supervision of the QSP.

The name(s) and contact number(s) of the site visual monitoring personnel are listed below.

Assigned inspector:	Tony Olmstead	Contact phone: 925-250-7875
Alternate inspector:	Teresa Ruha	Contact phone: 925-525-8210

Stormwater observations will be documented on the Visual Inspection Field Log Sheet (**Appendix C**, Inspection Forms). BMP inspections will be documented on the site-specific BMP inspection checklist.

Within 2 days of the inspection, the implementer will submit copies of the completed inspection report to the Navy. The completed reports will be kept in a binder located onsite in the Gilbane field office. Any photographs used to document observations will be referenced on the stormwater site inspection report and will be included in the Daily Production Reports.

7.6.4 Visual Monitoring Follow-Up and Reporting

Correction of deficiencies identified by the observations or inspections, including required repairs or maintenance of BMPs, will be initiated and completed as soon as possible.

If identified deficiencies require design changes, including additional BMPs, changes will be initiated within 72 hours of identification and be completed as soon as practical. When design changes to BMPs are required, the CERCLA SWMP will be amended to reflect the changes.

Deficiencies identified in site inspection reports and correction of deficiencies will be tracked on the Inspection Field Log Sheet or BMP Inspection Report and will be submitted to the SWMPPP implementer and will be kept in a binder located onsite in the Gilbane field office.

7.6.5 Visual Monitoring Locations

The inspections and observations identified in **Section 7.6.1** and **Section 7.6.2** will be conducted at stockpile locations identified on **Figure 2** and **Figure 3**.

Due to the current scope of work, there will be no discharge from the work areas. Therefore, there will not be any drainage areas identified. Potential discharge point locations were identified on the Site based on the possibility of a breach/malfunction in the installed BMPs during a storm event.

7.7 Water Quality Sampling and Analysis

Sampling and testing of stormwater runoff will occur only if the visual monitoring indicates possible pollution due to breach/malfunction of BMPs. If suspended particulate matter is observed in the stormwater runoff, a sufficient sample volume will be collected and the turbidity and pH of the water measured in the field using a multi-parameter water quality meter (YSI 600XL or equivalent suitable for measuring pH, temperature, dissolved oxygen, salinity, and turbidity) following procedures as established by the manufacturer of the meter. Results of the field tests, including the time and location of sample collection, will be recorded on a Sampling Log Sheet (**Appendix C**). Following this initial sampling and analysis, a follow-up visual inspection will be conducted, and sampling and testing will be performed if visible pollutants are observed, at 2-hour intervals during the remainder of business hours for the day, unless rainfall and runoff have ceased. If stormwater discharge continues to be observed on the subsequent business day(s), the visual monitoring, sampling, and testing will be performed at the beginning of business hours and repeated 6 hours later, unless rainfall and run-off have ceased.

If an oily sheen is observed from the visual monitoring of the stormwater runoff, sufficient stormwater to fill two 1-liter glass jars will be collected and analyzed following procedures described in **Section 7.7.1**.

7.7.1 Sampling and Analysis Plan for Non-Visible Pollutants in Stormwater Runoff Discharges

This Sampling and Analysis Plan for Non-Visible Pollutants describes the sampling and analysis strategy and schedule for monitoring non-visible pollutants in stormwater runoff discharges from the project site.

Sampling for non-visible pollutants will be conducted when (1) a breach, leakage, malfunction, or spill is observed or known to have occurred; (2) the leak or spill has not been cleaned up prior to the rain event; and (3) there is the potential for discharge of non-visible pollutants to surface waters or a drainage system.

The following construction materials, wastes, or activities, as identified in **Section 2.5**, are potential sources of non-visible pollutants to stormwater discharges from the project.

- Fuel.
- Sanitary septic effluent from portable toilets.
- Equipment decontamination water.
- Uncovered stockpile material with contaminated soil.

Based on the discussion of stormwater run-on in **Section 2.2**, stormwater run-on is not anticipated from locations that have potential to contribute non-visible pollutants to stormwater discharges from the project site.

7.7.1.1 Sampling Schedule

Collection of discharge samples for non-visible pollutant monitoring will be triggered when any of the following conditions are observed during site inspections conducted prior to or during a significant rain event.

- Materials or wastes containing potential non-visible pollutants are not stored under watertight conditions. Watertight conditions are defined as (1) storage in a watertight container, (2) storage under a watertight roof or within a building, or (3) protected by temporary cover and containment that prevents stormwater contact and runoff from the storage area.
- Materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up prior to the rain event, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- A construction activity including, but not limited to, those in **Section 2.5**, with the potential to contribute non-visible pollutants (1) was occurring during or within 24 hours prior to the rain event, (2) BMPs were observed to be breached, malfunctioning, or improperly implemented, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- Stormwater runoff from an area contaminated by historical usage of the site has been observed to combine with stormwater runoff from the site, and there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.

7.7.1.2 Sampling Locations

Sampling locations are based on proximity to the storage or use of non-visible pollutants; accessibility for sampling; and personnel safety. Planned non-visible pollutant sampling locations are shown on **Figure 3** and **Table 7.2** and **Table 7.3**.

Two sampling locations on the project site and the contractor's yard have been identified for the collection of samples of runoff from planned material and waste storage areas, and areas where non-visible pollutant-producing construction activities are planned.

Table 7.2: Non-Visible Pollutant Sample Locations – Contractors' Yard

Sample Location Number	Sample Location Description	Sample Location Latitude and Longitude (Decimal Degrees)
SP-1	Laydown and Refueling Area, Staging/ Material Storage/Vehicle Storage/ Portable Toilet Area	37°49'39.29"N 122°22'11.48"W
SP-2	Portable Toilet/Wash Station Area	37°49'30.36"N 122°22'37.87"W

Two sampling locations have been identified for the collection of samples of runoff from drainage areas contaminated by historical usage of the site.

Table 7.3: Non-Visible Pollutant Sample Locations – Areas of Historical Contamination

Sample Number	Sample Location	Sample Location Latitude and Longitude (Decimal Degrees)
SP-3	West of Bldg. 1315	37°49'36.40"N 122°22'43.87"W
SP-4	West of Bldg. 1131	37°49'41.26"N 122°22'42.36"W

One sampling location has been identified for the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. This location was selected so the sample will not have been impacted by the operations, activities, or areas identified in **Section 7.7.1**, or have come into contact with disturbed soils areas.

Table 7.4: Non-Visible Pollutant Sample Locations – Background (Unaffected Sample)

Sample Location Number	Sample Location	Sample Location Latitude and Longitude (Decimal Degrees)
SP-5	North West of Bldg. 225	37°49'31.12"N 122°22'33.85"W

If a stormwater visual monitoring site inspection conducted prior to or during a storm event identifies the presence of a material storage, waste storage, or operations area with spills or the potential for the discharge of non-visible pollutants to surface waters, or to a storm drain system that is at a location not listed above and has not been identified on the site maps, additional sampling locations will be selected by the SWMPPP

implementer using the same rationale as that used to identify planned locations. Non-visible pollutant sampling locations will be identified by the SWMPPP implementer on the pre-rain event inspection form prior to a forecasted qualifying rain event.

7.7.1.3 Monitoring Preparation

Non-visible pollutant samples will be collected by:

Contractor	☒ Yes	☐ No
Consultant	☐ Yes	☒ No
Laboratory	☐ Yes	☒ No

Samples on the Site will be collected by the following contractor sampling personnel:

Name/Telephone Number:	Tony Olmstead / 925-250-7875
Alternate(s)/Telephone Number:	Teresa Ruha / 925-525-8210

An adequate stock of monitoring supplies and equipment for monitoring non-visible pollutants will be available on the Site prior to a sampling event. Monitoring supplies and equipment will be stored in a cool environment and protected from rain or direct sunlight. Sampling personnel will be available to collect samples in accordance with the sampling schedule. Supplies maintained at the project Site will include, but are not limited to, clean powder-free nitrile gloves, sample collection equipment, coolers, an appropriate number and volume of sample bottles, identification labels, re-sealable storage bags, paper towels, personal rain gear, and ice.

7.7.1.4 Analytical Constituents

Table 7.5 lists the specific sources and types of potential non-visible pollutants on the project site and the water quality indicator constituent(s) for that pollutant.

Table 7.5: Potential Non-Visible Pollutants and Water Quality Indicator Constituents

Pollutant Source	Pollutant	Water Quality Indicator Constituent
Antifreeze and Other Vehicle Fluids	Visually Observable – No Testing Required	
Batteries	Sulfuric acid, lead, pH	Lead, sulfate, or pH
Contaminated Soil	Polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), Lead	PCBs, PAHs(1), Lead
Oily wastes	Petroleum products, PAHs, PCBs	Extractable petroleum hydrocarbons, PCBs, PAHs (1)
Radioactive Impacted Soil	radionuclides of concern (ROC; i.e., radium-226)	No testing required.

Notes:
(1) PAHs and PCBs may not be visible, and stormwater discharge contacting subsurface soil will be analyzed for PCBs and PAHs.

7.7.1.5 Sample Collection

Samples of discharge will be collected at the designated non-visible pollutant sampling locations shown on **Figure 3** and listed in **Section 7.7.1.2**, or at the locations determined by observed breaches, malfunctions, leakages, spills, operational areas, soil amendment application areas, and historical site usage areas that triggered the sampling event.

Grab samples will be collected and preserved in accordance with the methods identified in **Table 7.6**. Only the SWMPPP implementer, or personnel trained in water quality sampling under the direction of the SWMPPP implementer, will collect samples.

Sample collection and handling requirements are described in **Section 7.7.5**.

7.7.1.6 Sample Analysis

Samples will be analyzed using the analytical methods identified in **Table 7.6**. Samples will be analyzed by:

Laboratory Name:	Test America Laboratory
Street Address:	13715 Rider Trail North
City, State Zip:	Earth City, MO 63045
Telephone Number:	(314) 787-8227
Point of Contact:	Rhonda Ridenhower
ELAP Certification Number:	2886

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Table 7.6: Sample Collection, Preservation and Analysis for Monitoring Non-Visible Pollutants

Constituent	Analytical Method	Minimum Sample Volume	Sample Containers	Sample Preservation	Reporting Limit	Maximum Holding Time
TPH – Diesel and Motor Oil Range Organics	EPA 8015B; prep by EPA 3510C/3520C	2 x 1 liter	1.0-liter amber glass with Teflon liners	Store at 4°C	50 ug/L	Extraction – 14 days Analysis – 40 days
PAHs	EPA 8270 SIM	1 x 1 liter	Glass-Amber	Store at 4°C	10 ug/L	7 days
Metals (Lead)	EPA 6010C / 6020A[4]	500 mL[7]	Plastic	HNO_3 and 4°C	5 ug/L	180 days
PCBs	EPA 8081A / 8082	1 x 1 liter	Glass-Amber	Store at 4°C	0.1 ug/L	7 days

Notes:

Analyses for non-visible pollutants only performed if conditions or observations identified in **Section 7.6.1.2** occur.

Abbreviations used in table:

ºC = degrees Celsius
HNO_3 = nitric acid
mL = milliliter(s)
SIM = selective ion monitoring
ug/L = micrograms per liter

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7.7.1.7 Data Evaluation and Reporting

The SWMPPP implementer will complete an evaluation of the water quality sample analytical results within 48 hours of receiving data.

Runoff/downgradient results will be compared with the associated upgradient/unaffected results and any associated run-on results. Should the runoff/downgradient sample show an increased level of the tested analyte relative to the unaffected background sample, which cannot be explained by run-on results, the BMPs, site conditions, and surrounding influences will be assessed to determine the probable cause for the increase.

As determined by the site and data evaluation, appropriate BMPs will be repaired or modified to mitigate discharges of non-visible pollutant concentrations. Any revisions to the BMPs will be recorded as an amendment to the CERCLA SWMP.

The General Permit prohibits stormwater discharges that contain hazardous substances equal to or in excess of reportable quantities established in 40 Code of Federal Regulations (CFR) §§ 117.3 and 302.4. The results of any non-stormwater discharge results that indicate the presence of a hazardous substance in excess of established reportable quantities will be reported to the RWQCB and other agencies immediately, as required by 40 CFR §117.3 and §302.4.

7.7.2 Sampling and Analysis Plan for pH and Turbidity in Stormwater Runoff Discharges

Sampling and analysis of runoff for pH and turbidity is not required for this project.

7.7.3 Sampling and Analysis Plan for Non-Stormwater Discharges

This Sampling and Analysis Plan for non-stormwater discharges describes the sampling and analysis strategy and schedule for monitoring pollutants in authorized and unauthorized non-stormwater discharges from the project site in accordance with the requirements of the General Permit.

Sampling of non-stormwater discharges will be conducted when an authorized or unauthorized non-stormwater discharge is observed on the project Site. In the event that non-stormwater discharges run-on to the project Site from off-site locations, and this run-on has the potential to contribute to a violation of a numeric action level (NAL), the run-on also will be sampled.

The following authorized non-stormwater discharges identified in **Section 2.5**, have the potential to be discharged from the project site.

- Water to control dust.

In addition to the above authorized non-stormwater discharges, some construction activities have the potential to result in an unplanned (unauthorized) non-stormwater discharge if BMPs fail. These activities include:

- Water from equipment decontamination.
- Fuel or oil (leaks from fueling operation).

7.7.3.1 Sampling Schedule

Samples of authorized or unauthorized non-stormwater discharges will be collected when they are observed.

7.7.3.2 Sampling Locations

Samples will be collected from the point of non-stormwater release, as well as the discharge point of the construction site where the non-stormwater discharge is running off the project Site. Approximate sample locations are shown on **Figure 3** and include the locations identified below.

Four sampling locations on the project Site have been identified where non-stormwater discharges may run off from the project site. However, if a non-stormwater discharge is running off the project Site at a location other than those described below, samples will be collected from the actual discharge location.

Table 7.7: Non-Stormwater Discharge Sample Locations

Sample Location Number	**Sample Location**[1]	**Sample Location Latitude and Longitude** (Decimal Degrees)
SP-1	Gilbane Trailer / Office	37°49'39.29"N 122°22'11.48"W
SP-2	Portable Toilet/Wash Station Area	37°49'30.36"N 122°22'37.87"W
SP-3	West of Bldg. 1315	37°49'36.40"N 122°22'43.87"W
SP-4	West of Bldg. 1131	37°49'41.26"N 122°22'42.36"W

Notes:

[1] If the non-stormwater discharge is running off the project Site at a location other than those described in the table, samples will be collected from the actual discharge location.

7.7.3.3 Monitoring Preparation

Non-stormwater discharge samples will be collected by:

Contractor	☒ Yes	☐ No
Consultant	☐ Yes	☒ No
Laboratory	☐ Yes	☒ No

Samples on the project site will be collected by the following contractor sampling personnel:

Name/Telephone Number: Tony Olmstead / 925-250-7875

Alternate(s)/Telephone Number: Teresa Ruha / 925-525-8210

An adequate stock of monitoring supplies and equipment for monitoring non-stormwater discharges will be available on the project site. Monitoring supplies and equipment will be stored in a cool temperature environment that will not come into contact with rain or direct sunlight. Personnel trained in sampling will be available to collect samples in accordance with the sampling schedule. Supplies maintained at the project Site will include, but are not limited to, clean powder-free nitrile gloves, sample collection equipment, coolers, the appropriate number and volume of sample bottles, identification labels, re-sealable storage bags, paper towels, personal rain gear, and ice.

The contractor will obtain and maintain the field testing instruments, as identified in **Section 7.7.3**, for analyzing samples in the field by the contractor's sampling personnel.

7.7.3.4 Analytical Constituents

All non-stormwater discharges that flow through a disturbed area will, at minimum, be monitored for turbidity and pH.

Non-stormwater discharge run-on will be monitored, at minimum, for pH and turbidity. The SWMPPP implementer will identify additional pollutants to be monitored for each non-stormwater discharge incident based on the source of the non-stormwater discharge. If the source of an unauthorized non-stormwater discharge is not known, monitoring for pH, turbidity, methylene blue active substance, total organic content, and residual chlorine or chloramines is recommended to help identify the source of the discharge.

Table 7.8 lists the specific sources and types of potential non-visible pollutants on the project site and the water quality indicator constituent(s) for that pollutant.

Table 7.8: Potential Non-Stormwater Discharge Pollutants and Water Quality Indicator Constituents

Pollutant Source	Pollutant	Water Quality Indicator Constituent
Equipment Operation	Petroleum Hydrocarbons	TPH – Gasoline, Diesel, and Motor Oil Range Organics (TPH-g, TPH-d, TPH-mo)
Equipment Maintenance	Petroleum Hydrocarbons	TPH-g, TPH-d, TPH-mo
Equipment Washing	Petroleum Hydrocarbons	TPH-g, TPH-d, TPH-mo
Equipment Fueling	Petroleum Hydrocarbons	TPH-g, TPH-d, TPH-mo

7.7.3.5 Sample Collection

Grab samples will be collected and preserved in accordance with the methods identified in **Table 7.9**. Only personnel trained in water quality sampling will collect samples, under the direction of the SWMPPP implementer.

Sample collection and handling requirements are described in **Section 7.7.5**.

7.7.3.6 Sample Analysis

Samples will be analyzed using the analytical methods identified in **Table 7.9**.

7.7.3.7 Data Evaluation and Reporting

The SWMPPP implementer will complete an evaluation of the water quality sample analytical results.

Runoff sample results will also be evaluated for the constituents suspected in the non-stormwater discharge. Should the runoff sample indicate the discharge of a pollutant that cannot be explained by run-on results, the BMPs, site conditions, and surrounding influences will be assessed to determine the probable cause for the increase.

As determined by the site and data evaluation, appropriate BMPs will be repaired or modified to mitigate discharges of non-visible pollutant concentrations. Any revisions to the BMPs will be recorded as an amendment to the CERCLA SWMP.

The General Permit prohibits non-stormwater discharges that contain hazardous substances at levels equal to or in excess of reportable quantities established in 40 CFR §117.3 and §302.4. Any non-stormwater discharge results that indicate the presence of a hazardous substance in excess of established reportable quantities will be immediately reported to the RWQCB.

Table 7.9: Sample Collection, Preservation and Analysis for Monitoring Pollutants in Non-Stormwater Discharges

Constituent	EPA Analytical Method	Minimum Sample Volume	Sample Bottle	Sample Preservation	Reporting Limit	Maximum Holding Time
TPH-g	8015B (Modified)	40 mL	3 x 40 mL VOA vial	HCl and 4ºC	50 ug/L	14 Days
TPH-d	8015B (Modified)	1 L	2 x 1 L Amber	4ºC	50 ug/L	7 Days
TPH-mo	8015B (Modified)	1 L	2 x 1 L Amber	4ºC	300 ug/L	7 Days

Notes:

VOA = volatile organic analysis
HCl = hydrochloric acid

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7.7.4 Sampling and Analysis Plan for Other Pollutants Required by the Regional Water Quality Control Board

The RWQCB has not specified monitoring for additional pollutants.

7.7.5 Sample Collection and Handling

7.7.5.1 Sample Collection

Samples will be collected at the designated sampling locations shown on **Figure 3** and listed in the preceding sections. To maintain sample integrity and prevent cross-contamination, sample collection personnel will follow the protocol below.

- Collect samples (for laboratory analysis) only in clean analytical laboratory-provided sample containers.
- Wear clean, powder-free nitrile gloves when collecting samples.
- Change gloves whenever something not known to be clean has been touched.
- Change gloves between sampling locations.
- Decontaminate all equipment (e.g. bucket, tubing) prior to sample collection using a phosphate-free detergent (e.g., Liquinox®) water wash, potable water rinse, and final rinse with distilled water. Decontamination water will be collected and properly disposed (i.e., not discharged to storm drain or receiving water). Laboratory-provided clean, sample bottles will not be decontaminated.
- Do not smoke during sampling events.
- Never sample near a vehicle with the engine running.
- Do not park vehicles in the immediate sample collection area (even non-running vehicles).
- Do not eat or drink during sample collection.
- Do not breathe, sneeze, or cough in the direction of an open sample container.

The most important aspect of grab sampling is to collect a water sample that represents the runoff stream at the time of sampling. Typically, samples are collected by dipping the collection container in the runoff flow paths and streams as noted below.

- For small streams and flow paths, simply dip the bottle facing upstream until full.
- For a larger stream that can be safely accessed, collect a sample in the middle of the flow stream by directly dipping the mouth of the bottle, once again making sure that the opening of the bottle is facing upstream to avoid any contamination by the sampler.

- For larger streams that cannot be safely entered, use a pole-sampler to safely access the middle of the flow stream to collect a representative sample.
- Avoid collecting samples from ponded, sluggish, or stagnant water.
- Avoid collecting samples directly downstream from a bridge, as the samples can be affected by the bridge structure or runoff from the road surface.

Note that, depending upon the specific analytical test, some containers may contain preservatives. These containers should **never** be dipped into the runoff stream, but filled indirectly from the container used to collect the water sample from the runoff stream.

7.7.5.2 Sample Handling

Samples for laboratory analysis will be handled as follows. Immediately following sample collection, the sampler will:

- Cap the sample container.
- Label the sample container.
- Seal the container in a re-sealable storage bag.
- Place storage bags with sample containers into an ice-chilled cooler.
- Document sample information on the Effluent Sampling Field Log Sheet.
- Complete the chain-of-custody (COC) documentation.

All samples for laboratory analysis will be maintained between 2 and 6 ºC during delivery to the laboratory. Samples will be kept on ice, or refrigerated, from the time of sample collection through delivery to the laboratory. Samples to be shipped will be placed inside coolers with ice, ensuring that the sample bottles are well packaged to prevent breakage, and cooler lids will be secured with packaging tape.

Samples for laboratory analysis will be shipped by overnight carrier or delivered to the analytical laboratory by a courier within 24 hours of sample collection. Holding times are measured from the time the sample is collected to the time the sample is analyzed. The analytical laboratory is identified below.

Laboratory Name:	Test America Laboratory
Street Address:	13715 Rider Trail North
City, State Zip:	Earth City, MO 63045
Telephone Number:	(314) 787-8227
Point of Contact:	Rhonda Ridenhower

7.7.5.3 Sample Documentation Procedures

Information entries on sample bottle identification labels, the Effluent Sampling Field Log Sheet, and Chain of Custody (COC) documentation will be completed using waterproof ink. These labels and documents will be considered accountable documents. If an error is made on an accountable document, the individual will make corrections by lining through the error and entering the correct information. The erroneous information will not be obliterated. All corrections will be initialed and dated.

Duplicate samples will be identified consistent with the numbering system for other samples to prevent the laboratory from identifying duplicate samples. Duplicate samples will be identified in the Effluent Sampling Field Log Sheet.

Sample documentation procedures include the following:

- Sample Bottle Identification Labels: Sampling personnel will attach an identification label to each sample bottle. The sample identification number will identify each sample collection location uniquely.
- Field Log Sheets: Sampling personnel will appropriately complete the Effluent Sampling Field Log Sheet and Receiving Water Sampling Field Log Sheet for each sampling event.
- Chain of Custody: Sampling personnel will prepare a COC form for each sampling event for which samples are collected for laboratory analysis. Both the sampler and the receiving party will sign and date the COC when the samples are turned over to the testing laboratory or courier.

7.8 Quality Assurance and Quality Control

An effective Quality Assurance and Quality Control (QA/QC) plan (Appendix C of the RAWP) will be implemented to ensure that analytical data can be used with confidence. QA/QC procedures to be initiated include the following:

- Completion of field logs.
- Implementation of “clean” sampling techniques.
- Collection of QA/QC Samples.
- Data verification.

Each of these procedures is discussed in more detail in the following sections.

7.8.1 Field Logs

The purpose of field logs is to record sampling information and field observations during the collection of samples that may explain any uncharacteristic analytical results. Sampling information to be included in the field log includes the date and time of water quality sample collection, sampling personnel, sample container identification numbers, and the types of samples that were collected. Field observations should be noted in the

field log, including any abnormalities at the sampling location (color, odor, BMPs, etc.). Field measurements for pH and turbidity also should be recorded in the field log. A Visual Inspection Field Log is included in **Appendix C**, Inspection Forms.

7.8.2 Clean Sampling Techniques

Clean sampling techniques involve the use of certified clean containers for sample collection and clean powder-free nitrile gloves during sample collection and handling. Adoption of a clean sampling approach will minimize the chance of field contamination and questionable data results.

7.8.3 Chain of Custody

The sample COC is an important documentation step that tracks samples from collection through analysis to ensure the validity of the sample. Sample COC procedures include the following:

Proper labeling of samples.
Completion of COC forms for all samples submitted for laboratory analysis.
Prompt sample delivery to the analytical laboratory.

An example COC form is included in the Sampling and Analysis Plan (Appendix B of the RAWP).

7.8.4 QA/QC Samples

QA/QC samples provide an indication of the accuracy and precision of the sample collection; sample handling; field measurements; and analytical laboratory methods. The following types of QA/QC will be conducted for this project:

- ☒ Field duplicates at a minimum frequency of one duplicate per sampling event.
  (Required for all sampling plans with field measurements or laboratory analysis.)
- ☐ Equipment blanks at a frequency of 5 percent.
  (Only needed if equipment used to collect samples could add the pollutants to sample.)
- ☐ Field blanks at a frequency of 5 percent.
  (Only required if sampling method calls for field blanks.)
- ☒ Travel blanks for each cooler containing samples for volatile organic compound (VOC) or TPH-g analysis
  (Required for sampling plans that include VOC or TPH-g laboratory analysis.)

7.8.4.1 Field Duplicates

Field duplicates provide verification of laboratory or field analysis and sample collection. Duplicate samples will be collected, handled, and analyzed using the same protocols as primary samples. The sample location where field duplicates are collected will be randomly selected from the discharge locations. Duplicate samples will be collected immediately after the primary sample has been collected. Duplicate samples must be collected in the same manner and as close in time and location as possible to the original sample.

7.8.4.2 Equipment Blanks

Equipment blanks provide verification that equipment has not introduced a pollutant into the sample. Equipment blanks typically are collected when any of the following applies:

- New equipment is used.
- Equipment has been cleaned after use at a contaminated site.
- Equipment that is not dedicated for surface water sampling is used.
- A new lot of filters is used when sampling metals.

7.8.4.3 Field Blanks

Field blanks assess potential sample contamination levels that occur during field sampling activities. Deionized water field blanks are taken to the field, transferred to the appropriate container, and treated the same as the corresponding sample type during a sampling event.

7.8.4.4 Travel Blanks

Travel blanks (also known as trip blanks) assess the potential for cross-contamination of VOCs between sample containers during shipment from the field to the laboratory. Travel blanks are prepared by the analytical laboratory using water free of VOCs and provided to the contractor. When samples are collected for analysis of any type of VOCs, such as TPH-g, travel blanks are placed in the same cooler as the field samples for VOC analysis.

7.8.5 Data Verification

After results are received from the analytical laboratory, the Project Chemist will verify the data to ensure that it is complete, accurate, and the appropriate QA/QC requirements were met. Data must be verified as soon as the data reports are received. Results will be included in the Remedial Action Completion Report.

Data verification will include:

- Checking the COC and laboratory reports to verify that all requested analyses were performed and all sample analytical results are accounted for in the reports.

- Checking laboratory reports to make sure holding times were met and that the reporting levels meet or are lower than the reporting levels agreed to in the contract.
- Checking data for outlier values, and following up with the laboratory if necessary.
  Occasionally typographical errors, unit reporting errors, or incomplete results are reported and should be detected easily. These errors need to be identified, clarified, and corrected quickly by the laboratory.
- Checking laboratory QA/QC results.
  QA/QC checks will be performed based on acceptable criteria for laboratory analyses. The QA/QC data are reported along with the sample results. The Project Chemist will evaluate the reported QA/QC data to check for contamination (method, field, travel and/or equipment blanks), precision (laboratory matrix spike duplicates), and accuracy (matrix spikes and laboratory control samples). When QA/QC checks are outside acceptable ranges, the laboratory must flag the data, and provide an explanation of the potential impact to the sample results.
- Check the dataset for QA/QC outlier values, and request that the laboratory confirm results and re-analyze samples where appropriate.
  Sample re-analysis should only be undertaken when it appears that some part of the QA/QC resulted in a value out of the accepted range. Sample results may not be discounted unless the analytical laboratory identifies the required QA/QC criteria were not met and confirms this in writing.

Field data, including inspections and observations, must be verified as soon as the field logs are received, typically at the end of the sampling event. Field data verification will include:

- Checking field logs to make sure all required measurements and observations were completed and appropriately documented.
- Checking reported values that appear out of the typical range or inconsistent with previous results, noting data that are an order of magnitude or more different than similar locations, or are inconsistent with previous data from the same location.
- Following up immediately to identify potential reporting or equipment problems and, if appropriate, recalibrating equipment after sampling.
- Verifying equipment calibrations.
- Reviewing observations noted on the field logs.
- Reviewing notations of any errors and corrective actions taken.

7.9 Records Retention

All records of stormwater monitoring information and copies of reports will be retained for a period of at least 3 years from date of submittal or longer if required by the RWQCB.

