# City of Fort Bragg

416 N Franklin Street
Fort Bragg, CA 95437
Phone: (707) 961-2823
Fax: (707) 961-2802

## Meeting Agenda

## Planning Commission

**Wednesday, August 10, 2016** | **6:00 PM** | **Town Hall, 363 N.Main Street**

**MEETING CALLED TO ORDER**

**PLEDGE OF ALLEGIANCE**

**ROLL CALL**

## 1. APPROVAL OF MINUTES

**1A.** 16-250 Approve Minutes of June 08, 2016

***Attachments:*** Minutes of June 08, 2016

## 2. PUBLIC COMMENTS ON NON-AGENDA ITEMS

## 3. PUBLIC HEARINGS

## 4. CONDUCT OF BUSINESS

**4A.** 16-316 Recieve Report and Consider Certification of the SEIR Addendum and Approval of CDP 3-16 for the implementation of: 1) the Removal Action Workplan for Operable Unit E; 2) the Cultural Resources Coordination Plan; 3) the Wetland Mitigation and Monitoring Plan; and 4) the decommissioning of various monitoring wells and pits at the Georgia-Pacific Mill Site.

***Attachments:*** GP OUE RAW CDP 3-16 Staff Report

Attachment 1 - Removal Action Workplan Operable Unit E

Attachment 2 - Wetland Mitigation and Monitoring Plan

Attachment 3 - SEIR Addendum GP OU-E RAW

Attachment 3A - SEIR Addendum Mitigation and Monitoring Plan

Attachment 4 - Well Decommissioning Map

Attachment 5 - Pit Fill Areas

Attachment 6 - Site Photos

Attachment 7 - Rare Plant Survey OUE

## 5. MATTERS FROM CHAIR/COMMISSIONERS/STAFF

## ADJOURNMENT

*The adjournment time for all Planning Commission meetings is no later than 9:00 p.m. If the Commission is still in session at 9:00 p.m., the Commission may continue the meeting upon majority vote.*

STATE OF CALIFORNIA )
)ss.
COUNTY OF MENDOCINO )

I declare, under penalty of perjury, that I am employed by the City of Fort Bragg and that I caused this agenda to be posted in the City Hall notice case on August 5, 2016.

_____
Chantell O'Neal
Administrative Assistant-Community Development

## NOTICE TO THE PUBLIC

Materials related to an item on this agenda submitted to the Commission after distribution of the agenda packet are available for public inspection in the Community Development Department at 416 North Franklin Street, Fort Bragg, California, during normal business hours. Such documents are also available on the City's website at www.fortbragg.com subject to staff's ability to post the documents before the meeting.

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This notice is in compliance with the Americans with Disabilities Act (28 CFR, 35.102-35.104 ADA Title II).

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## Text File

### File Number: 16-250

**Agenda Date:** 8/10/2016 **Version:** 1 **Status:** Minutes to be Approved

**In Control:** Planning Commission **File Type:** Minutes

**Agenda Number:** 1A.

Approve Minutes of June 08, 2016

# City of Fort Bragg

416 N Franklin Street
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## Meeting Minutes
## Planning Commission

**Wednesday, June 8, 2016** | **6:00 PM** | **Town Hall, 363 N.Main Street**

## MEETING CALLED TO ORDER

**Chair Pro Tem Hannon Called the meeting to order 6:00 PM**

## PLEDGE OF ALLEGIANCE

## ROLL CALL

**Present** 3 - Commissioner Mark Hannon, Commissioner Stan Miklose, and Commissioner Heidi Kraut

**Absent** 2 - Chair Derek Hoyle, and Vice Chair Teresa Rodriguez

## 1. APPROVAL OF MINUTES

16-220 Approve Minutes of May 25, 2016

**A motion was made by Commissioner Kraut, seconded by Commissioner Miklose, that these Minutes be approved. The motion carried by the following vote:**

**Aye:** 3 - Commissioner Hannon, Commissioner Miklose and Commissioner Kraut

**Absent:** 2 - Chair Hoyle and Vice Chair Rodriguez

## 2. PUBLIC COMMENTS ON NON-AGENDA ITEMS

None.

