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

# FINAL
# REMEDIAL ACTION/NON-TIME CRITICAL REMOVAL ACTION WORK PLAN

Installation Restoration Site 12

Report and Exhibits 1 and 2, Figures, Appendix A through H

Former Naval Station Treasure Island, San Francisco, CA

September 2018

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**DCN: GLBN-0005-F4239-0011**

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September 2018

Prepared for:

**Department of the Navy**
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# TABLE OF CONTENTS

# LIST OF EXHIBITS



# LIST OF FIGURES



# LIST OF APPENDICES

# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| ºF | degrees Fahrenheit |
| µg/kg | micrograms per kilogram |
| 2,3,7,8-TCDD TEQ | 2,3,7,8- tetrachlorodibenzo-p-dioxin toxicity equivalent |
| 4,4-DDD | 4,4-dichlorodiphenyldichloroethane |
| ACM | asbestos-containing material(s) |
| AHA | activity hazard analysis |
| alpha-BHC | alpha-benzene hexachloride |
| ANL | Argonne National Laboratory |
| APP | Accident Prevention Plan |
| BAAQMD | Bay Area Air Quality Management District |
| BaP EQ | benzo(a)pyrene equivalents |
| BCT | Base Closure Team |
| bgs | below ground surface |
| BMPs | best management practices |
| BRAC | Base Realignment and Closure |
| CB&I | CB&I Federal Services, LLC |
| CCSF | City and County of San Francisco |
| CDPH | California Department of Public Health |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| COCs | chemicals of concern |
| CQCP | Contractor Quality Control Plan |
| CSO | Caretaker Site Office |
| DFW | definable features of work |
| DOD | U.S. Department of Defense |
| DQO | data quality objective |
| DTSC | California Department of Toxic Substances Control |
| EPP | Environmental Protection Plan |
| ESS | Explosives Safety Submission |
| FID | flame ionization detector |
| Gilbane | Gilbane Federal |
| HAZWOPER | hazardous waste operations and emergency response |
| HDPE | high density polyethylene |
| HSP | Health and Safety Plan |
| IDW | investigative-derived waste |
| IR | Installation Restoration |
| LBP | Lead Based Paint |
| LLRO | low level radioactive object |
| LLRW | low level radiological waste |
| MARSSIM | Multi-Agency Radiation Survey and Site Investigation Manual |
| mg/kg | milligrams per kilogram |
| MNA | monitored natural attenuation |
| NAVFAC SW | Naval Facilities Engineering Command Southwest |
| Navy | U. S. Department of the Navy |

| | |
|---|---|
| NEDD | NIRIS Electronic Data Deliverable |
| NIRIS | Naval Installation Restoration Information Solution |
| NOSSA | Naval Ordnance Safety and Security Activity |
| NRC | U.S. Nuclear Regulatory Commission |
| NSTI | former Naval Station Treasure Island |
| NTCRA | non-Time Critical Removal Action |
| PAHs | polycyclic aromatic hydrocarbons |
| PCBs | polychlorinated biphenyls |
| pCi/g | picocurie per gram |
| PMO | Program Management Office |
| PVC | poly vinyl chloride |
| QA | quality assurance |
| QAPP | Quality Assurance Project Plan |
| QC | quality control |
| Ra-226 | radium 226 |
| RAB | Restoration Advisory Board |
| RACR | Remedial Action Completion Report |
| RAOs | remedial/removal action objectives |
| RASO | Radiological Affairs Support Office |
| RCA | radiologically controlled area |
| RG | remediation goal |
| RMDP | Radiological Management and Demolition Plan |
| ROICC | Resident Officer in Charge of Construction |
| RPM | Remedial Project Manager |
| RSY | radiological screening yard |
| SAP | Sampling and Analysis Plan |
| SF PUC | San Francisco Public Utilities Commission |
| SOPs | standard operating procedures |
| SSHO | Site Safety Health Officer |
| SSHP | Site Safety and Health Plan |
| SWDA | Solid Waste Disposal Area |
| T&D | transport and disposal |
| TCP | Traffic Control Plan |
| TI | Treasure Island |
| TIDA | Treasure Island Development Authority |
| TPH | Total Petroleum Hydrocarbon |
| USEPA | U. S. Environmental Protection Agency |
| UXO | unexploded ordnance |
| Water Board | California Regional Water Quality Control Board, San Francisco Bay Region |
| WMP | Waste Management Plan |

# 1.0 INTRODUCTION

Gilbane Federal (Gilbane) prepared this Remedial Action/Non-Time Critical Removal Action Work Plan to describe activities to be performed in non-Solid Waste Disposal Areas (SWDAs) within Installation Restoration (IR) Site 12 (Old Bunker Area) and to continue the IR Site 12 non-Time Critical Removal Action (NTCRA) at the North Point SWDA at the former Naval Station Treasure Island (NSTI) in San Francisco, California (Figure 1). Groundwater monitoring in the Gateview Arsenic/Total Petroleum Hydrocarbons (TPH) Area that is within IR Site 12 also will be performed.

Gilbane is contracted through the Naval Facilities Engineering Command Southwest (NAVFAC SW) Radiological Multiple Award Contract, Contract Number N62473-17-D-0005, Contract Task Order F4239. Approval of planning documents and reports will be granted by NAVFAC SW and the State of California as represented by the Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Board San Francisco Bay Region (Water Board).

## 1.1 PROJECT OBJECTIVES

IR Site 12 contains soil and groundwater with elevated concentrations of the following chemicals of concern (COCs).

- Soil
  - Lead
  - Polycyclic aromatic hydrocarbons (PAHs) as benzo(a)pyrene equivalents (BaP EQ)
  - Polychlorinated biphenyls (PCBs) as total aroclors
  - Dioxins as 2,3,7,8- tetrachlorodibenzo-p-dioxin toxicity equivalent (TCDD TEQ
- Groundwater
  - Arsenic
- Radium 226 (Ra-226) (applicable to both matrices)

As stated in the *Final Record of Decision/Final Remedial Action Plan for Installation Restoration Site 12 (Non-Solid Waste Disposal Areas and Non-Radiological) Former Naval Station Treasure Island San Francisco, California* (IR Site 12 Non-SWDA/Non-Radiological

ROD; Navy, 2017), the Navy will address other chemical in soil, although these chemicals were not identified as COCs in the human health or ecological risk assessments. The Navy has identified remediation goals for pesticides and chromium. The other chemicals being addressed in soil are as follows:

- Total Chromium
- Pesticides (4,4-dichlorodiphenyldichloroethane [4,4-DDD] and alpha-benzene hexachloride [alpha-BHC]

The intent of this remedial action/NTCRA is to complete the work to support no further action for COCs in the IR Site 12 non-SWDAs and the North Point SWDA as described in the following documents:

- IR Site 12 Non-SWDA/Non Radiological ROD (Navy, 2017)
- *Action Memorandum/Interim Remedial Action Plan: Non-Time Critical Removal Action for Solid Waste Disposal Areas, Installation Restoration Site 12, Old Bunker Area* (Navy, 2007).

The remedial/removal action objectives (RAOs) are to reduce risk to current and future residents by minimizing dermal contact with incidental ingestion of, and inhalation of soil containing known COCs. The RAOs will be achieved by excavating discrete locations of soil with COCs above the remediation goals (RGs) and disposing of the soil off-site. This includes confirming that Ra-226 soil concentrations are below the release criteria. The RGs and release criteria are discussed in detail in Section 3.0. Groundwater monitoring is associated with this project, but achieving the RAOs for groundwater is not a performance objective. Ongoing groundwater monitoring at the Gateview Avenue area is part of the selected remedy for IR Site 12 documented in the IR Site 12 Non-SWDA/Non-Radiological ROD (Navy, 2017).

A secondary objective of the IR Site 12 non-SWDA remedial action is to collect radiological data representative of post-remedial action or “as-left” conditions of each excavation to better inform the IR Site 12 conceptual site model for non-SWDAs as to the presence and extent of radioactive contamination due to housing construction grading.

## 1.2 SCHEDULE

Planning activities are scheduled to commence immediately upon award. It is anticipated that this Work Plan will be submitted on July 30, 2018. Mobilization to commence field support activities will begin on August 10, 2018 with site work and field implementation starting on August 22, 2018. The field activities are expected to continue for a period of three months with demobilization occurring on December 4, 2018. The Remedial Action Completion Report (RACR) for the IR Site 12 non-SWDA remedial action is scheduled for issue on June 5, 2019.

## 1.3 WORK PLAN ORGANIZATION

This Work Plan has been structured to provide details regarding the three major aspects of this task order: (1) the non-SWDA remedial action, (2) the North Point SWDA NTCRA, and (3) the Gateview Arsenic/TPH Area groundwater monitoring. It is divided into the following sections:

- Section 1.0 Introduction – Describes the project objectives, schedule, and Work Plan organization.
- Section 2.0 Site Conditions – Describes the site conditions and background of IR Site 12, including the physical setting and other regional information, the results of previous investigations, and the nature and extent of contamination.
- Section 3.0 Regulatory Framework – Summarizes the regulatory framework, RGs, and radiological criteria.
- Section 4.0 Project Requirements – Describes the project requirements.
- Section 5.0 Field Support Activities – Describes field support activities including mobilization, community relations, notifications, pre-mobilization meetings, site security, permitting, and utility clearance.
- Section 6.0 Site Work and Field Implementation – Describes the field activities that will be performed.
- Section 7.0 Field Close-Out Activities – Describes the field close-out activities, including site restoration, inspections, and demobilization.
- Section 8.0 Remedial Action Completion Report – Outlines the main features to be included in the RACR for the IR Site 12 non-SWDA remedial action.
- Section 9.0 References – Lists references used in preparing this Work Plan.

The Work Plan also includes the following appendices:

- Appendix A Sampling and Analysis Plan (SAP; includes Field Sampling Plan and Quality Assurance Project Plan [QAPP]) – Details soil, groundwater, and waste sampling

requirements, analytical methods, and quality assurance (QA)/quality control (QC) procedures to be used throughout the project.

- Appendix B Waste Management Plan (WMP) – Documents the requirements in the generation, storage, sampling and analysis, waste profiling, transportation, treatment, and ultimate disposal of all waste for the task order.
- Appendix C Traffic Control Plan (TCP) – Details road closures and other traffic controls to be in effect during remediation activities.
- Appendix D Contractor QC Plan(CQCP) – Addresses lines of communication, technical review procedures, activity documentation, definable work features, quality control 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 technical quality throughout the project.
- Appendix E Radiological Management and Demolition Plan (RMDP) – Describes the process for radiological surveys on interior and exterior surfaces of Buildings 1126 and 1217 prior to demolition, the process required for asbestos and lead based paint (LBP) abatement prior to demolition, and the demolition of the buildings.
- Appendix F Environmental Protection Plan (EPP) – Addresses the controls to be put in place during the remediation activities for the purpose of protecting the environment. It includes a Storm water Plan and Dust Monitoring and Control Plan.
- Appendix G Work Notices – Describes the notices to be delivered to stakeholders that explain the work in plain language yet of sufficient detail to inform residents of what to expect and how the work will be accomplished.
- Appendix H Response to Comments (Final Work Plan only)

In addition, a Health and Safety Plan (HSP) that includes an Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) has been prepared as a separate document for work activities at IR Site 12 (Gilbane, 2018). These plans address health and safety hazards associated with the field activities as well as describing air monitoring and dust control measures.

# 2.0 SITE DESCRIPTION AND BACKGROUND

This section provides a general overview of the site history, site conditions, and land use as documented in the IR Site 12 Non-SWDA/Non-Radiological ROD (Navy, 2017). In addition, this section summarizes previous investigations and the nature and extent of contamination.

## 2.1 FORMER NAVAL STATION TREASURE ISLAND HISTORY

NSTI is located in the City and County of San Francisco (CCSF), California, between San Francisco and Oakland in San Francisco Bay (Figure 1). NSTI consists of two contiguous islands connected by a causeway. Treasure Island encompasses approximately 403 acres, and the southern island, Yerba Buena Island, encompasses approximately 147 acres. TI was constructed of materials dredged from the San Francisco Bay from 1936 to 1937 for the Golden Gate International Exposition of 1939 and 1940. Yerba Buena Island is a natural rock island.

In 1940, the U.S. Department of the Navy (Navy) began leasing TI from the CCSF and later, during World War II, gained full ownership of TI. The island became a major Navy base and was used primarily for training, administration, housing, and other support services to the U.S. Pacific Fleet. In 1993, the Base Realignment and Closure (BRAC) Commission, pursuant to the Defense BRAC Act of 1990, recommended closure of NSTI. The base was closed on September 30, 1997.

## 2.2 INSTALLATION RESTORATION SITE 12 HISTORY

IR Site 12 is located on the northeastern part of the island (Figure 2). During the Golden Gate International Exposition in 1939 and 1940, the majority of the area that now encompasses IR Site 12 was used for vehicle parking. After the Navy took over the lease of NSTI and throughout the 1940s, 1950s, and 1960s, ammunition bunkers were located in the northern half of IR Site 12. From the early 1940s until about 1968, 21 ammunition bunkers were located in the IR Site 12 area. Disposal units and general SWDAs were in the vicinity of some bunkers. The southern part of IR Site 12 also included part of a former runway, general storage, fueling station, and miscellaneous buildings. From approximately 1966 to 1988, four military housing series (1100, 1200, 1300, and 1400 series) were constructed at IR Site 12. The 1100, 1200, 1300 and 1400 series buildings were completed in 1966, 1969, 1974 and 1988, respectively.

IR Site 12 was included in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process in 1988 because of findings in the Final Preliminary Assessment/Site Inspection report (Dames and Moore, 1988). These findings documented the potential for soil and groundwater contamination from debris that may not have been entirely removed during housing construction. The concentrations and distribution of COCs and solid waste within the residential housing areas are uncertain because of the variable distribution of solid waste and COCs resulting from grading operations. In 2002, the IR Site 12 boundary was expanded to include all existing residential areas.