Results of visual monitoring, field measurements and laboratory analyses will be kept in the CERCLA SWMP along with COCs, and other documentation related to the monitoring.

Records are to be kept on the Site while field activities are ongoing. Records to be retained include:

- The date, place, and time of inspections, sampling, visual observations, and/or measurements, including precipitation.
- The individual(s) who performed the inspections, sampling, visual observation, and/or field measurements.
- The date and approximate time of field measurements and sample collection for laboratory analyses.
- The individual(s) who collected the samples for laboratory analyses.
- A summary of all analytical results, the method detection limits and reporting limits, and the analytical techniques or methods used.
- QA/QC records and results.
- Field instrument calibration records.
- Visual observation and sample collection exemption records.
- The records of any corrective actions and follow-up activities that resulted from analytical results, visual observations, or inspections.

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8.0 References

California Stormwater Quality Association (CASQA), 2009. *Stormwater BMP Handbook Portal: Construction*. November. (www.casqa.org.)

Gilbane Federal (Gilbane), 2020a. *Work Plan, Phase IV Non-Time Critical Removal Action for Solid Waste Disposal Area Westside, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California*. Tentatively June.

Gilbane, 2020b. *Site Safety and Health Plan, Phase IV Non-Time Critical Removal Action for Solid Waste Disposal Area Westside, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California*. Internal Navy Draft. December.

San Francisco Bay Regional Water Quality Control Board (RWQCB), 2011. *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)*. Tentatively June.

State Water Resources Control Board (SWRCB), 2012. *National Pollutant Discharges Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order 2012-0006-DWQ, NPDES No. CAS000003.* Available on-line at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml.

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FIGURES

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Gilbane

IR Site 12 SWDA
Westside Phase IV Non-TCRA
Former Naval Station Treasure Island
San Francisco, CA

Figure 1
SWDA Westside
Project Location

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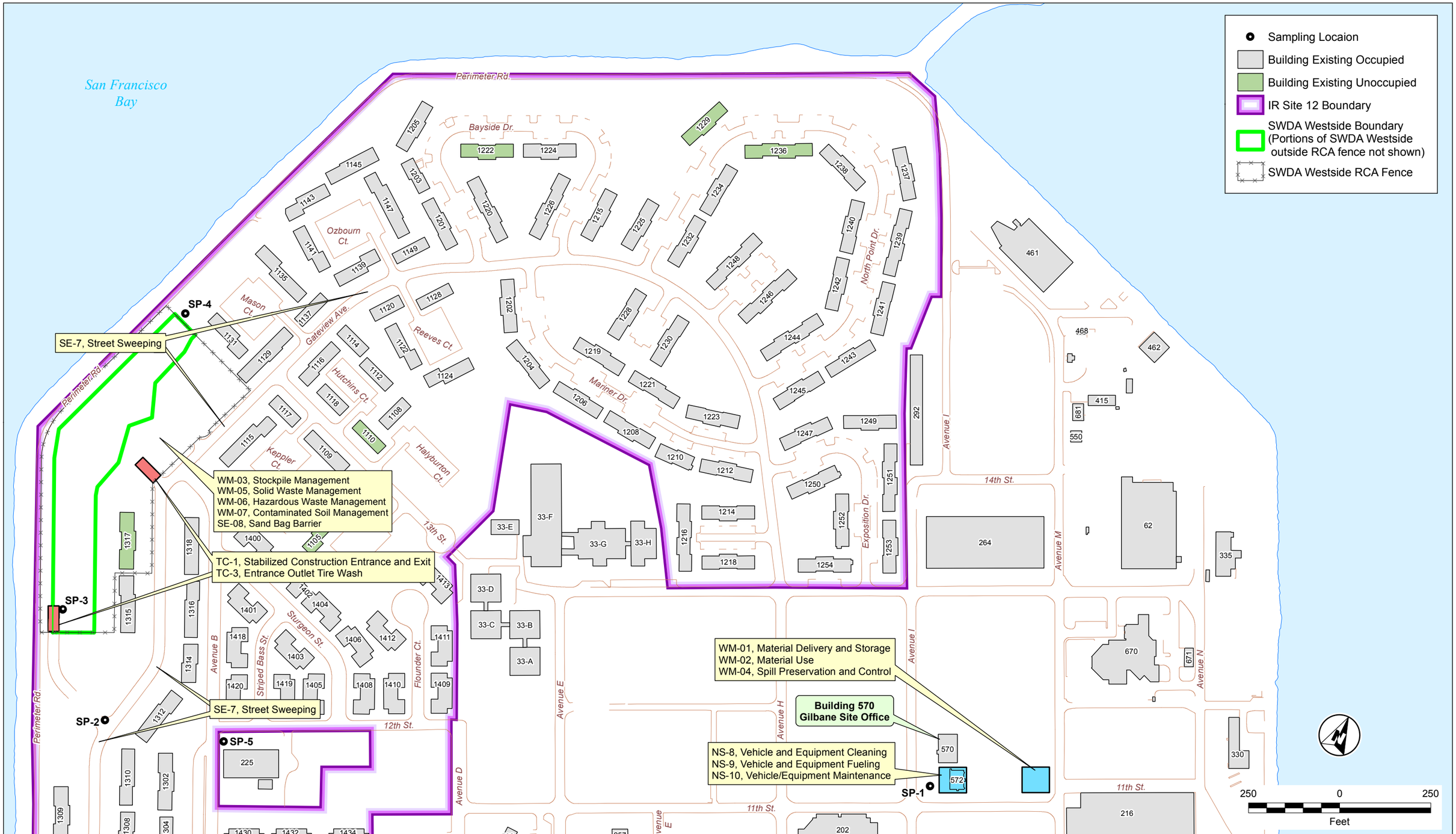

NAVFAC Naval Facilities Engineering Command

IR Site 12 SWDA Westside Phase IV Non-TCRA
Former Naval Station Treasure Island
San Francisco, CA

Figure 2
Temporary Facilities
BMP Map

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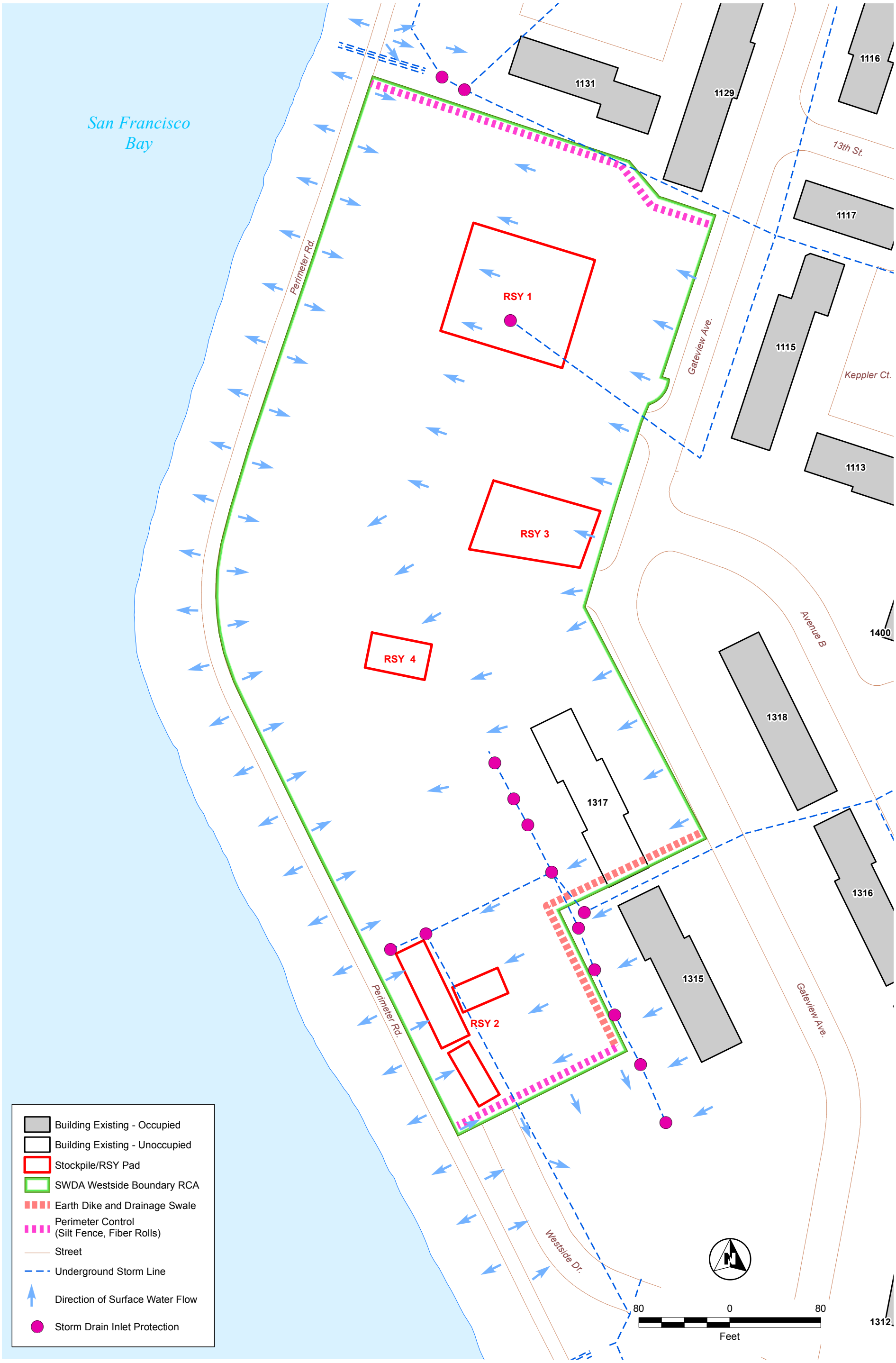

NAVFAC Naval Facilities Engineering Command

Phase IV NTCRA for SWDA Westside at IR Site 12
Former Naval Station Treasure Island
San Francisco, CA

Figure 3
Existing Soil Stockpiles and RSY Pads

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APPENDIX A

CONSTRUCTION ACTIVITIES, MATERIALS USED, AND ASSOCIATED POLLUTANTS

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Table A.1: Construction Activities and Associated Pollutants

Phase	Activity	Pollutant Source	Pollutant Category
General Construction, Mobilization and Site Preparation	Sanitary waste generation	▪ Portable toilets	Nutrients and bacteria
	Vehicle and equipment mobilization	▪ Equipment operation ▪ Equipment maintenance ▪ Equipment washing ▪ Equipment fueling	Oil and grease, and synthetic organics
Site Restoration and Demobilization	Backfilling, Waste transportation and disposal; Vehicle and equipment demobilization	▪ Equipment operation ▪ Equipment maintenance ▪ Equipment washing ▪ Equipment fueling	Oil and grease, and synthetic organics

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APPENDIX C
INSPECTION FORMS

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BMP INSPECTION REPORT

Date and Time of Inspection:			Date Report Written:	
Inspection Type: (Circle one)	Weekly *Complete Parts I, II, III, and VII*	Pre-Storm *Complete Parts I, II, III, IV, and VII*	During Rain Event *Complete Parts I, II, III, V, and VII*	Post-Storm *Complete Parts I, II, III, VI, and VII*

Part I. General Information

Site Information

Construction Site Name:			
Construction stage and completed activities:			Approximate area of site that is exposed:
Photos Taken: (Circle one)	Yes	No	Photo Reference IDs:

Weather

Estimate storm beginning: (date and time)	Estimate storm duration: (hours)
Estimate time since last storm: (days or hours)	Rain gauge reading (inches) and location:

Is a “Qualifying Event” predicted or did one occur (i.e., 0.5” rain with 48-hrs or greater between events)? (Y/N)
If yes, summarize forecast:

Exemption Documentation (explanation required if inspection could not be conducted).

Visual inspections are not required outside of business hours or during dangerous weather conditions such as flooding or electrical storms.

Inspector Information

Inspector Name:	Inspector Title:
Signature:	Date:

Part II. BMP Observations. Describe deficiencies in Part III.			
Minimum BMPs for Risk Level _____ Sites	Adequately designed, implemented and effective (yes, no, N/A)	Action Required (yes/no)	Action Implemented (Date)
Good Housekeeping for Construction Materials			
Inventory of products (excluding materials designed to be outdoors)			
Stockpiled construction materials not actively in use are covered and bermed			
All chemicals are stored in watertight containers with appropriate secondary containment, or in a completely enclosed storage shed			
Construction materials are minimally exposed to precipitation			
BMPs preventing the off-site tracking of materials are implemented and properly effective			
Good Housekeeping for Waste Management			
Wash/rinse water and materials are prevented from being disposed into the storm drain system			
Portable toilets are contained to prevent discharges of waste			
Sanitation facilities are clean and with no apparent for leaks and spills			
Equipment is in place to cover waste disposal containers at the end of the business day and during rain events			
Discharges from waste disposal containers are prevented from discharging to the storm drain system / receiving water			
Stockpiled waste material is protected using 10-millimeter plastic sheeting or soil stabilizing agent.			
Procedures are in place for addressing hazardous and non-hazardous spills			
Appropriate spill response personnel are assigned and trained			
Equipment and materials for cleanup of spills are available onsite			
Washout areas (e.g., concrete) are contained appropriately to prevent discharge or infiltration into the underlying soil			
Good Housekeeping for Vehicle Storage and Maintenance			
Measures are in place to prevent oil, grease, or fuel from leaking into the ground, storm drains, or surface waters			

All equipment or vehicles are fueled, maintained, and stored in a designated area with appropriate BMPs			
Vehicle and equipment leaks are cleaned immediately and disposed of properly			

Part II. BMP Observations (Continued). Describe deficiencies in Part III.			
Minimum BMPs for Risk Level _____ Sites	Adequately designed, implemented and effective (yes, no, N/A)	Action Required (yes/no)	Action Implemented (Date)
Good Housekeeping for Landscape Materials			
Stockpiled landscape materials such as mulches and topsoil are contained and covered when not actively in use			
Erodible landscape material has not been applied 2 days before a forecasted rain event or during an event			
Erodible landscape materials are applied at quantities and rates in accordance with manufacturer recommendations			
Bagged erodible landscape materials are stored on pallets and covered			
Good Housekeeping for Air Deposition of Site Materials			
Good housekeeping measures are implemented onsite to control the air deposition of site materials and materials from site operations			
Non-Stormwater Management			
Non-Stormwater discharges are properly controlled			
Vehicles are washed in a manner to prevent non-stormwater discharges to surface waters or drainage systems			
Streets are cleaned in a manner to prevent unauthorized non-stormwater discharges to surface waters or drainage systems.			
Erosion Controls			
Wind erosion controls are effectively implemented			
Effective soil cover is provided for disturbed areas inactive (i.e., not scheduled to be disturbed for 14 days) as well as finished slopes, open space, utility backfill, and completed lots			
The use of plastic materials is limited in cases when a more sustainable, environmentally friendly alternative exists.			
Sediment Controls			
Perimeter controls are established and effective at controlling erosion and sediment discharges from the site			

Entrances and exits are stabilized to control erosion and sediment discharges from the site			
Sediment basins are properly maintained			
Linear sediment control along toe of slope, face of slope, and at grade breaks (Risk Level 2 & 3 Only)			
Construction traffic to and from site limited to entrances and exits with effective controls to prevent off-site tracking (Risk Level 2 & 3 Only)			
Part II. BMP Observations (Continued). Describe deficiencies in Part III.			
All storm drain inlets and perimeter controls, runoff control BMPs, and pollutant controls at entrances and exits are maintained and protected from activities that reduce their effectiveness (Risk Level 2 & 3 Only)			
All immediate access roads inspected daily (Risk Level 2 & 3 Only)			
Run-On and Run-Off Controls			
Run-on to the site is effectively managed and directed away from all disturbed areas.			
Other			
Are the project CERCLA SWMPPP and BMP plan up to date, available onsite, and being properly implemented?			

Part III. Descriptions of BMP Deficiencies		
Deficiency	**Repairs Implemented:** **Note -** Repairs must begin within 72 hours of identification, and be completed as soon as possible.	
	Start Date	**Action**
1.		
2.		
3.		
4.		

Part IV. Additional Pre-Storm Observations. Note the presence or absence of floating and suspended materials, sheen, discoloration, turbidity, odors, and source(s) of pollutants(s).

	Yes, No, N/A
Do stormwater storage and containment areas have adequate freeboard? If no, complete Part III.	
Are drainage areas free of spills, leaks, or uncontrolled pollutant sources? If no, complete Part VII and describe below.	
Notes:	
Are stormwater storage and containment areas free of leaks? If no, complete Parts III and/or VII and describe below.	
Notes:	

Part V. Additional During-Storm Observations. If BMPs cannot be inspected during inclement weather, list the results of visual inspections at all relevant outfalls, discharge points, and downstream locations. Note odors or visible sheen on the surface of discharges. Complete Part VII (Corrective Actions) as needed.	
Outfall, Discharge Point, or Other Downstream Location	
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description

Part VI. Additional Post-Storm Observations. Visually observe (inspect) stormwater discharges at all discharge locations within two business days (48 hours) after each qualifying rain event, and observe (inspect) the discharge of stored or contained stormwater that is derived from and discharged subsequent to a qualifying rain event producing precipitation of ½ inch or more at the time of discharge. Complete Part VII (Corrective Actions) as needed.	
Discharge Location, Storage or Containment Area	**Visual Observation**

Part VII. Additional Corrective Actions Required. Identify additional corrective actions not included with BMP Deficiencies (Part III) above. Note if CERCLA SWMPPP change is required.	
Required Actions	**Implementation Date**

Risk Level 1, 2, 3 Visual Inspection Field Log Sheet						
Date and Time of Inspection:				Report Date:		
Inspection Type:	☐ Weekly	☐ Before predicted rain	☐ During rain event	☐ Following qualifying rain event	☐ Contained stormwater release	☐ Quarterly non-stormwater
Site Information						
Construction Site Name:						
Construction stage and completed activities:					Approximate area of exposed site:	
Weather and Observations						
Date Rain Predicted to Occur:				Predicted % chance of rain:		
Estimate storm beginning: _____ (date and time)		Estimate storm duration: _____ (hours)		Estimate time since last storm: _____ (days or hours)	Rain gauge reading:_ _____ (inches)	
Observations: If yes identify location						
Odors	Yes ☐	No ☐				
Floating material	Yes ☐	No ☐				
Suspended Material	Yes ☐	No ☐				
Sheen	Yes ☐	No ☐				
Discolorations	Yes ☐	No ☐				
Turbidity	Yes ☐	No ☐				
Site Inspections						
Outfalls or BMPs Evaluated			**Deficiencies Noted**			
(add additional sheets or attach detailed BMP Inspection Checklists)						
Photos Taken:	Yes ☐	No ☐	Photo Reference IDs:			
Corrective Actions Identified (note if CERCLA SWMPPP/REAP change is needed)						

Inspector Information	
Inspector Name:	Inspector Title:
Signature:	Date:

Risk Level 2 ***Effluent Sampling Field Log Sheets***			
Construction Site Name:	Date:	Time Start:	
Sampler:			
Sampling Event Type:	☐ Stormwater	☐ Non-stormwater	☐ Non-visible pollutant

Field Meter Calibration	
pH Meter ID No./Desc.: Calibration Date/Time:	Turbidity Meter ID No./Desc.: Calibration Date/Time:

Field pH and Turbidity Measurements			
Discharge Location Description	pH	Turbidity	Time

Grab Samples Collected		
Discharge Location Description	Sample Type	Time

Additional Sampling Notes:
Time End:

NAL or NEL Exceedance Evaluation Summary Report	**Page __ of __**
Project Name	
Project WDID	
Project Location	
Date of Exceedance	
Type of Exceedance	**NAL Daily Average** ☐ **pH** ☐ **Turbidity** **NEL Daily Average** ☐ **pH** ☐ **Turbidity** ☐ **Other (specify) _____**
Measurement or Analytical Method	☐ **Field meter** **(Sensitivity: _____)** ☐ **Lab method (specify) _____** **(Reporting Limit: _____)** **(MDL: _____)**
Calculated Daily Average	☐ **pH _____ pH units** ☐ **Turbidity ____ NTU**
Rain Gauge Measurement	**_____ inches**
Compliance Storm Event	**_____ inches (5-year, 24-hour event)**
Visual Observations on Day of Exceedance	

Description of BMPs in Place at Time of Event	
Initial Assessment of Cause	
Corrective Actions Taken (deployed after exceedance)	
Additional Corrective Actions Proposed	
Report Completed By	_____ **(Print Name, Title)**
Signature	_____

APPENDIX D

TRAINING REPORTING FORM

(To Be Filled Out During Construction)

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Trained Contractor Personnel Log

Stormwater Management Training Log and Documentation

Project Name: Radiological Remediation and Support, NSTI
WDID #: _____

Stormwater Management Topic: (check as appropriate)

☐ Erosion Control ☐ Sediment Control

☐ Wind Erosion Control ☐ Tracking Control

☐ Non-Stormwater Management Control ☐ Waste Management and Materials Pollution Control

☐ Stormwater Sampling

Specific Training Objective: _____

Location: _____ Date: _____

Instructor:_____ Telephone: _____

Course Length (hours): _____

Attendee Roster (Attach additional forms if necessary)

Name	Company	Phone

As needed, add proof of external training (e.g., course completion certificates, credentials for QSP, QSD).

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APPENDIX E

MONITORING RECORD

(To Be Filled Out During Construction)

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ATTACHMENT 2

DUST CONTROL PLAN

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Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

FINAL
Dust Control Plan

Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12
Former Naval Station Treasure Island
San Francisco, CA
March 2021

DCN: GLBN-0005-F5271-0007

Prepared for:

Department of the Navy
Naval Facilities Engineering Command Southwest
BRAC PMO West
33000 Nixie Way, Bldg. 50
San Diego, CA 92147

Prepared by:

Gilbane Federal
1655 Grant Street, Suite 1200
Concord, California 94520
Contract Number: N62473-17-D-0005; Task Order No. N6247318F5271

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Acronyms and Abbreviations

BRAC	Base Realignment and Closure
COCs	chemicals of concern
CSO	Caretaker Site Office
CTO	Contract Task Order
DCP	Dust Control Plan
EPP	Environmental Protection Plan
Gilbane	Gilbane Federal
IR	Installation Restoration
mph	miles per hour
Navy	U.S. Department of the Navy
NSTI	former Naval Station Treasure Island
NTCRA	Non-Time Critical Removal Action
QC	Quality Control
SWDA	solid waste disposal area
SWMP	Storm Water Management Plan

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1.0 Introduction

Dust control is of concern at former Naval Station Treasure Island (NSTI) and comprises two major goals of equal importance: protection of worker safety and health, and protection of the nearby community and public at large. This Dust Control Plan (DCP) was prepared by Gilbane Federal (Gilbane), as requested by the United States Department of the Navy (Navy) under Contract No. N62473-17-D-0005, Contract Task Order N6247318F5271.

This DCP is Attachment 2 to the Environmental Protection Plan (EPP). This DCP describes the implementation of dust control measures and procedures that will be employed during field work activities to minimize and control fugitive dust generated by these activities, in a manner that will meet regulatory and safety requirements to protect humans and wildlife at NSTI, San Francisco, California.

This DCP will follow the applicable regulations described in the Bay Area Air Quality Management District Regulation 6, Particulate Matter and Visible Emissions, 6-301 Ringelman No. Limitation, 6-302 Opacity Limitation, and 6-305 Visible Particles.

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2.0 Potential Sources of Fugitive Dust

Planned site activities have the potential to generate air emissions in the form of fugitive dust. Possible sources of emissions include:

- Construction Traffic: Movement of heavy equipment (e.g., transportation trucks) around the work site may create construction emissions. Vehicular traffic on paved or unpaved roads and parking areas also may produce emissions.
- Site Preparation: Vegetation removal can increase the potential for fugitive dust emissions through wind erosion and transport.
- Transportation of Solid Bulk Material: Soil will be transported for disposal. If soil is left uncovered, fugitive emissions could occur.
- Site Restoration: Backfilling and re-vegetation/restoration of the excavated areas may produce fugitive dust emissions.
- Fugitive dust emissions generated upgradient of the site (offsite) also may constitute a source.

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3.0 Dust Control

Soil handling or other dust-generating activities will be temporarily halted should visible dust be released into the air. Work will be terminated during high wind conditions and any time the sustained wind speed is over 25 miles per hour (mph). Any water runoff from dust suppression activities will be minimized to the maximum extent practicable. Sandbags will be used to divert flow and prevent runoff water from discharging into adjacent storm drains. Collected runoff water will be containerized, sampled, and disposed of properly. The track-out of soil/debris from vehicles engaged in project work will be eliminated. Trucks entering or leaving the site will be tarped (covered).

Control methods for fugitive dust are described for the following emissions generated from the construction activities at the project site:

- Dust entrained during on-site travel on paved and unpaved surfaces.
- Dust entrained during vegetation removal, material screening, placement of clean fill, and final grading at the removal action site.
- Dust entrained during soil loading and unloading operations.
- Wind erosion of areas disturbed during removal action activities.
- Vehicle emissions associated with construction equipment.

3.1 Construction Traffic

3.1.1 Field Traffic Control

Fugitive dust emissions from construction traffic traveling on unpaved surfaces will be controlled through the following mitigation methods:

- Actively used unpaved roads in the project site will be watered at a frequency sufficient to maintain adequate moisture. The frequency of watering will depend on climate conditions (precipitation, dry period, windy conditions, etc.).
- No vehicle will exceed 25 mph within the construction site and 5 mph in work areas.

The following mitigation measures will be followed for fugitive dust emissions from construction traffic traveling on paved streets:

- Bulk loaded trucks used for transportation of soil and other heavy earth-moving equipment will not be allowed to exit the project site, except through the track-out prevention control point, which includes a tire wash station with pressure washer when necessary.
- Construction areas adjacent to and above grade from any paved roadway will be

treated with best management practices, as specified in the Stormwater Management Plan (Attachment 1 of the EPP).

- Roadways within the excavation site will be swept utilizing a wet sweeper, or washed down to remove soils. The accumulated soils shall be routinely removed from non-traffic areas such as gutters and curbs.
- No vehicle will exceed 25 mph within the construction site and 5 mph in work areas.

If any of the foregoing mitigation methods fail to properly control fugitive dust emissions, one or more of the following reasonably available control measures will be applied:

- Unpaved active portions of the construction sites will be watered more frequently to minimize windblown dust and dust generated by vehicle traffic.
- Paved portions of the construction sites will be cleaned more frequently to control windblown dust and dust generated by vehicle traffic. Water may also be applied to the paved roads if necessary.
- Gravel, crushed/recycled asphalt, or other material of low silt content (less than five percent) will be applied to a depth of three or more inches, if necessary; material containing serpentinite will not be used for this purpose.
- Vehicle trips will be reduced if necessary.

3.1.2 Track-Out Control

Rumble strips will be used to dislodge residual soil from vehicles. Soils collected by the rumble strips will be removed periodically and subsequently characterized and disposed at the direction of the Caretaker Site Office (CSO). Where necessary to prevent track-out onto public roadways, gravel pads will be constructed where trucks will be pressure-washed before exiting construction sites onto paved roads. Any visible track-out soil on a paved road at any location where vehicles exit the work sites via the decontamination gravel pads and tire cleaning areas will be removed with a wet-brush street sweeper.

3.2 Site Preparation and Remediation

The following mitigation measures will be followed to control fugitive dust emissions during site preparation:

- Work areas will be adequately wetted, via a handheld water dispersal device (e.g., Hudson sprayer) or tow-behind water trailer, before any vegetation removal occurs, as necessary to prevent fugitive dust emissions.
- If any visible dust is noted, activities will be halted or slowed until dust suppression is applied via a handheld water dispersal device or tow-behind water trailer. Activities may resume once detected dust levels are below the applicable action level.

3.3 Bulk Soil Transport

Fugitive dust emissions from trucks used to transport soil and debris will be controlled using the following methods:

- Trucks that are used to transport solid bulk material will be covered (tarped) prior to leaving the site.
- Vehicles will be checked to ensure that they are tarped and to remove any excess material on the shelf or exterior surfaces of the cargo compartment.
- Bulk-loaded trucks will exit the work site via an established track-out control point.

3.4 Post-Construction Stabilization of Disturbed Areas

Unpaved areas disturbed during excavation, grading, and/or construction activities will be covered with one of the following to reduce dust generation at the site:

- An approved vegetative cover.
- Surface swales to control storm water.
- A minimum of three inches of non-asbestos-containing material.
- Hard surface paving.

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4.0 Quality Control Procedures

A quality control (QC) program will be as followed in the Air Monitoring Plan (Attachment 3 of the EPP) and implemented to ensure that conditions at the monitoring stations are effective during field activities. Complete documentation of the routine operations and QC aspects of the program, including log notes, calibration forms, and certifications, will be maintained on file located onsite at the Gilbane field office.

Dust control activities will be documented during construction activities and included in the Daily Contractor Production Reports. Results will be presented and analyzed in the Remedial Action Completion Report, which will also include dust control field documentation and air monitoring laboratory data as appendices.

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5.0 References

National Institute for Occupational Safety and Health, 1994. Manual of Analytical Methods

United States Environmental Protection Agency, 1998. Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Specific Methods.