## 3. PUBLIC HEARINGS

None.

## 4. CONDUCT OF BUSINESS

16-190 Receive Report and Consider Adoption of Resolution Determining that the Proposed FY 2016/17 Multi-Year Capital Improvement Program and FY 2016/17 Capital Projects Budget are Consistent with the City of Fort Bragg Inland General Plan and Coastal General Plan

Associate Planner Perkins presented the staff report summarizing the goals of the City's Capital Improvements Projects (CIP). The CIP is the management and planning tool used to schedule anticipated future projects and to allocate potential sources of financing. Planning Commission shall review for consistency and have the opportunity to approve the

CIP annually in conjunction with the Coastal General Plan and Inland General Plan per California State Government Code Section 65401. Staff finds that the CIP is consistent with the General Plans and has prepared a Resolution to be published upon approval. Planner Perkins reviewed several items of interest from the CIP tables submitted to the Commission with the report.

***Discussion:***

Miklose asked why Planning Commissions need to approve the CIP if staff finds it to be consistent. Perkins stated that this process is meant to serve as an opportunity for both the Commission and the Community to review and analyze the report for consistency with the plans before approving the Resolution.

Kraut requested further information on the following:
1. What is the goal for the new ground water production wells? Community Development Director Jones explained there are two potential wells being tested to serve as future water sources for the City.
2. What is the plan for the Highway 20 fire station? Jones believes it will be a housing project for fire fighters and Planner Perkins concluded that the Public Works Department can provide additional details upon request.

**A motion was made by Comissioner Kraut, seconded by Commissioner Miklose, to adopt a Resolution Determining that the Proposed FY 2016/17 Multi-Year Capital Improvement Program and FY 2016/17 Capital Projects Budget are Consistent with the City of Fort Bragg Inland General Plan and Coastal General Plan. The motion carried by the following vote:**

**Aye:** 3 - Commissioner Hannon, Commissioner Miklose and Commissioner Kraut

**Absent:** 2 - Chair Hoyle and Vice Chair Rodriguez

Enactment No: RES PC01-2016

## 5. MATTERS FROM CHAIR/COMMISSIONERS/STAFF

Commissioner Kraut thanked staff for the Coastal Trail Celebration. Commissioners and staff discussed attendance and the successes of the party and the benefits that open lands and trails provide to the City.

## ADJOURNMENT

**Chair Pro Tem Hannon adjourned the meeting at 6:15 PM.**

_____
DEREK HOYLE, Chair

_____
Chantell O'Neal, Administrative Assistant

IMAGED (_____)

# City of Fort Bragg

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## Text File

**File Number: 16-316**

**Agenda Date:** 8/10/2016 **Version:** 1 **Status:** Business

**In Control:** Planning Commission **File Type:** Staff Report

**Agenda Number:** 4A.

Recieve Report and Consider Certification of the SEIR Addendum and Approval of CDP 3-16 for the implementation of: 1) the Removal Action Workplan for Operable Unit E; 2) the Cultural Resources Coordination Plan; 3) the Wetland Mitigation and Monitoring Plan; and 4) the decommissioning of various monitoring wells and pits at the Georgia-Pacific Mill Site.

| | |
|---|---|
| **MEETING DATE:** | **August 10, 2016** |
| **PREPARED BY:** | **Marie Jones** |
| **PRESENTED BY:** | **Marie Jones** |