## 2.3 TREASURE ISLAND SITE CONDITIONS

Following is a description of the environmental site conditions at Treasure Island.

### 2.3.1 Winds

The prevailing wind direction for the Bay Area is from the northwest. Wind speed is less than 6 miles per hour more than 50 percent of the time and exceeds 12 miles per hour 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 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 (TriEco-Tt, 2012).

### 2.3.2 Temperature

Temperature at Treasure Island is influenced by the Pacific Ocean and the resulting maritime climate. Temperature data have been collected at the Oakland Museum (the nearest weather station) for a 30-year period of record. The average annual temperature is 59.5 degrees Fahrenheit (°F), the average summer temperature is 64.8 °F, and the average winter temperature is 52.2 °F. The warmest month of the year is usually September (average temperature 74.6 °F). Daily extremes for the period of record are 107 °F (recorded on June 8, 1973) and 26 °F (recorded on December 9, 1972) (Navy, 1987).

### 2.3.3 Precipitation

Precipitation data have been collected at the Oakland Museum for a 30-year period of record. The average annual precipitation is 21.3 inches. The average precipitation by season is the spring is 4.8 inches in spring, 0.3 inches in summer, 4.3 inches in fall, and 11.9 inches in winter. Approximately 90 percent of the annual precipitation occurs from November to April with 19.2 inches of rain. Localized showers are infrequent and storms are generally moderate in duration and intensity. The maximum rainfall recorded in a 24-hour period was 4.74 inches on January 4, 1982.

Mean annual evaporation is 48 inches; the greatest evaporation occurs during July (Navy, 1987).

### 2.3.4 Humidity

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 the spring; however, by summer, it increases when frequent fogs occur, particularly at night or in the morning. Humidity is lowest in the fall, ranging from approximately 50 percent during the day to 70 percent at night (Navy, 1987).

### 2.3.5 Topography, Geology and Hydrogeology

Treasure Island is a relatively flat manmade island, consisting primarily of sediment dredged from the Bay and retained by a perimeter of rock and sand dikes. In general, the soil found is poorly graded, fine-grained sand with occasional discontinuous lenses of silt and clay. The groundwater table is encountered at an average depth of approximately 5 feet below ground surface (bgs) but may be shallower in the removal action areas. Generally, groundwater flow is radial from the center of the island toward the shoreline.

IR Site 12 is flat, consisting of open grassy areas between buildings, paved roads, and parking areas.

## 2.4 LAND USE

IR Site 12 was leased to the Treasure Island Development Authority (TIDA), and TIDA subsequently subleased 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.

Following environmental restoration of the site, the entirety of IR Site 12 will be transferred to the CCSF. Redevelopment plans by the CCSF are described in the *Naval Station Treasure Island Reuse Plan - Public Review Draft* (CCSF, 1996) and *the Treasure Island/Yerba Buena Island Final Environmental Impact Report* (CCSF, 2011).

Redevelopment plans include designated areas for Residential, Open Space, Publicly Oriented Uses, and Shoreline Open Space.

## 2.5 PREVIOUS IVESTIGATIONS, REMOVAL ACTIONS, AND TREATIBILITY STUDIES

Table 10-1 in SAP (Appendix A) Worksheet #10 summarizes the previous investigations completed for IR Site 12 as well as the previous and ongoing removal actions.

## 2.6 EXTENT OF CONTAMINATION

A summary of the extent of COCs in soil and the associated excavations planned at IR Site 12 are presented in detail in SAP (Appendix A) Worksheets #17 and #18.

# 3.0 REGULATORY FRAMEWORK

This section summarizes the regulatory framework, RGs, and radiological criteria associated with this remedial action/NTCRA.

## 3.1 OVERVIEW

The U.S. Department of Defense (DOD) developed the IR Program in 1981 to comply with CERCLA and other federal and state environmental regulatory requirements. The IR Program is specific to military facilities and its purpose is twofold: (1) to identify, investigate, and clean up or control releases of hazardous substances and (2) to reduce the risk to human health and the environment in a cost effective manner. The applicable environmental requirements are in the following programs:

- CERCLA Program
- Petroleum Program
- PCB Program
- Residential LBP program
- Asbestos-Containing Material (ACM) Program
- Radiological Program

As the lead federal agency, the Navy, including the Radiological Affairs Support Office (RASO), is working with DTSC and the Water Board to develop and implement the remedial action/NTCRA. 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 BRAC Cleanup Team (BCT) for NSTI. In addition, the California Department of Public Health (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, the Restoration Advisory Board, the U. S. Environmental Protection Agency (USEPA), and other public groups.

## 3.2 REMEDIATION GOALS

The COCs and their associated RGs are presented in Exhibit 1. The values for the IR Site 12 non-SWDA remedial action COCs are taken from the IR Site 12 Non-SWDA/Non-Radiological ROD (Navy, 2017). The values for the North Point SWDA NTCRA COCs are the same as those

for the non-SWDA remedial action. They are found 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 Memo; Navy, 2007).

**Exhibit 1. Remediation Goals for Soil and Groundwater**

| Constituent | Remediation Goals | |
|---|---|---|
| | Soil (mg/kg) | Groundwater (ug/L)[1] |
| Lead | 400 | -- |
| Total Chromium | 280[2] | -- |
| PAHs as BaP EQ | 0.62 | -- |
| PCBs at total aroclors | 1.0 | -- |
| Pesticide (4,4-DDD) | 2.0[3] | -- |
| Pesticide (alpha-BHC) | 0.077[3] | -- |
| Dioxins as 2,3,7,8-TCDD TEQ | 12 ng/kg | -- |
| Arsenic | N/A | 36[4] |

Notes:

1 TPH does not have a remediation goal for groundwater. Qualitatively, the goal for dissolved TPH will be mass reduction via target cleanup goals in soil (including any measurable free product) to support the numeric remedial goal for arsenic in groundwater.

2 Total chromium is not a COC. However, the Navy will excavate isolated locations with an RBC goal of 280 mg/kg.

3 Pesticides (4,4-DDD and alpha-BHC) are not COCs. However, the Navy will excavate isolated locations with an RBC goal of 2.0 and 0.077 mg/kg, respectively.

4 Goal from Tier 1 Screening-Level Ecological Risk Assessment for Treasure Island (IR Sites 6, 12, 21, 24, 30, 31, 32, and 33), Naval Station Treasure Island, San Francisco, California prepared by SulTech for U.S. Department of the Navy, BRAC PMO West, March 23.

Acronyms:

| | |
|---|---|
| BaP EQ | benzo(a)pyrene equivalents |
| BHC | alpha-benzene hexachloride |
| BRAC PMO | Base Realignment and Closure Program Management Office |
| COC | contaminants of concern |
| DDD | dichlorodiphenyldichloroethane |
| IR | Installation Restoration |
| mg/kg | milligrams per kilogram |
| N/A | not applicable |
| ng/kg | nanograms per kilogram |
| PAHs | polycyclic aromatic hydrocarbons |
| PCBs | polychlorinated biphenyls |
| RBC | risk-based concentration |
| TCDD TEQ | tetrachlorodibenzo-p-dioxin toxicity equivalent |
| TPH | Total Petroleum Hydrocarbon |
| ug/L | micrograms per liter |

## 3.3 RADIOGICAL CRITERIA

The radionuclide of concern is Ra-226. The radiological criteria are given in Exhibit 2.

**Exhibit 2. Radiological Criteria for Ra-226**

| Total Surface Radioactivity[a] | Soil (or Volumetric) Radioactivity[b] | Dose[c] |
|---|---|---|
| 100 dpm/100 $cm^2$ | 1.69 pCi/g | 12 millirem/year |

Notes:

[a] from Table 3 of U.S. Nuclear Regulatory Commission (NRC) Regulatory Guide 8.23, *Radiation Safety Surveys at Medical Institutions* (NRC, 1981); removable surface radioactivity is limited to 20 percent of total surface radioactivity

[b] based on screening level previously used at NSTI of 1.0 pCi/g above background; background assumed to be 0.69 pCi/g from memorandum titled "*Analysis of Gamma Survey and Ra-226 Soil Concentration Data at the Treasure Island Site-Wide Background Areas and the Area 7 Background Reference Area*" (Shaw, 2012)

[c] total effective dose equivalent to an average individual reasonably expected to receive the greatest exposure to residual radioactivity based on USEPA Office of Solid Waste and Emergency Response (OSWER) Directive 9200.4-40, *Radiation Risk Assessment at CERCLA Sites: Q&A* (EPA, 2014); calculated using RESRAD-ONSITE for Windows, Version 7.2 (Argonne National Laboratory [ANL], 2016)

This remedial action/NTCRA will also include radiological controls, surveying, screening, potential object retrieval, characterization, and sampling to ensure worker(s) and community health and safety within the project area footprint(s) as is described in the RMDP.

# 4.0 PROJECT REQUIREMENTS

This section provides information related to the individual requirements to complete the remedial action/NTCRA at IR Site 12.

## 4.1 SAMPLING AND ANALYSIS PLAN

A SAP was prepared and is included as Appendix A to this Work Plan. The SAP includes sampling methods, procedures, and QA/QC requirements to be followed during execution of this task order.

The SAP, which includes a Field Sampling Plan and QAPP was prepared in accordance with the Uniform Federal Policy guiding the development of QAPPs and the DOD Policy and Guidelines for Acquisitions Involving Environmental Sampling or Testing. The SAP was written in accordance with applicable regulatory guidance documents and NAVFAC Environmental Work Instructions. The SAP describes the approach to the remedial action/NTCRA and sampling requirements.

## 4.2 WASTE MANAGEMENT PLAN

A WMP was prepared and is included as Appendix B to this Work Plan. The WMP includes information regarding waste management of liquids, soil, concrete, asphalt, and miscellaneous construction debris to be followed during implementation of project work. The contractual, legal, and risk-management requirements in the generation, storage, sampling and analysis, waste profiling, transportation, treatment, and ultimate disposal of waste are documented in the WMP. Additionally, waste generated during fieldwork will be safely managed and disposed in accordance with applicable laws and regulations.

The WMP covers both wastes to be remediated under this task order and investigative-derived waste (IDW) generated during the remediation activities. It includes:

- a description of the wastes expected by type;
- a description of minimization techniques for reducing the generated quantities of IDW, including recycling activities associated with building demolition (as appropriate);
- a review of applicable federal, state, and local regulatory criteria governing the management of these materials;

- a characterization rationale for solid and liquid waste materials;
- a rationale for on-site management of each expected waste type; and
- waste transportation, treatment, and disposal methods for fieldwork.

## 4.3 TRAFFIC CONTROL PLAN

A TCP was prepared and is included as Appendix C. The TCP details the road closures and other traffic controls to be in effect during remediation activities. This plan includes provisions and notifications of:

- road closures and/or residential parking areas;
- identification of approved truck routes, holding, and queuing areas;
- controlling traffic near the project site (if necessary); and
- site preparation and provisions for use of access roads by use of signage, barricades, signals, flagman, and/or other methods to minimize the impact on daily activities of the Treasure Island community.

## 4.4 CONTRACTOR QUALITY CONTROL PLAN

A CQCP was prepared and is included as Appendix D to this Work Plan. The CQCP describes QC actions and procedures that will be followed during execution of work. The CQCP includes a description of the QC organization, roles and responsibilities, a submittal register, reporting procedures, and a list of definable features of work (DFW) to be performed.

The CQCP follows the three phases of control for each DFW and meets the requirements of the Unified Facilities Guide Specification for QC. The primary function of CQCP is to assure the completed project meets all quality requirements of the contract. Government QA will be conducted during the field effort through reviews and inspections by designated representatives. The CQCP was prepared per the current version of Unified Facilities Guide Specifications (01 45 00.00 20 dated November 2011) 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 functions of contractors, subcontractors, fabricators, suppliers, purchasing and agents, etc.) that involves 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;
- a list of DFWs to be performed separate and distinct from other tasks with separate control requirements.

## 4.5 RADIOLOGICAL MANAGEMENT AND DEMOLITION PLAN

A RMDP was prepared and is included in Appendix E to this Work Plan. The RMDP addresses procedures and methodology for radiological surveys of buildings prior to asbestos and/or lead abatement and demolition activities in sufficient detail to complete all radiological scanning and sampling, associated characterization and demolition of building materials, slabs, footings and all building appurtenances. The overall goal for excavation areas is to collect, document, and report information which would be sufficient for a radiological characterization study. The plan includes details on interior and exterior gamma scanning, alpha/beta contamination surveys, sample collection and laboratory analyses, the types of equipment that will be used, calibration details, how survey units will be setup and classified, and how the building materials will be released and disposed. The plan was prepared using guidance from RASO and the *Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM; DOD et al, 2000). It also includes a section to address LBP and ACM. Due to the age of the buildings, it is possible to encounter both LBP and/or ACM. The RMDP describes the methods to address LBP and/or ACM in accordance with applicable regulations prior to demolition of structures.

## 4.6 ENVIRONMENTAL PROTECTION PLAN

An EPP was prepared and is included as Appendix F to this Work Plan. The EPP includes a storm water plan, a dust control plan, and an air monitoring plan to be followed during implementation of the remedial action activities. Construction best management practices (BMPs) will be implemented to prevent offsite migration of visible and nonvisible pollutants. Construction activities will comply with the requirements of:

- The California State Water Resources Control Board's National Pollutant Discharge Elimination System General Permit (NPDES General Permit) No. CAS000002, "Storm water Discharges Associated with Construction and Land Disturbance Activities" Order Number 2012-0006-DWQ (which amends 2009-0010-DWQ, as amended by 2010-0014-DWQ)
- "San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)" (SFRWQCB, 2007)
- Bay Area Air Quality Management District (BAAQMD) Regulation 6, Rule 1 (BAAQMD, 2007)

## 4.7 WORK NOTICES

Written work notices will be prepared in coordination with TIDA and other stakeholders that will be hand delivered or mailed to all residents in the neighborhood. Work notices, described in additional detail in Appendix G, will describe the work in plain language and be of sufficient detail to inform residents of what to expect and how the work will be accomplished safely with BMPs for the control of soil, groundwater, storm water, dust, petroleum odors, etc. Work notices specific to small work areas will be provided for Navy and TIDA review prior to distribution.