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ATTACHMENT 3

AIR MONITORING PLAN

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Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

FINAL

Air Monitoring Plan

Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12
Former Naval Station Treasure Island
San Francisco, CA
March 2021

DCN: GLBN-0005-F5271-0007

Prepared for:

Department of the Navy
Naval Facilities Engineering Command Southwest
BRAC PMO West
33000 Nixie Way, Bldg. 50
San Diego, CA 92147

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Concord, California 94520
Contract Number: N62473-17-D-0005; Task Order No. N6247318F5271

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Appendix 1 Dust Action Levels

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Acronyms and Abbreviations

ALI	annual limit on intake
AMP	Air Monitoring Plan
BAAQMD	San Francisco Bay Area Air Quality Management District
BaP	benzo(a)pyrene
BaP(eq)	benzo(a)pyrene equivalent
Cal/OSHA	California Occupational Safety and Health Administration
CFR	Code of Federal Regulations
cfm	cubic feet per minute
COCs	chemicals of concern
DAC	derived airborne concentration
dioxin	2,3,7,8-tetrachlorobenzo-p-dioxin [TCDD]
DTSC	Department of Toxic Substances Control
EPA	United States Environmental Protection Agency
Gilbane	Gilbane Federal
HERO	Human and Ecological Risk Office
IR	Installation Restoration
mg/m^3	milligrams per cubic meter
Navy	U.S. Department of the Navy
NIOSH	National Institute for Occupational Safety and Health
NIRIS	Naval Installation Restoration Information Solution
NSTI	Former Naval Station Treasure Island
NTCRA	Non-Time Critical Removal Action
PAH	polycyclic (polynuclear) aromatic hydrocarbon
PEL	permissible exposure limit
PCB	polychlorinated biphenyl
PID	photoionization detector
PM10	particulate matter less than 10 microns in diameter
ppmv	parts per million by volume
QC	Quality Control
Ra-226	radium-226

RAM	real-time aerosol monitor
RAOs	remedial action objectives
RGs	remediation goals
ROC	radionuclide of concern
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SWDA	solid waste disposal area
TSP	total suspended particulates
TWA	time-weighted average
ug/m^3	micrograms per cubic meter

1.0 Introduction

Air quality is of concern at the former Naval Station Treasure Island (NSTI) and monitoring will be performed to achieve two major goals of equal importance: protection of worker safety and health, and protection of the nearby community and public at large in a manner that will meet regulatory and safety requirements. This Air Monitoring Plan was prepared by Gilbane Federal (Gilbane), as requested by the United States Department of the Navy (Navy) under Contract No. N62473-17-D-0005, Contract Task Order N6247318F5271.

This Air Monitoring Plan is Attachment 3 to the Environmental Protection Plan, which is Appendix F to the Work Plan. This plan describes the implementation of air monitoring measures during field work activities that could pose a risk to humans and wildlife at NSTI, San Francisco, California.

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2.0 Air Monitoring

Air monitoring is performed to ensure worker safety and provide reasonable assurance of the protection of the surrounding residents in accordance with National Institute for Occupational Safety and Health (NIOSH) approved air sampling methodology. Four types of air monitoring will be conducted during soil handling activities:

- Real-time air quality monitoring for particulate matter less than 10 microns in diameter (PM10)
- Air quality monitoring for total suspended particulates (TSP), lead, PM10, polychlorinated biphenyls (PCBs), polycyclic (polynuclear) aromatic hydrocarbons (PAHs), and dioxin (2,3,7,8-tetrachlorobenzo-p-dioxin [TCDD]).
- Air monitoring for radionuclides of concern (ROCs).
- Personnel monitoring.

At the discretion of the on-site air monitoring personnel, and due in part to safety concerns and equipment integrity issues, air monitoring equipment may need to be shut down and protected during precipitation events.

2.1 Air Quality Monitoring

The real-time air quality monitoring for this removal action will include two downwind and one upwind perimeter dust monitoring locations at the perimeter of each excavation exclusion zone that will be monitored during soil handling activities. Two (2) downwind perimeter dust monitoring locations will be established and approximately 8-hour (full shift) samples should be collected using two (2) TSI Dustrak (or equivalent equipment) for measurement of total PM10 dust. The device shall be calibrated in accordance with the manufacturer's instruction. The monitoring device will continuously record aerosol concentrations corresponding to PM10 size fractions in a concentration range of 0.001 to 400 milligrams per cubic meter (mg/m^3) (i.e. 1 microgram per cubic meter [ug/m^3] to 400,000 ug/m^3). The equipment units will be programmed to trigger a visual alarm (i.e. flashing strobe light) at the 15-minute action level of 0.050 mg/m^3. If the action level is exceeded at one or more downwind locations, upwind concentrations will be evaluated, additional dust controls will be implemented, and the Navy will notify Department of Toxic Substances Control (DTSC). If the difference between upwind and downwind concentrations is greater than the action level, then cease dust-generating work until dust can be controlled.

In addition to the real-time air monitoring, the air monitoring for this removal action will include portable ambient air quality monitoring stations that will be established to perform monitoring during impacted soil handling activities. Air samples will be collected at the monitoring stations and will be analyzed for the airborne contaminants of concern, including TSP, dioxin, lead, PM10, PCBs, and PAHs. The air quality sampling will be

used to assess the status of air quality compliance and to evaluate modifications to project activities in the event of compliance concerns. Representative meteorological data for the general project areas, specifically wind speed and direction, will be collected by Gilbane personnel and used to identify the most appropriate locations for the air monitoring stations. Air samplers and monitoring stations will be located in the most practical locations upwind and downwind from the project site according to available wind speed and direction data. Air monitoring activities will be included in daily reports.

2.1.1 Dust Action Levels

Sub-chronic and chronic dust action levels as PM10 were calculated for lead, dioxin, benzo(a)pyrene (BaP), and PCBs following the guidance provided by the Department of Toxic Substances Control (DTSC) Human and Ecological Risk Office (HERO) in a Technical Memorandum dated September 7, 2018, and are presented in this section.

The San Francisco Bay Area Air Quality Management District (BAAQMD) limit for PM10 is 50 micrograms per cubic meter (ug/m^3). The site-specific dust action level for lead and the carcinogenic dust action levels for BaP, dioxin as TCDD, and PCBs were calculated using the Maximum Soil Concentrations presented in **Table 1**. The values in **Table 1** were selected from the Naval Installation Restoration Information System (NIRIS) using IR Site 12 as a selection criterion, and the selections were then further refined to the SWDA Westside excavation areas using GIS before selection the maximums. Their calculation is shown in **Appendix 1**.

The following assumptions were made to calculate the dust action levels:

- The maximum soil concentrations within or close to the excavation areas in the project boundaries were used in the calculations.
- During the excavation, exposure to respirable dust could occur for 40 hours per week (8 hours per day for 5 days).

The PM10 action level is calculated using the following equation:

$$PM10\ Action\ Level\ (\frac{ug}{m^3}) = \frac{Subchronic\ or\ Chronic\ REL, RfC, MRL\ (\frac{ug}{m^3})}{Soil\ Concentration\ (\frac{mg}{kg}) x\ Conversion\ Factor\ (10^{-6}\frac{kg}{mg})}\ x\ \frac{24\ hours}{8\ hours}\ x\ \frac{7\ days}{5\ days}$$

To account for the short-term duration of the project relative to the lifetime exposure assumptions of the chronic REL/RfC for dioxin and benzo(a)pyrene, the dust action levels were adjusted by a factor of 10. Calculated dust action levels are reported as PM10 action levels and are shown in **Table 2**, and summarized below.

Analytical results will be compared to the following threshold criteria (**Table 2**):

- 50 ug/m^3 for TSP.
- 1.6 x 10^3 ug/m^3 for lead (SWDA Westside Dust Action Level).
- 50 ug/m^3 for PM10, 24-hour TWA (BAAQMD regulatory limit).
- 5.5 x 10^4 ug/m^3 for benzo(a)pyrene (SWDA Westside Dust Action Level).
- 1E+07 ug/m^3 for dioxin as TCDD (SWDA Westside Dust Action Level).

TSP is expected to be further controlled based on the limit employed for PM10, in accordance with guidance provided by BAAQMD, which estimates that PM10 makes up approximately 55 percent of TSP. If it is apparent that project activities are the cause of exceedances as shown by a positive delta between the upwind and downwind monitoring stations of greater than the threshold criteria for PM10 and TSP, additional control measures will be considered and implemented wherever practical. Air monitoring threshold criteria are listed in **Table 2**.

During precipitation events, the air monitoring units may not be operable. An air monitoring station or individual units being inoperable shall not preclude construction activities at the associated work site.

2.1.2 Monitoring Site Locations

A minimum of two air monitoring stations will be installed to collect air samples: one upwind and one downwind station will be monitored for the duration of the field activities. Based on past meteorological data, the prevalent wind direction at NSTI is from the west or west-southwest.

Air monitoring is performed to estimate and assess the impact of the field activities. The locations of the air monitoring stations will be selected based on the most prevalent wind direction and may be modified as needed for accessibility considerations and worker safety. Winds will be monitored daily to determine the prevailing wind direction. The downwind monitoring station will be relocated as needed. Monitoring stations will remain stationary while sampling is conducted. Radiological air monitoring will be conducted both upwind and downwind of the excavations, and in the immediate vicinity of each excavation site.

Each monitoring station will include four different monitoring systems: (1) TSP; (2) PM10 (which will also be analyzed for lead); (3) PCBs/PAHs and dioxin; and (4) radionuclides of concern. Descriptions of these samplers are provided below. Sampling frequency and monitoring methods are listed in **Table 3**.

2.1.3 Total Suspended Particulates

TSP will be sampled with a high-volume (39 to 60 cubic feet per minute [cfm]) air sampler in accordance with the U.S. Environmental Protection Agency (EPA) reference sampling method for TSP, described in Title 40 Code of Federal Regulations (CFR), Part 50, Subpart B. Each sample will be collected on a filter over the course of a period not to exceed 24 hours; the filter then will be weighed to determine the amount of TSP collected. The equipment specifications and sampling procedures will comply with the specifications provided in the regulations for the sampler, filter, accuracy, calibration, and quality assurance.

The flow of the high-volume air sampler will be calibrated to establish traceability of the field measurements. Calibrations will follow the guidelines specified in 40 CFR, Part 50, Section 9.3, and Section 2.6 of the Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Specific Methods (EPA, 1998).

Field logs will be used to properly record information after the samples are collected. Appropriate field data, such as date, time, sample identification, calibration data, sample location, ambient temperature and pressure, and any additional information or observations that could influence analyses of the results will be entered on the field logs.

2.1.4 PM10 and Lead

PM10 will be sampled in accordance with the EPA reference sampling method for PM10, described in 40 CFR 50, Subpart J. Each sample will be collected on a filter over a period not to exceed 24 hours; the filter then will be weighed to determine the amount of PM10 collected. Once the filter weight has been determined, the sample will be analyzed for lead in accordance with one of the IO-3 methods identified in the Compendium of Methods for the Determination of Inorganic Compounds in Ambient Air (United States Environmental Protection Agency [EPA], 1999).

2.1.5 Real-Time Dust Monitoring for PM10

Data logging real-time aerosol monitors or personal real-time aerosol monitors (RAMs) will supplement PM10 readings to provide immediate information for dust levels present at the site perimeter. A minimum of two RAMs will be used for the larger SWDA excavations. The data collected will be used to evaluate the effectiveness of dust-control procedures (in real time) and provide data during the lag time between compound-specific sampling events and laboratory analysis of the samples. The monitors will be strategically placed downwind of operations and positioned at an approximate height of 5 feet. The monitors will be checked 3 times during the work day, and stored data will be downloaded at the end of the work shift. The monitors will be calibrated and operated in accordance with the manufacturer’s specifications.

Field personnel will pay special attention to the possibility of high readings generated by water vapor, insects, or other environmental factors, and thereby the chance of generating false positives. Any such observations will be logged.

2.1.6 PCBs, PAHs, and Dioxin

PCBs will be sampled and analyzed in accordance with EPA TO-4A. A high-volume (approximately 8 cfm) sampler will be used to collect PCBs on a sampling cartridge containing polyurethane foam. The same sampler will be used for collection of PAH samples and will alternate between PCB, PAH, and dioxin samples. The sampler will be operated to collect a sample for a period not to exceed 24 hours, after which the cartridge will be returned to the laboratory for analysis. PAHs will be sampled and analyzed in accordance with EPA TO-13A with results calculated as the benzo(a)pyrene equivalent [BaP(eq)], and dioxin will be sampled and analyzed in accordance with TO-9A.

2.2 Air Sampling for Radionuclides of Concern

Airborne radioactivity monitoring (continuous or grab samples) and trending will be performed as necessary to control public and occupational exposures, establish personal protective equipment requirements, and determine respiratory protection requirements. Each ROC has a derived airborne concentration (DAC) value. DAC is defined as the concentration of a given radionuclide in air that will result in an intake of one annual limit on intake (ALI) if breathed for a working year under working conditions (inhalation rate of 1.2 cubic meters of air per hour). (ALI is the derived limit for the quantity of radioactive material intake into the body of a worker by inhalation or ingestion in a year.)

Engineered controls will be developed in conjunction with the Radiological Affairs Support Office. They will be implemented if required to maintain airborne concentrations below 10 percent of the applicable DAC value for the ROCs at the sites. **Table 4** shows the ROC that has been identified for this project (radium-226) and its DAC value.

2.3 Personnel Monitoring

The Site Safety and Health Officer (SSHO) will conduct monitoring to ensure that each site worker is adequately protected. Site monitoring and sampling includes real-time air monitoring and perimeter monitoring. In consultation with the Corporate Health and Safety Manager, the SSHO will determine if personal or addition perimeter monitoring is required to evaluate the potential for personnel exposure. Upon receipt of air quality monitoring results that exceed the California Occupational Safety and Health Association permissible exposure limit permissible exposure limit (Cal/OSHA PELs) (PM10 – 5,000 ug/m^3; TSP – 0.5 mg/m^3; lead – 50 ug/m^3; PCBs – 500 ug/m^3; PAHs – 200 ug/m^3, as 8-hour time weighted averages (TWAs), the SSHO will be notified and the results forwarded to the Corporate Health and Safety Manager for evaluation.

Depending on the elevated results, additional sampling may be conducted for PM10, PCBs, PAHs, or lead, and personnel monitoring may be required.

2.4 Quality Control Procedures

A quality control (QC) program will be implemented to ensure that collected data are accurate, precise, and effectively characterize both the magnitude and variations in ambient conditions at the monitoring stations. Complete documentation of the results of routine operations and QC aspects of the program, including all log notes, calibration forms, and certifications, will be maintained on file. Key elements of the routine field QC program will include:

- Routine visits to each sampling station over the sampling period to check sampler pump flow rates, verify operation and sample conditions, and note any ambient conditions that could affect the accuracy or representativeness of the sample.
- Calibration of the sampling pumps and flow devices.
- Routine preventive maintenance of all equipment components.

The analytical laboratory performing the sample analyses will establish a QC program that will ensure the accuracy of the data as the data are being analyzed. Key elements of the routine QC procedures implemented during the sample analyses will include analysis of laboratory blanks and spikes and calibration of the analytical instruments, as specified in the appropriate methodology.

Air monitoring activities will be documented during construction activities and included in the Daily Contractor Production Reports. Results will be presented and analyzed in the Remedial Action Completion Report, which will also include all air monitoring field documentation and air monitoring laboratory data as appendices.

3.0 References

National Institute for Occupational Safety and Health, (NIOSH), 1994. Manual of Analytical Methods

United States Environmental Protection Agency (EPA), 1998. Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Specific Methods.

EPA, 1999. Compendium of Methods for the Determination of Inorganic Compounds in Ambient Air

Gilbane, 2020. *Site Safety and Health Plan, Phase IV Non-Time Critical Removal Action for Solid Waste Disposal Area Westside, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California*. September.

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TABLES

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Table 1: IR Site 12 SWDA Westside Soil Concentrations[1]

Chemical of Concern	Maximum Soil Concentration (mg/kg)
Lead	**400**
BaP(eq)	**1.518**
Dioxin – TCDD	**0.0016**
Total PCBs	**0.396**

Notes:
[1] Soil data for IR Site 12 specific to the excavation area at SWDA Westside was retrieved from the **Naval** Installation Restoration Information Solution.

IR - Installation Restoration
SWDA - Solid Waste Disposal Area
BaP(eq) - benzo(a)pyrene equivalent
TCDD - 2,3,7,8-tetrachlorobenzo-p-dioxin
mg/kg- milligrams per kilogram

Table 2: Air Monitoring Threshold Criteria

COC	Threshold Criteria ug/m^3	Basis
TSP	50	SWDA Westside Dust Action Level
PM10	50	CARB ambient air quality standards
Pb	1575	SWDA Westside Dust Action Level
PCBs	N/A	SWDA Westside Dust Action Level
BaP[1]	55,330	SWDA Westside Dust Action Level
Dioxin[1]	1E+07	SWDA Westside Dust Action Level

Notes:

[1] The dust action level was adjusted a factor of 10 to account for the short-term duration of the project relative to the lifetime assumptions incorporated into the toxicity criteria and exposure assumptions.

CARB- California Air Resources Board
COC chemicals of concern
N/A Toxicity criteria not available
PCBs - polychlorinated biphenyls
Pb - Lead
PM10 - particulate matter smaller than 10 microns in diameter
TSP - total suspended particulates
ug/m3 micrograms per cubic meter

Table 3: Sampling Frequency and Monitoring Methods

Test Scenario	Type of Analysis	Monitoring Method[1]	Frequency
Excavation and soil handling (upwind and downwind)	TSP	40 CFR, Part 50, Appendix B Analysis	1 sample per workday[3]
	Metals (Pb)	EPA Method 12 (modified)	1 sample per workday[3]
	PM10	40 CFR, Part 50, Appendix J	1 sample per workday[3]
	PCBs alternated with PAHs and dioxin[4]	EPA Method TO-4A EPA Method TO-13 EPA Method TO-9A	1 sample per workday[3]
	ROCs	RMDP[2]	1 sample per workday[3]
Placement of clean import fill and site restoration (upwind and downwind)	TSP	40 CFR, Part 50, Appendix B Analysis	1 sample per workday[3]
	Metals (Pb)	EPA Method 12 (modified)	1 sample per workday[3]
	PM10	40 CFR, Part 50, Appendix J	1 sample per workday[3]
	ROCs	RPP[2]	1 sample per workday[3]

Notes:

1 Monitoring Method to be employed for emissions analysis or industry recognized equivalent.
2 Radiation Protection Plan (RPP), Appendix B of the Remedial Action/NTCRA Work Plan, (Gilbane, 2018a), is a Radiation Safety Operating Procedure used for radiological air sampling activities by Gilbane.
3 Sampling may be reduced to a minimum of 2 samples per work week based on two weeks of sample results less than 50 percent of the PEL, at the discretion of the Corporate Health and Safety Manager.
4 Sampling for PCBs, PAHs, and dioxin will be alternated in this high-volume sampler.

CFR - Code of Federal Regulations
EPA - U.S. Environmental Protection Agency
PAHs - polynuclear aromatic hydrocarbons
Pb - Lead
PCBs - polychlorinated biphenyls
PEL - permissible exposure limit
PM10 - particulate matter smaller than 10 microns in diameter
ROC - radionuclide of concern
TSP - total suspended particulates

Table 4: Radionuclides Airborne Concentration Guidelines

Radionuclide	Worker*	
	DAC (uCi/mL)	10% DAC (uCi/mL)
Radium-226	3.00E-10	3.00E-11

Notes:

* The guideline values were determined using the NRC's 10 CFR, Part 20, Appendix B.
uCi/mL - microcuries per milliliter (activity)
CFR - Code of Federal Regulations
DAC - derived airborne concentration
NRC - Nuclear Regulatory Commission

APPENDIX 1

Dust Action Levels

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Dust Action Levels

Dust action levels as PM10 were calculated for lead, dioxin, benzo(a)pyrene (BaP), and selected PCBs (Aroclor-1254 and Aroclor-1260) following the guidance provided by the Department of Toxic Substances Control (DTSC) for IR Site 12 in a Technical Memorandum dated September 7, 2018, and detailed in this Attachment.

Soil sample results for polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), lead, and dioxin/furans were queried from NIRIS on 8 November 2018 using IR Site 12 as a selection criterion. The data set was further refined to encompass only those results in and around the four excavation areas for the SWDA Westside project. The soil values used are presented below in Table 1.

Table 1. IR Site 12 SWDA Westside Soil Concentrations

Chemical of Concern	Maximum Soil Concentration (mg/kg)
Lead	400
BAP(EQ)	1.518
Dioxin – TCDD	0.0016
Total PCBs	0.396

Notes:
IR - Installation Restoration
SWDA - Solid Waste Disposal Area
BaP(EQ) - benzo(a)pyrene equivalency
TCDD - 2,3,7,8-tetrachlorobenzo-p-dioxin
mg/kg - milligrams per kilogram

The San Francisco Bay Area Air Quality Management District (BAAQMD) limit for PM10 is 50 ug/m^3. The dust action level for lead was calculated, as were the carcinogenic dust action levels for BaP, dioxin as TCDD, and total PCBs; the toxicity criteria used to perform the calculations are presented in Table 2.

The following assumptions were made to calculate the dust action levels:

- The maximum soil concentrations within or close to the four excavation areas in the project boundaries presented in Table 2 were used in the calculations.
- During the excavation, exposure to respirable dust could occur for 40 hours per week (8 hours per day for 5 days).
- To account for the short-term duration of the project relative to the lifetime exposure assumptions of the chronic REL/RfC for dioxin and benzo(a)pyrene, the dust action levels were adjusted by a factor of 10.

Table 2. Toxicity Criteria

Chemical of Concern	Type (Source)	Toxicity Criteria (ug/m^3)
Lead	Regulatory Limit (BAAQMD)	0.15
BAP(EQ)	Chronic RfC (USEPA)	2E-03
Dioxin – TCDD	Chronic REL (OEHHA)	4E-05
Total PCB	Not Available	Not Available

Notes:
BAAQMD - Bay Area Quality Management District Rules and Regulations regulatory limit
BAP(EQ) - benzo(a)pyrene equivalency
OEHHA - Office of Environmental Health Hazard Assessment
REL - Reference exposure level
RfC – reference concentrations
TCDD – 2,3,7,8-tetrachlorobenzo-p-dioxin
USEPA – US Environmental Protection Agency
µg/m^3 - micrograms per cubic meter

The PM10 action level is calculated by the following equation:

$$PM10\ Action\ Level\ (\frac{ug}{m^3}) = \frac{Subchronic\ or\ Chronic\ REL, RfC, MRL\ (\frac{ug}{m^3})}{Soil\ Concentration\ (\frac{mg}{kg}) x\ Conversion\ Factor\ (10^{-6}\frac{kg}{mg})}\ x\ \frac{24\ hours}{8\ hours}\ x\ \frac{7\ days}{5\ days}$$

Calculated dust action levels are reported as PM10 action levels and are shown in Table 3. summarized below.

Table 3. PM10 Dust Action Levels

Chemical of Concern	Subchronic Dust Action Level (ug/m^3)	Chronic Dust Action Level (ug/m^3)
Lead	1,575	N/A
BAP(EQ)[1]	N/A	55,330
Dioxin – TCDD[1]	N/A	1E+07
Total PCBs	N/A	N/A

Notes:
[1]The dust action level was adjusted by a factor of 10 to account for the short-term duration of the project relative to the lifetime assumptions incorporated into the toxicity criteria and exposure assumptions
N/A – toxicity criteria no available
BAP(EQ) - benzo(a)pyrene equivalency
TCDD – 2,3,7,8-tetrachlorobenzo-p-dioxin
USEPA – US Environmental Protection Agency
mg/m^3 - millilgrams per cubic meter

APPENDIX G

TRAFFIC PLAN

(Provided on CD)

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Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

FINAL
Traffic Plan

Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12
Former Naval Station Treasure Island
San Francisco, CA
March 2021

DCN: GLBN-0005-F5271-0007

Prepared for:

Department of the Navy
Naval Facilities Engineering Command Southwest
BRAC PMO West
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San Diego, CA 92147

Prepared by:

Gilbane Federal
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Concord, California 94520
Contract Number: N62473-17-D-0005; Task Order No. N6247318F5271

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Figure 1 SWDA Westside Truck Route Map

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Acronyms and Abbreviations

bcy	bank cubic yards
DOT	California Department of Transportation
Gilbane	Gilbane Federal
IR	Installation Restoration
LLRO	low-level radioactive objects
LLRW	low-level radioactive waste
MUTCD	Manual of Uniform Traffic Control Devices
NTSI	Naval Station Treasure Island
NTCRA	non-time critical removal action
SWDA	solid waste disposal areas

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1.0 Introduction

This Traffic Plan describes the traffic control measures to be applied in support of the Phase IV non-time critical removal action (NTCRA) for chemical and radioactive contaminants at Solid Waste Disposal Area (SWDA) Westside in Installation Restoration (IR) Site 12 at the former Naval Station Treasure Island in San Francisco, California.

1.1 General Approach

The TCP includes details regarding road closures and other traffic controls to be in effect during remediation activities. This plan includes provisions and notifications of:

- identification of approved truck routes, holding, and queuing areas;
- road closures and/or closures within residential parking areas (if necessary);
- controlling traffic near the project site (if necessary); and
- site preparation and provisions for use of access roads (signage, barricades, signals, flagman, and/or other methods will be utilized to minimize the impact on daily activities of the Treasure Island community).

Work at SWDA Westside includes activities that may impact the surface traffic patterns on Avenue B and Gateview Avenue. Traffic control devices, location and operations will be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways (California Department of Transportation [DOT], 2014) and Caltrans Temporary Traffic Control Manual.

This TCP was developed to assure the safety and convenience of motorists, pedestrians, and workers during construction. Current traffic activity in these areas of NSTI is moderate and construction activities at IR Site 12 will have minimal impact on any existing NSTI traffic. NSTI is currently a residential area and open to the public.

Proper planning and scheduling of work will be implemented to reduce any potential impacts to traffic flow, with soil hauling activities scheduled to avoid early morning and late afternoon “rush hour” traffic flows on NSTI. The existing traffic control measures will be utilized to reduce the effects of inbound and outbound soil hauling vehicles.

1.2 The California Manual on Uniform Traffic Control Devices (MUTCD)

Although not required, the following are the MUTCD (State of California DOT, 2014) principles most applicable to work on NSTI; these principles will be utilized as guidance during implementation of any supplemental traffic control measures:

<u>MUTCD, Part 6, Temporary Traffic Control</u>

- Chapter 6A: General Information

- MUTCD, Part 6, Temporary Traffic Control, Chapter 6B, Fundamental Principles
- MUTCD, Part 6, Temporary Traffic Control, Chapter 6E: Flagger Control
- MUTCD, Part 6, Temporary Traffic Control, Chapter 6F: Temporary Traffic Control Zone Devices

2.0 Site Specific Approach

SWDA Westside is currently enclosed by perimeter fencing and the single building remaining inside the fencing (Building 1317) is vacant. The residential buildings in the immediate vicinity of SWDA Westside are occupied. Barricades with flashing lights, flags, signs, flag persons, and other traffic control measures will be used as needed to inform the public of lane closures and to direct trucks entering the roadway. Traffic control barricades and signs will comply with California DOT specifications.

Traffic control will not be necessary on the Bay Bridge to accommodate waste transport as no disruption of Bay Bridge traffic due to the truck traffic is expected during remediation activities.

2.1 Impacted Traffic Areas

The following activities may impact traffic to and from laydown areas and soil stockpiles in SWDA Westside (shown on **Figure 1**):

- Loading and transporting an estimated total of 22,000 bank cubic yards (bcy) of low-level radioactive waste (LLRW) soil from the RSY area in SWDA Westside to the approved waste disposal facility.
- Loading and transporting of low-level radioactive objects (LLRO) from IR Site 12 to the RSY and then to the approved waste disposal facility.
- Delivery of materials
- Mobilization/demobilization of subcontractors (i.e., utility clearance, land surveying, portable toilets and fencing) and heavy equipment (i.e., excavators, loaders, and dump trucks)
- Operating of Gilbane vehicles between IR Site 12 and RSY and Building 570, Gilbane Site Office.

Traffic routes to and from SWDA Westside are shown on **Figure 1**.

2.2 Traffic Control Notifications

Gilbane will notify the Navy at least 24 hours before large shipments or deliveries are expected on the jobsite and notify the Navy by email or telephone of any construction activities that will alter traffic flow.

If it becomes necessary to modify the vehicular patterns described herein during the performance of the remediation activities, Gilbane will notify:

- The San Francisco Fire Department—NSTI
- The San Francisco Police Department—NSTI

- The Treasure Island Development Agency

before the implementation of the proposed modification.

2.3 Traffic Routes

Following is a description of the haul route to be used by trucks entering and leaving the jobsite. Trucks will exit the Highway 80 freeway and enter onto Treasure Island Road, then will turn right onto 9th Street.