# AGENDA ITEM SUMMARY REPORT

**APPLICATION NO.:** Coastal Development Permit 3-16 (CDP 3-16)

**OWNER:** Georgia-Pacific LLC

**APPLICANT:** Dave Massengill, Georgia-Pacific LLC

**PROJECT DESCRIPTION:** Coastal Development Permit (CDP 3-16) for remedial activities primarily composed of hot spot excavation in Operable Unit E at the former Georgia-Pacific Lumber Mill located on the western edge of the City of Fort Bragg. The proposed project would consist of soil excavation and disposal of approximately 3,500 cubic yards of contaminated soils in Operable Unite E (OU-E). While OUE consists of approximately 12 acres of man-made ponds and seasonal wetland areas and 45 terrestrial acres, the proposed removal area is relatively small at 24,630 square feet or about half an acre. The primary removal action areas (RAAs) include the following: OU-E Lowland, Southern Ponds (1-4), Ponds 7, and Riparian area. Confirmation samples will be collected during excavation activities to evaluate remaining site conditions; if testing warrants additional soil removal to achieve clean-up goals additional material will be removed. Excavation activities will require approximately 151 truckloads to move excavated soil and sediment to off-site disposal at a nonhazardous waste facility. The Ponds and the Riparian area will be reseeded and monitored to restore native plants. The project also includes the removal/decommissioning of 57 monitoring and injection wells that are no longer sampled as well as six former water supply wells that are no longer used. The project will also include filling in four pits and re-establishing one monitoring well after construction is complete. Removal and restoration activities are expected to take approximately 20 days to complete. The project includes a wetland mitigation and monitoring plan which will be followed over a five year period to ensure that the wetland established as mitigation for project impacts to Ponds 2, 3 and 7, is successful per Coastal Act and Fish and Wildlife requirements.

**LOCATION:** 90 West Redwood Avenue

**ZONING:** Timber Resources Industrial (TI)

**ENVIRONMENTAL DETERMINATION:** SEIR Addendum

**SURROUNDING LAND**

NORTH: Georgia-Pacific Mill Site, Noyo Headlands Park
EAST: State Route One, City of Fort Bragg
SOUTH: Georgia-Pacific Mill Site, Noyo Headlands Park, Noyo Harbor
WEST: Wastewater Treatment Plant, Noyo Headlands Park and Pacific Ocean

## BACKGROUND

The Georgia Pacific Mill Site occupies an approximately 323 acre site on the coastline of the City of Fort Bragg (See Figure 1-1 of Attachment 1). According to historical records, the timber mill in Fort Bragg began operations in 1885. Georgia-Pacific (GP) acquired the facility and began operations in 1973. In November 2002, lumber production operations ceased at the facility. Since then, GP has been engaged in the process of decommissioning the site. This has involved dismantling buildings, removal of equipment, extensive site investigations and remediation activities.

In October 2003 and October 2004, the City approved two Coastal Development Permits (CDP 1-03; CDP 2-04) authorizing demolition of 17 structures on the Mill Site totaling over 200,000 SF of buildings.

In 2005, the City approved CDP 3-05 authorizing: 1) the removal of all building foundations for the above listed structures; 2) additional investigation of soils and ground water; and, 3) if necessary, interim remedial measures (IRMs).

On March 26, 2009, the City received a request from the applicant for issuance of an emergency permit for the demolition of the badly damaged Truck Loading Shed on the former Georgia-Pacific Wood Products Facility site. The structure had suffered from serious damage due to driving winds, which were causing the roof to sag dangerously and the wall to bulge out. On June 20, 2009, the Planning Commission approved an after-the-fact Coastal Development Permit for the truck shed demolition.

In 2013 Georgia-Pacific requested a CDP to authorize the removal of the above-ground portions of 38 buildings, as the site no longer had a functioning fire suppression systems and many of the structures were in bad condition and in danger of collapse in heavy winds. The Planning Commission approved the Coastal Development Permit and 323,000 SF of structures were demolished during the summer of 2013.

In 2015 Georgia-Pacific requested a CDP to remove approximately 1,108 to 1,858 cubic yards of contaminated soils and materials in OU-C and OU-D. The areas requiring remediation (excavation and disposal of contaminated soils) include the following locations:

1) Former AST and MES/Pilot Study (contaminant is TPHd);
2) Former Dip Tank (contaminant is Dioxin and PCP);
3) Rail Lines East (contaminant is lead);
4) Kilns (contaminant is TPHd and B(a)P); and
5) Planer #2 (contaminant is TPHd and B(a)P).