## 4.8 HEALTH AND SAFETY PLAN

An HSP that includes an APP and SSHP has been prepared as a separate document. In accordance with FAR 52.236-13, this plan is site-specific and includes an activity hazard analysis (AHA) for each DFW. The HSP will be amended if appropriate and the AHA will be a "living" document with periodic reviews in the field and subsequent revisions as conditions warrant. A copy of the HSP will be maintained on site.

The APP is intended as guidance for the Site Safety Health Officer (SSHO) on conducting field work, responding to changing conditions, and making professional judgments based on monitoring data and related hazard control measures. As such, the APP identifies the health and safety responsibilities and reporting requirements for project field and office personnel, specifies necessary training, identifies health and safety program plans applicable to the project scope of work, and specifies site-specific hazards and controls.

The SSHP provides a detailed discussion of the potential site-specific physical and chemical or biological hazards associated with the site work and the measures that must be implemented for

protection of the site personnel and the surrounding community. Among other safe work practice measures provided by the APP, the SSHP includes the AHA for each field activity to be conducted, the personal protective equipment that will be necessary, and the emergency response action plan for the site.

# 5.0 FIELD SUPPORT ACTIVITIES

This section describes the activities to be conducted for the remedial action/NTCRA prior to commencing formal construction activities.

## 5.1 PERMITS AND NOTIFICATIONS

Permits and notifications are required prior to initiating various phases of removal action activities. Necessary authorizations will be obtained from the Resident Officer in Charge of Construction (ROICC) and Caretaker Site Office (CSO) for implementing and completing work activities. An annual excavation permit from the California Occupational Safety and Health Administration will be maintained and required notifications will be made before excavation begins. A Dig Permit will be submitted and the San Francisco Public Utilities Commission (SF PUC) will be notified before excavation work begins. Permits will be obtained for connections to necessary services provided by utility companies serving the project area as needed.

## 5.2 MEETINGS

Coordinating efforts will be required with BRAC Program Management Office (PMO), RASO, the ROICC, the CSO, TIDA, and appropriate BRAC BCT members. Timely and open communication with BRAC, RASO, CSO, and ROICC is essential to project success and understanding the protocols of notification and coordination are crucial. A meeting will be coordinated with ROICC prior to initializing field mobilization. Attendees of this meeting will include the Gilbane Project Manager, Site Supervisor and key Gilbane personnel, Navy Remedial Project Manager (RPM), RASO, ROICC, CSO, and other appropriate Navy or project stakeholder personnel. The meeting will address health and safety, site security, scope of work, QA/QC procedures, access to the site locations, scheduling, and other field issues. A project schedule covering field activities will be provided. This meeting may be held in union with the Mutual Understanding Meeting as part of the CQCP.

The meeting will also discuss the lines of communication. For instance, RASO may provide guidance for radiological operations to the Navy and its contractors, but all direction in such matters is ultimately issued by the BRAC contracting officer and/or representative (usually the RPM). CSO personnel will be notified of any issues involving site access, security, facilities, and

environmental compliance. Any health and safety issues or accidents will be reported to ROICC personnel, who provide QA oversight and therefore require timely notification prior to key events taking place.

## 5.3 COMMUNITY RELATIONS

Several community relations activities will be conducted to inform the public of the ongoing remedial activities and to encourage involvement in discussions and the review of relevant documents.

Gilbane will work with the Navy, ROICC, CSO, and TIDA as required to alert residents to upcoming field activities. Work notices detailing project activities and important facts for the community, discussed further in Appendix G, will be distributed as appropriate.

Gilbane will also provide support for RAB meetings to inform and involve the community in the status of the remedial action. Gilbane will provide support by attending the RAB meetings in person and assisting the Navy RPM in the preparation and presentation of a PowerPoint slide show of approximately 30 minutes. The presentation will be provided to the community relations coordinator (coordinator to be determined) in advance of the meetings.

## 5.4 WORK RESTRICTIONS

Work outside regular workday hours, including Saturdays, Sundays, and Government holidays, will not be performed unless permission is granted by the Navy RPM, ROICC or CSO in advance. It is anticipated that work hours for site activities will be Monday through Friday, between the hours of 7:00 A.M. and 4:00 P.M. Work areas will be left in a safe, secure condition when not attended.

## 5.5 MOBILIZATION

Mobilization activities will include site preparation, movement of equipment and materials to NSTI, the construction of temporary facilities and utilities as needed, and orientation and training of field personnel. Trucks, machinery, and equipment will be radiologically surveyed prior to initial use and decontaminated prior to first arrival, if required, and routinely throughout the project in accordance with standard operating procedures, and after completion of remedial activities. Survey records will be maintained onsite. The majority of equipment and materials

will be mobilized to the site on an as-needed basis to minimize storage requirements. IR Site 32 will be used as a radiological screening yard (RSY) (Figure 3).

## 5.6 SITE SECURITY

The Navy worked with TIDA to have Buildings 1126 and 1217 vacated in anticipation of fieldwork. Although not currently scheduled for demolition, Building 1202 is also slated for vacancy due to its location within a portion of the remedial action area footprint. It is anticipated that Building 1202 will be vacant by mid 2018. Buildings 1126 and 1217were secured immediately upon vacancy with security systems to restrict access and provide deterrence from potential break-ins and vandalism.

An appropriate level of 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 excavations and equipment laydown and storage areas. 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.

During active excavation and transport and disposal (T&D) operations, local site access will be controlled by temporary barriers including warning tape and signage. Traffic control will be conducted in accordance with TCP provided as Appendix C. Prior public notice of any road closures will be provided as described in Appendix G.

## 5.7 SITE PREPARATION

The following site preparation activities will be performed, as applicable, at excavation locations.

### 5.7.1 Site Survey

A site survey will be performed prior to and upon completion of field work. A land surveyor, registered in the State of California, will perform an initial survey of site features to establish horizontal and vertical controls; nodes for a sampling grid system in larger excavations (to control the location of subsequent lifts and assist in the collection of confirmation samples); and existing grades. The excavation boundaries will be marked with white pavement-parking spray

paint using solid line corner points with arrows pointing inward and dashed white lines outlining each excavation.

Following completion of excavation activities, and prior to backfilling, each excavation area will be surveyed. The confirmation and pre-excavation survey information will be compared to assess the total volume of excavated soil. The excavation volumes will be used to assist with the determination of the amount of backfill material required. The final grade of the site will be consistent with the pre-construction elevation and will account for removal of structures to ensure proper drainage and aesthetics of the area.

Additionally, a pre-construction photo survey of the existing infrastructure at the project site, including buildings, fences, pavement, walkways, appurtenances, etc. will be conducted so that possible impacts related to field activities can be assessed and appropriate repairs can be made at the end of the project.

For small, discrete excavations, surveying will be accomplished using a combination of a handheld GPS instrument and photographs.

### 5.7.2 Temporary Construction Facilities

Building 570 will serve as the administrative field office. A shipping container, if needed, will be staged at IR Site 32 as a working space and for storage of tools, small equipment, and non-radiological 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.

The following utilities will be used on site during project execution.

- Construction water for dust control (further discussed in Appendix F).
- Communication: Two-way radios and cell phones will be used for on-site communications as required.
- Electrical: Power is available to Building 570. As required, generators fueled by diesel or gasoline will be used for electrical power.
- Potable water: Bottled water or potable water jugs will be provided for site workers.

- Sanitation facilities: Portable toilets and refuse containers will be set up near the work sites. Portable toilets will have non-potable water for hand-washing.

### 5.7.3 Screening and Stockpiling of Soil

IR Site 32 will be used as a radiological screening yard (RSY) to characterize and radiologically screen and stockpile excavated soil as needed to support excavation activities. Laydown pads and soil stockpile areas will be constructed as described in the RMDP (Appendix E).

Screened material may be stockpiled in the RSY if needed while awaiting RASO authorization for disposal. A sign or other physical marker will be used to identify each stockpile. 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. Screened material will not be stockpiled in the event concerns of possible cross-contamination exist. Environmental protection measures (e.g., runoff/erosion control) will be implemented and maintained while the soil is stockpiled. Once approved by the Navy, the soil will be loaded and transported to the waste disposal facility.

Once the RSY is no longer needed, the laydown pads and soil stockpile areas will be deconstructed and the site returned to its pre-use condition. Chemical and radiological sampling will be performed and the area remediated as necessary so the "as-left" state of the site is consistent with its pre-use condition.

### 5.7.4 Equipment and Personnel Decontamination Facilities

A decontamination pad will be constructed as needed adjacent to the exit of the excavation areas. The decontamination pad will be constructed using a minimum of one 20-mil layer of high-density polyethylene (HDPE) or poly vinyl chloride (PVC) liner.

Prior to constructing the pad, the area will be cleared of rocks, debris, and other items that could puncture the liner. An initial radiological survey of the area may be performed to ensure no radiological interference and to establish base-line data for future radiological release of the area. A single-height course of sand bags or other devices will be placed around the perimeter of the decontamination pad to ensure that a bermed sump area is formed and fully contained by the impermeable plastic liner material. The liner will then be placed directly on the ground surface

and the berm material. A minimum of 16-ounce non-woven geotextile fabric will be placed on the top of the liner. A 12-inch layer of ¾-inch drain rock will be placed over the geotextile fabric and sloped such that runoff is conveyed to a sump. Equipment to be decontaminated will drive over the rock layer, not the plastic liner. The purpose of this system is to prevent puncture of the HDPE or PVC liner; thereby preventing contaminated media from coming into contact with the native soil or pavement. In addition, to prevent rainwater from accumulating, the decontamination pad will be covered and secured with sandbags or equivalent during periods of heavy precipitation.

Gilbane will use dry decontamination methods to the maximum extent possible to clean excavators, backhoes, bins, trucks, and associated tools and equipment. Solids collected in the decontamination area will be stored in drums or appropriate containers and characterized for subsequent reuse or disposal. Liquids generated during decontamination activities will be pumped from the sump into an on-site tank for sampling, characterization, and disposal as described in the SAP (Appendix A) and WMP (Appendix B). Personnel decontamination areas may be established at work areas, as required in the HSP.

## 5.8 STORMWATER MANAGEMENT

Storm water management activities, described in detail in the EPP (Appendix F), will include the identification and implementation of BMPs to reduce sources of sediment and other pollutants that may affect storm water discharges.

## 5.9 UTILITIES

It is anticipated that utilities within and surrounding IR Site 12 may interfere with field work. Appropriate utility as-built drawings, will be obtained and reviewed. Gilbane will complete a utility clearance and work with the Navy, TIDA, SF PUC, and other stakeholders to identify and mitigate potential impacts to utilities.

Underground utility clearance will be completed prior to initiating intrusive activities. Efforts to locate and clear utilities will include, as appropriate:

- Field observations of surface expressions (cleanouts, risers, manholes) will be used as guides during the utility marking work;

- Geophysical methods, including electromagnetic induction, magnetometry, and/or ground-penetrating radar, will be used to clear areas of intrusive activity of potential subsurface obstructions prior to soil excavation;
- Proposed limits of intrusive activity and the utility lines in the immediate vicinity, will be marked using color-coded surveyor paint; and
- Underground Service Alert will be notified and a meeting with interested parties that will potentially be affected by the intrusive activities will be scheduled.

Utility line locations will be marked using color-coded surveyor paint and American Public Works Association-approved colors.

Intrusive (i.e., soil disturbing) work will be performed under radiological controls appropriate to the activity. During excavation activities in the vicinity of identified utilities, a construction laborer (spotter) may be used to guide excavation equipment and view excavations for buried utilities as soil is removed. Hard pipes (steel or small-diameter PVC) will be maintained as much as possible during the excavation. Brittle pipes (vitrous clay) will be demolished and replaced (if required). Abandoned utilities (especially transite pipe) may either be removed to a depth of 5 feet and properly disposed or left in place; utilities that are no longer active will not be replaced. Open ends of pipes remaining after sections of pipes have been removed will be permanently plugged using concrete to prevent creating a new subsurface conduit. In the event that an active utility line is broken or damaged, the NSTI utility manager will be contacted and, as appropriate, affected people will be notified. Utilities will be repaired by Gilbane and/or other subcontractors as appropriate. Broken or damaged utilities will be replaced in-kind or with other materials that meet current industry standards (i.e., clay drainpipes may be replaced with acrylonitrile butadiene styrene piping, steel water pipes may be replaced with PVC piping).

Gilbane does not anticipate any planned interruptions to utilities during fieldwork. However, in the event of an unexpected interruption, the outage will be remedied so disruption to site residents is minimal. Hand digging to complete the excavations/sampling may be required to avoid disruption of service. If utilities need to be disconnected to complete field work, Gilbane will coordinate these activities, providing bypass utility service during the remedial action implementation, and replace these utilities upon completion. Connections and/or disconnection of utilities will be coordinated with SF PUC and Navy ROICC and CSO.

## 5.10 TRAFFIC CONTROL

Construction work performed within IR Site 12 may directly or indirectly impact vehicle parking areas, roadways, and pedestrian walkways on NSTI. The TCP is provided as Appendix C.

## 5.11 SITE SAFETY

A trained and qualified SSHO will be onsite during the remedial activities. Work will be performed in accordance with the HSP provided under separate cover.

## 5.12 ENVIRONMENTAL PROTECTION

Work performed under this Work Plan will be conducted in accordance with applicable environmental regulations as discussed in the EPP provided in Appendix F.

## 5.13 BEST MANAGEMENT PRACTICES

BMPs to be implemented for construction activities include, but are not limited to, waste minimization, environmental controls, and safe work practices.