To access SWDA Westside from 9th Street, trucks will turn left onto Avenue B. The specific planned truck haul route between SWDA Westside and off-island is shown in **Figure 1**. Metal plates and/or wooden planks will be used as necessary to protect existing paved roads from track damage when entering SWDA Westside. During the project, part of Perimeter Road will be maintained as a private access road and use by the public will be restricted.

2.4 Traffic Exiting

Before trucks can drive offsite, they must be tarped and must pass through the Portal Monitor. The Portal Monitor is managed by a Navy contractor and Gilbane will coordinate with them on when access to the Portal will be needed. The Portal Monitor is a second form of radiological screening to ensure safe transportation of material onto public roadways.

Transport of heavy dump trucks will be limited to 8:00 am to 5:00 pm during business days.

3.0 References

California Department of Transportation, 2014, *California Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways, Federal Highway Administration's [FHWA's] MUTCD 2009 Edition, including Revisions 1&2 as Amended for Use in California*.

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FIGURES

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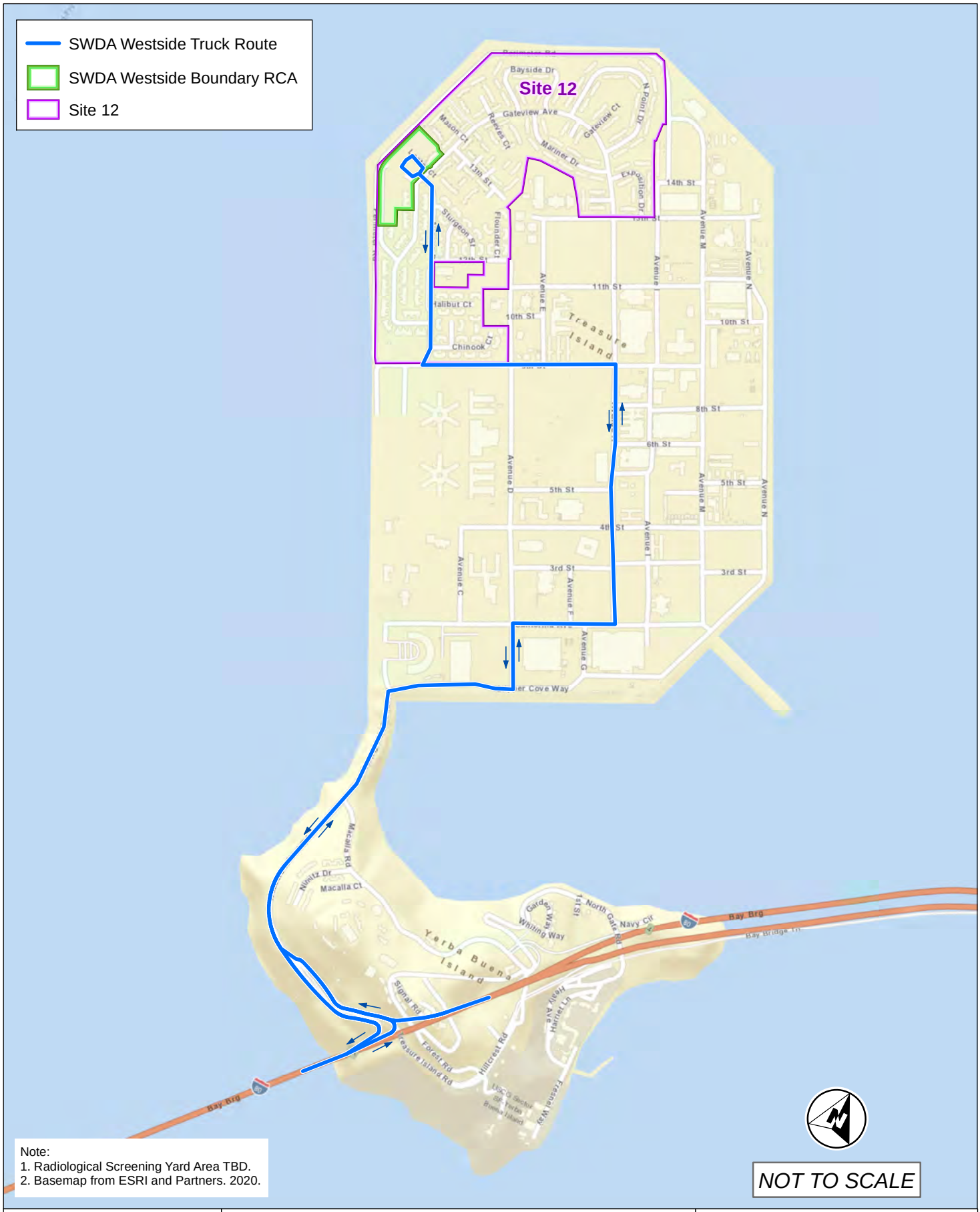

IR Site 12 Non-Time Critical Remedial Action for SWDA Westside
Former Naval Station Treasure Island
San Francisco, CA

Figure 1
SWDA Westside Truck Route

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APPENDIX H

CONTRACTOR QUALITY CONTROL PLAN

(Provided on CD)

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Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA

FINAL
Contractor Quality Control Plan

Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12
Former Naval Station Treasure Island, San Francisco, CA
March 2021

DCN: GLBN-0005-F5271-0007

Prepared for:

Department of the Navy
Naval Facilities Engineering Command Southwest
1220 Pacific Highway
San Diego, CA 92132

Prepared by:

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Contract Number: N62473-17-D-0005; Task Order Number: N6247318F5271

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Table 1 Gilbane Quality Control Team Responsibilities

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List of Acronyms and Abbreviations

APP	Accident Prevention Plan
AHA	Activity Hazard Analysis
bgs	below ground surface
CO	Contracting Officer
CQCP	Contractor Quality Control Plan
CSO	Caretaker Site Office
CTO	Contract Task Order
DFOW	definable feature of work
EPM	Environmental Protection Manager
Gilbane	Gilbane Federal Company
HRASTM	Historical Radiological Assessment Supplemental Technical Memorandum
IR	Installation Restoration
LLRW	Low level radiological waste
MEC	munitions and explosives of concern
MPPEH	material potentially presenting an explosive hazard
Navy	United States Department of the Navy
NAVFAC	Naval Facilities Engineering Command Southwest
NSTI	former Naval Station Treasure Island
NTCRA	non-Time Critical Removal Action
PM	Project Manager
POC	Point of Contact
PQCM	Project Quality Control Manager
QA	Quality Assurance
QC	Quality Control
RA	Removal Action
RAOs	remedial action objectives
RASO	Radiological Affairs Support Office
RCA	Radiologically controlled area
RFIs	Request for Information
RGs	remediation goals

ROICC	Resident Officer in Charge of Construction
ROs	Radiological objects
RPM	Remedial Project Manager
RSO	Radiation Safety Officer
SAP	Sampling and Analysis Plan
SOW	Statement of Work
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SWDA	Solid Waste Disposal Areas
UFGS	Unified Facilities Guide Specifications
USACE	U.S. Army Corps of Engineers
WP	Work Plan

1.0 Introduction

This Contractor Quality Control Plan (CQCP) describes the quality control (QC) measures to be applied in support of the Phase IV non-time critical removal action (NTCRA) for chemical and radioactive contaminants at Solid Waste Disposal Area (SWDA) Westside in Installation Restoration (IR) Site 12 at the former Naval Station Treasure Island in San Francisco, California.

This CQCP was prepared by Gilbane Federal (Gilbane) for the U.S. Department of the Navy (Navy) Base Realignment and Closure Program Management Office West under Radiological Environmental Multiple Award Contract N62473-17-D-0005, Contract Task Order N62473-18-F-5271, with the Naval Facilities Engineering Command Southwest.

This CQCP describes the measures to be taken to ensure project activities are conducted in a planned and controlled manner, that the product of these activities conforms to Contract requirements, and appropriate documentation exists to support each activity for which Gilbane is responsible. It includes a description of the QC organization, roles and responsibilities, a submittal register, reporting procedures, and a list of definable features of work (DFOW). The CQCP follows the three phases of control for each DFOW.

The primary function of CQCP is to assure the completed project meets all quality requirements of the contract. Quality Assurance (QA) will be conducted during the field effort through reviews and inspections by designated representatives. The CQCP meets the requirements of the current version of Unified Facilities Guide Specifications (01 45 00.00 20 dated November 2011) for QC and includes:

- A description of the QC organization, including a chart showing lines of authority;
- The names, qualifications, duties, authorities, and responsibilities of each person assigned a QC function;
- A description of onsite and offsite work as well as the work sequence; a schedule for managing submittals, testing, inspections, QA audits, meetings, three phases of control, and any other QA function (including contractors, subcontractors, fabricators, suppliers, purchasing agents, etc. that are involved in assuring quality workmanship, verifying compliance with the plans and specifications, or any other QC objectives);
- A description of how the remediation activities comply with environmental requirements including air quality, emissions monitoring records, waste disposal records, etc.;
- Reporting procedures and reporting format for CQCP activities including such items as daily summary reports, schedule of data submissions, inspection data sheets, results of QA fieldwork audits, problem identification and corrective

measures reports, evaluation reports, acceptance reports, and final documentation; and

- A list of DFOWs to be performed separate and distinct from other tasks with separate control requirements.

2.0 Quality Control Organization

Gilbane has structured its corporate QC organization to support the Program and Project Managers who have ultimate responsibility for the quality of services Gilbane provides. The Program and Project Managers are responsible for ensuring that personnel in their organizations understand the corporate and contract-specific QC programs and that their organizations' functions are set up and maintained effectively.

Quality issues are resolved at the lowest possible organizational level at each project site, to enable timely corrective action development and implementation. Issues that cannot be satisfactorily resolved at the project level are elevated to and resolved at the corporate level.

Key staff positions in the Gilbane QC organization for each project conducted under this Contract include:

- Corporate QA/QC Director / QC Program Manager
- Program Manager
- Project QC Manager
- Alternate QC Manager
- Project Manager
- Project/Site Radiation Safety Officer

The project organization chart, including QC personnel, is shown on **Figure 1**. This figure illustrates the reporting and communication relationships between QC personnel, the Gilbane field team, subcontractors, and Navy representatives. This structure provides the organizational freedom for personnel to identify and evaluate quality problems and discrepancies, provide recommended solutions, and ensure that appropriate corrective actions are taken.

The specific responsibilities and qualifications associated with each QC-related position are outlined in **Table 1**. The qualifications and experience of the proposed key appointees for this project are summarized in the following subsection. QC organization personnel are subject to acceptance by the Contracting Officer (CO). The CO may require the removal of any individual for non-compliance with quality requirements specified in the Contract.

Key QC personnel for Gilbane projects are assigned on the basis of appropriate experience and the determination that these individuals meet all CTO specific requirements. The PQCM and Alternate PQCM are appointed by the Corporate QA/QC Director. QC Specialists are appointed by the PQCM in the field as needed. As appropriate, copies of appointees' resumes and/or certifications are included in **Attachment 1** to this QC Plan.

A Site Superintendent/Field Team Leader and Project Quality Control Manager (PQCM) will be present on site during field activities, and will oversee and supervise work

performed by Gilbane personnel and subcontractors on the project. The PQCM, who reports directly to the QC Program Manager, will work closely with the Project Manager (PM) and Project Chemist, and with the United States Department of the Navy (Navy) QC representatives, to assure that the work is performed in compliance with the specifications contained in the approved work plan and this CQCP. The PQCM has the authority to stop work if Contract requirements are not being met. In the event that the PQCM is unavailable, an alternate PQCM will assume this responsibility. The proposed QC organization for this project is shown on **Figure 1**, which includes relationships to other elements of Gilbane Company, including the reporting structure to a corporate officer. The details of the project QC organization, including qualifications and responsibilities of key QC personnel, are outlined in **Section 2.0** and presented on **Figure 1**.

The QC Program Manager for this Navy Contract is responsible for implementing the quality control program for the Contract, and will work directly with the PM and PQCM to assure that all work is performed in compliance with the Contract. The QC Program Manager will serve as an alternate contact for the PQCM if questions arise regarding acceptability of materials or performance during the project.

The PM reports to the Program Manager for the Contract, who has the responsibility and authority to ensure that the work is performed according to the approved specifications and to the Navy's satisfaction. The QC Program Manager is also the Corporate QA/QC Director, who reports directly to the Executive Vice President. The QC Program manager is responsible for reviewing the CQCP as needed and for verifying compliance with contract documents and the applicable QA/QC requirements.

3.0 Outside Organizations

To manage subcontractors and vendors effectively, Gilbane carefully selects and prequalifies each firm. Gilbane continuously and aggressively manages subcontractor costs, schedule, safety, and quality performance. The pre-qualification process ensures that subcontractors bring the same focus on quality, cost control, schedule discipline, and commitment to customer satisfaction as Gilbane. Once an award is made to a subcontractor, Gilbane manages the quality of the subcontractor's performance through the three-phase inspection process outlined in **Section 9.0**.

Laboratories providing environmental analyses are accredited by a program identified in Unified Facilities Guide Specifications (UFGS) 01 45 02, Section 1.13.2 Laboratory Accreditation Authorities, as appropriate.

Names and qualifications of subcontractors proposed for this project will be submitted to the Navy for review and approval prior to the start of field activities. Subcontractors will be subject to Gilbane's QC procedures, and will be provided with copies of the approved CQCP.

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4.0 Submittal Procedures

Subcontractors and vendors will be required to submit drawings and data to Gilbane for approval. Submittals will be reviewed and certified by the PQCM before they are forwarded to the Navy.

The procedure for internal Gilbane approval of these submittals is as follows:

- As applicable, the subcontractor or vendor will provide relevant drawings, survey data, and test results to the PQCM for review.
- The PQCM will verify that the information is complete and that the survey methods and data are consistent with the requirements of the applicable sections and/or appendices of the WP.
- Each documentation package will be submitted with a transmittal form that identifies the contract number, task order number, location, and description of the submitted information. The submittal will carry the approval of the PQCM indicating his review and approval of the package as meeting contract requirements.

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5.0 Special Inspection and Testing

In addition to implementing the three phases of control system to ensure the overall quality of each DFOW, Gilbane will make use of formal testing and inspection procedures where applicable–including tests performed by subcontractors and/or off-site laboratories–to ensure conformance to applicable specifications and verify that control measures are adequate to provide a finished product which conforms to Contract requirements.

5.1 Special Inspection and Testing Plan and Log

Inspections and tests will be performed during field work as part of the overall QC activities and as required by the applicable technical specifications. Applicable requirements will be detailed on a Special Inspection and Testing Plan and Log. The log will include the tests or inspections required, referenced by the specification paragraph number requiring the test, location where tests were taken, the frequency of the each, the person responsible for each, and the sequential control number identifying the test. Tests and inspections will also be noted on the Daily Activity Report and QC Report. The Special Inspection and Testing Plan and Log will be prepared following final approval of the list of DFOWs for the project. A copy of the form is included in **Attachment 3**.

Gilbane will provide the Navy with 24-hour notification prior to testing. The Gilbane PQCM will be on site during any testing activities and will document tests and areas of testing. The PQCM will also verify that the third-party testing agency provides adequate and certified equipment to be used during any testing activity. Upon request, Gilbane will furnish duplicate samples of test specimens for possible testing by the government or State of California. Testing includes operation and/or acceptance tests when specified. Gilbane will perform the following activities and record and provide the following data:

- Verify that testing procedures comply with contract requirements.
- Verify that facilities and testing equipment are available and comply with testing standards.
- Check test instrument calibration data against certified standards.
- Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

Results of all tests taken, both passing and failing tests, will be recorded on the daily QC Report for the date taken, as well as the Testing Plan and Log. If approved by the CO, actual test reports may be submitted later with a reference to the test number and date taken. An informational copy of tests performed by an off-site or commercial test facility will be provided directly to the CO.

The types of testing and methods of testing/inspection expected to be implemented for this project are outlined in the following subsection.

5.2 Equipment Inspections

PQCM will verify that equipment vendors and subcontractors provide safety equipment checklists with each piece of equipment used on the site. Operators using the equipment will also maintain daily inspection records of each piece of power equipment and machinery used on site.

6.0 Tracking Deficiencies

The PQCM will review any instances where materials, equipment or activities fail to meet the specified requirements, and will take appropriate action to prevent future occurrences. Gilbane and subcontractor personnel will be responsible for bringing potential non-conformances to the attention of the Site Superintendent or PQCM. Client complaints and requests for corrective action also will be documented and routed to the Project Manager or PQCM as appropriate.

6.1 Deficiencies

A “deficiency” is defined as any item, part, product or activity with one or more characteristics that depart from the relevant specification, drawing, or other approved method of description, thus making the material, workmanship, or equipment potentially unfit for use. The PQCM will review these occurrences and take appropriate action to remediate these occurrences and prevent reoccurrence.

Most deficiencies can be corrected during the process of the work through the PQCM’s direct interaction with workers and prior to acceptance of the feature of work encompassing the deficiency. Those deficiencies will be tracked through the use of a Rework Item List. Items recorded on the Rework Items List will be assigned a sequential number. The notation in the list will include the location and a concise description of the deficiency, and will indicate the PQCM’s verification of the corrective action. (A copy of this form is included in **Attachment 3**).

6.2 Non-Conformances

A deficiency will be categorized as a “non-conformance” when it affects any of the following:

- Health and safety.
- Performance, durability, and longevity.
- Reliability or maintainability.
- Appearance (when a factor).

A non-conformance will be addressed in the following manner:

- The portion of work that is affected by the nonconformance will be stopped.
- The entity responsible for the work or item will be officially notified in writing of the non-conformance (see Non-Conformance/Corrective Action Request form in **Attachment 3**).
- The responsible entity will determine causes and develop corrective and preventive actions.

- The PQCM and PM will review and, when acceptable, approve the proposed actions.
- The corrective actions will be implemented by the responsible entity and verified by the PQCM before the impacted work, other than corrective measures, resumes.

Poor performance by subcontractors or suppliers will be documented and reported to procurement, and may result in termination of an individual's or company's services.

6.3 Corrective and Preventive Action

The extent of corrective or preventive action taken will be commensurate with the magnitude of the condition and the associated risk factor(s). Corrective and preventive actions will be based on thorough examination of root causes.

After identification and correction of each deficiency, verification inspections will be performed as appropriate to verify the completion of the actions and access the effectiveness of the corrective/preventive measures implemented.

6.4 Procedures for Tracking Laboratory Deficiencies

Laboratory testing requirements for radiological analyses, and procedures for identifying and managing any deficiencies, are addressed under the SAP (see Appendix E of the WP) for this project.

7.0 Quality Control Records and Documents

A variety of documents and certifications will be developed at specified points or intervals during the course of the project to support the quality control process. These items will be submitted to the Navy or maintained by Gilbane and available for review, as required. QC-related project documentation may include:

- Testing Plan and Log.
- Daily Contractor QC Reports.
- Three Phase Control Inspection Checklists (Preparatory, Initial, and Follow-up).
- QC Meeting Minutes.
- Rework Items List.
- Nonconformance/Corrective Action Reports.
- As-Built Drawings.
- Material Receipt Inspections.

The following subsections briefly describe the elements of QC documentation that are not discussed in separate sections of this CQCP. Copies of the referenced QC forms are included in **Attachment 3**.

7.1 Daily Reports

A Daily Radiological and Field Report and QC Report will be prepared for each day that work is performed at the site, and will account for each calendar day throughout the life of the contract.

The Daily QC Reports and Production Reports will be completed and signed by the PQCM or his or her designee and will be submitted to the Navy ROICC by 10:00 a.m. the following work day. Copies of the QC Reports and Daily Production Reports will be forwarded to the PM at the end of each work week.

Typically, the daily QC Report will include the following information:

- Preparatory or Initial Phase meetings and inspections performed with completed checklists provided as attachments.
- Follow-up inspections performed on ongoing DFOWs.
- Any tests, inspections, or other QC activities performed, with results and references to specifications/drawings or other requirements with test and inspection results provided as attachments.
- Deficiencies identified or corrected that day.

Each QC Specialist on the project will prepare a report for each day that work is performed in his or her area of responsibility. These reports will include the same

documentation requirements as the QC Report for the applicable area of responsibility. QC Specialist reports will be signed and dated by the QC Specialists and attached to the QC Report prepared for the same day.

7.2 QC Meeting Minutes

After the start of construction, the PQCM will conduct weekly QC meetings by conference call with the Site Superintendent, QC Specialists, and the foremen who are performing the work on the current DFOWs. The Navy Remedial Project Manager (RPM), CSO, ROICC, and the Radiological Affairs Support Office (RASO) Environmental Protection Manager (EPM) are designated to also attend these meetings.

As a minimum, the following will be accomplished at each QC meeting:

- Review the minutes of the previous meeting.
- Review the schedule and the status of work and rework.
- Review the status of submittals.
- Review the work to be accomplished in the next two weeks and documentation required.
- Resolve QC and production problems [pending Request for Information (RFIs), etc.].
- Address items that may require revising the CQCP.
- Review the Accident Prevention Plan (APP) and/or Activity Hazard Analysis (AHAs).
- Review environmental requirements and procedures.
- Review plan implementation, status of training completion, and progress.

The PQCM will prepare the minutes of the meetings and provide a copy to the CO within two working days after the meeting.

7.3 Quality Control Validation

The PQCM will establish and maintain a series of three ring binders or folders, divided and tabbed, containing the information listed below. These binders will be readily available to the client during all business hours.

- Completed Preparatory and Initial Phase Checklists, arranged by specification section.
- Milestone inspections, arranged by Activity Number.
- An up-to-date copy of the Testing and Special Inspection Plan and Log with supporting field test reports, arranged by specification section or DFOW.

- Copies of contract modifications, arranged in numerical order, along with documentation that modified work was accomplished.
- Up-to-date copy of the Rework Items List.
- Copies of QC Meeting minutes, arranged by date.
- Up-to-date copies of punch lists issued by the QC staff to the Contractor and Sub-Contractors and all punch lists issued by the Government.
- Other QC-related correspondence and notes, arranged by date.

7.4 As-Builts

If required, the Gilbane Site Superintendent or PQCM will mark up the site drawings or specifications when deviations from these documents occur. Following the completion of site grading, these mark-ups will be used in preparing “as-built drawings” for submission at the end of the project. In the event a major change to the Conceptual Grading Plan is required which may create a hazard, a field change request may be issued for review and approval by the Navy and regulatory agencies. Upon completion of work, the PQCM will furnish a certificate attesting to the accuracy of the as-built drawings prior to submission to the CO. Survey data will be used to verify locations.

7.5 Photographic Record

Photographic documentation of project activities will be maintained for the duration of the project, using a digital camera in JPEG (or equivalent) format. Photographs will be noted in field logbooks or the daily production reports. Information recorded will include the nature of the picture, its location, the time of day, and other pertinent information. Images will be archived, and electronic copies will be provided to the Navy following completion of the project.

7.6 Completion Report

Following completion of field activities and site restoration, Gilbane will prepare Internal Draft, Draft, Draft Final, and Final versions of a completion report. The report will contain the following:

- Description of the field work and the results of analysis.
- A preliminary screening evaluation of the analytical results collected during field work.
- A discussion of the results that will include: interpretation of the survey results; an assessment of the data; a statement as to whether or not the objectives of the survey were met; descriptions of the uncertainties of the data collected; and other information required to support conclusions and recommendations.
- Conclusions and recommendations based on the technical evaluation of the data collected.

7.7 Records Management

Project records will be managed and provided to the Navy as required by the Schedule Matrix and Deliverable List in **Section 7.0** of the Contract Task Order N62473-18-F5271 Statement of Work, and *NAVFAC Environmental Work Instruction No. 6*.

8.0 Definable Features of Work

A DFOW is a representative portion of work that is separate and distinct from any other stage of work. Seven definable features of work have been identified for this project, as outlined in the following subsections and further described in the WP. Activities associated with the project will be conducted in accordance with the WP for this project, which provide specific methods and requirements for implementation of the DFOWs.

8.1 DFOW 1: Screening of Stockpiled Phase III Soil

Previously excavated Phase III soil presently stored in stockpiles and on existing RSY pads in SWDA Westside will be spread out and screened for munitions and/or LLROs. Screening for MPPEH/MEC will be completed first, followed by screening for LLROs.

8.2 DFOW 5: Backfill and Site Restoration

Backfilling will be performed in accordance with the Site Backfill and Grading Plan (see WP Appendix E). Where groundwater is encountered, crushed rock/gravel will be placed as bridging material. Self-compacting bridging sand may be used to help control the excavation and facilitate backfilling Geotextile fabric will be used to prevent the creation of a contaminant pathway and stabilize the transition from the crushed rock/gravel to bridging sand. Backfill material will meet the standards described in the *Information Advisory Clean Imparted Fill* (DTSC, 2001). The fill material will be placed into the excavation and compacted up to the ground surface. The fill material will be compatible with the existing material and allow for adequate compaction (90% standard proctor) for areas above and below the water table. Recycled materials such as crushed concrete may be used for backfill, as appropriate.

8.3 DFOW 6: Radiological Survey of SWDA Westside RCA

A radiological survey of SWDA Westside will be performed to verify active radiological controls can be discontinued. The survey will be performed in two parts. An exposure rate survey will be performed. The radiological survey results will be provided to RASO for review and acceptance. Once they are accepted by RASO, the SWDA Westside RCA will be down-posted and released from radiological controls.

8.4 DFOW 7: Soil Cover Installation and Site Restoration

The areas excavated both during this and prior NTCRAs will be backfilled to match the grade of nearby streets and housing units and to provide proper site drainage utilizing the existing storm drains. The detailed design for the material and methodology is in the Site Backfill and Grading Plan provided in WP Appendix G. Fill material (both backfill and soil cover) will meet DTSC standards (DTSC, 2001).

A layer of clean fill soil up to 2 ft thick will be placed over the entire SWDA Westside to flatten and balance out the site, and create useable space. The fill will be placed in 1-ft

compacted lifts, lightly graded to prevent ponding and promote proper drainage, and seeded with grass. The fencing will be removed. Existing roadways, sidewalks, curbs, gutters, drainage culverts, and utilities will remain and be modified as needed to transition to open space allowing for vegetation growth. An approved grass seed mix will be applied by hydro-seeding to restore the area to compatible neighboring grasses. The seed mix will be consistent with that previously used at Treasure Island will be submitted to the Navy for concurrence prior to application.

9.0 Three Phases of Control/Documentation for Inspection

The PQCM will use the three-phase of control method for inspection during implementation of this project to ensure the quality of workmanship and results. Three phases of QC will be applied to each DFOW outlined in **Section 8.0**. Each of the three phases of control as described in this section, and other QC-related activities, will be documented on the appropriate forms, and noted on the daily QC Reports.

9.1 Phase 1: Preparatory Phase

A preparatory phase meeting will be held and an inspection performed before work begins on each definable feature of work, after all required plans, documents, and materials are approved or accepted, and copies of the plans and documents are at the work site.

The PQCM will notify the Navy at least 48 hours in advance of the preparatory phase meeting. At this meeting, the Gilbane PQCM and any QC Specialists involved with the DFOW will meet with the Navy's representative(s) and foremen or management representative for each subcontractor involved in the feature of work.

The preparatory phase meeting will include, but not be limited to, the following activities:

- Review applicable sections of the WP.
- Review established provisions for required control inspections and testing.
- Review testing procedures to be implemented during the DFOW.
- Examine the work area to assure that all required preliminary work has been completed in accordance with the WP.
- Examine required materials and equipment to assure that these items are on hand, conform to approved drawings or submitted data, and are properly stored.
- Review the appropriate AHA.
- Discuss procedures for controlling the quality of the work, including repetitive deficiencies.
- Verify that the portion of the plan for the work to be performed has been accepted by the Navy.

Each preparatory phase meeting will be recorded on the preparatory inspection checklist, and noted on the daily QC Report form.

9.2 Phase 2: Initial Phase

An initial phase inspection/meeting will be accomplished as work begins on each definable feature of work. The PQCM will notify the Navy a minimum of 24 hours prior to the initial phase meeting. Initial phase activities will include the following, as required:

- Reviewing the minutes of the preparatory phase meeting.
- Establishing the level of workmanship required for the DFOW and verifying that it meets minimum acceptable workmanship standards.
- Checking work performed to ensure that it is in full compliance with work plan requirements.
- Verifying the adequacy of QC procedures to ensure full WP compliance.
- Verifying that required control inspections and testing procedures are in place.
- Resolving all differences between specifications and performance.
- Checking work safety procedures and reviewing the SSHP and appropriate AHA to ensure that applicable safety requirements are met; and upgrading the AHA, if required.
- Reviewing the project schedule.

Each initial phase will be recorded on an initial phase inspection checklist form, and these documents will be submitted with the daily QC Report.

9.3 Phase 3: Follow-up Phase

The follow-up phase applies to all DFOWs, and consists of continuing checks to ensure that all requirements of the WP applicable to the DFOW are being met. After the initial phase meeting has been conducted and work has started on the DFOW, the PQCM will document in the daily QC Report all control activities that are implemented to ensure compliance with WP requirements applicable to that particular feature of work, including each follow-up inspection.

Any deficiencies in quality, workmanship, material, equipment, or supplies, and any unauthorized deviations from engineering requirements or specifications will be recorded on the daily QC Reports. Each deficiency will then be tracked until corrected, as described in **Section 6.0**. The PQCM has the full authority to act directly with both Gilbane and subcontractor personnel to correct deficiencies.