Additional activities, covered under the CDP include placing a cover/fill of soil and gypsum at the Former AST and Former MES/Pilot Study to address soil vapor contaminants. In February of 2016 the Planning Commission approved the Coastal Development Permit for this remediation activity. The Applicant is seeking to implement this project at the same time as the proposed project (CDP 3-16).

The California State Department of Toxic Substances Control (DTSC) oversaw the development of the Remedial Action Workplan (RAW) and all the supporting studies for the proposed activities within Operable Unit E (OU-E), which include:

1) The Remedial Investigation (RI) Report Operable Unit E– which summarizes the extensive sample collection and analysis process for constituents of concern.
2) The Revised Baseline Human Health and Ecological Risk Assessment (BHHERA), completed in 2013. The BHHERA estimates risks within OUE for both potential future human receptors and ecological receptors based on current industrial use and foreseeable land use scenarios. It includes child and adult residents, commercial/ industrial workers, construction workers and maintenance/ utility workers, recreational receptors, plants, soil invertebrates, and representative wildlife receptors (birds and mammals).
3) The Removal Action Workplan (RAW), which is described in detail below, defines the remediation steps required to remove hot spots.

In July of 2016 the City and DTSC completed an Addendum to the Fort Bragg Coastal Trail Phase II Subsequent SEIR for the implementation of the RAW for OU-E.

## PROJECT DESCRIPTION

The project consists of four inter-related activities:

1. Implementation of the OUE RAW (Attachment 1);
2. Construction of a 0.584 acre (17,000 S)F wetland and implementation of a five year wetland monitoring plan for mitigation to project impacts to Army Corp and Coastal Act wetlands (Attachment 2);
3. Decommissioning of 57 wells that are no longer in service and re-establishing one well upon completion of the remediation; and
4. Filling of four pits (non-wetland) with clean soil.

Each of these project components is described in more detail below.

### Implementation of the OU-E Remedial Action Workplan (RAW)

The OU-E RAW is an interim action to address impacted soil, groundwater, and sediment within OU-E on an accelerated basis to support the construction and public use of the Coastal Trail project, which is anticipated to occur in 2017. Once the proposed RAW activities are complete, risks to public health and the environment will be mitigated and the areas identified in the RAW will be acceptable for the planned recreational use.

The proposed removal and restoration activities primarily consist of excavation of soil or sediment to reduce overall potential risk to human health and ecological receptors, as well as restore areas with native species to improve aquatic ecosystems. In total, proposed OU-E excavation activities amount to removing approximately 3,500 cubic yards (cy) at depths between 0.5 and 7.5 feet below ground surface (bgs) in an approximate 24,630 square foot (sf) footprint. The 3,500 cubic yards (cy) of chemically-impacted soil will be transported to and disposed of at an appropriate, permitted off-site landfill for disposal. The soil would be

removed over an area of less than one acre, within a 12 acre OU-E site.

For all of the excavation activities below, sidewall and bottom confirmation samples will be collected during the excavations, and if additional problematic contamination is found the excavation area will be expanded. Soil will be excavated using conventional construction equipment and would be either temporarily stockpiled and managed to prevent dust and odors or directly loaded into truck beds. Trucks will transport soil and sediment for disposal to a nonhazardous waste disposal facility.

Lowland Terrestrial Soil

The *Baseline Human Health and Ecological Risk Assessment, Operable Unit E* (BHHERA; Arcadis U.S., Inc. 2015) identified 12 sample locations with elevated concentrations of either benzo(a)pyrene (B(a)P) toxic equivalent (TEQ), 2,3,7,8-TCDD (dioxin) TEQ, or lead, which were developed into eight areas for hot spot excavation. Adding one additional hot spot excavation area for total petroleum hydrocarbons as diesel (TPHd), there are nine areas for hot spot excavation located in the terrestrial lowland (Figures 2-7 through 2-11 of the OU-E RAW, respectively). The three excavations of B(a)P TEQ amounts to approximately 607 cy with a maximum excavation depth of 4 feet below ground surface (bgs). The one excavation for dioxin TEQ amounts to approximately 43 cy with a depth of 3 feet bgs. The seven lead excavations amount to approximately 666 cy with a maximum excavation depth of 6 feet bgs. The TPHd Soil Contamination hot spot excavation area amounts to approximately 194 cy with an excavation depth of 6 feet bgs. Excavation is expected to take 14 - 18 days.