### 5.13.1 Waste Minimization

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 from demolition or excavation, through handling and transport for disposal. For example, building inspections will identify waste streams based on hazardous waste type and the waste will be managed accordingly. Similarly, excavations will be sequenced and managed by COC groupings (e.g., metals, PCBs, etc.) to facilitate RSY screening and subsequent waste characterization and handling. Additional details are provided in the WMP (Appendix B).

### 5.13.2 Environmental Controls

The implementation of environmental controls will be documented via photographic record and through written field notes to demonstrate project compliance with applicable rules and regulations. Additionally, constant evaluation of environmental controls by site management and QC personnel is crucial to ensure site controls are sufficient and appropriate for changing site conditions; controls will be modified as necessary to ensure continued efficacy. Environmental controls are discussed in detail in the EPP (Appendix F).

#### *5.13.2.1 Dust Control and Air Monitoring Reporting*

Gilbane will implement measures to minimize and control dust throughout building demolition, soil excavation, and RSY operation. A water truck or large mister will be used to prevent airborne dust and keep demolition debris and soil moist. A water truck will be used to wet down public roadways used for transport of soil outside of fenced areas. Soil stockpiles will be treated with a soil stabilizing agent that prevents airborne dust due to wind and minimizes runoff during rain events.

Airborne dust will be monitored visually on a continual basis. Visible dust will not be permitted during demolition activities. Demolition, excavation, stockpiling or other dust-generating activities will be halted should visible dust be released into the air. Work will be stopped during high wind conditions, including sustained wind speeds over 25 miles per hour. Dust action levels are presented in the EPP (Appendix F) and will be used as criteria to take action when necessary.

Air monitoring will be conducted at upwind and downwind locations, including during periods of non-activity such as weekends and holidays, to ensure workers and the public are adequately protected from airborne contaminants. COCs and airborne radioactivity will be included as part of the routine monitoring. Air monitoring data will be presented in an air monitoring report submitted every two weeks to the Navy Remedial Project Manager in a format suitable for on-line posting. Any exceedances will be documented in the report. Air sampling descriptions and field activities will be documented in the daily field logs and submitted as part of the daily quality control package to the Navy.

#### *5.13.2.2 Petroleum Odors*

The potential for emission of organic compounds during excavation and soil handling activities will be controlled by spraying excavations and soil stockpiles with water so that they are visibly moist. In addition, the stockpiles will be covered with a soil stabilizer as required. A flame ionization detector (FID) will be used to perform ambient air monitoring for organic compound emissions. Monitoring will be conducted upwind and downwind of the excavation area. In the event that FID monitoring results suggest the need for additional control measures as defined by the criteria presented in the EPP (Appendix F), exposed soil will be covered at the end of each

workday and during periods of heavy precipitation or high winds by a 10-mil liner securely anchored by sandbags. As a contingency measure, odor neutralizers may be applied to open excavations and/or stockpiles.

#### *5.13.2.3 Runoff Control*

Sand bags will be used to divert water runoff from dust suppression activities to collection points away from adjacent storm drains. The RSY laydown pads and soil stockpiles will be constructed with berms to contain rainwater for collection and disposal. The collected runoff water will be sampled and treated, if necessary, prior to discharge. Storm water entry into open excavations will be prevented using temporary berms and the existing storm sewer system used for runoff management over the broader work areas. Hay bales or other typical means of sediment control will be used to prevent sediment entry into storm water inlets.

BMPs will be implemented to minimize the potential for pollution of storm water, including but not limited to, fiber rolls, hay bales, sand bags, and silt fence installation where applicable. Stockpiles will be underlain with plastic sheeting and encircled by fiber rolls and/or hay bales to minimize the potential for runoff.

#### *5.13.2.4 Track-In/Track-Out*

Building debris and excavated soil will be transferred by truck from the building demolition or excavation site to the RSY or off-island disposal facility. Wherever possible, trucks will be kept outside of controlled areas to minimize track-out of soil and debris. Loaded trucks will be tarped and loose dirt and debris cleaned off the truck dovetail and bed rail prior to transport. Transport routes are shown in Figure 4.

### 5.13.3 Safe Work Practices

Workers will receive hazardous waste operations and emergency response (HAZWOPER), radiation, and munitions awareness training. Those involved in demolition work also will be trained in hazardous waste handling and packaging. Workers will be briefed on hazards and controls specific to the planned work in daily safety meetings during and throughout the daily field activities. Safety postings, warnings, and rope barricades will be used to limit access to allow only essential personnel within work areas. Spotters will be used when equipment is in use

near electrical lines and other active utilities or if there is any potential for contact. All workers have the authority and responsibility to stop work when controls are inadequate or imminent danger exists.

The likelihood of unplanned releases of contaminants that could threaten human health or the environment is considered low. In case of emergencies, Gilbane will implement the emergency response measures described in the HSP.

## 5.14 MUNITIONS RESPONSE

Munitions are not anticipated to be present in the remedial action/NTCRA areas. However, if munitions items are encountered, munitions oversight will be required for the remaining duration of the field work. Gilbane will employ a fully qualified unexploded ordnance (UXO) technician who is familiar with the UXO response process as well as Gilbane standard operating procedures (SOPs). Upon identification of UXO, the technician will implement the response plan, immediately evacuating the area of non-essential personnel. Gilbane will work with the Navy to implement the IDIQ line item for UXO clearance operations, prepare the Explosives Safety Submission (ESS) for draft submittal, and work with the project team to gain approval of the ESS through Naval Ordnance Safety and Security Activity (NOSSA). After approval is gained, Gilbane will implement the agreed upon appropriate munitions oversight and/or screening measures for the remaining duration of the field work.

Gilbane will employ a fully qualified UXO technician who is familiar with the UXO response process as well as Gilbane SOPs. Upon identification of UXO, the technician will implement our response plan, immediately evacuating the area of non-essential personnel. Gilbane will work with the Navy to implement UXO clearance operations, prepare the ESS for draft submittal, and work with the project team to gain approval of the ESS through NOSSA. After approval is gained, Gilbane will implement the agreed upon appropriate munitions oversight and/or screening measures for the remaining duration of the field work.

## 5.15 ASBESTOS CONTAINING MATERIAL AND LEAD BASED PAINT

Due to the age of the buildings, it is possible to encounter both LBP and/or ACM. It is assumed ACM will be present in materials including, but not limited to, pipe insulation, wallboard,

mastic, flooring, and roofing materials. The methods to address LBP and/or ACM in accordance with applicable regulations prior to demolition of structures are described in the RMDP (Appendix E).

# 6.0 SITE WORK AND FIELD IMPLEMENTATION

This section describes the field activities that will be performed once project plans have been approved and the Navy has provided the notice to proceed.

## 6.1 IR SITE 12 NON-SWDA REMEDIAL ACTION

Up to 4,000 bank cubic yards of soil will be excavated from 58 discrete locations and two building demolition footprints, and screened, transported, and disposed of as appropriate. See Figure 2. For planning purposes, the 58 discrete locations are assumed to each measure 10 feet wide, 10 feet long, and range from 4 to 10 feet deep. The building demolition footprint of Building 1126 measures 80 feet wide and 170 feet long while the footprint of Building 1217 measures 80 feet wide and 130 feet long.

Field activities will begin with preparation for building demolition. Once the buildings are demolished and debris removed, the soil beneath the building footprints will be excavated. Concurrently a separate crew will conduct the soil excavations, confirmation sampling, and backfilling activities at the 40 discrete locations. Radiological screening and waste characterization of excavated soil at the RSY will support excavation activities. See the RMDP (Appendix E).

### 6.1.1 Preperation of Nearby Residential Buildings

The close proximity of the work to nearby residential buildings demands the highest level of coordination, communication, and accommodation. Gilbane's focus will be to minimize disruptions to the neighbors. Street closures will be minimized and Gilbane will provide measures to limit the impact of dust to the residential buildings that could be impacted by the excavation and remedial activities as described in the EPP (Appendix F).

The blue concrete playground structure and adjacent tree near Halyburton Court area will need to be removed and will not be replaced following field work efforts. Additionally, should the large sandbox in this area need to be removed, it also will not be replaced.

### 6.1.2 Building Demolition

Demolition of the structures, appurtenances, concrete foundation slab, and asphalt will be conducted in accordance with the RMDP (Appendix E).

### 6.1.3 Pre-Excavation Soil Boring

A direct push rig (or equivalent) will be used to collect a vertical core boring at the discrete locations to be excavated. The soil core will extend beyond the soil COC exceedance depth. The analytical results will be used to delineate the vertical extent of the excavation to ensure the COC-containing soil is removed, and as a confirmation sample in accordance with the SAP (Appendix A).

### 6.1.4 Excavation

The initial lateral and vertical extent of each excavation is dictated by historical sample analytical results (Figure 2). Excavation sidewalls will be cut vertically for excavations shallower than 4 feet. Deeper excavations will be sloped or benched. Excavated soil will be direct loaded, where possible, into a dump truck staged next to the excavation, but outside the controlled area, and transported to the RSY. A conditional radiologically controlled area (RCA) will be established during loading activities and released once loading activities are completed. A water truck will be used to mist the soil with water during excavation, screening, and segregation activities to minimize the potential for dust.

### 6.1.5 Saturated Soil

If groundwater is encountered, rather than dewatering, saturated soil will be placed onto a plastic-covered area adjacent to the excavation to allow water to drain back into the excavation and the soil worked or turned to allow it to dry prior to transport. These temporary laydown areas will be constructed using a 60-mil HDPE welded liner to protect existing soil from contaminants. The perimeters of the laydown areas will be bermed to contain water. Additionally, the excavator may be equipped with a perforated “mud” bucket to allow excess water to drain back into the hole before moving the material. Appropriate environmental controls will be applied to mitigate potential contaminant release and cross contamination during soil draining. Other than temporarily placing soil immediately adjacent to an excavation, either while waiting to be loaded into a truck or allowing saturated soil to drain and dry, areas outside the RSY will not be used for

soil laydown. The RSY pads may also function as soil drying pads. To avoid tracking material outside the excavation area, loose, muddy soil will be air dried to a damp state (based on visual observation) at the excavation site prior to transport to the RSY. All dump trucks transporting soil to the RSY will be lined and tarped.

Oversized soil and debris, if encountered, will be segregated from the soil and screened separately for proper disposal. Debris may include clay balls, rock, small pieces of asphalt, metal objects, plastic, glass, or other similar waste materials.

When the initial lateral extent of each excavation has been reached, confirmation samples will be collected from the sidewalls. Soil borings collected prior to excavation will serve as confirmation samples for vertical extent (see Section 6.1.3). If RGs for every COC are not achieved at the planned limits of excavation, excavations, including those previously backfilled, will be extended laterally or vertically until sample results confirm COC concentrations, including Ra-226, are below the RGs. Excavations may also be extended based on consultation with the Navy if there is visual confirmation of debris or if the soil is found to contain elevated radioactivity (in the form of elevated gamma activity). For sidewall exceedances, an additional 1-foot lateral step-out will be excavated the length of the wall up to 5 feet on either side of the sample location. For floor exceedances, an additional 1-foot vertical step-down will be excavated across a 5-foot by 5-foot floor area centered on the sample exceedance. The excavation step-out and step-down process will repeat until confirmation samples indicate COC concentrations are below the RGs.

Excavated material will be hauled off site for disposal after waste profile sampling, landfill waste acceptance, and waste profile approval as described in the WMP (Appendix B).

For small excavations (i.e., a single sample location exceeding the RGs), the excavation will be backfilled immediately to minimize neighborhood disruption. For larger excavations (i.e., multiple sample locations exceeding the RGs), the excavation will remain open pending results from confirmation sampling. For both safety and security, plastic water-filled jersey barriers will be placed around open excavations left unattended. The barriers will be surrounded by fencing with privacy fabric and posted with construction signs. Where warranted, radiological postings will be positioned so as to be visible to workers in accordance with the RMDP (Appendix E).

### 6.1.6 Possible Unknown Site Features

If any leach field lines, sumps, vaults, or other underground conveyances or containers are found during excavation activities, Gilbane and the Navy will discuss the situation and agree on an approach to properly decommission the feature. Options will include removal and backfilling with clean material where possible or the use of pressure-grouting equipment to inject grout/cement or neat cement into the feature where excavation is not feasible.

### 6.1.7 Confirmation Sampling

To demonstrate that soil exceeding the RGs has been removed, confirmation samples will be collected from the excavation floor and sidewalls as well as at suspect locations (e.g., visually discolored soil, highest gamma scan reading), if any, in accordance with the SAP (Appendix A). Four confirmation sidewall soil samples and one bottom soil sample will be collected for analysis from each excavation location to confirm and characterize the soil of the excavation areas. The results of the pre-excavation soil core samples (Section 6.1.3) will be used in lieu of the bottom sample. Pre- and post-gamma static readings will be collected where practical and safe to do so. For large excavations, samples will be collected every 50 linear feet of sidewall and in each area larger than a 50-foot by 50-foot survey grid of the excavation bottom. Step-out samples from over-excavated areas will be collected laterally once every 2 linear feet of sidewall and vertically once from each additional 2-foot by 2-foot area of excavation bottom. Where there is standing water, material from the desired sample location will be removed from the excavation using the excavator bucket or equivalent. A grab sample will be collected from the material once it has been allowed to drain.

Soil samples will be collected using inert sampling tools (disposable plastic scoops or stainless steel trowels) and placed in laboratory-provided sample containers. In the case of unshored/unsloped excavations deeper than 4 feet, soil samples will be collected utilizing the backhoe or excavator bucket. The operator will remove a relatively intact portion of the bottom or sidewall to provide the sampler sufficient material to safely collect the sample for analysis. Samples will be labeled, placed in appropriate laboratory-supplied, clean sample containers wrapped in re-sealable plastic bags, and placed on ice in an insulated cooler for transport to the analytical laboratory following standard chain-of-custody procedures. A DoD Environmental

Laboratory Accreditation Program and California-certified analytical laboratory will be used to analyze the samples for the COCs, including Ra-226, appropriate to the excavation from which the samples were collected and the sample results compared to the RGs.