Follow-up phase activities include, but are not limited to, confirming that:

- Workmanship continues to meet WP requirements.
- Deficiencies have been corrected prior to the initiation of subsequent features of work that may be affected by the deficient work.
- Deficiencies have been corrected before a final inspection is requested.

Additional preparatory and initial phases will be conducted for a deficiency if the quality of ongoing work remains or becomes unacceptable.

10.0 Procedures for Final Inspections

A final inspection of each DFOW or survey area will be conducted by the Navy ROICC and CSO, and the Gilbane PQCM, PM, and Site Superintendent when survey activities in an area have been completed. The inspection will include a review of survey data to ensure that requirements of the WP have been met. Any anomalies–i.e., areas not meeting release criteria–will be reviewed and documented.

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11.0 References

California Department of Toxic Substances Control (DTSC), 2001. *Information Advisory, Clean Imported Fill Material*. October.

EPA, DoD, and DOE, 2005. *Uniform Federal Policy for Quality Assurance Project Plans*, Version 1. EPA-505-B-04-900A. March.

Naval Facilities Engineering Command (NAVFAC) Southwest, year. *Environmental Restoration Recording Keeping Program Manual, Appendix G*.

NAVFAC, year. *Environmental Work Instruction 4*.

(U.S.) Department of the Navy (Navy), 2007. *Action Memorandum/Interim Remedial Action Plan: Non-Time Critical Removal Action for Solid Waste Disposal Areas Installation Restoration Site 12 Old Bunker Area Naval Station Treasure Island San Francisco, California*. February 15.

United Facilities Guide Specification (UFGS), 2017a. *Governmental Safety Requirements*, UFGS 01 35 26. November 2015, Change 4 – 02/17.

UFGS, 2017b. *Quality Control*, UFGS 01 45 00.00 20. November 2011, Change 2 – 08/17.

U. S. Army Corps of Engineers (USACE), 2014. *Safety and Health Requirements*, Manual No. 385-1-1. November.

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FIGURES

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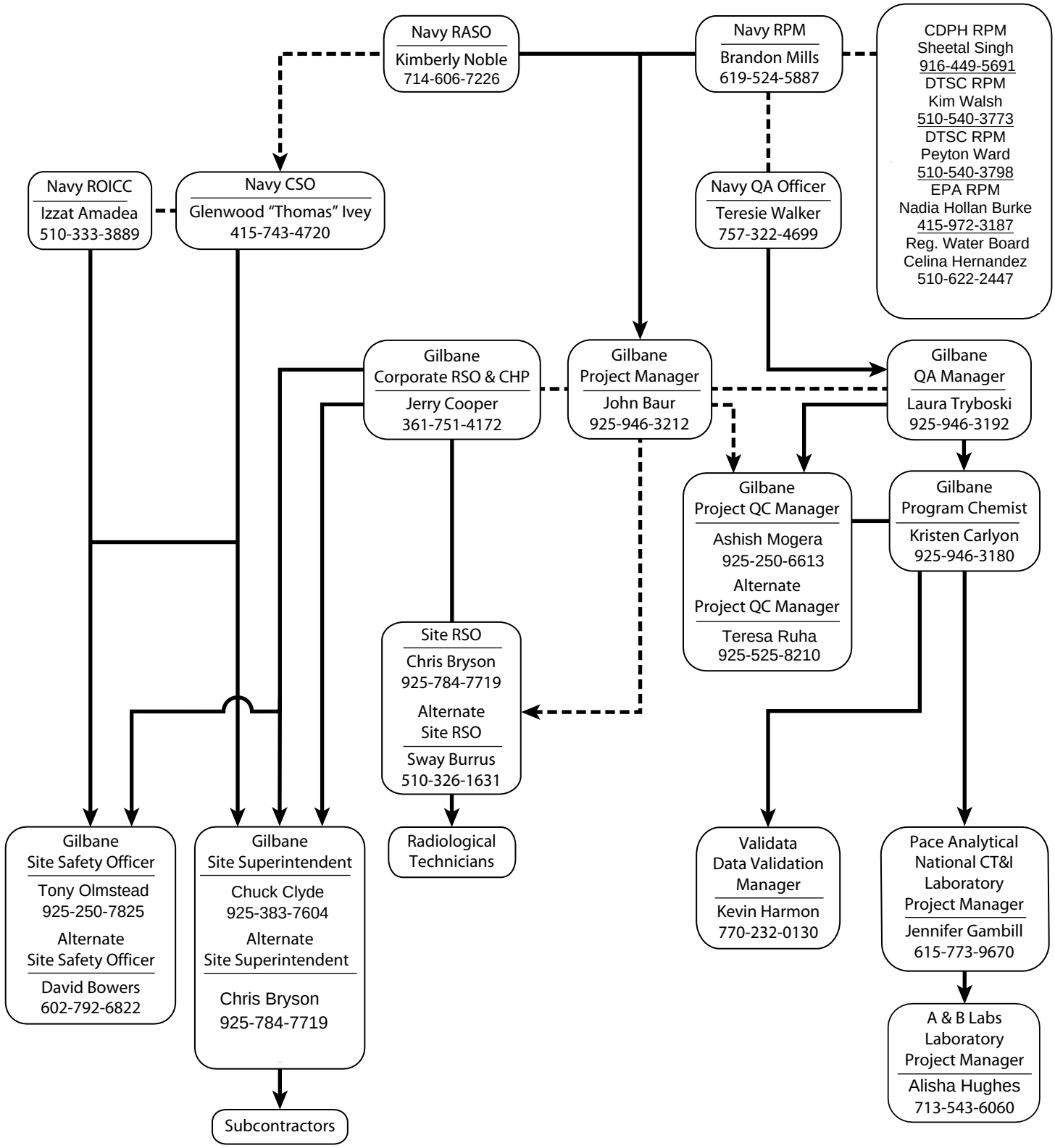
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Lines of authority

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TABLES

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Table 1: Gilbane Quality Control Team Responsibilities

Gilbane Functional Title	Responsibilities and Relationships
Corporate Quality Assurance (QA)/ Quality Control (QC) Director	• Reports directly to the Executive Vice President for Operations, with direct communications with the Gilbane President for resolving QA/QC issues. • Responsible for audits and general oversight of company-wide QC program. • Provides guidance and support to QC Program Managers and Project QC personnel, and assists with resolution of QC issues that cannot be resolved at the project or program level. • Approves Project Quality Control Manager (PQCM) designees in the absence of the QC Program Manager. • Has full authority to require corrective actions and stop work on any portion of a task if it does not conform to the standards or specifications established for the program.
QC Program Manager	• Reports directly to the Gilbane Corporate QA/QC Director. • Works closely with the Program Manager to assure compliance with the contract-wide quality control program, and has direct access to the Gilbane President to resolve issues that require escalation. • Develops, implements, manages, and enforces the Contract-wide QC program. • Implements and documents program-level quality control activities. • Implements or directs QC audits, internal QC system audits, and system checks to ensure that QC controls and documentation are in place; identifies nonconformance and recommends corrective actions. • Directs and approves any changes to the Program Contractor Data Quality Management Plan (CDQMP) or Contractor Quality Management Plan (CQMP). • Reviews the Contractor Quality Control Plan (CQCP) for adherence to the Program CQMP and project-specific requirements prior to submission. • For each Contract Task Order (CTO), appoints a PQCM whose qualifications meet the requirements specified in the Contract, the CTO, and Gilbane guidelines. • Oversees implementation of Program and CTO-specific QC requirements by the designated project-level field QC representatives.

Gilbane Functional Title	Responsibilities and Relationships
	• Readily available for consultation with the Client and project QC personnel during the CTO activities. • Has full authority to stop work on any portion of a task if it does not conform to the standards or specifications established for the program or CTO. • Has completed the Construction Quality Management for Contractors course, and will maintain this certification while serving as QC Program Manager.
Program Manager	• Serves as the primary Point of Contact (POC) for the Client regarding Contract management. • Supports the Project Manager in identifying and assigning required resources. • Assists with resolution of any project-related issues when needed. • Works closely with the QC Program Manager and Project Managers to assure compliance with the contract-wide quality control program.
Project QC Manager	• Appointed by the QC Program Manager. • Reports directly to the QC Program Manager in implementing, managing, and enforcing the approved CQCP, and will not be subordinate to the Project Manager or Site Superintendent. • May prepare or review the project CQCP. • Maintains a copy of the approved CQCP on the project site and available to project and Client personnel during all work hours. Issues copies of the approved CQCP to project QC staff. • Has primary responsibility for project-level quality control: enforces and manages all QC field operations, protocols, and documentation; responsible for implementation of the Three Phases of Control system; reviews and approves submittals; oversees QC field personnel; ensures that testing is performed as specified; and provides QC certifications and documentation as required in the Contract and CTO. • Works closely with the QC Program Manager to: conduct QC audits; ensure that QC controls and documentation are in place; and identify any nonconformance, and recommend/oversee necessary corrective actions. • Works closely with the Radiation Safety Officer and Project Manager to assure the quality of work on the project.

Gilbane Functional Title	Responsibilities and Relationships
	• Attends or conducts the initial QC Meeting, the Coordination and Mutual Understanding Meeting, and any partnering meetings; conducts the project QC meetings. • Completes and/or approves daily QC reports, weekly QC meeting minutes, project submittals, rework items list, and as-built records, as required. • Has full authority to stop work on any portion of the task that does not conform to the standards or specifications established for the CTO. • Responsible for managing and coordinating all QC documentation submitted by the project QC Specialists, testing laboratory personnel, and any other inspection and testing personnel. • Must have a minimum of five years of combined experience as a superintendent, Project Manager, and/or PQCM on projects similar in type and scope to the designated CTO, with at least two years' experience as a PQCM. [Unified Facilities Guide Specifications (UFGS) 01-45-02] • Must be familiar with the requirements of Engineering Manual (EM) 385-1-1, and have experience in the areas of hazard identification, safety compliance, and sustainability. • Will have completed the Construction Quality Management for Contractors course, and will maintain this certification while serving as PQCM.
	• Direct all testing, and prepare and submit all required reports and QC documentation. • Chair the weekly contractor QC meetings and provide minutes of these meetings. • Compile and review QC reports. • Check incoming material items to ensure their condition and conformance to the contract documents, including approved submittals. • Direct and implement the three-phase QC system of control/ documentation for inspection (Preparatory, Initial, and Follow-Up). • Review and ensure that pertinent portions of the safety plan and appropriate activity hazard analysis (AHA) are covered in the preliminary inspection meetings and are implemented throughout the work.

Gilbane Functional Title	Responsibilities and Relationships
	• Maintain a record of field activities. • Review the QC results. • Prepare and submit required project submittals. • Perform field performance and system audits. • Determine that incidents of noncompliance are reported to the Project Manager and Site Superintendent. • Provide reports or memoranda or both regarding completion of corrective actions. • Prepare and compile the data needed to complete inspection test reports and test forms. • Prepare and submit daily inspection reports for each field activity day to the Navy Resident Officer in Charge of Construction (ROICC) and Remedial Project Manager (RPM). • Update the As-built drawings. • Ensure Photographic Record is maintained. • Document rework and punch list items on daily reports. • Conduct pre-final and final inspections.
Alternate PQCM	• Appointed by the QC Program Manager to serve in the designated PQCM's absence. • The responsibilities of, and qualification requirements for, the Alternate PQCM are the same as for the PQCM, as outlined above.
Project Manager	• Develops task requirements with technical representatives; implements project-specific plans within the project schedule; and maintains and manages the budget. • Responsible for providing a quality product and meeting all contract requirements for quality; oversees compliance with normal safety procedures and regulatory requirements. • Submits a copy of the general description of the work with the names and qualifications of the QC personnel proposed for the project to the QC Program Manager. • Reviews draft QC Plans for adherence to the program CQMP and project-specific requirements prior to submission. • Works closely with the Radiation Safety Officer and PQCM on QC-related matters.
Radiation Safety Officer	• May be designated by the PQCM for areas of work that are of sufficient complexity or size to justify specific technical expertise.

Gilbane Functional Title	Responsibilities and Relationships
	• Assist and report to the PQCM to insure that QC requirements are maintained. • Provide appropriate documentation, testing, and verifications, including Three Phases of Control, for each Definable Feature of Work (DFOW) in their area(s) of responsibility, as assigned. • Attend the applicable QC meetings. • Meet qualifications specified in the Contract, the CTO, and/or the CQCP, based on the tasks and responsibilities assigned. May perform other tasks, as assigned.
Site Supervisor	• Designated by and reports to the Project Manager. • Works closely with the Project QC Manager, Project Manager, and client representatives to assure that the work is performed in compliance with the CQCP, Execution Plan, and drawings and specifications, as applicable. • Has the authority to stop work if contract or CTO requirements are not being met. • All training and experience requirements specified in the contract and CTO.

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APPENDIX I
RESPONSE TO COMMENTS

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From: Ward, Peyton@DTSC <Peyton.Ward@dtsc.ca.gov>
Sent: Thursday, February 25, 2021 11:48 AM
To: Mills, Brandon S CIV USN (USA) <brandon.s.mills1@navy.mil>
Cc: Walsh, Kimberly@DTSC <Kimberly.Walsh@dtsc.ca.gov>; Linz, Tahirih P CIV USN NAVFAC WASHINGTON DC (USA) <tahirih.linz@navy.mil>
Subject: [Non-DoD Source] RE: Treasure Island IR Site 12 SWDA Westside Phase IV NTCRA Work Plan - Revised Draft Final Planning Docs and RTCs

Hi Brandon,
As we discussed on the phone, these RTCs address our concerns. I look forward to receiving the final work plan and confirming that certain of these RTCs are reflected in the text, at which point DTSC can issue a no further comment letter.
Thanks,

Peyton Ward
Site Mitigation and Restoration Program
Department of Toxic Substances Control
Peyton.Ward@dtsc.ca.gov
(510) 540-3798

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Response to Document Review Comments

Document Reviewed:	***Draft Work Plan, Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California***	**Date of Document:**	June 2020
Project Site:	Former Naval Station Treasure Island, San Francisco, California		

Item	Review Comment	Navy Response
Comments from:	Treasure Island Development Authority (submitted by Langan Engineering and Environmental Services on behalf of TIDA)	**Date of Comments** 30 Jul 2020
1	(Comment #1) The report mentions that the Explosives Safety Submission (ESS) is “in preparation”. When is it scheduled to be finalized?	NOSSA finalized the ESS in Sep 2020. The ESS is currently under review at the Department of Defense Explosive Safety Board (DDESB).
2	(Comment #2) Screening and sampling sections such as Sections 3.4, 3.7.4, 3.9, and 3.11 do not indicate action level thresholds or screening criteria to which the data will be compared. Please provide these criteria or include a reference to the applicable appendix sections.	Munitions and radiological screening (Sections 3.4.1 and 3.4.2) are qualitative processes used to detect anomalies (e.g., metal, radiation), which in turn, facilitate the identification of UXO and LLROs, respectively. Action levels are not used. Excavation no longer will be conducted; therefore, Section 3.9 was deleted. Screening of excavated soil no longer will be performed. Radiological down-posting also no longer is a project objective; therefore, Section 3.11 was deleted.
3	(Comment #3) Sections 3.4.2 and 3.9 state that excavated soil will be spread out on the RSY pads in 9-inch lifts. In previous RSY screening processes, soil was placed in 6-inch lifts (or 12-inch lifts with prior approval from the Navy). Please provide a brief justification for the change in lift thickness.	The 9-inch soil thickness was selected for the Phase IV project to be consistent with the soil thickness for screening with an RS-700 system used during the Phase III project (Section 4.5.3, *Final Post-Construction Summary Report, Non-Time Critical Removal Action for Solid Waste Disposal Areas Westside Drive, Bayside Drive, and North Point Drive, Radiological Characterization, Building Demolition, and Remediation, Installation Restoration Site 12 (Phase III), Former Naval Station Treasure Island, San Francisco, CA* (APTIM, 2019)
4	(Comment #4) TIDA and Treasure Island Community Development (TICD) would like to point out that the Work Plan includes	The current agreement in the EDC MOA between TIDA and the Navy stipulates unrestricted re-use,

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	placement of 19,000 cubic yards of soil into a portion of SWDA Westside that has not received a Radiological Unrestricted Release Recommendation (RURR) from the State of California. This RURR is required per the Economic Development Conveyance Memorandum of Agreement (EDC MOA) between TIDA and the Navy prior to site transfer of land from the Navy to TIDA. The Navy should recognize and discuss in the report that to the extent this soil must be re-excavated so that additional investigation or remediation can be completed to the attain a RURR from the State of California, the Navy is obligated to do so, unless otherwise agreed to by TIDA and the State of California.	not specifically a RURR, for IR Site 12. The Navy is not requesting radiological unrestricted release as an objective of this scope of work. Radiological data collected as part of this scope of work is solely for the purposes of appropriate waste disposal.
5	(Comment #5) Section 1.0, Introduction, page 1-1, second paragraph: Consider including total petroleum hydrocarbons (TPH) in the list of chemicals of concern (COCs).	TPH has not been formally identified as a COC; however, the proposed excavations to remove TPH-contamination are no longer part of this Phase IV NTCRA Work Plan.
6	(Comment #6) Section 3.2.4, Monitoring Well Decommissioning, page 3-3, first paragraph: Consider including additional protective measures for wells located near excavation areas that are unpaved. Historically, wells in unpaved areas have been more susceptible to damage. Placing a steel plate over the well heads during excavation will mitigate damage posed by excavator buckets and motor vehicles that may compromise the structural integrity of the wells.	A sentence was added to Section 3.2.4, 1st paragraph (new text in bold): "***These*** [protective measures] ***may include placing a steel plate over the well heads during excavation to mitigate damage posed by excavator buckets and vehicles that may compromise the structural integrity of the wells***."
7	(Comment #7) Section 3.4.2, Radiological Screening, page 3-9: Please include a sentence referencing the Radiation Protection Plan in Appendix A addressing instrument calibration and maintenance checks that will be conducted prior to use.	A sentence was added to Section 3.4.2, 1st paragraph (new text in bold): "***Instrument calibration and maintenance checks will be conducted prior to use in accordance with the Radiation Protection Plan (see Appendix A)***."

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8	(Comment #8) Section 3.6.1, Laydown Pads, page 3-10: Please include a figure of the approximate onsite locations where these pads are planned to be stationed.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, laydown pads are no longer planned and Section 3.6 was deleted from the text.
9	(Comment #9) Section 3.6.2, Stockpile Areas, page 3-11, last sentence: Add a reference to Appendix C as detail of environmental protection measures to be implemented while soil is stockpiled.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, soil stockpiling is no longer planned and Section 3.6 was deleted from the text.
10	(Comment #10) Section 3.7, Soil Excavation, page 3-11, first paragraph: Please explain why confirmation sampling will not be conducted. Confirmation sampling is recommended since visible evidence is not always reliable.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, characterization sampling is no longer planned and Section 3.7 was deleted from the text.
11	(Comment #11) Section 3.7.3 and 3.7.4, page 3-13: Please consider confirmation sampling for TPH to confirm TPH-impacted soil has been removed.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Section 3.7 was deleted from the text.
12	(Comment #12) Appendix A, Section 5.3, Calibration and Maintenance, page 5-2: Please include the frequency of instrument calibration.	Appendix A, specifically Attachment 1, *PR-RP-140, Radiation Instruments and Equipment*, Section C.3, requires that instruments be calibrated prior to first use; following repair, maintenance, or modifications that could affect calibration; and after failure of a response check requiring adjustments or repair that could affect calibration. In addition, instruments must be calibrated in accordance to manufacturers'

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		specifications and re-calibrated at least annually (every 12 months).
13	(Comment #13) Appendix C, Project-Specific SAP, Executive Summary, page ES-1: The first sentence mentions “non-Solid Waste Disposal Areas (SWDA) Westside”. The “non” should be removed from this sentence.	The sentence was corrected.
14	(Comment #14) Appendix E, Section 3.0, Site Grading, fourth paragraph: The last sentence states “Inadvertent damage to surface completions and/or surveyed well heads by equipment or vehicles will be repaired and/or resurveyed.” Please include that these wells may need to be reinstalled if well heads sustain sufficient damage.	The following sentence was added to end of Section 3.0, 4th paragraph (new text in bold): “***Monitoring wells may need to be reinstalled, if well heads sustain sufficient damage, as determined by the Navy***.”
15	(Comment #15) Appendix F, Section 2.8, Protection of Benchmarks, Monuments and Groundwater Monitoring Wells, page 2-3: Consider installing bollards or steel plates as more effective protective/delineation measures at groundwater monitoring wells within the authorized work area/staging areas. Please elaborate on what “care” will be taken to protect the wells.	The following sentence was added to end of Section 2.8 (new text in bold): “***Bollards or steel plates may be installed as more effective protective/ delineation measures at groundwater monitoring wells within the authorized work area/staging areas***.”
Comments from:	San Francisco Bay Regional Water Quality Control Board	**Date of Comments** 30 Jul 2020
15	(Comment #1a) Section 1.0, first paragraph, first sentence: Recommend deleting “total petroleum hydrocarbon (TPH)-” from the first sentence given that the chemicals of concern (COCs) are dioxins, lead, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs); TPH is not a COC. As written, the sentence sets up the expectation that the focus of the NTCRA is to remove TPH-contaminated soil.	The first three NTCRAs met the objectives of the 2007 Action Memorandum. This fourth phase is to address the incomplete elements of the NTCRA Phase III. The potential for TPH-contamination will be addressed under the Base Wide Groundwater Monitoring Program.

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	In addition, consider replacing "TPH" with "petroleum" throughout much of the document because TPH is an analytical parameter/method and, since the Navy does not plan to test for TPH, using petroleum would lessen the potential for confusion. Extend this comment throughout the Draft Workplan including the appendices.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, the term "TPH" was removed from the document, including the appendices, with the exception of the SAP. TPH is a target compound for import fill material testing for fill sources from residential/acceptable commercial land in accordance with the *Information Advisory Clean Imported Fill Material* (DTSC, 2001); therefore, the term is retained in the SAP.
16	(Comment #1b) Section 1.0: The 2018 OTIE report indicates the purpose of the investigation was to delineate solid waste extent and doesn't use the term TPH. Recommend using the same terminology in the 2018 OTIE report or previous reports.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, the term "TPH" was deleted from the text, including the appendices, with the exception of the SAP as noted in response to comment #15.
17	(Comment #1c) Section 1.0: Regarding PCBs, is there any data for PCBs that would trigger Toxic Substances Control Act (TSCA) Regulations? If so, explain how it will be handled during Phase IV.	PCBs are identified as a COC in the 2007 Action Memorandum and TSCA is an ARAR supporting this CERCLA removal action; therefore, PCBs will be addressed in the future IR Site 12 Feasibility Study when considering alternatives.
18	(Comment #2) Section 3.1.3: This Section states: "*Community outreach will be conducted to keep the public informed of activities related to the removal action. Regular updates will be provided to the Navy on the progress of field work at a frequency and in such a manner as to foster Navy communication with its stakeholders.*" Please clarify the method of outreach (e.g. public meetings, fact sheets, etc.) and schedule (e.g. weekly, monthly, etc.). The responsibilities of the agencies is not described.	The following sentence was added to Section 3.1.3, end of first paragraph (new text in bold): "***Community interaction and support will include work notice flyers, monthly updates and pictures provided to project stakeholders, and public presentations made as part of the quarterly Restoration Advisory Board***

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		meetings." Agency roles are briefly described in Section 1.2.
19	(Comment #3) Section 3.2.4: Drilling out the well to the total depth is more effective at preventing a potential conduit for future contamination. Either employ this approach or provide justification for the currently proposed approach. The depth of the well in relation to the excavation depth is not clear. Recommend adding well construction details in a table and/or boring logs.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan. However, every effort will be made to work around existing monitoring wells. Section 3.2.4, 2nd paragraph, also modified to read, in part (new text in bold): "*The well will be destroyed by extracting the casings and screens. A hollow-stem auger will be used to drill out the annular materials from the ground surface to* ***well depth. If not over-drilled to depth,*** *the remaining well casing will be* ***pressure****-grouted*."
20	(Comment #4) Section 3.3.5: MSDS should be provided in health and safety plan for products use to mitigate odors. The assumption is there are no health and safety concerns for the public.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, odor mitigation is no longer planned and Section 3.3.5 was deleted from the text.
21	(Comment #5) Section 3.4.4: It is not clear if data packages will be sent to all parties for review. Will it include all soil analytical results or only RAD?	Section 3.4.4, 3rd sentence was modified to read (new text in bold), "*As a minimum, they will include radiological screening data and soil sample* ***chemical and radiological*** *analytical results****, including instrument and related QC data***."
22	(Comment #6a) Section 3.7: The excavation limits proposed in the Draft Workplan do not match the "limits of solid waste disposal" mapped on Figure 2 of the 2018 OTIE report, please explain.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, reference to the 2018 OTIE report as well as Section 3.7 were deleted from the text.

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23	(Comment #6b) Section 3.7: Refer to comment #1 above regarding TPH terminology. It is confusing to reference TPH. It is not clear if 15fbg is where native material/Bay Mud has been encountered or the depth is the full vertical extent of waste found previously. Will water encountered in the excavation inhibit visual observations? Are there any lessons learned from previous excavations? What preventative measures will be taken to prevent any discharge to the Bay?	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Section 3.7 was deleted from the text.
24	(Comment #7) Section 3.7.2: It is not clear how excess water will be directed back into the open excavation. The last sentence states: “no liquid collection or disposal is anticipated.” However, Section 3.7.3 indicates contaminated water will be pumped if needed. See comment below.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Section 3.7 was deleted from the text.
25	(Comment #8a) Section 3.7.3: Consider applying the following procedures outlined in Section 3.7.3 for handling groundwater and address the comment following the reference: “…a water pump will be used to collect free-phase (non-aqueous) liquid or TPH contaminated water whenever there is significant accumulation present, including any accumulation prior to commencing removals at the beginning of each day.” Comment: Please define “significant accumulation.”	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Section 3.7 was deleted from the text.
26	(Comment #8b) Section 3.7.3: Consider applying the following procedures outlined in Section 3.7.3 for handling groundwater and address the comment following the reference: “This will minimize contaminant migration during the excavation and ascertain whether TPH contaminated soil is present. In areas where lower concentrations of TPH are encountered (e.g., sheen or discoloration on surface of water), oil-absorbent booms or soil	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Section 3.7 was deleted from the text.