Ponds 2 and 3 (Southern Ponds) Sediment

Sediment in Ponds 2 and 3 are proposed to be excavated due to elevated dioxin TEQ concentrations. Excavation in Pond 2 amounts to approximately 474 cy with excavation to a depth of 2 feet bgs, and hot spot excavation in Pond 3 amounts to approximately 222 cy with excavation to a depth of 1 foot bgs (Figure 2-8 of the OU-E RAW). The pond extent will be reseeded with native plant species to restore ecological conditions. The pond depth may be allowed to increase depending on the resulting geometry and agency permit requirements. Implementation is expected to take 5 days.

Pond 7 Sediment

Sediment in Pond 7 is proposed to be excavated due to elevated dioxin TEQ concentrations. Resulting excavation amounts to approximately 1,200 cy with excavation to a depth of 7.5 feet bgs (Figure 2-13 of the OU-E RAW). Implementation is expected to take 7 days.

Riparian Area

Sediment in the riparian area is proposed to be excavated due to elevated dioxin TEQ concentrations. Approximately 32 cy with excavation to a depth of 0.5 feet bgs will be excavated using conventional construction equipment and would be either temporarily stockpiled and managed to prevent dust and odors or directly loaded into truck beds.

Implementation is expected to take 1-2 days.

Upon completion of the remediation activities, DTSC would allow for recreational use (from the perspective of the clean-up level and not zoning) throughout Operable Unit E.

**Wetland Creation**

RAW activities will impact approximately 0.064 acre of waters of the United States (0.055 acre of wetland habitat and 0.009 acre of stream habitat), and approximately 0.476 acre of waters of the State (which includes the 0.064 acre of impacts to waters of the United States), and approximately 0.020 acre of upland riparian habitat. The impacts will be temporary in nature, and restoration activities would occur immediately following completion of OU-E Removal and continue through a five year monitoring and adaptive management program.

The applicant proposes to create in-kind, in-place restoration of wetland, stream, and upland riparian habitats at a 1:1 ratio and establish 0.548 acre of new wetlands in the portion of OU-E immediately north of Pond 7 and to the east of Pond 6. The proposed restoration and wetland establishment activities will result in a mitigation ratio of approximately 16:1 for waters of the United States and 2.2:1 for waters of the State. The applicant also proposes to implement a wetland mitigation and adaptive management plan (Attachment 2) to ensure successful establishment of a native plant community within the impacted and established wetlands.

**Well Decommissioning**

Fifty-seven of the wells proposed for decommissioning are located in areas recommended for no further action (NFA) for groundwater, or are locations at which sampling has been discontinued per the approved management plan (CMP) and associated updates. See Attachment 4 to view wells proposed for decommissioning. Thirty-one monitoring wells located in OU-B, OU-C, OU-D, and OU-E are proposed for decommissioning due to historical concentrations of Contaminants of Interest (COI primarily below detection limits or below applicable screening levels. Six monitoring wells are proposed for decommissioning in OU-D and three monitoring wells are proposed for decommissioning in OU-E because existing infrastructure is sufficient to characterize groundwater quality. Three monitoring wells are proposed for decommissioning in OU-A and one well is proposed for decommissioning in OU-D for remediation and redevelopment of the applicable parcels to form the City of Fort Bragg Coastal Trail Property, which are also within areas with NFA status. Two monitoring wells and two piezometers are proposed for decommissioning in OU-D due to removal of the consolidation cell. Three injection wells are proposed for decommissioning in OU-D due to association with the former in-situ chemical oxidation (ISCO) treatability test. ISCO was not recommended after further evaluation. Six former water supply wells are proposed for decommissioning in OU-C and OU-D because they are no longer needed for water supply and are not used for monitoring groundwater quality.