Note that when saturated conditions are encountered in an open excavation and the pre-excavation soil cores are insufficient, the confirmation survey will be accomplished either using the excavator arm/bucket or by using a cherry picker to place the surveyor over the excavation to drop a pole to the excavation bottom.

The SAP (Appendix A) presents additional details on the confirmation sampling program, including: sample design; sample procedures; data quality objectives (DQOs); lists of analytes; appropriate sample containers to be used and volumes to be collected for each analytical suite; laboratory reporting limits; data handling; data validation; and database management.

### 6.1.8 Radiological Characterization

Radiological characterization will be completed in accordance with the RMDP (Appendix E) once confirmation sampling demonstrates that COCs are below the RGs. Gilbane possesses a radioactive materials license No. 7948-07 from the State of California that allows the performance of radiological survey and sampling, as well as the radioactive material handling that is required. Because IR Site12 is a radiologically impacted area, all field activity elements, include building demolition, soil excavation, confirmation sampling, and waste management will be performed under radiological controls appropriate to the activity. Gilbane will enter into a Memorandum of Understanding with the Navy and other radioactive material licensees at NSTI to ensure proper interfacing of radioactive material handling responsibilities. Corporate-level radiation safety SOPs will be used to implement field work. These SOPs provide controls necessary for radiologically safe operations essential to data quality. In situations involving ancillary radiological activities or to further augment the corporate-level SOPs, work instructions may be prepared to facilitate a specific activity. Work instructions will be provided to the Navy for review and approval. Copies will be maintained on-site during radiological work activities and will be available for review by regulatory agencies.

## 6.2 NORTH POINT SWDA REMOVAL ACTION

Concurrent with the IR Site 12 non-SWDA remedial action, 4,000 bank cubic yards of soil within the IR Site 12 NTCRA at the North Point SWDA will be excavated, radiologically screened, and disposed of as Class I CA hazardous waste. See Figure 3 for proposed excavation boundaries. The excavated area will be backfilled and the site restored. As part of the removal action, approximately 4,000 bank cubic yards of radiologically screened soil already staged at IR Site 32 also will be transported and disposed of as Class I CA hazardous waste. The removal action will be performed consistent with previously approved work plans (e.g., CB&I Federal Services, LLC [CB&I], 2015).

### 6.2.1 Soil Excavation

Soil excavation will involve handling and processing of the following three categories of soil:

- Impacted soil - Soil that is impacted with radiological and/or chemical contaminants, or with UXO. This soil may be present at previously identified locations with elevated sample results.
- Buffer backfill - Clean import fill (non-impacted) placed as backfill during previous removal actions and is located within one foot of the original excavation bottom or sidewall. Based on its proximity to impacted soil, up to 1-foot of buffer backfill soil will be radiologically screened with the intention to reuse as backfill material. Chemical characterization for this buffer material is not required as a result of pre-existing confirmation sample results showing that sidewalls met RGs.
- Clean backfill - Clean import fill (non-impacted) placed as backfill during the site restoration phase of previous removal actions and is located within the interior portions of the backfilled excavation (i.e., not including the 1-foot buffer). Clean backfill will be stockpiled separately for reuse as backfill material.

Excavations of impacted soil will be extended to incorporate existing areas known to exceed the RGs or radiological screening criterion. The planned excavation depth is established as 4 feet bgs based on the technical specifications in the historical grading plans implemented during construction of IR Site 12 housing (Navy, 2007). Low level radioactive objects (LLROs) containing Ra-226 are anticipated to be co-located with debris and excavation will continue until debris has been removed. If debris is encountered, confirmation sample results are above the RGs or the radiological screening criterion at the extent of the planned excavation footprint, the depth or lateral extent of excavation may exceed the 4-foot bgs depth following consultation with the Navy. Over-excavations may be conducted following close coordination with the Navy.

Excavation of impacted soil may cease prior to reaching the maximum depth prescribed in the Action Memo (Navy, 2007) of 4 feet bgs if visible debris is no longer observed.

Impacted soil will be excavated in concert with in-process gamma scans, loaded onto dump trucks for transport, and transferred to the RSY for radiological screening in accordance with the RMDP (Appendix E). Large debris may be segregated to separate staging areas within the immediate work area for further evaluation. Where possible, *in-situ* soil gamma scans (i.e., within the excavation) will be conducted to identify potential radiological anomalies prior to loading impacted soil for transport to the RSY. If saturated soils or groundwater is encountered, the soil will be excavated and placed on adjacent pads or equivalent in preparation for radiological surveys.

### 6.2.2 Saturated Soil

The depth to groundwater ranges from approximately 3 to 5 feet bgs in the IR Site 12 area. Tidal influence will cause fluctuations in groundwater levels, especially close to the perimeter, and excavations may fill with rainwater during storms. Excavations will be dewatered as necessary and to the extent practical to access excavation bottoms and sidewalls to safely remove soil that exceeds the RGs and/or screening criterion and inspect for debris or evidence of past disposal activities. Given the location of IR Site 12 next to the San Francisco Bay, it is not anticipated that excavations can be fully dewatered. Excavations will proceed using best management procedures and only smaller areas will be opened one at a time to avoid collection of large volumes of surface and ground water. Consequently, only smaller excavations are planned for dewatering as necessary. If excavations containing known elevated COCs or Ra-226 require dewatering to meet the RAOs, excavation will be planned around lower tide cycles. Collected water will be contained in tanks or equivalent and processed prior to disposal.

Surface water including rainwater collecting on RSY pads or ponding water from low spots within the project site will be sampled for disposal in the sanitary sewer. Water from excavations requires approval of sampling results by RASO prior to disposal.

Although not expected, water generated from dewatering activities, if collected or containerized, will be subject to the storage and treatment requirements described in the WMP (Appendix B).

### 6.2.3 Confirmation Sampling and Analysis

Confirmation soil sampling will be conducted in completed excavations and the samples analyzed for the COCs as described in the SAP (Appendix A) Worksheets #17 and #18. Chemical confirmation samples collected and analyzed for the full set of COCs (lead, PCBs, PAHs, dioxin/furans) will be used to support the final site no further action decision.

Initially, the soil sample will be analyzed for the primary COC in the SWDAs (lead). If the result exceeds the RG, then a step-out excavation will be performed. If the step-out result does not exceed the RG, then the same soil sample will be analyzed for the other COCs at the SWDA (i.e., PCBs, PAHs, and dioxin/furans). If other COCs exceed their respective RGs, then a step-out excavation will be performed. A minimum of 25 percent of the samples will be analyzed for dioxins/furans, with analyses biased to sampling locations where there is visual confirmation of debris or ash layers that suggest potential dioxin contamination.

If a confirmation sample location is below groundwater or standing water in an open excavation and the pre-excavation soil cores are insufficient, the confirmation survey will be accomplished either using the excavator arm/bucket or by using a cherry picker to place the surveyor over the excavation to drop a pole to the excavation bottom.

Inspection and clearance of the final excavation footprint for waste materials and debris associated with SWDAs will be conducted and documented.

### 6.2.4 Radiological Characterization

Radiological characterization will be performed in accordance with the RMDP (Appendix E). Soil samples will be collected when the planned extent of excavation is reached.

### 6.2.5 Low-Level Radioactive Object Management

There is a possibility of encountering LLROs (i.e., discrete radioactive sources) in soil and debris. The goal is to identify LLROs in the excavation prior to moving the soil onto an RSY pad. Areas exhibiting discrete areas of elevated gamma count rate readings will be investigated in accordance with the RMDP (Appendix E). If identified and recovered, LLROs will be packaged and transported per applicable U.S. Department of Transportation regulations and site-specific work instruction to a designated Radioactive Materials Storage Area consistent with the

Memorandum of Understanding between contractors at NSTI. The Navy will be informed of LLROs encountered as soon as practical. Following safe removal of the accessible LLROs, work will resume at the site following approval of the Project/Site Radiation Safety Officer.

## 6.3 GATEVIEW ARSENIC/TPH AREA GROUNDWATER MONITORING

The Gateview Arsenic/TPH Area in IR Site 12 (Figure 5) is contaminated by TPH (free product and dissolved phases) in soil and groundwater and dissolved arsenic in groundwater. The TPH in soil and groundwater at the Gateview Arsenic/TPH Area is located with, and is believed to contribute to, the elevated concentrations of dissolved arsenic in groundwater. Mass reduction of TPH in soil was conducted in 2017 per the *Work Plan Time Critical Removal Action Installation Restoration Site 12* (CE2Kleinfelder, 2016). The current phase of work addresses groundwater only.

Groundwater monitoring will be performed in accordance with the *Final Interim Groundwater Monitoring Plan, Naval Station Treasure Island, San Francisco, California* (PRC Environmental Management, Inc., 1997) at installed wells in the Gateview Arsenic/TPH Area. Groundwater elevation and sampling data will be collected in accordance with SAP Worksheet #14. Groundwater samples will be collected and analyzed in accordance with SAP (Appendix A) Worksheets #17 and #18. TPH concentrations and monitored natural attenuation (MNA) parameters in groundwater will be evaluated against the criteria presented in the SAP (Appendix A) Worksheet # 15.15 through 15.18.

### 6.3.1 Groundwater Elevation Measurement

Prior to sampling the monitoring wells, depth to groundwater will be measured using an electronic water level meter. Depth-to-groundwater measurements along with monitoring well elevations will be used to calculate groundwater elevation, flow direction, and gradient.

### 6.3.2 Groundwater Sampling

Groundwater samples will be collected using low-flow (minimal drawdown) purging and sampling methodology, as described in the NOREAS Field SOP FS-101 provided in Attachment A of the SAP (Appendix A). Monitoring wells will be purged using bladder pumps. For wells that have diameters smaller than 0.75 inches, a peristaltic pump with new or dedicated tubing

will be used for purging and sampling. Additional information regarding groundwater sampling locations, sampling frequency, sampling procedures, and analytical requirements are summarized in SAP Worksheet #14 (Appendix A). Inspections to be conducted during the site remediation of IR Site 12 are described in the CQCP (Appendix D).

### 6.3.3 Quality Control Samples

Along with the primary groundwater and soil samples, field quality control (QC) samples will be collected during monitoring activities. Field QC samples will include duplicate samples, equipment rinsate samples, source-water blanks, and trip blanks, as described in the SAP (Appendix A).

### 6.3.4 Groundwater QC Samples

Field duplicate samples will be collected during groundwater sampling. Duplicate samples will be collected at a rate of 10 percent of the total number of primary samples and will be analyzed for the same parameters as the corresponding primary sample. During groundwater sampling, duplicate samples will be collected at the same time as the primary sample by collecting additional containers, as described in SAP Worksheets #19 and #20 (Appendix A).

Equipment rinsate samples will be collected from all non-dedicated sampling equipment at a rate of one sample per day of sampling. Each equipment rinsate will consist of analyte-free, reagent grade water collected from a final rinse of sampling equipment after the decontamination procedure has been performed. The purpose of the equipment rinsate is to evaluate the effectiveness of the decontamination procedure and potential for cross-contamination during sampling collection.

Along with the equipment rinsate samples, a source-water blank sample will be collected. A source-water blank sample will consist of analyte-free, reagent-grade water provided by the laboratory for use as the final rinse step in the decontamination process. Source-water blank samples are used to verify whether the water used for the equipment final rinse might be contributing to the analytes detected in the primary samples.

Trip blank samples will accompany groundwater samples to the laboratory. Trip blanks will consist of three 40-milliliter glass vials filled with analyte-free, reagent-grade water provided by

the laboratory that will be placed in each of the coolers containing samples to be analyzed for VOCs. The purpose of the trip blank sample is to assess the potential for the primary samples to be contaminated from outside sources during transport or to assess if cross-contamination potentially occurred between the samples during shipping.

# 7.0 FIELD CLOSE-OUT ACTIVITIES

This section describes the activities to be performed upon completion of the site work including, site restoration, inspections, demobilization, and monitoring efforts.

## 7.1 SITE RESTORATION

Any utilities disturbed by the excavation activities will be replaced, capped, and/or repaired. Excavations will be backfilled to match the existing grade using imported fill material; and the fill compacted based on the planned use of each area once confirmation sampling criteria have been met.

For excavations in which groundwater is present, with Navy concurrence, radiologically cleared recycle fill materials (recycled concrete from demolished building foundations reduced to less than 12 inches diameter for reuse) and/or crushed rock/gravel will be placed as bridging material to approximately 3-5 feet bgs (depending on water level). A geotextile fabric (or equivalent) will be placed over the bridging material.

For excavations where groundwater is not present, or where bridging material has been used, backfilling will proceed using uncontaminated fill material meeting the *Information Advisory: Clean Imported Fill Material* (California Department of Toxic Substances Control, 2001) criteria. The fill material will be placed in the excavation area in 18-inch lifts and compacted as required based on site restoration requirements specific to each location. Where appropriate, disturbed areas will be revegetated with the dominant native plant species observed at the location prior to initiating the excavation.

If existing roadways need repair, aggregate base may be utilized under the re-constructed roadways. AB will be placed in 8-inch maximum lifts. Compaction will meet 95 percent maximum dry density.

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 hydro seeding 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.

## 7.2 INSPECTIONS

Inspections will be conducted as described in the CQCP (Appendix D).

## 7.3 DEMOBILIZATION

Earthwork equipment and personnel will be demobilized as activities are completed. Radiological surveys will be performed of vehicles and equipment prior to their release from the project. Low level radioactive waste (LLRW) and mixed waste will be transferred to the Navy's LLRW basewide contractor. Demobilization will include the disposition of government-owned property, if any; decontamination and removal of equipment, tools, and supplies; removal of temporary fencing, traffic control devices, signs, storage containers, portable toilets, and refuse containers. Office and storage trailers will be disconnected from utilities, removed, and returned to the rental company. The equipment storage and laydown areas will be inspected to verify that project-related equipment, trash, and debris have been collected and properly disposed. A final site inspection will be held by the Navy, Gilbane, and other stakeholders as may be required.