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	berms/barriers will be constructed to collect and restrict movement of water entering the open excavation." Comment: Please consider changing the wording "lower concentrations" since removal will be based on visual observations.	
29	(Comment #9) Section 9: There is a typo in Gilbane reference, please correct the year referenced as "202ab."	Corrected.
30	(Comment #10a) Appendix C, Worksheet 3, page 5: Regional Water Board contact is not current in Distribution List.	Contact updated.
31	(Comment #10b) Appendix C, Worksheet 5: Regional Water Board contact is not current.	Contact updated.
32	(Comment #10c) Appendix C, Worksheet 15.12: Recommend updating Regional Water Board Tier 1 environmental screening levels (ESLs) to match the current 2019 ESLs.	ESLs on Worksheet 15.12 (now Worksheet 15.6) were updated to the current Jan 2019 Rev. 2 version of the Tier 1 ESLs.
33	(Comment #11a) Appendix F, [Attachment 1] Section 1.4 states: "Records assisting in the determination of compliance with the General Permit will be made available within a reasonable time, to the RWQCB, SWRCB, or U.S. Environmental Protection Agency (EPA) upon request." However, Section 1.1 states: "…this construction project is not covered by the National Pollutant Discharges Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities issued by the California State Water Resources Control Board (SWRCB, 2012), and most of the requirements of the General Permit do not apply to this project." Please clarify.	Section 1.4, 2nd paragraph, 2nd sentence was modified to read, "*Records will be made available within a reasonable time to the RWQCB, SWRCB, or U.S. Environmental Protection Agency (EPA) upon request*."
34	(Comment #11b) Appendix F, [Attachment 1] Page 2-3, third paragraph states: "As a general rule, no attempt will be made to dewater the excavation since the screening/dewatering plant is	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, dewatering is no longer

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	designed to handle saturated soil." Please clarify this sentence and explain "screening/dewatering plant."	planned and Appendix F was amended to exclude dewatering.
35	(Comment #11c) Appendix F, [Attachment 1] Page 3-9: TC-1 (Stabilized Construction Entrance and Exit) and TC-3 (Entrance Outlet Tire Wash) are marked as not being used in Table 3.3, but Figure 2 (Temporary Facilities BMP Map) shows multiple site entrances/exits and includes both of these BMPs. If the entrances/exits are accurately depicted on Figure 2, update Table 3.3 and Table 3.1 (BMP Implementation Schedule), include discussion of these BMPs in Section 3.2.3 (Sediment Controls), and include the BMP Fact Sheets in Appendix C.	Tables 3.1 and 3.3 were modified to show that BMPs TC-1 and TC-3 are used. Discussion of these BMPs was added to Section 3.2.3 and the corresponding BMP Fact Sheets were added to Appendix C of Attachment 1.
36	(Comment #11d) Appendix F, [Attachment 1] Page 3-17 Dewatering Operation states: "Excavations and sampling locations may fill with water or surfaces may accumulate ponded water during rainstorms or from wave overtopping or wave splash. Groundwater also may infiltrate excavations due to high tides or storm surge." This is not acceptable. Please explain procedures for preventing any contaminated water, soil or debris from discharging to the Bay and any water entering excavation from tides or storm surges.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, dewatering is no longer planned and Appendix F was amended to exclude dewatering.
37	(Comment #11e) Appendix F, [Attachment 1] Page 3-23 Stockpile Management: The section indicates stockpiles will be covered with plastic sheeting or soil stabilizing agent when not in use. Will stockpiles be placed on pads or plastic sheeting and not directly on the existing surface?	Yes. A sentence in referenced section added to require (new text in bold), ***"Prior to use, a 10-mil liner will be placed on the ground surface and wrapped and secured with hay bales or straw wattles***."
38	(Comment #11f) Appendix F, [Attachment 1] Page 3-24 Contaminated Soil Management: Same comment as item e above.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Appendix F was amended to

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		exclude references to contaminated soil management.
39	(Comment #11g) Appendix F, [Attachment 1] Page 3-25 Liquid Waste Management: Clarify that drums will be sufficient to store wastewater that is generated by dewatering of an excavation.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, dewatering is no longer planned and Appendix F was amended to exclude dewatering.
40	(Comment #11h) Appendix F, [Attachment 1] Page 7-1: Update Section 7.2 (Applicability of Permit Requirements) to include that the project is exempt under CERCLA section 121(e), and not because the site is less than acre, as it is also part of a larger project and CGP coverage would otherwise still apply.	The 1st sentence of referenced section was modified to read (new text in bold), "*This project* ***is exempt under CERCLA Section 121(e)****; therefore, this SWMP identifies the following types of monitoring as being applicable for this project*."
41	(Comment #11i) Appendix F, {Attachment 1] Page 7-16: Table 7.7 describes sample point SP-3 as west of building 1319, but Figure 3 (Existing Stockpiles and Proposed Laydown Pads and Storage Areas) shows this sample point west of building 1315. Update either the table or the figure to describe the correct location.	Table 7.7 was corrected to indicate that SP-3 is located west of Building 1315.
42	(Comment #11j) Appendix F, [Attachment 1] Figure 2: Clarify if street cleaning will also occur on the streets leading to temporary stockpile areas and radiological screening yards; the truck route to and from these areas, and the legend does not define SP locations (black dots).	There are no existing streets inside SWDA Westside. Figure 2 was modified to remove streets within SWDA Westside that no longer exist and to show street sweeping will be performed on streets outside and around SWDA Westside. SP locations (black dots) were added to the legend as representing sampling locations.
43	(Comment #11k) Appendix F, Figure 4: Figure 4 is mislabeled and should be Figure 3. The legend does not define SP locations (black dots). The map is missing a portable toilets/hand wash stations.	Figure 4 was corrected to be Figure 3 and the black dots, shown on Figure 2, were removed. The location of portable toilets/hand wash stations has not yet been defined.

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Comments from:	California Department of Toxic Substances Control	**Date of Comments** 19 Aug 2020
44	(General Comment #1) The Navy concluded in the previous phase of the non-time critical removal action (Phase III NTCRA; APTIM, 2019) that "remediation of SWDA Westside should be continued until the lateral and vertical excavation footprint meet project action limits (PALs) and radiological release criteria. Special consideration and planning for removal of oil-saturated material southeast of former Building 1123 at SWDA Westside should be made." The current Work Plan proposes to focus excavation on two relatively small areas of SWDA Westside and on petroleum contaminated soil. Given the scope of the Phase IV NTCRA, please explain how the recommendation from the Phase III NTCRA will be accomplished.	The recommendations of the Phase III NTRCA will be evaluated as future remedial alternatives in the next IR Site 12 Feasibility Study.
45	(General Comment #2) The Work Plan states that a radiological survey will be conducted to identify if the SWDA Westside radiologically controlled area can be down posted and released from radiological controls. However, the Work Plan appears to omit gamma scanning of the excavation bottoms and sidewalls to identify areas that may require additional characterization or excavation, or to document residual radioactivity for future follow up. Please revise the Work Plan to explain what procedures will be used to characterize residual radioactivity in the excavations prior to backfill.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, post-excavation characterization is no longer planned.
46	(General Comment #3) Excavation is planned to a depth of, at most 15 feet. Areas of SWDA Westside that were investigated in a previous phase of the NTCRA were not excavated to 15 feet. Please comment on whether those areas be subject to deeper excavation in future phases of the NTCRA.	Phase IV is a follow-up to the Phase III NTCRA and is the last phase that will be performed under the 2007 Action Memorandum. It is likely that complete excavation of the SWDA Westside will

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		be a remedial alternative that is evaluated in the upcoming IR Site 12 Feasibility Study.
47	(General Comment #4) Appendix C does not appear to have been properly updated. For example, personnel, screening levels, and references to the main document are outdated. Please conduct a thorough review of the whole appendix. Specific comments are included below and in DTSC Human and Ecological Risk Office's (HERO's) memo dated July 16, 2020.	Appendix C was reviewed and modified, where appropriate, to correctly reference the revised work plan body.
48	(General Comment #5) Please expand the Work Plan to describe the trenching process in detail (see attached comments from DTSC Engineering and Special Projects Office [ESPO]). How will the use of slot trenching affect how confirmation samples are taken? Please provide a figure demonstrating how the slot trenching will be accomplished.	DTSC ESPO comments are included as comments #96 through #107. The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, neither slot trenching nor confirmation sampling are planned.
49	(Specific Comment #1) Section 1.1.2/Figure 1 – Please clarify the boundaries of the SWDA in the text and figures. Based on the Figure 2 in the Phase III Post-Construction Summary Report (PCSR), SWDA Westside extends north beyond Building 1133. The Work Plan (Figure 2) shows the northern extent of SWDA Westside ending south of Building 1133.	Figure 2 was modified to show the historical areal extent of SWDA Westside.
50	(Specific Comment #2) Section 1.1.2/Section 3.2.5/Section 3.3.2 – How was it determined which areas are impacted by munitions?	The MRS 1 boundary was created following the Phase I NTCRA which encountered munitions-related debris during construction. The MRS boundary includes the footprint of former Building 1321, portions of the footprints of former Buildings 1123 and 1319, and an area west and northwest of Building 1321. The MRS 1 was expanded following additional items encountered during the

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		Phase III NTCRA, further details are described in the IR Site 12 Phase III NTCRA PCSR (APTIM, 2019).
	Will all excavated materials be checked for munitions?	The proposed excavations are no longer part of this Phase IV NTCRA Work Plan.
	How will it be determined when the UXO officer needs to be on site?	UXO personnel will be onsite full-time during any soil-disturbing activities of existing onsite material such as the screening of the soil stockpiles. Additionally, UXO personnel will be onsite during the site preparations activities including clearing and grubbing and trash removal.
	Please include a discussion of these matters in the text of the work plan.	Section 3.4.1, 1st paragraph, was modified to read (new text in bold), "***The remaining stockpiles from the Phase III NTCRA will be screened for munitions per the ESS (Gilbane, 2020b)***."
51	(Specific Comment #3) Section 2.1.2 – DTSC does not have a copy of the report referenced as CB&I 2014. DTSC has a 2013 CB&I PCSR that does not include SWDA Westside and a 2014 Tetra Tech PCSR for Phase II. Please provide a copy of the relevant report.	The 2014 CB&I report is the PCSR detailing the Phase I NTCRA. An electronic copy was sent to DTSC on 4 Sept 2020.
52	(Specific Comment #4) The text states that oily material was encountered southeast of the former Building 1123 footprint. The excavation area near the Building 1123 footprint (Figure 2) does not include the area southeast of Building 1123. Please resolve this apparent discrepancy, especially as one of the objectives of the Phase IV NTCRA is to remove petroleum-contaminated soil.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Figure 2 modified to reflect this change in scope.

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53	(Specific Comment #5) DTSC does not have a copy of the report referenced as APTIM 2018 and the MEC objects that required suspension of work on the site were not discussed in the PCSR. Please provide a copy of this report to DTSC.	The APTIM 2018 reference refers to the AAR which was sent electronically to DTSC on 10 Sept 2020.
54	(Specific Comment #6) Section 2.1.5 – Please provide OTIE 2018 as an appendix to this report as it is used as the basis for the scope of this Work Plan.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, reference to the 2018 OTIE report was deleted from the text.
55	(Specific Comment #7) Section 2.3 – Please include a figure highlighting the results of the OTIE 2018 investigation. Please expand this section to summarize the nature and extent of residual contamination based on the analytical results and field observations in previous NTCRA phases of work as well as the OTIE 2018 investigation. Please provide one or more figures conveying the residual contaminant concentration from previous NTCRA phases.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, reference to the 2018 OTIE report was deleted from the text.
56	(Specific Comment #8) Section 3.0 – the second bullet indicates that excavated soil will be sampled for the following COCs: dioxins, lead, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and radium-226. The objective of the work is to remove TPH. Please provide rationale for excluding TPH from list of analytes.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, soil sampling no longer will be performed.
57	(Specific Comment #9) Section 3.1.1 – Please provide the Site Safety & Health Plan (Gilbane 2020a) so that DTSC can ensure that there are adequate protections against corona virus disease (COVID-19) to ensure the safety of our staff during oversight work.	A copy of the COVID-19 AHA, which specifies the adequacy of COVID-19 protections and how they are implemented, is included with this RTC table.
58	(Specific Comment #10) Section 3.1.2 – Please revise this section to reflect that results of air monitoring will be provided to DTSC on a monthly basis.	Section 3.1.2 was updated to state (new text in bold): "***Air monitoring data will be provided to DTSC on a monthly basis***."

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59	(Specific Comment #11) Section 3.2.4 – Please provide a list of any wells sampled during the annual Basewide Monitoring Program that will not or may not be accessible during this fieldwork and how impacts on the monitoring program will be mitigated.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, there will be no impacts to the well network nor the monitoring program and Section 3.2.4 was deleted from the text.
60	(Specific Comment #12) Section 3.7 – Please revise the document to clarify in the text whether there will be lateral step outs, as well as vertical.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Section 3.7 was deleted from the text.
61	(Specific Comment #13) Section 3.7.3 – The second and third sentences of this section appear to contradict each other. Please resolve the conflict and confirm whether all visible free product will be removed from excavations before backfilling.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Section 3.7 was deleted from the text.
62	(Specific Comment #14) Section 4.2 – Please define “activities with the potential for generating dust.”	Section 2.0 of the Dust Monitoring Plan describes activities that can create dust in greater detail.
63	(Specific Comment #15) Appendix C: Executive Summary – final paragraph – the Sampling and Analysis Plan (SAP) is Appendix C to the Work Plan not Appendix A and the Work Plan is dated 2020, not 2018.	The final paragraph of the Executive Summary was updated to reflect that the SAP is Appendix C of the Work Plan, which is dated 2020.
64	(Specific Comment #16) Appendix C: SAP Worksheets #2, #3, #5, and #7 – please revise or add the following contacts: a. The branch of CDPH is called Environmental Management Branch. b. California Department of Public Health – Please add Matthew Wright.	SAP Worksheets were modified to address the comments as follows: a. Item 6 of SAP Worksheet #2 modified to correct the branch of CDPH to the Environmental Management Branch. SAP Worksheet #3 and #5 modified to add Matthew Wright as California Dept. of Public Health Agency Representative.

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	c. DTSC – Please remove Nina Bacey and replace with Peyton Ward and Kimberly Walsh.	SAP Worksheet #3 and #5 modified to list Peyton Ward and Kimberly Walsh as DTSC Regulatory Agency Representatives.
	d. San Francisco Bay Region Water Quality Control Board (SFRWQCB) – Please remove Myriam Zech and replace with Celina Hernandez.	SAP Worksheet #3 and #5 modified to remove Myriam Zech and replace with Celina Hernandez as Regional Water Board Regulatory Agency Representatives.
	e. Please replace Chris Yantos with David Clark.	SAP Worksheet #7 modified to replace Chris Yantos with Brandon Mills as Navy Remedial Project Manager.
	f. Please ensure that contact information in Worksheet #30 is also correct.	SAP Worksheet #5, #7, and #30 modified to update the project manager for A&B Labs from Shantall Carpenter to Alisha Hughes.
65	(Specific Comment #17) Appendix C: SAP Worksheet #6 – Do DTSC and CDPH have stop work authority? If so, please include them in this table.	Stop work authority rests with all workers and visitors should they feel unsafe, recognize an unsafe condition, or witness unsafe acts by others. Therefore, DTSC and CDPH have stop work authority. SAP Worksheet #6 was modified to reflect that, in addition to Gilbane and Navy staff, visitors have stop work authority.
66	(Specific Comment #18) Appendix C: SAP Worksheet #10 – Section 10.1 should include a discussion of the 2005 Historical Radiological Assessment HRA and 2014 Historical Radiological Assessment – Supplemental Technical Memorandum (HRA-STM).	SAP Worksheet 10, Section 10.1 was modified to add the following text as paragraph 3 (new text in bold): "***A historical radiological assessment (HRA) was conducted at Naval Station Treasure Island in 2006 (Weston, 2006), and***

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		updated in the Historical Radiological Assessment – Supplemental Technical Memorandum (HRA-STM) in 2014 (TriEco-Tt, 2014). The HRA recommended radiation monitoring during excavation of the identified SWDAs due to the contamination potential from solid waste disposal or incineration. Low level radioactive objects (LLROs) or objects containing Ra-226 were discovered in the SWDAs. All of IR Site 12, with the exception of Building 157, has been radiologically impacted due to grading activities."
67	(Specific Comment #19) Appendix C: SAP Worksheet #10 – Final paragraph of page 21 appears randomly placed. Please revise the text for clarity.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, the final paragraph of SAP Worksheet #10 was deleted from Appendix C.
68	(Specific Comment #20) Appendix C: SAP Worksheet #10 – Please define "inert debris" as it relates to chemical and radiological contamination.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Appendix C, Worksheet #10 was modified to delete the third paragraph of the introductory text to the worksheet as well as all text starting from the fourth paragraph of Section 10.2 to the end of Section 10.3.
69	(Specific Comment #21) Appendix C: SAP Worksheet #11 – In Step 1, please clarify in that existing stockpiles will be both scanned and sampled for radioactivity.	Existing stockpiles will not be scanned and sampled for radioactivity as those tasks were completed during the Phase III NTCRA (APTIM, 2019) and were radiologically cleared by RASO for non-low level radioactive waste (LLRW) disposal/recycle. Munitions screening of these

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		stockpiles is still required under Phase IV. No changes were made to the SAP as a result of this comment.
70	(Specific Comment #22) Appendix C: SAP Worksheet #14 – Section 14.1, please include maintaining BMPs as a major project task.	The following was added as the third bullet in Section 14.1 of SAP Worksheet #14 (new text in bold): "***Implementation and maintenance of BMPs in accordance with the Storm Water Management Plan provided as part of the Environmental Protection Plan (Appendix F to the Work Plan)***."
71	(Specific Comment #23) Appendix C: SAP Worksheet #14 – Section 14.1.1, please describe how split samples will be taken.	As the sampling for this project is for characterization of import fill material only, no split sampling is planned.
72	(Specific Comment #24) Appendix C: SAP Worksheet 27 – The headers appear multiple times on certain pages or in the middle of the page.	Formatting was revised to correct headers on SAP Worksheet #27.
73	(Specific Comment #25) Appendix C: Worksheet #17 and References – Please revise the date of the Phase IV Work Plan.	The date of the Phase IV Work Plan was revised to 2020 throughout the SAP.
74	(Specific Comment #26) Appendix D: Section 3.2 states that solid waste, including personal protective equipment (PPE) and sampling supplies/materials will be disposed of as municipal waste "unless site conditions indicate that more stringent disposal requirements are required." Please describe how this determination will be made.	Appendix D, Section 3.2, 3rd paragraph was modified to read (new text in bold), "*Solid waste from field activities, including PPE, disposable supplies, and materials used during sampling activities, will be double-bagged and disposed of as waste* ***appropriate to the conditions under which it was used (e.g., disposable supplies used to sample radioactively contaminated soil are disposed as LLRW)***."
75	(Specific Comment #27) Appendix D – There seems to be a contradiction between Section 2.0 and Section 3.2.1 regarding the	A sentence was added to Appendix D, Section 3.2.1, end of first paragraph (new text in bold):

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	handling of debris. Will metal, plastic and wood/organic be scanned/sampled for radiation or not? Please revise the text to resolve this apparent contradiction.	"***Wastes not suitable for radiologically screening, but suspected of being radioactively contaminated, will be turned over directly to the Navy's LLRW contractor for disposal***."
76	(Specific Comment #28) Appendix D: Section 3.2.1 – Please clarify in the text whether LLRW will be chemically characterized.	The following text was added as 2nd sentence to Section 3.2.1 (new text in bold): "***LLRW will be transferred to the custody and control of the Navy's LLRW contractor to be stored on site pending packaging, labeling, transport, and disposal by a certified waste broker at a permitted radioactive/mixed waste disposal facility. The Navy's LLRW contractor will provide brokerage services, including waste characterization sampling required by the disposal facility, waste containers, and transportation of the waste for disposal***."
77	(Specific Comment #29) Appendix D: Table 1 – PPE row lists accumulation method as "Roll-of" containers instead of "Roll-off" containers	Corrected.
78	(Specific Comment #30) Appendix E: Ensure that changes to the screening levels in Appendix C are used to screen the backfill, as needed.	Noted.
79	(Specific Comment #31) Appendix E: Section 3.0 – Please describe more completely how inadvertent damage to wells will be inspected.	The following sentence was added to end of Appendix E, Section 3.0, 4th paragraph (new text in bold): "***Monitoring wells may need to be reinstalled if well heads sustain sufficient damage as determined by the Navy***."

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80	(Specific Comment #32) Appendix F: Section 2.4 – Please clarify whether there will be a noise monitoring and reduction plan.	There will not be a separate noise monitoring and reduction plan.
81	(Specific Comment #33) Appendix F: Attachment 1: Section 2.4 references Appendix B – Please clarify in the text whether this refers to an appendix to the SWMP or Appendix B of the main report.	The sentence was clarified to reference SWMP Appendix B.
82	(Specific Comment #34) Appendix F: Attachment 1: Section 2.5 refers to authorized discharge of water used to wash vehicles and equipment. Please clarify in the text if this considers decontamination wastewater and, if so, why it is appropriate to discharge it.	Water used to wash vehicles and equipment was removed from the list of non-stormwater discharges that are authorized by the Navy for this project site. Liquid waste will be handled in accordance with the Waste Management Plan in Appendix D to the Work Plan.
83	(Specific Comment #35) Appendix F: Attachment 1: Appendix A – Please revise the construction schedule to be more realistic. Currently all dates are in the past.	Appendix A containing the construction schedule was deleted and a reference added to Section 2.3 to the project schedule found in Figure 3 of the Work Plan.
84	(Specific Comment #36) Appendix F: Attachment 1: Appendix D – Please revise the 6th item under Good Housekeeping for Waste Management Section to include that stockpiled material is protected using 10-millimeter plastic sheeting.	The item was modified to read, “Stockpiled waste material is protected **using 10-millimeter plastic sheeting or soil stabilizing agent**.
85	(Specific Comment #37) Appendix F: Attachment 3: Section 1.0 – The Environmental Protection Plan is Appendix F, not Appendix C.	The sentence was modified to correct reference.
86	(Specific Comment #38) Appendix F: Attachment 3: Section 2.1.1 – The first bullet refers to four excavation areas but elsewhere in the main report, there is reference to only two excavation areas.	The bullet was modified to correct reference.
87	(Specific Comment #39) Appendix F: Attachment 3: Section 2.1.1 – Please include an appendix to the Air Monitoring Plan showing the calculations of each site-specific action level.	The Air Monitoring Plan (AMP) was revised to add Appendix 1 showing the calculations of each site-specific dust action level. In addition, the following edits were made to the AMP:

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		• References to total suspended particulates were removed. Particulates will be measured as particulate matter less than 10 microns in diameter (PM10) in keeping with current regulatory practice. • To standardize the requirements with those for the recent IR Site 12 RA/NCTRA Air Monitoring Program as approved in FCR 003 to the AMP, the requirement for air monitoring during handling of clean import fill material with concentration that were established to be below screening criteria was removed from Table 3: Sampling Frequency and Monitoring Methods.
88	(Specific Comment #40) Appendix F: Attachment 3: Section 2.1.1 – Please define the decision criteria to determine whether "project activities are the cause of exceedances."	The decision criteria were defined as follows (new text in bold): "*If it is apparent that project activities are the cause of exceedances* ***as shown by a positive delta between the upwind and downwind monitoring stations of greater than the threshold criteria for PM10****, additional control measures will be considered and implemented wherever practical*."
89	(Specific Comment #41) Appendix F: Attachment 3: Section 2.1.6 – Please provide a more specific description of how frequently will the flame ionization detector (FID) be checked beyond "periodically." Further, please document that the FID threshold of 50 parts per million (ppm) for odor is a health protective, including against low molecular weight hydrocarbons that may volatilize off of stockpiles.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, TPH odor monitoring no longer will be performed.

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90	(Specific Comment #42) Appendix F: Attachment 3: Section 3.4 – Please clarify in the text whether an independent third party will conduct observations to document wind direction, wind speed, contractor activities and other pertinent information and whether air monitoring activities will be documented during construction activities and included in the Daily Contractor Production Reports.	Attachment 3, Section 2.1 was modified to read (new text in bold), "*Representative meteorological data for the general project areas, specifically wind speed and direction, will be* ***collected by Gilbane personnel and*** *used to identify the most appropriate locations for the air monitoring stations. Air samplers and monitoring stations will be located in the most practical locations upwind and downwind from the project site according to available wind speed and direction data.* ***Air monitoring activities will be included in daily reports***."
91	(Specific Comment #43) Appendix F: Attachment 3: Table 1 – Please clarify in the text whether the soil concentrations presented SWDA Westside specific.	The data presented in Table 1 were selected from NIRIS using IR Site 12 as a selection criterion and then refined to the SWDA Westside excavation area using GIS. The table header and footer and the text were edited for clarity.
92	(Specific Comment #44) Appendix G: Section 2.3 – Please include the locations where RSY pads and stockpiles will be located on Figure 1.	Appendix G, Section 2.3, 2nd paragraph, was modified to remove unnecessary discussion of RSY pads and stockpiles. It now reads (new text in bold), "*To access SWDA Westside from 9th Street, trucks will turn left onto Avenue B. The specific planned truck haul route between* ***SWDA Westside and off-island is*** *shown in Figure 1. Metal plates and/or wooden planks will be used* ***as necessary*** *to protect existing paved roads from track damage when entering* ***SWDA Westside****. During the project, part of Perimeter*

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		Road will be maintained as a private access road and use by the public will be restricted."
93	(Specific Comment #45) Appendix H: Section 6.1 – Please clarify in the text whether deficiency/corrective action forms be provided to the Navy and DTSC.	Appendix H, Section 7.0, 1st paragraph, identifies several items that "…*will be submitted to the Navy or maintained by Gilbane and available for review, as required*." In addition, Section 7.1 states that daily reports will include, among other information, "*Deficiencies identified or corrected that da*y." Both non-conformance/corrective action reports and daily reports are available for stakeholder review.
94	(Specific Comment #46) Appendix H: Section 7.4 – Please clarify in the text whether deviations requiring as-built drawings warrant a field change request to DTSC.	Appendix H, Section 7.4 will be applied to the current Conceptual Grading Plan (Appendix E, Figure 3). No mark-ups are warranted on the grading plan, nor a field change request required; however, final grades will be surveyed to produce final as-builts. Section 7.4 was edited as such (new text in bold): "***Following the completion of site grading,*** *these mark-ups will be used in preparing "as-built drawings" for submission at the end of the project….* ***In the event a major change to the Conceptual Grading Plan is required which may create a hazard, a field change request may be issued for review and approval by the Navy and regulatory agencies***."
95	(Specific Comment #47) Appendix H: Section 8.5 – Please clarify whether backfill will occur before results of confirmation sampling are received.	The proposed excavations to remove TPH-contamination is no longer an objective of this

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		work plan; therefore, soil sampling will no longer be conducted.

Comments from:	DTSC Engineering and Special Projects Office (ESPO)	**Date of Comments**	17 Aug 2020

96	(Comment #1) Section 1.0, Introduction. The second paragraph of this section states that the purpose of the NTCRA is to address the human health risk to a resident or utility worker, associated with direct contact to soil near the ground surface, under the current land use and utility configuration plan. The plan states that excavations may be completed to depths up to 15 feet below the ground surface, which would seem to be inconsistent with the stated purpose of the work. The Work plan should clarify if utilities exist within the work area at depths below the water table.	The 2nd paragraph describes the NTCRA phases implemented following the 2007 Action Memorandum to date. Therefore, the verbiage was updated to past tense. The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, further clarification regarding utilities is no longer relevant.
97	(Comment #2) 2. Section 3.2.3, Utility Clearance. The last sentence of this section states that utilities within the impacted work area will be identified, excavated around (to the extent possible), and supported/shored to ensure integrity. All known utilities within the work area should be identified in the Work Plan and the potential for interruptions of utility service to surrounding residents and/or other entities should be communicated within the document. Contingency measures for protecting previously-unidentified utilities that are encountered during excavation should also be provided. In particular, it should be clearly stated if utilities are expected to be encountered below the water table, and if so, how they will be addressed.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, further clarification regarding utilities is no longer relevant.
98	(Comment #3) Section 3.3.5, Mitigating Odor Impacts. The first sentence of this section states that TPH is expected to be encountered in both free product and dissolved phases in soil and groundwater. Section 3.7.3 indicates that free-product would be	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, odor mitigation is no longer

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	removed by using a pump to skim it off of the surface of the groundwater. It is challenging to foresee how this will be effectively completed, given the influence of tidal conditions and the use of a slot-trenching approach for completion of the excavation. Section 3.7.3 also states that excavations will not remain open solely for the purpose of removing free product. This is counterintuitive, given that TPH contamination is stated as the primary driver for this work and failure to completely remove the free product TPH will result in some level of re-contamination of the clean backfill. The work plan should include detail that addresses free-product removal, handling, and disposal, and this work should be closely coordinated with the excavation plan.	planned and Section 3.3.5 was deleted from the text.
99	(Comment #4) Section 3.4, Screening of Existing Phase III Stockpiled Soil and RSY Pads. This section notes that approximately 3,300 cubic yards of stockpiled soil remains from the previous NTCRA phase, when work was halted due the discovery of MEC that wasn't addressed in the ESS for that phase. It appears that some of this material still needs to be screened for radiological contaminants and it is unclear if it the anticipated disposal location(s) should be provided in the Workplan for any stockpiled soil that is determined to have COCs at concentrations in excess of unrestricted-use levels.	Section 3.4 describes how excavated soil will be screened for munitions and radiological objects, and chemically and radiologically characterized for waste disposal. As discussed in Appendix D, the waste will be disposed at appropriate off-site disposal facilities consistent with the waste characterization and classification.
100	(Comment #5) Section 3.4.5, Waste Management. The workplan should identify the proposed locations for the disposal of all excavated materials. The workplan should also identify the criteria used to determine where material will be directed for disposal.	No disposal facilities were pre-designated; however, Appendix D, Table 2 lists potential disposal facilities and their corresponding classification types. The disposal criteria are specific to the disposal facility. Once the waste is characterized and classified, it will be disposed at

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		a disposal facility whose disposal criteria correspond to the classification of the waste.
101	(Comment #6) Section 3.7, Soil Excavation (Paragraph 1). The Workplan should clearly identify the maximum extents of the excavation area and the basis for the limits. The first paragraph of Section 3.7 states that the decision criteria for identifying the limits of excavation are based on visual evidence of TPH-contamination or debris. As noted earlier in our comments, we question the practicality of these criteria for the work completed below that water table and the intention to use slot trenches as means to avoid dewatering and mitigate against collapse of excavation sidewalls during work. The Workplan does not contain a sufficient level of detail for the excavation and backfill of soils below the water table.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Section 3.7 was deleted from the text.
102	(Comment #7) Section 3.7, Soil Excavation (Paragraphs 2 & 3). The second paragraph of this section states that soil will be removed from the excavation in one-foot lifts, using a hydraulic excavator. The workplan should provide detailed criteria for the slot trenching approach that has been proposed for these excavations. Given the poor soils at the site, the shallow water table, the presence of discarded metal debris, the potential presence of MEC in the soils, and the apparent presence of TPH as free product, it is necessary to understand the constraints that will be imposed on the excavation process to ensure it is completed safely and successfully. As the lead regulatory oversight agency, we consider this a non-trivial scope of work and the regulatory agencies should have a firm understanding for how the work is anticipated to proceed.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Section 3.7 was deleted from the text.