One of the wells proposed for decommissioning is actively monitored. Completing the excavation activities will require the abandonment of currently sampled monitoring well MW-3.12. Following implementation of the excavation activities, a replacement monitoring well MW-3.12R is proposed to be installed with similar construction in the same vicinity or slightly down gradient of abandoned MW-3.12 and developed for routine sampling.

**Fill Four Pits with Clean Fill**
Four pits, remnants from the industrial operations, are located in the lowland area (see Attachment 5). These pits do not have wetland features, because they are deep non-vegetated pits. The applicant proposes to fill these pits with clean soil as they are an attractive nuisance that could result in injury, should people trespass and fall into one of the pits.

## CONSISTENCY WITH GENERAL PLAN & COASTAL LAND USE AND DEVELOPMENT CODE (CLUDC)

**Land Use Consistency**. The project is consistent with Timber Resources Industrial (IT) zoning as it includes the remediation of a Lumber Mill site which was used for the manufacture and storage of wood products. No new uses are proposed as part of this CDP application.

The proposed remediation is consistent with the draft Specific Plan for the site which identified potential future uses for the site and was developed through a three year process with the participation and input from the community, City Council, City Staff, and Georgia-Pacific. DTSC used the draft Specific Plan to set appropriate clean up levels for the site as it is the only documentation of potentially foreseeable future land uses for the site. Thus implementation of the RAW would result in the remediation of the site in a manner consistent with the potential future land uses envisioned for OUE in the Specific plan, namely open space and recreation. Recreational uses are currently allowed within the Timber Resources Industrial zoning districts. The proposed remediation is consistent with both the draft Mill Site Specific Plan and the CLUDC land use tables.

Furthermore as the remediation clean-up levels are geared towards open space uses, the applicant has proposed to place a deed restriction on the property limiting its use to open space. The Coastal Commission has requested that a Special Condition be placed on the Coastal Development Permit that secures the OU-E lowlands site for open space uses, in order to protect and preserve the wetland establishment area. Staff recommends special condition 1 to achieve this goal.

> Special Condition 1: Georgia-Pacific shall record a deed restriction on the OU-E Lowlands (the area illustrated as “A OUE Lowland” in Figure 2-2 of Attachment 1) limiting use of this area to Open Space.

**Public Access.** The property is currently fenced and there are no prescriptive easements across the property. The site is not a public access location, nor is it specified as a future vertical access location in the LCP. The site is the proposed location for phase II of the Fort Bragg Coastal Trail. The remediation of the site is a pre-requisite to establishing future public access to the ocean in this location.

**Visual Resources.** The proposed implementation of the Remedial Action Workplan will improve the visual resources of the project area by removing monitoring wells, constructing new wetlands, and decommissioning various pits in the lowland area. The project is consistent with visual resource protection policies of the Coastal General Plan and the regulations of the CLUDC.

**Hazards.** The OU-E RAW project is the remediation of the site listed as a hazardous materials site (Cortese List) pursuant to Government Code Section 65962.5. DTSC oversees the remediation of the former GP lumber mill site, pursuant to regulatory authority granted under Chapter 6.8, Division 20 of the Health and Safety Code. DTSC issued a Site Investigation and Remediation Order (Docket Number HAS-RAO 06-07-150) to Georgia-Pacific in 2007. Overall, the proposed project is protective of human health and the environment as it will result in the removal of contaminated soil and sediment from locations where they could come into contact with the public or wildlife. The Removal Action Work Plan:

1. Details the existing nature and extent of contamination;
2. Evaluates an array of remediation alternatives for each area of concern;
3. Selects the preferred remedial alternative for each are of concern;
4. Describes excavation procedures, confirmation sampling, biological and air quality monitoring, waste disposal and restoration activities.

The City's CLUDC does not explicitly regulate remediation activities. The City relies on DTSC for the regulation and remediation standards for contaminated sites. Thus Special Condition 2 is included below to ensure that the OUE RAW approval process is completed prior to City approval of the grading permit.