# 8.0 REMEDIAL ACTION COMPLETION REPORT

After the final inspection, Gilbane will prepare a RACR that describes in detail the IR Site 12 non-SWDA remedial action. The RACR will become the primary reference document for demonstrating remediation of all chemical contamination within IR Site 12 non-SWDAs has been completed. The RACR will be certified by an authorized Navy representative. This document will be provided to the Navy in preliminary (internal) draft form for initial review, followed by draft, draft final, and final versions for review and comments. The draft final version will incorporate resolved regulatory agency comments.

The RACR will include at a minimum, the following items:

- Site conditions and background
- Summary of work defined in the work plan and certification of the work performed
- Historical removal action activities
- Remedial Action construction activities
- Explanation of modifications and/or field change requests
- Construction monitoring and excavation confirmation testing results
- Description of site conditions and delineated excavations prior to backfill
- Surveying and site restoration
- Demonstration of completion
- Community involvement
- Certification statement
- Conclusions and recommendations
- Data tables
- Radiological screening and systematic sampling data packages capable of supporting characterization surveys
- Munitions oversight/screening, if performed
- Figures
- References
- Appendices

The appendices will include, but are not limited to, the Record Drawings (survey), photographs, waste manifests, field sampling logs, laboratory analytical results, data validation reports, permits, certificates of disposal/destruction/recycling, and response to agency comments on the draft report. The Contractor will provide a copy of all load tickets for construction material including import backfill soil and waste disposal in the contract closeout report.

Data packages containing detailed sample results will be prepared as the project progresses and will be submitted to the Navy for review and concurrence. The data packages will be prepared as "stand-alone" packages to allow independent review and verification of results. If desired, a summary letter and CD containing the detailed results can be provided to interested stakeholders (e.g., DTSC, CDPH, and/or the Water Board).

Two types of data packages will be prepared. A post-remedial action data package will be prepared for each excavation site that includes post-excavation data from the "as-left" excavation floor and wall surfaces. Waste characterization data packages will be prepared for demolition debris from each building and for each laydown pad of excavated soil. The package will demonstrate suitability of the waste for disposal as LLRW or as non-radioactively contaminated waste. Concurrence from the Navy will be obtained prior to transport of the material off-island to an approved disposal facility.

Tabular and spatial data and environmental restoration program documentation will be submitted to the Naval Installation Restoration Information Solution (NIRIS) system and documented within the RACR. Analytical data generated by the laboratory will be reviewed by the Project Chemist and validated in accordance with the SAP, prior to submittal to NIRIS. NIRIS data submittals will be coordinated with the Command NIRIS Regional Data Manager (RDM) for inclusion into NIRIS. Relevant environmental tabular data will be submitted, including confirmation sampling results, using the NIRIS Electronic Data Deliverable (NEDD) format as outlined in the current NEDD SOP. Appropriate NEDD tables will be identified to populate and approval will be obtained from the Navy RPM to ensure completeness. Stockpile sampling results and waste water sampling results used to classify excavated soil and waste water for

disposal purposes are not required to be and will not be submitted to NIRIS. Spatial information will be submitted in accordance with current Non-NEDD Deliverable Submittal Guidelines.

Groundwater monitoring will be reported in stand-alone reports while the follow on work for the NTCRA excavation will be documented as an appendix to the RACR.

# 9.0 REFERENCES

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# FIGURES


**IR Site 12 Non-SWDA Remedial Action/ SWDA Removal Action**
Former Naval Station Treasure Island
San Francisco, CA

**Figure 1**
Treasure Island Location Map

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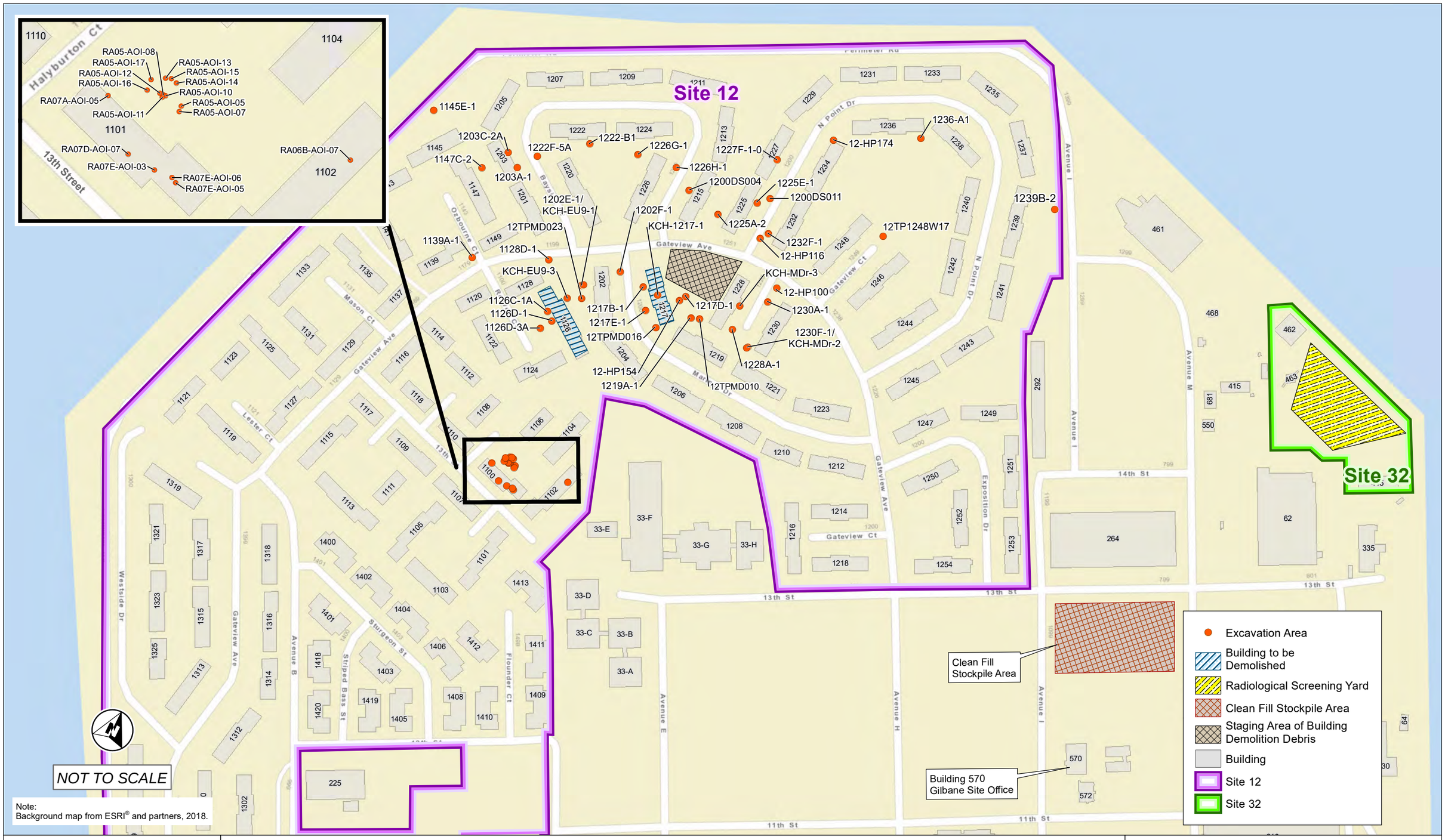


**IR Site 12 Non-SWDA Remedial Action/**
**SWDA Removal Action**
Former Naval Station Treasure Island
San Francisco, CA

**Figure 2**
IR Site 12
Non-SWDA Remedial Action Map

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NAVFAC Naval Facilities Engineering Command

**IR Site 12 Non-SWDA Remedial Action/ SWDA Removal Action**
Former Naval Station Treasure Island
San Francisco, CA

**Figure 3**
IR Site 12 North Point
SWDA NTCRA Map

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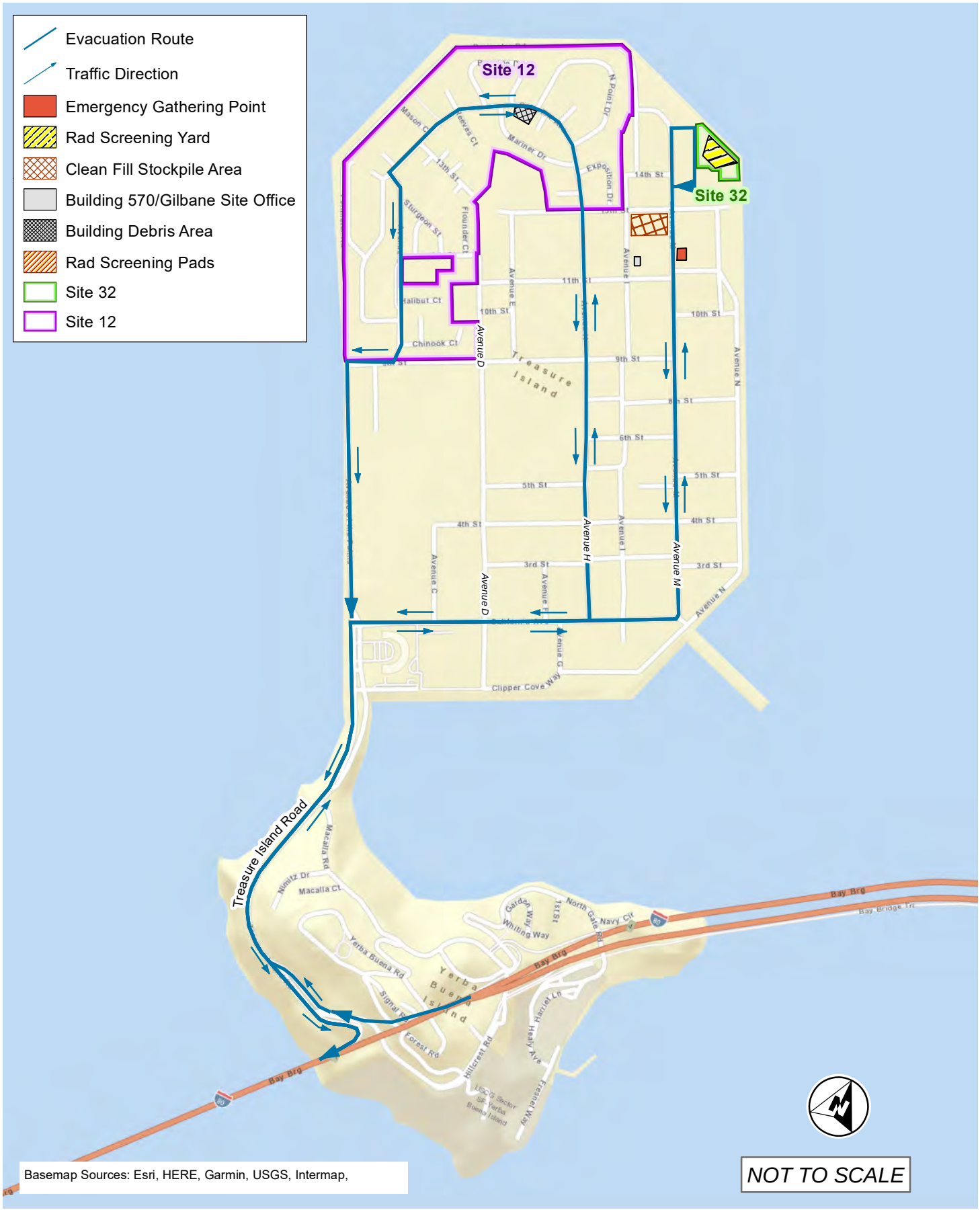


NAVFAC Naval Facilities Engineering Command

**IR Site 12 Non-SWDA Remedial Action/ SWDA Removal Action**
Former Naval Station Treasure Island
San Francisco, CA

**Figure 4**
IR Site 12
Truck Route Map

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NAVFAC Naval Facilities Engineering Command