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	Although we recognize that the Navy has indicated that workers will not enter the excavation, for work completed below the water table, the excavation work still presents a health and safety hazard. We recommend that the Workplan is revised to address detail that includes, but is not limited to, the following: the maximum dimensions of a slot trench, the maximum amount of time a trench may remain open, the timing of the excavation work (both with respect to time-of-year and the daily tide schedule), the minimum spacing between open slot trench excavations, the maximum surcharge loads and minimum distances of these loads from the edge of the excavation, the means and methods for shoring and protecting utilities, and the process for backfilling the excavation, including the placement and compaction of material below the water table.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Section 3.7 was deleted from the text.
103	(Comment #8) Section 3.7, Soil Excavation (Paragraph 4). This paragraph states that an excavator with a perforated bucket may be used to remove saturated soil and debris from below that water line. Based on this discussion, we would assume that the removal of floating free product will have been completed (to the extent possible) before commencing with excavation below the water table. However, it is also possible that groundwater contamination will exist after free-product removal. The Workplan should address how contaminated runoff from the excavated soils will be collected and treated. Section 3.7.2 of the Workplan simply states that excess water will be directed back to the excavation or it will evaporate into the atmosphere, and no liquid collection and disposal is anticipated. We recommend that the Workplan provides provisions for the collection, treatment and disposal of water from excavated soils.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Section 3.7 was deleted from the text.

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104	(Comment #9) Section 3.7.4, Post-Excavation Sampling. This section states that radiological and chemical data will be collected at the limits of the excavation to characterize the "left-in-place" conditions. The section specifies a frequency with which to collect samples based on the size of the excavation. However, it is still unclear how samples from below the water table will be collected and analyzed in a meaningful way. We also note that the last sentence of Section 2.3 states that the results of this work will be used to develop the IR Site 12 Feasibility Study. The characterization should be as representative and thorough as possible.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Section 3.7 was deleted from the text.
105	(Comment #10) Section 3.8, Backfilling. This section states that crushed rock will be placed as bridging material in areas below the water table. The Workplan should specify the gradation of this material and include the full specifications for achieving and documenting compaction. We note that this section indicates that backfill material, above and below that water table, will be compacted to "90% Standard Proctor". From the discussion in the Workplan, it is unclear how this compaction specification will be achieved or evaluated for the material placed below the water table. Additional discussion regarding compaction details are included below and we note that 90% compaction, under the Standard Proctor compaction test, may result in an unsatisfactory amount of consolidation and settlement, over time.	Based on the Navy's planned use of the area as open space, backfill does not need to meet any geotechnical specifications though backfill must meet chemical acceptance criteria and its placement must meet compaction criteria. Gradation requirements are minimal. The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, there is no need for crushed concrete or similar fill material to bridge the water table. The Site Backfill and Grading Plan (Appendix E), Section 2.0, was modified to better explain (new text in bold), "***Backfill material used above the water table may include crushed concrete, crusher dust, sand, soil, or other material that suitably meets compaction requirements. There are no***

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		other geotechnical specifications. The top two feet (to final grade) will be backfilled with soil capable of supporting vegetation. Prior to placing the topsoil, the backfill material will be compacted to 90% standard proctor using a wheeled roller*.* "*The backfill* ***material*** *needed to bring the excavated areas and other areas of site previously excavated to finished grades (see Figure 3) will be imported from offsite sources. The import fill material will meet California Department of Toxic Substances Control (DTSC) recommendations for clean fill material and* ***consist of*** *well graded materials compatible with existing soils to facilitate compaction and grading. Satisfactory fill material will be well graded soils with stones no larger than 8 inches. Imported fill will not contain any trash, refuse, roots, and other organic plant materials*."
106	(Comment #11) Section 3.10, Site Restoration. Section 3.8 states that backfill will be compacted to 90% Standard Proctor (ASTM International (ASTM) Method D698). However, this section states that the compaction of backfill material will be conducted in accordance with ASTM D1557, with 90% relative compaction. Thus, two different methods and specifications have been provided for soil compaction. Please address the discrepancy.	Section 3.10 (now in Section 3.6) was modified to specify compaction in accordance with ASTM D698 (Standard Proctor). ASTM D1557 (Modified Proctor) is no longer specified.
107	(Comment #12) Section 3.12, Final Inspection/Site Closeout. This section states that the Navy will conduct a final inspection and the	The final inspection/site close-out is an internal Navy process for which contractors are

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	Navy's sign-off of the final inspection will serve as acceptance of the Site work and task completion. We recommend that work is summarized in a completion report, to clearly document elements that include but are not limited to: the scope of work completed, the conditions encountered, waste removed and disposed of, site surveys, and final site conditions, including waste left-in-place. The completion report should be reviewed and approved by the regulatory agencies, to signify completion of the work.	contractually obligated to complete and does not involve regulatory oversight. Section 8.0 states that a post-construction summary report will be prepared and details the elements that will be included in the report. This report will be provided to the agencies for review and concurrence.

Comments from:	DTSC Site Mitigation and Restoration Program, Geological Services Branch, Geological Services Unit	**Date of Comments**	14 Aug 2020

108	(Comment #1a) Section 1.0 Introduction: The second paragraph lists the chemicals of concern (COCs) at Site 12 as dioxins, lead, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs), but the Sampling and Analysis Plan (SAP) Worksheet 11 also identifies volatile organic compounds (VOCs) and furans as COCs. This discrepancy should be evaluated and the Work Plan revised appropriately. Additionally, as petroleum free product is anticipated in this removal action, the Work Plan should clarify why total petroleum hydrocarbons are not considered a COC at this site.	Per the Action Memorandum, the COCs identified at IR Site 12 include dioxins [as2,3,7,8-TCDD TEQ], lead, PCBs, and PAHs in soil within the SWDAs. Since dioxins as 2,3,7,8-TCDD TEQ are analyzed as dioxins/furans, SAP Worksheet #11 includes this analysis. The proposed excavations to remove TPH-contamination is no longer part of this Phase IV NTCRA Work Plan.
109	(Comment #1b) Section 1.0 Introduction: On page 1-2 and in Section 3.7, the text mentions that debris has been encountered down to approximately 15 feet below ground surface (bgs); therefore, the excavations will extend to a maximum depth of 15 feet bgs. However, the Work Plan does not provide details regarding how work will proceed if debris or contaminated soils are noted below 15 feet bgs. The Work Plan should be revised to discuss possible contingencies if debris and contamination are noted below the planned maximum excavation depth.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Section 1.0 has been modified to remove discussion of excavation activities.

Response to Document Review Comments

Document Reviewed:	***Draft Work Plan, Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California***	**Date of Document:**	June 2020
Project Site:	Former Naval Station Treasure Island, San Francisco, California		

Item	Review Comment	Navy Response
110	(Comment #2a) Section 3.2.4 Monitoring Well Decommissioning: A table should be included in the Work Plan that presents the well construction details for the current wells.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan. However, every effort will be made to work around existing monitoring wells.
111	(Comment #2b) Section 3.2.4 Monitoring Well Decommissioning: The Work Plan states that wells will be decommissioned and replaced in consultation with the US Navy. Discussions regarding well destruction and well replacement should also involve the regulatory agencies to ensure that the wells are properly destroyed and the replacement wells meet well construction standards.	Noted. Section 3.2.4, 1st paragraph, last sentence, was modified to include (new text in bold), "*…in consultation with the Navy* ***and regulatory agencies***".
112	(Comment #2c) Section 3.2.4 Monitoring Well Decommissioning: The text indicates that well destruction will involve overdrilling to the bottom of the excavation and then grouting or removing the well casing below the base of the excavation. Well casings should be pressure-grouted if they are not going to be overdrilled to depth. Removing the lower well casing without grouting the remaining hole is not an appropriate well destruction method. The text should be revised to include correct well destruction methods.	Agreed. Section 3.2.4, 2nd paragraph, modified to read (new text in bold), "The well will be destroyed by extracting the casings and screens. A hollow-stem auger will be used to drill out the annular materials from the ground surface to **well depth. If not over-drilled to depth,** the remaining well casing either will be **pressure**-grouted."
113	(Comment #2d) Section 3.2.4 Monitoring Well Decommissioning: The Work Plan states that the replacement wells will be installed with slotted wells screens with 0.01-inch to 0.02-inch slots and sand filterpack using #2/12 and #2/16 sand. The sands listed are appropriate to use with 0.01-inch slotted screen, but a #3 sand is appropriate for 0.02-inch slotted screen. The Work Plan should be revised to correctly identify what sands will be used for the filterpack with which well screen slot size.	Section 3.2.4, 10th sentence was modified to read (new text in bold), "The sand pack at each well will consist of **sand sized appropriately relative to the screen** from the bottom of each borehole to approximately 1 foot above the screened interval."
114	(Comment #2e) Section 3.2.4 Monitoring Well Decommissioning: The replacement wells should be surveyed after installation.	Agreed. Section 3.2.4, 2nd paragraph, modified to specify that any replacement well will be surveyed following installation.

Response to Document Review Comments

Document Reviewed:	*Draft Work Plan, Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California*	Date of Document:	June 2020
Project Site:	Former Naval Station Treasure Island, San Francisco, California		

Item	Review Comment	Navy Response
115	(Comment 3) Section 3.3.5 Mitigating Odor Impacts: The text states that a surface capping material, such as Gorilla Snot, will be used to "seal stockpiled material." This might be appropriate for use on dirt roadways, but soil stockpiles should be covered with plastic sheeting. The Work Plan should be revised to indicate that soil stockpiles will be covered by plastic sheeting if not immediately transferred to a truck for off-site disposal.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, odor mitigation is no longer planned and Section 3.3.5 was deleted from the text. Appendix F, Attachment 1, requires stockpiles to be covered with plastic sheeting or soil stabilizing agent when not in use. The use of a stabilizing agent is acceptable in that existing stockpiles do not pose chemical impacts.
116	(Comment 4) Section 3.4 Screening of Existing Phase II Stockpiled Soil and RSY Pads: The Work Plan indicates that stockpiled soil has already been screened for low-level radioactive waste, but no citation is provided for the document presenting these results and activities. The text should be revised to include a citation for these findings.	Reference to the Final Phase III Post-Construction Summary Report (APTIM, 2019), specifically Table 12, was added.
117	(Comment 5) Section 3.7 Soil Excavation: The Work Plan should discuss the need for excavation wall shoring, sloping, or benching to keep the excavation open after groundwater has been encountered.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, Section 3.7 was deleted from the text.
118	(Comment 6) Section 3.8 Backfilling and SAP Worksheet #11 – Project Quality Objectives/Systematic Planning Process Statements: The text states that the backfill material will be evaluated based on the standards in DTSC's Information Advisory, Clean Imported Fill Material (2001). If possible, it is recommended that the Work Plan discuss the proposed analyses for the backfill material.	Reference to the SAP (Appendix C) was added where discussion of the analyses is found in Worksheets 15-1 through 15-9.
119	(Comment 7) Section 4.2 Air and Dust Monitoring: The Work Plan indicates that monitoring for dust and VOCs will occur, but the text should specify that this monitoring will be continuous at the	The Work Plan, specifically Attachment 3 of Appendix F, addresses the air sampling frequency.

Item	Review Comment	Navy Response
	perimeter and in work zones. Additionally, the Work Plan should specify the frequency for air sample collection for lead, PCBs, PAHs, and radium.	
120	(Comment 8) Appendix C Sampling and Analysis Plan, SAP Worksheet #12 – Measurement Performance Criteria Table: The Work Plan does not indicate that trip blank samples will be submitted to the laboratory with the primary samples and associated quality assurance/quality control samples. It is recommended that the Work Plan be revised to include trip blank samples when soil or water samples are collected for volatile organic compound analysis.	Per SAP Worksheet #18, only soil samples are planned for this project. Per Section 3.7.7.5 of the DoD Environmental Field Sampling Handbook revision 1 (DoD, 2013) "*A trip blank is included in each shipping container used to ship VOA water samples*." Similarly, the Data Validation Guidelines Module 1 (DoD, 2019) state in Section 3.3.1: "*Trip blanks are included for aqueous volatile analytes only*." In accordance with the cited guidance, trip blanks will not be collected for this project.
121	(Comment 9) Appendix C Sampling and Analysis Plan, SAP Worksheet #14 – Summary of Project Tasks: Decontamination of equipment is discussed on page 32 of the SAP and should be revised to specify that all reusable equipment will be decontaminated between uses and locations.	SAP Worksheet #14, Section 14.1.2, 2nd paragraph, 1st sentence was modified as follows (new text in bold): "*Once radioactivity is below the release limits, the non-disposable sampling equipment that comes into contact with samples will be decontaminated* ***between uses and sample locations*** *to prevent the introduction of extraneous material into samples, and to prevent cross-contamination between samples*."
122	(Comment 10) Appendix F Environmental Protection Plan, Section 2.2 Dust Control and Attachment 2 Dust Control Plan: The Environmental Protection Plan (EPP) and Dust Control Plan (EPP) do not provide sufficient details regarding how soil stockpiles will be managed to prevent dust creation. The soil stockpiles should be covered by plastic sheeting when not in use. The EPP and DCP	Appendix F, Section 2.2 calls for dust control measures to be implemented as part of field work activities in accordance with the DCP (see Appendix F, Attachment 2). The DCP, Section 3.5, was modified to read (new text in bold), "*Fugitive dust emissions from soil storage piles*

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	should be revised to specify that plastic sheeting will be placed over soil stockpiles at the site.	*will be controlled by using a temporary cover* ***(e.g., 10-millimeter plastic sheeting)****, water, or a chemical soil stabilizer*."
123	(Comment 11a) Appendix F Environmental Protection Plan, Attachment 1 Storm Water Management Plan: Section 2.4 and Table 7.6 list the site's COCs, but these do not match the chemicals listed in the main text of the Work Plan. Based on the main text, chromium and pesticides are not considered COCs at Site 12. This attachment should be revised to match the COCs listed in the Work Plan.	Attachment 1 was modified to reflect COCs listed in the *Action Memorandum/Interim Remedial Action Plan: Non-Time Critical Removal Action for Solid Waste Disposal Areas Installation Restoration Site 12 Old Bunker Area Naval Station Treasure Island San Francisco, California* (Navy, 2007).
124	(Comment 11b) Appendix F Environmental Protection Plan, Attachment 1 Storm Water Management Plan: Radium-226 is a COC for this site, but it is not included in the stormwater monitoring. It is recommended that monitoring for radium-226 is included in the stormwater monitoring program.	Liquid waste will be handled in accordance with the Waste Management Plan in Appendix D to the Work Plan.
125	(Comment 11c) Appendix F Environmental Protection Plan, Attachment 1 Storm Water Management Plan: The second figure included in this attachment is missing a figure number, a title block, and figure legend, which are needed to understand what this figure is presenting.	Attachment 1, Figure 2 was modified to include figure number, title block, and figure legend.
126	(Comment 11d) Appendix F Environmental Protection Plan, Attachment 1 Storm Water Management Plan: Figure 3 is not included in this attachment. The Work Plan should be revised to include Figure 3.	Attachment 1, Figure 3 was inadvertently left out and is now included.
127	(Comment 11e) Appendix F Environmental Protection Plan, Attachment 1 Storm Water Management Plan: Figure 4 is included in this attachment, but is not referenced anywhere else in the	Attachment 1, Figure 4 was inadvertently included and was removed.

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Item	Review Comment	Navy Response
	attachment. The content of Figure 4 should be evaluated to determine if it should be included in the attachment.	

Comments from:	DTSC Human and Ecological Risk Office	Date of Comments	16 Jul 2020

128	(Comment #1) Main Text – Section 4.2 – Air and Dust Monitoring. Please include in the text the dust action levels established for this site. At a minimum, please reference Table 2 from Appendix F, Attachment 3.	Reference to Appendix F dust action levels was added.
129	(Comment #2a) SAP Worksheet #11: Step 2 – Identify the Goals of the Study. Please address why TPH contaminated soil and debris will only be excavated to 15 feet bgs when during the 2017 Waste Delineation Investigation, visible debris was observed to a maximum depth of 17 feet bgs.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan.
130	(Comment 2b) SAP Worksheet #11: HERO recommends characterizing the left-in-place soil for TPH and not just polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyl (PCBs), dioxins/furans, volatile organic compounds (VOCs), lead, and radium-226. Given that TPH contaminated soil has been detected at the site and one of the purposes of this Phase IV NTCRA is to remove this soil, the soil left-in-place should be tested for TPH.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, soil sampling no longer will be conducted.
131	(Comment #2c) SAP Worksheet #11: Step 4 – Define the Boundaries of the Study. Please address why the excavation will not exceed a depth of 15 feet bgs even though the 2017 investigation found debris down to 17 feet bgs at one are of the site. Please address if TPH-staining and debris is still visible at 15 feet bgs, how this will be documented and risk to human health and the environment will be evaluated.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan.
132	(Comment #3) SAP Worksheets #15.1, #15.2, #15.3, #15.4, and #15.5 – Reference Limits and Evaluation Tables for Soil	The proposed excavations to remove TPH-contamination is no longer an objective of this

Item	Review Comment	Navy Response
	Characterization Sampling: Confirmation samples are only being collected and analyzed for PAHs, PCBs, dioxins/furans, VOCs and lead post excavation to document any concentrations of the contaminants left-in-place, and thus, project screening levels (PSLs) are not established in SAP Worksheets #15.1, #15.2, #15.3, #15.4, and #15.5. Please address how the risk to human health and the environment, such as groundwater given the shallow groundwater at the site, from potential exposure to these contaminants will be documented at the site, if VOCs, PAHs, PCBs, lead, and/or dioxins/furans are detected in the confirmation soil samples.	work plan; therefore, characterization sampling is no longer planned.
133	(Comment #4a) SAP Worksheet #17.2 – Benzo(a)pyrene [BAP] and Dioxin Toxicity Equivalency Calculation: For PAHs, HERO recommends also reporting the individual PAHs using their respective DTSC-screening levels and US EPA Regional Screening Levels (RSLs) along with reporting them as BAP(eq) as stated in SAP Worksheet #17.2. The use of BAP(eq) values and not the individual screening levels would result in non-compliance with Title 22, CCR Section 69021, Toxicity Criteria for Human Health Risk Assessment, Screening Levels, and Remediation Goals (Toxicity Criteria Rule).	Section 17.2 of SAP Worksheet #17 was deleted. The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, soil sampling no longer will be conducted.
134	(Comment #4b) SAP Worksheet #17.2 – Benzo(a)pyrene [BAP] and Dioxin Toxicity Equivalency Calculation: Potency Equivalence Factors (PEFs) for BAP. HERO recommends using the PEFs listed in Table 2-4 of the 2015 Preliminary Endangerment Assessment Guidance Manual (PEA Manual) (https://dtsc.ca.gov/wpcontent/uploads/sites/31/2018/01/PEA_Guidance_Manual.pdf) instead of the PEFs listed in the 2003 OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines. The	Section 17.2 of SAP Worksheet #17 was deleted. The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, soil sampling no longer will be conducted.

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	PEFs listed in the PEA Manual are consistent with current risk assessment practices. HERO recommends using the following PEFs: 1) benzo(k)fluoranthene PEF of 0.01 instead of 0.1 and 2) chrysene PEF of 0.001 instead of 0.01. Please revise the PEF's listed in SAP Worksheet #17.2.	
135	(Comment #5) SAP Worksheet #18: HERO recommends analyzing confirmation samples for TPH and adding TPH to the list of contaminants sampled for in SAP Worksheet #18. Please see HERO's General Comment 2b.	The proposed excavations to remove TPH-contaminated soil is no longer an objective of this work plan; therefore, confirmation sampling for TPH will not be performed.
136	(Comment #6) Appendix F – Attachment 3 – Air Monitoring Plan: HERO reviewed the dust action levels listed in Section 2.1.1. HERO has no comments; however, we recommend that an industrial hygienist and/or DTSC Project Manager review the sampling frequency and monitoring methods to ensure that they are appropriate for the work being conducted at this site.	Noted.
137	(Comment #7a) SAP Worksheet #15.8 - Soil testing of imported fill material – VOCs: Please use the most recent version of the US EPA RSLs and DTSC Human and Ecological Risk Office (HERO) HHRA Note 3. For both the US EPA RSLs and DTSC HERO HHRA Note 3, the foot note references the 2018 versions. The most recent version of the US EPA RSLs is May 2020 and April 2019 for the DTSC HHRA Note 3. Please revise the foot note.	SAP Worksheets #15.2 through 15.5, and 15.7 were updated to use the most recent versions of the US EPA RSLs (May 2020) and DTSC HERO HHRA Note 3 (June 2020) and footnotes were modified as appropriate.
138	(Comment #7b) SAP Worksheet #15.8 - Soil testing of imported fill material – VOCs: Please review the PSLs listed to ensure that they are the current recommended screening value. HERO spot checked several of the PSLs and we have the following recommended changes:	SAP Worksheet #15.2 (formerly #15.8) was reviewed and updated as requested using the most current screening values utilizing the following hierarchy: HERO HHRA Note 3, EPA RSLs, TI SSC. Eighteen PSL and/or PSL references were revised, including the following.

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Item	Review Comment	Navy Response
	i. Bromodichloromethane – The PSL should be 0.29 mg/kg.	i. The PSL for Bromodichloromethane modified to 0.29 mg/kg.
	ii. Bromoform – The PSL should be 19 mg/kg.	The PSL for Bromoform modified to 19 mg/kg.
	iii. Cis-1,2-Dichloroethene (DCE) – The PSL should be 18 mg/kg.	The PSL for Cis-1,2-DCE modified to 18 mg/kg.
	iv. 2-Chlorotoluene – The PSL should be 470 mg/kg.	The PSL for 2-Chlorotoluene modified to 470 mg/kg.
	v. 1,2,3-Trichlorobenzene – The PSL should be 40 mg/kg.	The PSL for 1,2,3-Trichlorobenzene modified to 40 mg/kg.
	vi. p-Xylene – The PSL should be 560 mg/kg.	p-Xylene is not reported as a distinct analyte. It co-elutes with m-xylene which has an EPA RSL of 550 mg/Kg. The PSL for the combined pair was given the more conservative of the two RSLs – 550 mg/kg. No change was made as a result of this comment.
	vii. Hexochlorobutadiene – The PSL reference should be the EPA Residential RSL instead of HERO HHRA Note 3. Please note that the PSL is the same value.	The PSL reference for Hexochlorobutadiene was modified to the EPA Residential RSL instead of HERO HHRA Note 3.
	viii. Methylene Chloride – The PSL should be 2.2 mg/kg.	The PSL for Methylene Chloride was revised to 2.2 mg/kg.
	ix. Trans-1,2-DCE – The PSL should be 130 mg/kg.	The PSL for trans-1,2-DCE was revised to 130 mg/kg.

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	x. Vinyl Chloride – The PSL should be 0.0082 mg/kg.	The PSL for vinyl chloride was revised to 0.0082 mg/kg.
139	(Comment 8a) SAP Worksheet #15.9 – Soil testing of imported fill material – semiVOCs: Please use the most recent version of the US EPA RSLs dated 2020 and DTSC HERO HHRA Note 3 dated 2019. Please revise the foot note.	The most recent versions of the US EPA RSLs (May 2020) and DTSC HERO HHRA Note 3 (June 2020) were used for SAP Worksheets #15.2 through 15.5, and 15.7. The footnotes were modified as appropriate.
140	(Comment 8b) SAP Worksheet #15.9 – Soil testing of imported fill material – semiVOCs: Please review the PSLs listed to ensure that they are the current recommended screening value. HERO spot checked several of the PSLs and we have the following recommended changes: i. 2,4,6-Trichlorophenol – The PSL should be 7.8 mg/kg. ii. 3,3'-Dichlorobenzidine – The PSL should be 0.45 mg/kg. iii. Dibenz(a,h)anthracene – The PSL should be 0.28 mg/kg and the PSL reference should be the HERO HHRA Note 3 and not EPA Residential RSL. iv. Dibenzofuran – The PSL should be 66 mg/kg and the PSL reference should be the HERO HHRA Note 3 and not EPA Residential RSL.	SAP Worksheet #15.3 (formerly #15.9) was reviewed and updated as requested using the most current screening values utilizing the following hierarchy: HERO HHRA Note 3, EPA RSLs, TI SSC. Thirteen PSL and/or PSL references were revised, including the following. The PSL for 2,4,6-Trichlorophenol was revised to 7.8 mg/kg. The PSL for 3,3'-Dichlorobenzidine was revised to 0.45 mg/kg. The PSL for Dibenz(a,h)anthracene was revised to 0.028 mg/kg and the PSL reference to HERO HHRA Note 3. The PSL for Dibenzofuran was revised to 66 mg/kg and the PSL reference to HERO HHRA Note 3.

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	v. Fluorene – The PSL should be 2300 mg/kg and the PSL reference should be the HERO HHRA Note 3 and not EPA Residential RSL. vi. Hexochlorobenzene – The PSL should be 0.19 mg/kg and the PSL reference should be the HERO HHRA Note 3 and not EPA Residential RSL. vii. Naphthalene – The PSL should be 2.0 mg/kg and the PSL reference should be the HERO HHRA Note 3 and not EPA Residential RSL. viii. n-Nitrodiphenylamine – The PSL should be 110 mg/kg.	The PSL for Fluorene was revised to 2300 mg/kg and the PSL reference to HERO HHRA Note 3. The PSL for Hexachlorobenzene was revised to 0.19 mg/kg and the PSL reference to HERO HHRA Note 3. The PSL for Naphthalene was revised to 2.0 mg/kg and the PSL reference to HERO HHRA Note 3. The PSL for n-Nitrodiphenylamine was revised to 110 mg/kg.
141	(Comment #9) SAP Worksheet #15.10 – Soil testing of imported fill material – PCBs: Please use the most recent version of the US EPA RSLs dated 2020. Please revise the foot note.	The most recent versions of the US EPA RSLs (May 2020) and DTSC HERO HHRA Note 3 (June 2020) were used for SAP Worksheets #15.2 through 15.5, and 15.7. The footnotes were modified as appropriate.
142	(Comment #10a) SAP Worksheet #15.11 – Soil testing of imported fill material – Pesticides: Please use the most recent version of the US EPA RSLs dated 2020. Please revise the foot note.	SAP Worksheets #15.2 through 15.5, and 15.7 were updated to use the most recent versions of the US EPA RSLs (May 2020) and DTSC HERO HHRA Note 3 (June 2020) and footnotes were modified as appropriate.
143	(Comment #10b) SAP Worksheet #15.11 – Soil testing of imported fill material – Pesticides: Please review the PSLs listed to ensure that they are the current recommended screening value. HERO spot checked several of the PSLs and we have the following recommended changes:	SAP Worksheet #15.5 (formerly #15.11) was modified as requested using the most current screening values utilizing the following hierarchy: HERO HHRA Note 3 followed by EPA RSLs. One

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	i. Toxaphene – The PSL should be 0.45 mg/kg.	PSL and PSL references was revised, including the following. The PSL for Toxaphene was revised to 0.45 mg/kg.
144	(Comment #11a) SAP Worksheet #15.12 – Soil testing of imported fill material – TPH: Please use the most recent version of the San Francisco Regional Water Board Tier 1 Environmental Screening Levels (ESLs) dated 2019. Please revise the foot note.	SAP Worksheet #15.6 (formerly #15.12) was modified as requested using the January 2019 Rev. 2 version of the Water Board Tier 1 ESLs. The footnote now reflects the 2019 version.
145	(Comment #11b) SAP Worksheet #15.12 – Soil testing of imported fill material – TPH: Please review the PSLs listed to ensure that they are the current recommended screening value. HERO spot checked several of the PSLs and we have the following recommended changes: i. TPH as diesel range organics (C10-C28) – The PSL should be 260 mg/kg. ii. TPH as oil range organics (C28-C40) – The PSL should be 1,600 mg/kg.	As recommended: i. The PSL for the diesel range organics was updated to 260 mg/kg, and ii. The PSL for the oil range organics was updated to 1,600 mg/kg.
146	(Comment #12a) SAP Worksheet #15.13 – Soil testing of imported fill material – metals: Please use the most recent version of the US EPA RSLs dated May 2020 and DTSC HERO HHRA Note 3 dated April 2019. Please revise the foot note.	SAP Worksheet #15. 7 (formerly #15.13) was updated to use the most recent versions of the US EPA RSLs (May 2020) and DTSC HERO HHRA Note 3 (June 2020) and footnotes were modified as appropriate.
147	(Comment #12b) SAP Worksheet #15.13 – Soil testing of imported fill material – metals: Please review the PSLs listed to ensure that they are the current recommended screening value. HERO spot	SAP Worksheet #15.7 (formerly #15.13) was modified as requested using the most current screening values utilizing the most conservative of

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	checked several of the PSLs and we have the following recommended changes:	HERO HHRA Note 3 and EPA RSLs, with the exception of the PSL for arsenic which was revised to the TI Ambient Level of 10 mg/kg . Six PSL and/or PSL references were revised, including the following.
	i. Beryllium – The PSL should be 160 mg/kg and the PSL reference should be the EPA Residential RSL and not HERO HHRA Note 3.	The PSL for Beryllium was revised to 160 mg/kg and the PSL reference to the EPA Residential RSL.
	ii. Cadmium – The PSL should be 71 mg/kg and the PSL reference should be the EPA Residential RSL and not HERO HHRA Note 3.	The PSL for Cadmium was revised to 71 mg/kg and the PSL reference to the EPA Residential RSL.
	iii. Nickel – The PSL should be 820 mg/kg.	The PSL for Nickel was revised to 820 mg/kg.
	iv. Silver – The PSL reference should be the EPA Residential RSL and not HERO HHRA Note 3.	The PSL reference for Silver was revised to the EPA Residential RSL.
	v. Vanadium – The PSL reference should be the EPA Residential RSL and not HERO HHRA Note 3.	The PSL reference for Vanadium was revised to the EPA Residential RSL.
148	(Comment #13) SAP Worksheets #15.8, #15.9 and #15.13 – Foot note 2: Please note that HERO stands for “Human and Ecological Risk Office”. Please replace the word “Ecology” in foot note 2 with “Ecological”.	Footnote 2 on Worksheets #15.2, 15.3, 15.5, and 15.7 modified to replace the word “Ecology” with “Ecological”.

Comments from:	DTSC Brownfields and Environmental Restoration Program, Engineering and Special Projects Office (ESPO), State-Wide Munitions Response Coordinator	**Date of Comments**	07 Aug 2020

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Item	Review Comment	Navy Response
149	(General Comment) ESPO has no major issues with the work plan or the ESS; however, the following specific comment should be addressed for consistency within and between the separate documents. In addition, to avoid confusion of the acronyms and terminology a glossary should be provided with the document.	Noted. The Work Plan was reviewed and appropriate changes made as needed to standardize acronyms and terminology.
150	(Specific Comment) Executive Summary; page ES-1; fifth paragraph; last sentence; states “the results of the RI will be sent to current property owners in the form of a fact sheet”. The statement provides no time frame of when this will occur or if the regulatory agencies will be allowed to provide input on the content. Please provide a statement clarifying the time frame for distribution and that regulators will be involved in the development of the content.	The Work Plan does not contain an Executive Summary.
151	(Specific Comment) Section 3.2.5; Munitions-Related Engineering Controls; page 3-4; last paragraph; the paragraph states that mechanized equipment will be shielded with no less than 0.51 inches of acrylic sheet (e.g., PlexiGlas) to provide full frontal fragmentation penetration protection for equipment operators. A review of the ESS; page 604; lines 23-32 states that the Fragmentation Data Review Forms (Appendix A) identifies PlexiGlas thickness of 1.68 inches for primary-2 munitions with the greatest fragmentation distance (MGFD). Please correct or clarify this inconsistency.	Corrected.
152	(Specific Comment) Section 3.3.1; UXO Construction Support; page 3-5; first paragraph; second sentence states that UXO technicians will observe excavation operations from behind a 0.51 inch acrylic sheet barrier. The ESS; page 6-4; lines 23-32 states that the Fragmentation Data Review Forms (Appendix A) identifies PlexiGlas thickness of 1.68 inches for primary-2 munitions with the	Corrected.

Response to Document Review Comments

Document Reviewed:	***Draft Work Plan, Phase IV Non-Time Critical Removal Action, Solid Waste Disposal Area Westside, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California***	**Date of Document:**	June 2020
Project Site:	Former Naval Station Treasure Island, San Francisco, California		

Item	Review Comment	Navy Response
	greatest fragmentation distance (MGFD). Please correct or clarify this inconsistency.	
153	(Specific Comment) ESS; Section 7.2; Quality Assurance Implementation; page 7-5; last paragraph; correct the typographical error of 20 mm to 25 mm.	Corrected.

Comments from:	CDPH Environmental Management Branch	**Date of Comments**	14 Sep 2020

154	(Comment #1) General Comment: The California Department of Public Health - Environmental Management Branch (CDPH-EMB) utilizes the California Code of Regulations (CCR), Title 17, Section 30256(k) for determining suitability of a site for radiological unrestricted release, the CCR requires: a. Radioactive material be properly disposed, b. A reasonable effort has been made to eliminate residual radioactive contamination, c. A radiation survey has been performed which demonstrates that the premises are suitable for release for unrestricted use. In practice this means employing the decision-making process outlined in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM, NRC et al, 1997), which includes establishing a reference background area for each of the materials to remain in situ. These reference background measurements are then compared to survey units (SUs). The survey report should document and explain reasonable efforts that have been made to remediate the site.	Determining the suitability of SWDA Westside for radiological unrestricted release is not an objective of this NTCRA. At this time, the Navy is not performing final status surveys on any excavation surface(s) or the ground surface following backfilling to grade.
155	(Comment #2) Please include, “Acronyms and Abbreviations”, in the table of contents.	Acronyms and Abbreviations follow the Table of Contents along with List of Exhibits, List of Figures, Attachments, and Appendices.

Response to Document Review Comments

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Item	Review Comment	Navy Response
156	(Comment #3) Introduction, page 1-1, paragraph 4, bullet 4: "*Release SWDA Westside from active radiological controls that exist at present*." Please explain the term, "active radiological controls" in the text, and list current active controls.	The proposed release of SWDA Westside from radiological controls is no longer a project objective; therefore, the bullet was deleted.
157	(Comment #4) Introduction, page 1-2 paragraph 2 sentence 4: "*Radiological and chemical data will be collected at the limits of the excavation to characterize the left-in-place conditions*." a. Please provide the worked-out equations from the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) used to determine the numbers of data points i.e., the number of soil samples, to document the as-left conditions. If the MARSSIM results differ from the sampling frequency presented in this text, please select the most conservative soil sampling approach, b. Please discuss the broader implications of this statement. If the radiological characterization of the left-in-place conditions at the limits of the excavation bordering on non-SWDA soil indicate the presence of residual radiological contamination, what steps will be taken? Please explain in the text. c. The radiological data, in order to be incorporated into IR Site 12 Feasibility Study, or to be used by DON to request a Recommendation of Unrestricted Radiological Release (RURR) for SWDA Westside, must conform to a MARSSIM derived number of sample points.	a. The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, soil sampling will no longer be performed. b. The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, soil sampling will no longer be performed. c. The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, soil sampling will no longer be performed.
158	(Comment #5) Section 3.0 Non-Time Critical Removal Action Implementation, page 3-1, paragraph 1, bullet 2: "*Excavation*	Bullet 2 was deleted. The proposed excavations to remove TPH-contamination is no longer an

Response to Document Review Comments			
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Item	Review Comment	Navy Response
	Activities – activities performed during excavation, including excavation of debris and TPH contaminated soil, post-excavation sampling for COCs, backfill of excavated areas, and screening of excavated soil and transport for offsite disposal." Please indicate in this paragraph if the screening of post-excavation soil includes a MARSSIM style radiological screening capable of detecting Low Level Radiological Objects (LLROs) as well as radionuclides of concern (ROCs).	objective of this work plan; therefore, soil sampling will no longer be performed.
159	(Comment #6) Section 3.4.2 Radiological Screening, page 3-9, paragraph 3, sentence 1: "*A minimum of 20 samples will be collected for each 600 cubic yards of soil*." Please provide the worked-out equations from MARSSIM used to determine the numbers of data points i.e., number of soil samples, to document the as-left conditions. If the MARSSIM results differ from the sampling frequency presented in this text, please select the most conservative radioactive soil sampling approach.	Radiological sampling of the soil in accordance with MARSSIM is not a project objective. The Navy is not requesting radiological unrestricted release as an objective of this scope of work. Sampling of the historical soil stockpiles will be conducted to confirm the suitability of the soil for disposal as non-LLRW.
160	(Comment #7) Section 3.4.4 Data Package, page 3-8, paragraph 1, sentence 3: "*As a minimum, they will include radiological screening data and soil sample analytical results*". Please include calibration records and signed and dated Quality Control (QC) daily response checks for the radiological detection instruments which will be used to produce soil data packages following radiological screening.	Section 3.4.4, 3rd sentence, was modified to read (new text in bold), "*As a minimum, they [data packages] will include radiological screening data and soil sample* ***chemical and radiological*** *analytical results****, including instrument and other related QC data****."*
161	(Comment #8) Section 3.7.4 Post-Excavation Sampling, page 1-13, paragraph 1, sentence 1: "*Soil samples will be collected and analyzed for COCs and ^{226}Ra to characterize the left-in-place chemical and radiological conditions (see Section 3.4.3) at the horizontal and vertical extent of the debris/soil staining removal*."	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, soil sampling will no longer be performed.

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Item	Review Comment	Navy Response
	a. Soil sampling alone is not sufficient to radiologically survey for LLROs possibly present in excavation floor(s) and sidewalls. Please perform a 100-percent coverage Gamma Walk Over survey of excavation floor(s) and sidewalls to identify LLROs. b. What provisions are being made to ensure that tidally influenced groundwater intrusion does not defeat soil sampling and Gamma Walk Over surveys of the excavation floor(s) and sidewalls? Please provide an explanation in the text. c. Please provide the worked-out equations from MARSSIM used to determine the numbers of data points i.e., number of soil samples, to document the as-left conditions. If the MARISSIM results differ from the sampling frequency presented in this text, please select the most conservative radioactive soil sampling approach.	
162	(References) Please provide to EMB in an electronic format the following documents as separate appendices: I. Aptim Federal Services (APTIM, 2018). After Action Report, Non-Time Critical Removal Action for Solid Waste Disposal Areas Westside, Bayside, and North Point, Radiological Characterization, Building Demolition, and Remediation Installation Restoration Site 12 (Phase III), Former Naval Station Treasure Island, San Francisco, California. August. II. APTIM, 2019. Final Post-Construction Summary Report, Non-Time Critical Removal Action for Solid Waste Disposal Areas Westside Drive, Bayside Drive, and North Point Drive,	Documents were sent in electronic format as follows: An electronic copy was sent to DTSC on 10 Sept 2020. An electronic copy was sent to DTSC/CDPH on 29 Sept 2020.

Item	Review Comment	Navy Response
	Radiological Characterization, Building Demolition, and Remediation, Installation Restoration Site 12 (Phase III), Former Naval Station Treasure Island, San Francisco, California. December	
	III. CB&I Federal Services (CB&I), 2014. Final Post-Construction Summary Report, Installation Restoration Site 12, Solid Waste Disposal Area Westside, Naval Station Treasure Island, San Francisco, California. December	An electronic copy was sent to DTSC on 4 Sept 2020.
	IV. Oneida Total Integrated Enterprises (OTIE), 2018. Final Technical Memorandum: Investigation of Lateral and Vertical Extent of Solid Waste Solid Waste Disposal Areas (SWDAs) Westside, Bayside, and North Point Former Naval Station Treasure Island San Francisco, California. June 11.	An electronic copy was sent to DTSC.
	V. TetraTech EC, 2014. Final Post Construction Summary Report for Solid Waste Disposal Area A&B, Non-Time Critical Removal Action Phase II, and Radiological Removal near Buildings 1128, 1303, and 1306, former Naval Station Treasure Island, San Francisco, California.	As noted in Comment #51, DTSC already has a copy of this report.
163	(Comment #9) Figure 2, “Excavation Areas”: Please include the SWDA boundaries on this figure.	Figure 2 was modified to add the SWDA Westside boundary historical footprint. Also, proposed excavation areas were removed.
164	(Comment #10) Appendix A, Draft Radiation Protection Plan, Section 5.3 Calibration and Maintenance, page 5-2, paragraph 3, sentence 1: “*Calibration records will include the type of instrument and manufacturer; instrument model and serial number, date of calibration, calibration due date, and the name of the worker*	The calibration records will be maintained on site and available for inspection by state agencies. A sentence was added to Appendix A, Section 5.0 that reads (new text in bold), “***Instrument and equipment records are maintained in hardcopy***

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Item	Review Comment	Navy Response
	performing the calibration." Will the calibration records be maintained on site and available for inspection by state agencies? Will the calibration records be included in the Appendices? Will the calibration records be maintained for three years? Please provide details in the text.	***and/or electronic form and will be available on-site for inspection***." Calibration records will be included in the PCSR to document the quality aspects of the radiological data collected. The three-year record retention requirement is set forth in Appendix A, Attachment 1, specifically procedure PR-RP-140.
165	(Comment #11) Appendix A, Draft Radiation Protection Plan, Section 5.4 Response Checks, page 5-2, paragraph 1, sentence 1: "*Instrument response checks will be conducted to assure constancy in instrument response, to verify that the detector is operating properly, and to demonstrate that measurement results are not the result of detector contamination*." Will the Quality Control (QC) response checks be signed/initialed and dated by the performer of the response checks? Will the response checks be reviewed in a timely basis? Will the name and signature of the Project/Site RSO or designee reviewing the survey response checks and the date of the review be documented and available of for inspection by state agencies? Will the Quality Control (QC) response checks be records be maintained for three years? Please provide an explanation in the text.	Appendix A, Section 5.4, 2nd paragraph, was modified to include (new text in bold), "***Response check records include background and source count data to verify instrument response falls within the acceptable range and the initials of the radiation safety technician who performed the check, and are periodically reviewed, signed off, and dated by the Project/Site RSO or designee***." See also response to Comment #164.
166	(Comment #12) Appendix A, Draft Radiation Protection Plan, Section 7.1 General Requirements, page 7-1, paragraph 1, sentence 2: "*Postings will provide information concerning a specific radiological hazard and include the wording: "Caution: Controlled Area" or "Caution: Restricted Area*." Please explain in the text of the document which language will be incorporated in the radiological postings.	Section 7.1, 2nd sentence, was modified to read (new text in bold), "*Postings will provide information concerning a specific radiological hazard and include the wording, "Caution:* ***Radiologically*** *Controlled Area*."

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Item	Review Comment	Navy Response
167	(Comment #13) Appendix A, Draft Radiation Protection Plan, Section 8.4 Atypical Work Site Conditions, page 8-2, paragraph 2, sentence 1: "*RASO will be notified immediately*." Please clarify in the text whether CDPH/DTSC/EMB will be notified of atypical work conditions.	Section 8.4, last paragraph, was modified to read (new text in bold), "*RASO will be notified,* ***who pass on information to stakeholders, as appropriate***."
168	(Comment #14) Appendix A, Draft Radiation Protection Plan, Section 10.1 Discrete Radioactive Source Control, page 10-1, paragraph 1, sentence 5: "*Sources will be stored in locked container*." Please describe radiological postings for this locker.	The radiological postings required for source storage depend on the specific activity and localized dose rates. Appendix A, Section 7.8, describes what constitutes a radioactive material area and how it is posted.
169	(Comment #15) Attachment 1, Radiation Safety Manual, Section A Introduction and Purpose, page 1, sentence 1, paragraph 1: "The Radiation Safety Manual consists of the Gilbane Federal ("Company") policy on radiation safety and the procedures that implement that policy." Please provide EMB in an electronic format the following Gilbane procedure in the appendices: I. Gilbane Federal Policy PO-RP-100, Radiation Safety II. PR-RP-110, Radiation Safety Program Administration III. PR-RP-120, Radiation Dose Limits and Personnel Monitoring IV. PR-RP-130, Radiation Work Planning and Control V. PR-RP-140, Radiation Instruments and Equipment VI. PR-RP-150, Radiological Survey and Sampling VII. PR-RP-160, Radiation and Contamination Control VIII. PR-RP-170, Radioactive Material Control IX. PR-RP-180, Personnel Protection and Emergency Response X. PR-RP-190, Radiological Records, Notifications, and Reports	The listed Gilbane procedures are included in the Radiation Safety Manual, which is Attachment 1 to Appendix A. It was included in the electronic submittal of the Draft Work Plan.
170	(Comment #16) Appendix B, Data Management Plan, Section 2.1 Management of Field Data, paragraph 1, bullet 7: "*QC of Entered Field Data*". Please provide additional details about the QC of field	Appendix B, Section 2.1, Management of Field Data, applies to field data entered into Gilbane's environmental data management system (eDMS).

Item	Review Comment	Navy Response
	data in the text, i.e., whether it will include a review of radiological scan reports to ensure that all appropriate signatures and dates are present for each radiological survey or scan.	Results of radiological analyses of soil samples are entered into eDMS and follow the prescribed process. Radiological survey records follow a separate process described in Appendix A, Section 6.1.
171	(Comment #17) Appendix C, Sampling and Analysis Plan, Executive Summary, Introduction, page ES-2, paragraph 1, bullet 1: "The remedial action objective for the NTCRA per the Action Memo is as follows: • Reduce the potential for human contact with chemically-contaminated soil near the ground surface within the four SWDAs at Site 12 under the current land and utility configuration." Please include reduction of the potential for human contact with radiologically contaminated soil as an objective.	The paragraph describing the RAOs from the Phase I NTCRA was removed. Page ES-1, paragraph 2 was revised to provide the following text regarding the objectives for current Phase IV NTCRA (new text in bold): "***This Phase IV project is considered an extension of the Phase I, Phase II, and Phase III of the NTCRA. The Phase IV-specific objectives are to:*** ***1. Remove existing soil stockpiles and radiological screening yard (RSY) pads that remain from the Phase III NTCRA; and*** 2. ***Restore SWDA Westside areas excavated during Phase I and Phase III of the NTCRA to the pre-excavation grade (at which the adjacent housing is constructed)***."
172	(Comment #18) Appendix C, Sampling and Analysis Plan, SAP Worksheet #17 – Sampling Design and Rationale, page 58, paragraph 1, sentence 1: "*Soil samples will be collected to characterize the as-left chemical and radiological conditions at the lateral and vertical extent of the debris/soil staining removal*". Please read comment #7.	The proposed excavations to remove TPH-contamination is no longer an objective of this work plan; therefore, soil sampling will no longer be performed.
173	(Comment #19) Appendix C, Sampling and Analysis Plan, SAP Worksheet #34 – Verification (Step I) Process Table, page 120:	The first entry was modified as follows (new text in bold): "*Field notes will be reviewed internally, at*

Item	Review Comment	Navy Response
	Please provide additional details about the QC of field data in the text, i.e., whether it will include a review of radiological scan reports to ensure that all appropriate signatures are present.	*intervals as needed during the project and at the completion of the work and placed in the project file.* ***Radiological surveys will be reviewed in accordance with the Radiation Protection Plan (Gilbane, 2020)****. A copy of the field notes will be attached to the final report*." In addition, "*Site RSO or designee, Envirachem/ Gilbane*" was added to the "*Responsible for Verification Column*".
174	(Comment #20) Appendix D, Draft Waste Management Plan, Section 3.2.2 Liquid waste page 3-3, paragraph 1 sentence 1: "*Liquid waste (waste water) generated from excavation activities (e.g., run-off water, contaminated water from decontamination activities), free product, and any decontamination activities will be characterized prior to disposal*." Please explain in the text if the process will include characterization for radiological contaminants.	The referenced sentence was modified to read (new text in bold), "*Liquid waste (waste water) generated from field work activities (e.g., run-off water, contaminated water from decontamination activities), if any, will be characterized* ***both chemically and radiologically*** *prior to disposal*."
175	(Comment #21) Appendix D, Draft Waste Management Plan, Section 4.1 Waste Analysis page 4-1, paragraph 1, sentence 2: "*Wastewater samples will be taken when accumulation of liquids is completed or no later than 90 days after accumulation of liquids commenced to verify hazardous waste has not been generated*." Please explain in the text if the process will include characterization for radiological contaminants.	Appendix D, Section 4.0, Waste Characterization, was modified to read (new text in bold), "*Samples will be collected and analyzed* ***chemically and radiologically*** *to characterize waste for disposal according to waste disposal facility requirements*."
176	(Comment #22) Appendix F, Draft Environmental Protection Plan, Section Introduction, page 1-1, paragraph 1, sentence 3: "*It addresses protection of air, water, and land resources and includes a Storm Water Management Plan (SWMP), Dust Control Plan (DCP), and an Air Monitoring Plan*." Please explain in the text if the process will include mitigation of radiological contaminants.	The referenced sentence was modified to read (new text in bold), "*It addresses protection of air, water, and land resources* ***from chemical and radiological contaminants*** *and includes a Storm Water Management Plan (SWMP), Dust Control Plan (DCP), and an Air Monitoring Plan*."

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Project Site:	Former Naval Station Treasure Island, San Francisco, California		

Item	Review Comment	Navy Response
Comments from:	San Francisco Bay Regional Water Quality Control Board	**Date of Comments** 28 Dec 2020
1	RTC 32: Because excavations will not be conducted, delete Worksheet 15.6 Reference Limits and Evaluation Table (soil characterization sampling for TPH) and potential all other soil characterization sampling Worksheets 15.1 through 15.7.	Worksheets specific to characterization sampling have been deleted. (The remaining Worksheets 15.1 through 15.9) are specific to import material sampling.)
2	Figure 4 Example Illustration of Blast Barriers and Exclusion Zones: Access Point is not labeled at all locations as in Figure 5. Please add Access Point labels at all locations for clarity.	Figure 4 was deleted and its information added to Figure 2, which was modified to label all locations serving as access points to the exclusion zone, similar to Figure 5 (also deleted).
3	Appendix C, Sampling and Analysis Plan: Because excavations will not be conducted, remove Section 17.1 in Worksheet 17.	Section 17.1 has been deleted in Worksheet 17 and replaced with a new Section 17.1 discussing Import Fill Material.
4	Exhibits, Attachments, Appendices: Consider moving Exhibits under Attachments of the Workplan. The Appendices of the Workplan have Attachments. This is confusing. To provide clarity, consider referencing the Appendix in the header of the Appendix and reference the Appendix in the Attachment of the Appendix. This is merely a suggestion and could be applied to future submittals if labor is too extensive to change. Examples for clarification are provided below: • The cover page/title page for Attachment 1 of Appendix F could read “Attachment 1 of Appendix F Environmental Protection Plan.” • The header for Attachment 1 of the Appendix F could read “Attachment 1 CERCLA Stormwater Management Plan of Appendix F Environmental Protection Plan.”	Exhibits, attachments, and appendices to the work plan were reviewed and modified to clarify their relationship to each other.

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Comments from:	California Department of Toxic Substances Control	**Date of Comments**	14 Jan 2021

Item	Review Comment	Navy Response
5	1. In general, the responses to comments are adequate, except where noted below.	Noted.
6	2. The response to Specific Comment #11 notes that monitoring wells will not be affected by Phase IV work activities. Reviewing against the figures in the 2019 Basewide Monitoring Program (BMP) Report, well 12-MW-29, which is part of the monitoring network is not included in Figure 2 of this work plan. In addition, well12-MW-08, which is included in Figure 2 is not part of the monitoring network. Please revise the figures to be consistent with the BMP Report and re-assess to ensure that no wells will be impacted with Phase IV work activities.	Figure 2 was modified to be consistent with the BMP Report. The SWDA Westside RCA fenced area will be backfilled, graded, and re-vegetated as part of this project. The active monitoring wells within that area include 12-MW29 and 12-MW30. Provisions to decommission (and replace) wells as necessary are found in Section 3.2.4.
7	3. Please revise the response to Specific Comment #14 to direct the reader to Section 2.0 of the Dust Monitoring Plan, which describes activities that can create dust in greater detail.	The referenced response to comment was modified as recommended.
8	4. Response to Specific Comment #16: DTSC PM, Peyton Ward, is still missing from Appendix C Worksheet #5 and Shantall Carpenter is still listed as the A&B Labs Project Manager on Appendix C Worksheet #5.	The organization chart presented on WS#5 was revised to present Peyton Ward as a second DTSC PM and to replace Shantall Carpenter with Alisha Hughes.
9	5. Response to Specific Comment #34 states that “waters used to wash vehicles and equipment (excluding for the purpose of decontamination), provided that there is no discharge of soaps, solvents, or detergents used for such purposes” can be discharged to the storm water system. DTSC has consulted with the Water Board, which oversees discharges to the Bay, and recommends that the Navy contain any wash water for vehicles and equipment used on site in case there is contamination and to prevent contamination from tracking onto roads.	Water used to wash vehicles and equipment was removed from the list of non-stormwater discharges that are authorized by the Navy for this project site. Liquid waste will be handled in accordance with the Waste Management Plan in Appendix D to the Work Plan.

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Item	Review Comment	Navy Response
10	6. Response to Specific Comment #37: Appendix F: Attachment 3: Section 1.0 still refers to the Environmental Protection Plan is as Appendix C, not Appendix F.	The referenced citation was corrected.
11	7. The response to Specific Comment #43 describes a footnote, which references Sampling and Analysis Plan (SAP) Worksheet #17, Table 17-1. There are no tables associated with this worksheet. Please correct this reference to point to the appropriate source.	The first footnote for Table 1 of Attachment 3 of Appendix F of the RAWP was updated to reference Naval Installation Restoration Information Solution for the site-specific data. The second footnote containing the reference to SAP WS #17, Table 17-1 was deleted.
12	8. The response to Specific Comment #46 states that the Navy and regulatory agencies will be alerted to deviations in the work plan if they "impact the site immensely." Please revise this to state that the Navy and agencies will be alerted of any deviations that could create a hazard.	The response to comment and related Appendix H text were modified as recommended.
13	9. [Engineering and Special Projects Office (ESPO) Comment 5] DTSC should be notified of the disposal locations for all waste, in advance of disposal. We recommend that DTSC is notified of the disposal locations at least two weeks before the material is transported off site for disposal.	The Navy agrees to notify DTSC greater than 2 weeks in advance of disposal activities commencing as to which disposal facilities will be used.
14	10. [Geological Services Unit (GSU) Comment 2a (Item 110)] a. The comment response states that Exhibit 1 presents the well construction details for well 12-MW08 but Exhibit 1 shows "Stockpiled Phase III Soil and RSY Pads Requiring Screening." The Work Plan should be revised to include the well construction details for the wells that will need to be destroyed and replaced. b. Additionally, the RTC states that well 12-MW30 was removed from Figure 2, which is not correct; however, it is	 The response to comment was modified to read, "*The proposed excavations to remove TPH-contamination is no longer an objective of this work plan. However, every effort will be made to work around existing monitoring wells*." Figure 2 was modified to show the location of well 12-MW30.

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	recommended that the location of well 12-MW30 remain on the figure for future reference even if it is not planned for destruction and replacement.	
15	12. DTSC has the following new comments:	
	a. Please standardize the use of Appendix and Attachment. For example, consistently implement the hierarchy: Main Reports →Appendices → Attachment (to appendices) → Appendices (to attachments to appendices). Please also incorporate the currently named Exhibits into this structure.	Exhibits, attachments, and appendices to the work plan were reviewed and modified to clarify their relationship to each other.
	b. DTSC's industrial hygiene staff have reviewed the novel coronavirus 2019 (COVID-19) activity hazard analysis (AHA) included in response to Specific Comment #9 against the Department's checklist to determine whether DTSC staff will be safe when performing oversight. They have identified numerous inadequacies. Please review the attached checklist reviewing the proposed protocols and address all deficiencies in the final work plan.	The AHA for COVID-19 was modified (see attached). In addition, a Cal/OSHA COVID-19 prevention plan was prepared (also attached).
	c. As discussed on the phone on January 8, 2021, please include the language about well decommissioning in the work plan in case wells are encountered or damaged during fieldwork. In addition, please ensure that the responses to GSU comments about well construction/decommissioning are included in the final RTCs.	The language about well decommissioning was added as Section 3.2.4. The response to comments were modified to include GSU comments about well construction/ decommissioning.
	d. Please restate comments describing the reduced scope of the project in each reviewer's section of the RTCs so those RTC	The responses to comments were modified as recommended.

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	sections stand alone. e. Please uniquely label the RTC sections with the names of the expert groups (e.g., GSU and State-Wide Munitions Response Coordinator) responsible for those comments, as is done for HERO and ESPO.	The RTC sections were modified as recommended.

Comments from:	California Department of Toxic Substances Control, Site Mitigation and Restoration Program	**Date of Comments**	10 Feb 2021

16	1. Comment for the administrative record: Please note that DTSC requires virgin aggregate material used as import fill to be sampled in accordance with the 2001 Information Advisory Clean Imported Fill Material.	The Import Fill Material Sample collection directions in Worksheet 14.1.1 of the SAP has been revised to clarify (new text in bold): "1. Only soil and fine materials **(i.e., sand)** will be sampled." With the exception of asbestos testing, aggregate material larger than sand is not amenable to the analytical extraction and digestion process required for the tests listed on SAP Worksheet #18 for Import Fill material characterization.
17	2. Appendix C – Worksheet #12: Please explain why dioxins and furans have been removed from the list of analytical groups for equipment rinse blanks and matrix spikes and cyanide from the list of analytes for temperature blanks.	Dioxin/Furans (SW8290) have been removed from the list of analytes needed for equipment blank rinsates because the SW8290 was only needed from the now removed characterization sampling. Cyanide was removed as a temperature blank requirement because no samples will be tested for that parameter.
18	3. Appendix C – Worksheet #15: Please note there is an extra "20" in the date in the footnote for the Regional Screening Levels.	The extra "20" has been removed from the RSL footnote on Worksheet # 15.1.

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Item	Review Comment	Navy Response
19	4. Appendix C – Worksheet #19: Please explain why dioxins and furans and lead have been removed from the Analytical SOP Requirements Table.	Dioxin/Furan and lead sampling were only required for the characterization sampling which has also been removed from the Final SAP.

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