**IR Site 12 Non-SWDA Remedial Action/ SWDA Removal Action**
Former Naval Station Treasure Island
San Francisco, CA

**Figure 5**
Gateview Arsenic/TPH Area
Groundwater Monitoring Well Map

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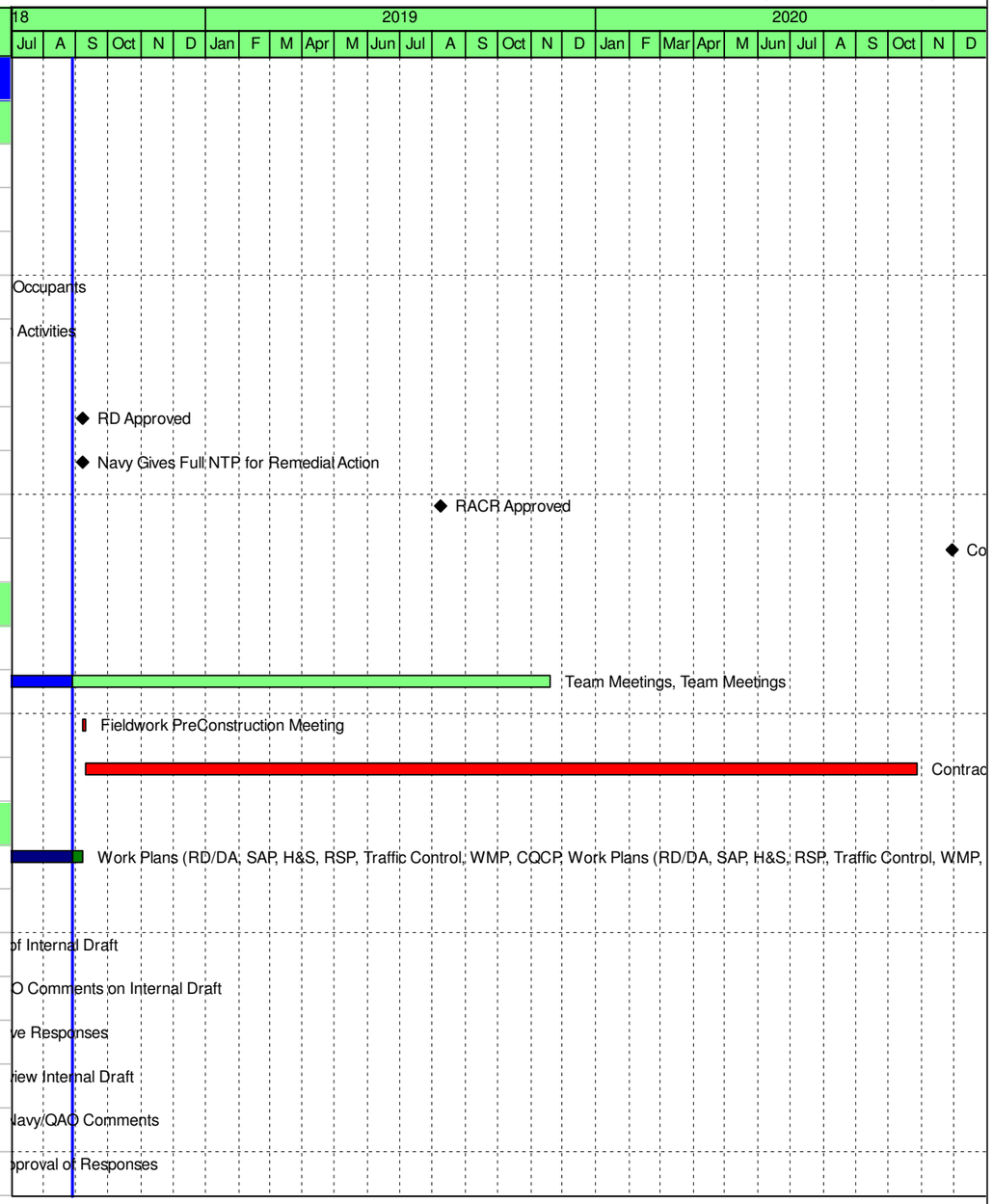
# Figure 6 Project Schedule

Data Date - 29-Aug-18 Run Date - 29-Aug-18

| Activity ID | Activity Name | Orig Dur | Activity % Complete | Start | Finish | Predecessors |
|---|---|---|---|---|---|---|
| **RADMAC II - Treasure Island** | | 1155 | | 02-Aug-17 A | 30-Nov-20 | |
| **Milestones** | | 788 | | 02-Aug-17 A | 30-Nov-20 | |
| MS0100 | Contract Award | 0 | 100% | 02-Aug-17 A | | |
| MS0200 | Submit Schedule and Agenda | 0 | 100% | 15-Aug-17 A | | MS0100 |
| MS0300 | Kick-off Meeting | 0 | 100% | 15-Aug-17 A | | MS0100 |
| MS0400 | Navy Gives 90-Day Notice to Bldg 1126 & 1217 Occupants | 0 | 100% | 15-Aug-17 A | | MS0300 |
| MS0500 | Navy Gives Limited NTP for PreRemedial Action Activities | 0 | 100% | 15-Aug-17 A | | MS0300 |
| MS0600 | Award of IDIQ Items | 0 | 100% | 22-Sep-17 A | | |
| MS0700 | RD Approved | 0 | 0% | 07-Sep-18* | | PP0180 |
| MS0800 | Navy Gives Full NTP for Remedial Action | 0 | 0% | 07-Sep-18 | | MS0700 |
| MS0900 | RACR Approved | 0 | 0% | 09-Aug-19 | | RC0170 |
| MS1000 | Contractural POP Date | 0 | 0% | | 30-Nov-20* | RC0170 |
| **Project Management** | | 675 | | 15-Aug-17 A | 28-Oct-20 | |
| PM0100 | Contract Kick-off Meeting | 1 | 100% | 15-Aug-17 A | 15-Aug-17 A | MS0300 |
| PM0200 | Team Meetings | 534 | 42.7% | 15-Aug-17 A | 19-Nov-19 | PM0100 |
| PM0300 | Fieldwork PreConstruction Meeting | 1 | 0% | 07-Sep-18* | 10-Sep-18 | MS0700 |
| PM0400 | Contractor QC Meetings | 534 | 0% | 10-Sep-18* | 28-Oct-20 | PM0300 |
| **Project Plans** | | 896 | | 15-Aug-17 A | 07-Sep-18 | |
| PP0100 | Work Plans (RD/DA, SAP, H&S, RSP, Traffic Control, WMP, CQCP | 534 | 98.84% | 15-Aug-17 A | 07-Sep-18 | PP0110 |
| PP0110 | Internal Draft | 35 | 100% | 15-Aug-17 A | 24-Oct-17 A | |
| PP0120 | Navy/BRAC/RASO Review of Internal Draft | 30 | 100% | 25-Oct-17 A | 18-Dec-17 A | PP0110 |
| PP0125 | Response to BRAC/RASO Comments on Internal Draft | 25 | 100% | 14-Dec-17 A | 07-Jan-18 A | PP0120 |
| PP0126 | BRAC/RASO Approve Responses | 30 | 100% | 07-Jan-18 A | 08-Feb-18 A | PP0125 |
| PP0127 | Navy/QAO Review Internal Draft | 30 | 100% | 09-Feb-18 A | 14-Mar-18 A | PP0126 |
| PP0128 | Response to Navy/QAO Comments | 5 | 100% | 14-Mar-18 A | 19-Mar-18 A | PP0127 |
| PP0129 | Navy/QAO Approval of Responses | 5 | 100% | 20-Mar-18 A | 26-Mar-18 A | PP0128 |



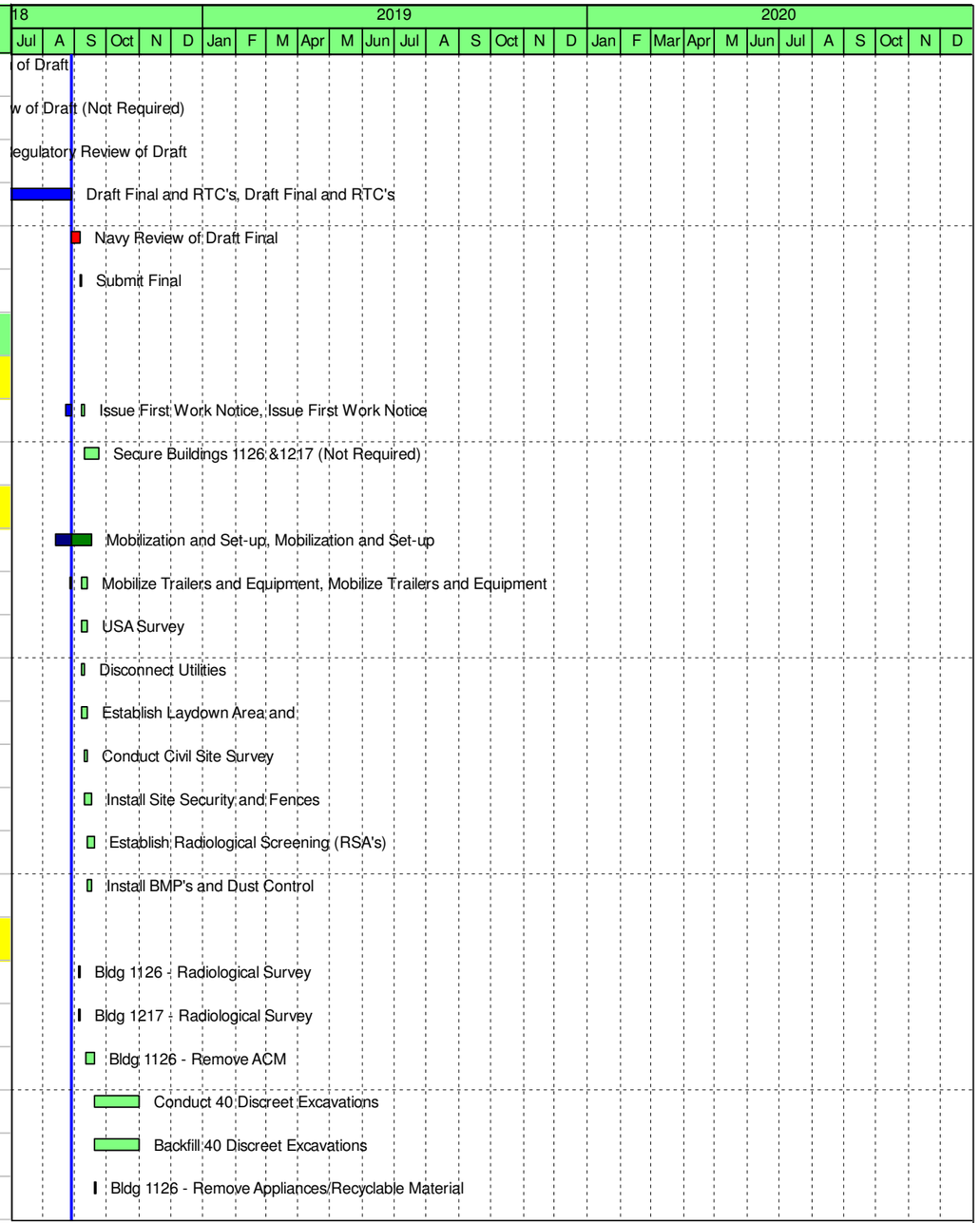

Remaining Level of Effort ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

RADMAC II - IR 12 - Treasure Island
August 2018 Schedule
1 of 4

Gilbane

# Figure 6 Project Schedule

| Activity ID | Activity Name | Orig Dur | Activity % Complete | Start | Finish | Predecessors |
|---|---|---|---|---|---|---|
| PP0130 | Preparation of Draft | 5 | 100% | 27-Mar-18 A | 04-Apr-18 A | PP0120, PP0129 |
| PP0140 | Navy Review of Draft (Not Required) | 0 | 100% | 05-Apr-18 A | 05-Apr-18 A | PP0130 |
| PP0150 | Regulatory Review of Draft | 30 | 100% | 05-Apr-18 A | 08-Jun-18 A | PP0140 |
| PP0160 | Draft Final and RTC's | 21 | 99% | 11-Jun-18 A | 29-Aug-18 | PP0150 |
| PP0170 | Navy Review of Draft Final | 5 | 0% | 29-Aug-18 | 06-Sep-18 | PP0160 |
| PP0180 | Submit Final | 1 | 0% | 06-Sep-18 | 07-Sep-18 | PP0170, PP0100 |
| **Remedial Action Implementation** | | 107 | | 13-Aug-18 A | 06-Feb-19 | |
| **Pre-Remedial Actions** | | 11 | | 23-Aug-18 A | 24-Sep-18 | |
| PRE0100 | Issue First Work Notice | 1 | 0% | 23-Aug-18 A | 10-Sep-18 | MS0700 |
| PRE0200 | Secure Buildings 1126 &1217 (Not Required) | 10 | 0% | 10-Sep-18 | 24-Sep-18 | PRE0100 |
| **Mobilization** | | 14 | | 13-Aug-18 A | 19-Sep-18 | |
| MM0100 | Mobilization and Set-up | 12 | 0% | 13-Aug-18 A | 17-Sep-18 | |
| MM0140 | Mobilize Trailers and Equipment | 4 | 0% | 27-Aug-18 A | 13-Sep-18 | PRE0100 |
| MM0110 | USA Survey | 3 | 0% | 07-Sep-18 | 12-Sep-18 | PRE0100, MM0100 |
| MM0120 | Disconnect Utilities | 1 | 0% | 07-Sep-18 | 10-Sep-18 | PRE0100 |
| MM0150 | Establish Laydown Area and | 4 | 0% | 07-Sep-18 | 13-Sep-18 | PRE0100 |
| MM0130 | Conduct Civil Site Survey | 3 | 0% | 10-Sep-18 | 13-Sep-18 | PRE0100 |
| MM0170 | Install Site Security and Fences | 5 | 0% | 10-Sep-18 | 17-Sep-18 | PRE0100 |
| MM0160 | Establish Radiological Screening (RSA's) | 4 | 0% | 13-Sep-18 | 19-Sep-18 | MM0150 |
| MM0180 | Install BMP's and Dust Control | 2 | 0% | 13-Sep-18 | 17-Sep-18 | MM0150, MM0100 |
| **Remedial Action** | | 75 | | 04-Sep-18 | 24-Dec-18 | |
| RA0140 | Bldg 1126 - Radiological Survey | 3 | 0% | 04-Sep-18* | 06-Sep-18 | MM0100 |
| RA0180 | Bldg 1217 - Radiological Survey | 3 | 0% | 04-Sep-18* | 06-Sep-18 | MM0100 |
| RA0150 | Bldg 1126 - Remove ACM | 7 | 0% | 11-Sep-18* | 19-Sep-18 | RA0140 |
| RA0100 | Conduct 40 Discreet Excavations | 30 | 0% | 19-Sep-18 | 01-Nov-18 | MM0180, MM0160 |
| RA0120 | Backfill 40 Discreet Excavations | 30 | 0% | 19-Sep-18 | 01-Nov-18 | RA0100 |
| RA0130 | Bldg 1126 - Remove Appliances/Recyclable Material | 2 | 0% | 19-Sep-18 | 21-Sep-18 | RA0100 |




Remaining Level of Effort ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

RADMAC II - IR 12 - Treasure Island
August 2018 Schedule
2 of 4

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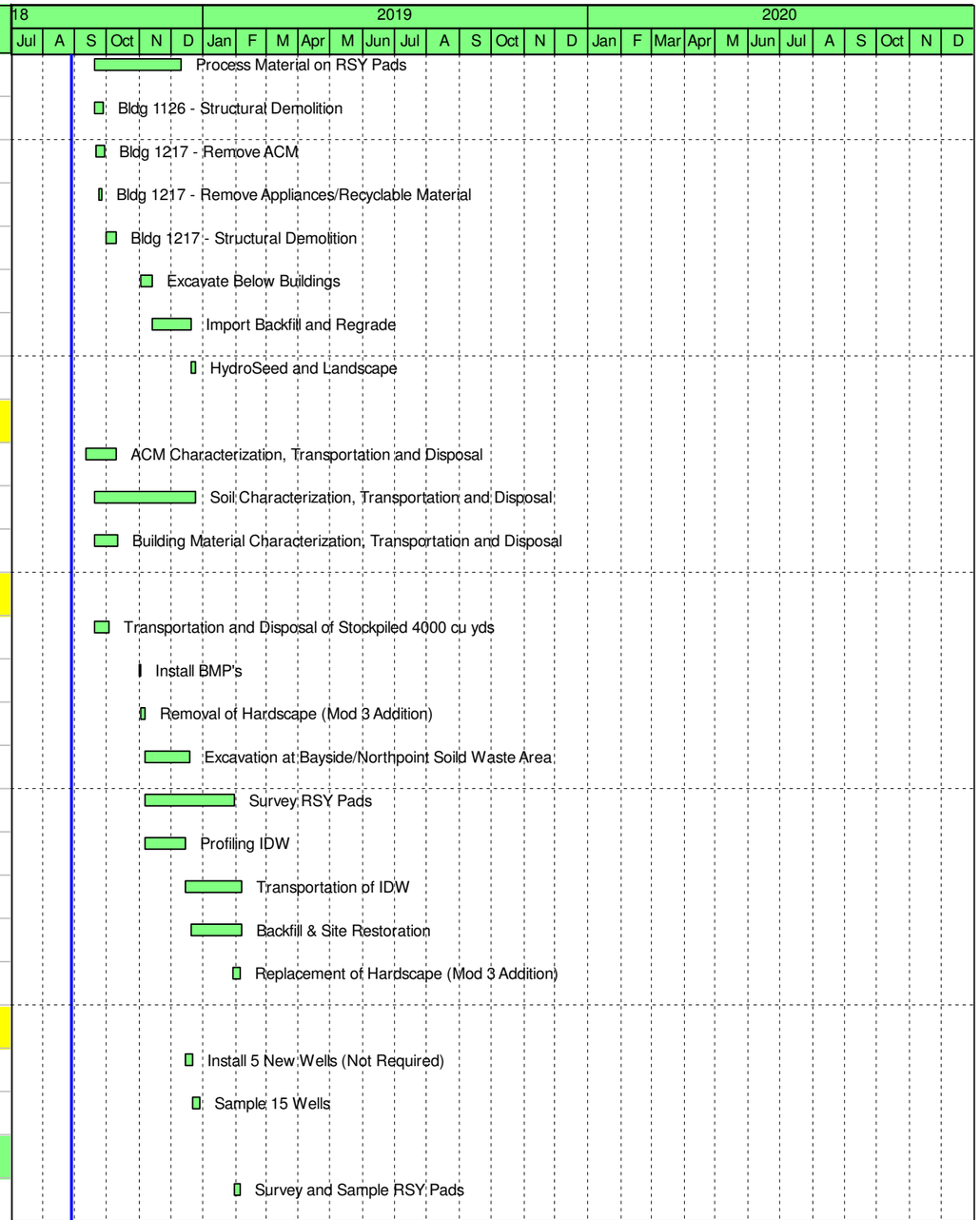
# Figure 6 Project Schedule

| Activity ID | Activity Name | Orig Dur | Activity % Complete | Start | Finish | Predecessors |
|---|---|---|---|---|---|---|
| RA0220 | Process Material on RSY Pads | 55 | 0% | 19-Sep-18 | 11-Dec-18 | RA0100 |
| RA0160 | Bldg 1126 - Structural Demolition | 6 | 0% | 20-Sep-18 | 27-Sep-18 | RA0150 |
| RA0190 | Bldg 1217 - Remove ACM | 6 | 0% | 21-Sep-18 | 28-Sep-18 | RA0150 |
| RA0170 | Bldg 1217 - Remove Appliances/Recyclable Material | 2 | 0% | 24-Sep-18 | 26-Sep-18 | RA0130 |
| RA0200 | Bldg 1217 - Structural Demolition | 6 | 0% | 01-Oct-18 | 09-Oct-18 | RA0160 |
| RA0210 | Excavate Below Buildings | 6 | 0% | 02-Nov-18 | 13-Nov-18 | RA0100, RA0200 |
| RA0230 | Import Backfill and Regrade | 25 | 0% | 13-Nov-18 | 20-Dec-18 | RA0210 |
| RA0240 | HydroSeed and Landscape | 2 | 0% | 20-Dec-18 | 24-Dec-18 | RA0230 |
| **Waste Characterization, Transportation and Disposal** | | 70 | | 11-Sep-18 | 24-Dec-18 | |
| RA0270 | ACM Characterization, Transportation and Disposal | 20 | 0% | 11-Sep-18 | 10-Oct-18 | RA0150 |
| RA0250 | Soil Characterization, Transportation and Disposal | 64 | 0% | 19-Sep-18 | 24-Dec-18 | RA0100 |
| RA0260 | Building Material Characterization, Transportation and Disposal | 15 | 0% | 20-Sep-18 | 11-Oct-18 | RA0160, RA0200 |
| **Continuation of NTCRA Field Activities** | | 92 | | 20-Sep-18 | 06-Feb-19 | |
| RA0280 | Transportation and Disposal of Stockpiled 4000 cu yds | 10 | 0% | 20-Sep-18 | 03-Oct-18 | RA0160 |
| RA0290 | Install BMP's | 1 | 0% | 01-Nov-18 | 02-Nov-18 | RA0100 |
| RA0295 | Removal of Hardscape (Mod 3 Addition) | 2 | 0% | 02-Nov-18 | 06-Nov-18 | RA0290 |
| RA0300 | Excavation at Bayside/Northpoint Soild Waste Area | 28 | 0% | 06-Nov-18 | 19-Dec-18 | RA0295 |
| RA0310 | Survey RSY Pads | 55 | 0% | 06-Nov-18 | 30-Jan-19 | RA0300 |
| RA0340 | Profiling IDW | 25 | 0% | 06-Nov-18 | 14-Dec-18 | RA0300 |
| RA0350 | Transportation of IDW | 35 | 0% | 14-Dec-18 | 06-Feb-19 | RA0340 |
| RA0320 | Backfill & Site Restoration | 31 | 0% | 20-Dec-18 | 06-Feb-19 | RA0300 |
| RA0330 | Replacement of Hardscape (Mod 3 Addition) | 5 | 0% | 29-Jan-19 | 05-Feb-19 | RA0320 |
| **GW Monitoring Wells at Gateway Arsenic** | | 9 | | 14-Dec-18 | 28-Dec-18 | |
| GW0100 | Install 5 New Wells (Not Required) | 5 | 0% | 14-Dec-18 | 21-Dec-18 | RA0350 |
| GW0200 | Sample 15 Wells | 4 | 0% | 21-Dec-18 | 28-Dec-18 | GW0100 |
| **Demobilization and Close-out** | | 17 | | 30-Jan-19 | 25-Feb-19 | |
| DM0100 | Survey and Sample RSY Pads | 4 | 0% | 30-Jan-19 | 05-Feb-19 | RA0310 |



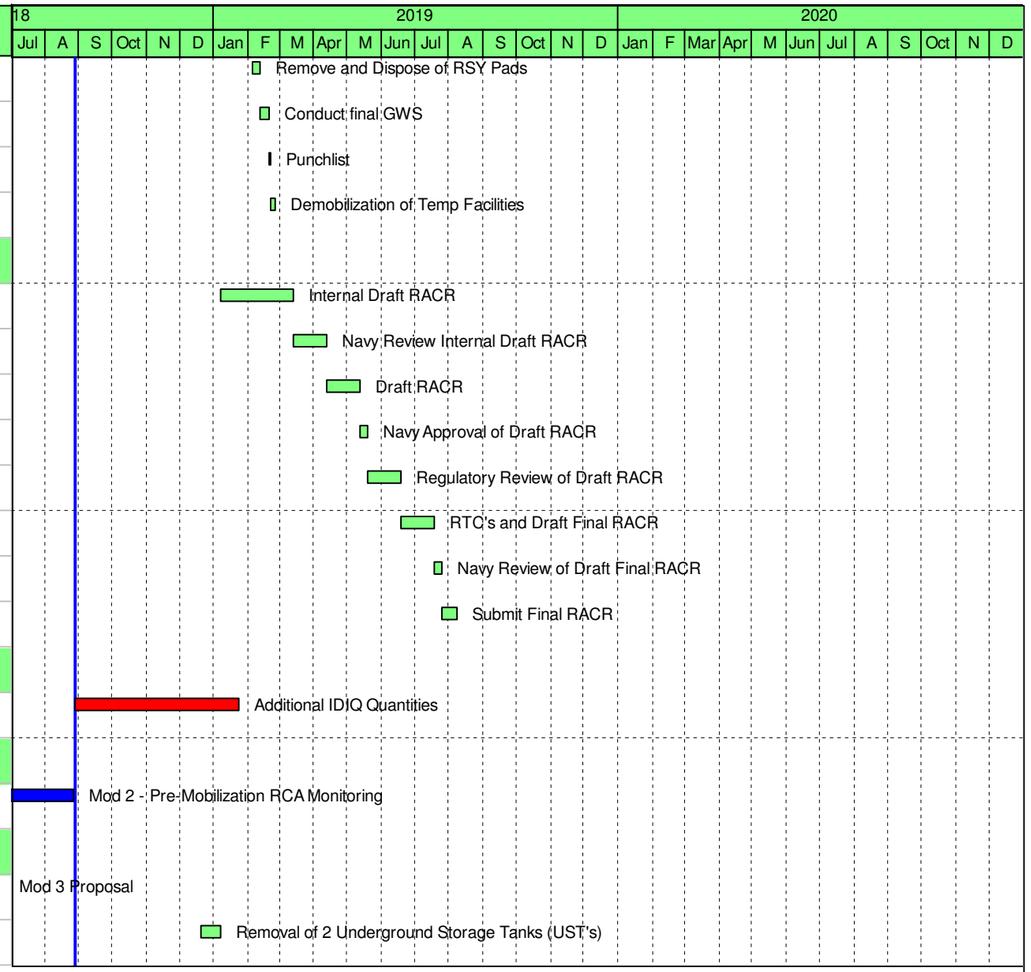

Remaining Level of Effort ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

RADMAC II - IR 12 - Treasure Island
August 2018 Schedule
3 of 4

Gilbane

# Figure 6 Project Schedule

| Activity ID | Activity Name | Orig Dur | Activity % Complete | Start | Finish | Predecessors |
|---|---|---|---|---|---|---|
| DM0110 | Remove and Dispose of RSY Pads | 5 | 0% | 05-Feb-19 | 12-Feb-19 | DM0100 |
| DM0120 | Conduct final GWS | 4 | 0% | 12-Feb-19 | 19-Feb-19 | DM0110 |
| DM0130 | Punchlist | 2 | 0% | 19-Feb-19 | 21-Feb-19 | DM0120 |
| DM0140 | Demobilization of Temp Facilities | 2 | 0% | 21-Feb-19 | 25-Feb-19 | DM0130 |
| **Reports and Data Submission** | | 214 | | 07-Jan-19 | 09-Aug-19 | |
| RC0100 | Internal Draft RACR | 45 | 0% | 07-Jan-19 | 13-Mar-19 | RA0240, MOD3 100 |
| RC0110 | Navy Review Internal Draft RACR | 30 | 0% | 13-Mar-19 | 12-Apr-19 | RC0100 |
| RC0120 | Draft RACR | 21 | 0% | 12-Apr-19 | 13-May-19 | RC0110 |
| RC0130 | Navy Approval of Draft RACR | 5 | 0% | 13-May-19 | 20-May-19 | RC0120 |
| RC0140 | Regulatory Review of Draft RACR | 30 | 0% | 20-May-19 | 19-Jun-19 | RC0130 |
| RC0150 | RTC's and Draft Final RACR | 21 | 0% | 19-Jun-19 | 19-Jul-19 | RC0140 |
| RC0160 | Navy Review of Draft Final RACR | 5 | 0% | 19-Jul-19 | 26-Jul-19 | RC0150 |
| RC0170 | Submit Final RACR | 10 | 0% | 26-Jul-19 | 09-Aug-19 | RC0160 |
| **MOD 1 - Additional IDIQ Quantities** | | 98 | | 29-Aug-18 | 23-Jan-19 | |
| IDIQ0010 | Additional IDIQ Quantities | 98 | 0% | 29-Aug-18* | 23-Jan-19 | |
| **MOD 2 - Early Establishment of RCA Monitoring** | | 40 | | 19-Mar-18 A | 27-Aug-18 A | |
| MOD2 001 | Mod 2 - Pre-Mobilization RCA Monitoring | 40 | 100% | 19-Mar-18 A | 27-Aug-18 A | |
| **MOD 3 - Removal of 2 UST's** | | 201 | | 01-May-18 A | 07-Jan-19 | |
| MOD3 001 | Mod 3 Proposal | 40 | 100% | 01-May-18 A | 25-Jun-18 A | |
| MOD3 100 | Removal of 2 Underground Storage Tanks (UST's) | 10 | 0% | 20-Dec-18 | 07-Jan-19 | MOD3 001, RA0230 |




Remaining Level of Effort ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

RADMAC II - IR 12 - Treasure Island
August 2018 Schedule
4 of 4

Gilbane