> Special Condition 2: DTSC must approve the OUE RAW, and the OUE RAW must be approved by City Council under its Polanco authority, prior to City approval of the Grading Permit for the implementation of the OUE RAW.

The applicant also proposes the removal/decommissioning of 57 monitoring, injection and/or supply wells that are no longer sampled and/or used. The applicant has not yet received approval from DTSC for the removal/decommissioning of the monitoring wells. The City asked that these components of the project be included in the CDP application so that all proposed activities can be reviewed under one CDP as preferred by the zoning ordinance. Staff recommends Special Condition 3 to ensure that the applicant obtain DTSC approval to decommission the wells prior to commencement of the work.

> Special Condition 3: Prior to removal or decommissioning of monitoring and injection wells, the applicant shall obtain approval from DTSC.

The project will also include filling in four pits. This activity will remove a physical safety hazard from the site, and while not required by the CLUDC this activity is in conformance with the CLUDC, as none of the sites are wetlands.

**Wetland Impacts and Mitigation Requirements.** The proposed implementation of the Remedial Action Workplan (Attachment 1) and the Operable Unit E Wetland Mitigation and Monitoring Plan (Attachment 2) must conform with a number of Coastal General Plan wetland policies and CLUDC regulations as described below and as conditioned through this permit and mitigated through the SEIR Addendum (Attachment 3).

> Policy OS-1.3: Development in ESHA Wetlands: Diking, Filling, and Dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following uses:

1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.
2) Maintaining existing or restoring previously dredged depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.
3) New or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.
4) Incidental public service purposes, including but not limited to burying cables and pipes or inspection of piers and maintenance of existing intake and outfall pipelines.
5) Restoration purposes.
6) Nature study, aquaculture, or similar resource dependent activities.

Policy OS-1.3 allows for removal of soil (dredging) from a wetland only where "there is no feasible less environmentally damaging alternative." In order to protect human health and protect ecological health the removal of dioxin contaminated soils is required. As noted in the BHERRA and the RAW, the levels of dioxin contamination within Ponds 2, 3 and 7 and the wetland L (a riparian ditch) are above screening levels and have the potential to result in excess cancer deaths if not removed (see Figures 2-3, 2-4, 2-12, 2-13, and 2-14 of the OUE RAW). The Department of Toxics and Substance Control (DTSC) considered: 1) leaving the contaminated soils in place; 2) capping the contaminated soils; and 3) removing the materials to a landfill. DTSC determined that only removal of the materials would be protective of human health and ecological heath. Thus there is no feasible less environmentally suitable alternative to the removal of these contaminated sediments from these wetlands.

Additionally Policy OS-1.3 requires that mitigation measures be provided to minimize adverse environmental impacts. The Coastal Act requires that new wetlands be created and restored in cases in which wetlands are impacted by development, even if that impact is a temporal disruption of the wetland's function.

- Proposed OU-E Removal Action activities are anticipated to impact approximately 0.064 acre of waters of the United States (0.055 acre of wetland habitat and 0.009 acre of stream habitat), approximately 0.476 acre of waters of the State (which includes the 0.064 acre of impacts to waters of the United States), and approximately 0.020 acre of upland riparian habitat. These impacts will be temporary in nature, and restoration activities would occur immediately following completion of OU-E Removal and through a five year monitoring and adaptive management program.
- Compensatory mitigation activities proposed include in-kind, in-place restoration of wetland, stream, and upland riparian habitats at a 1:1 ratio and establishment of an additional 0.548 acre of wetlands in the portion of OU-E immediately north of Pond 8 (OU-E Lowlands). The proposed restoration and establishment activities will result in a mitigation ratio of approximately 16:1 for waters of the United States and 2.2:1 for waters of the State. These proposed mitigation ratios meet the intent of the policy.

Section 17.58.040(B) 1 of the CLUDC requires on-site mitigation ratio of 4 to 1 for functional loss of wetland acreage or functional capacity. The proposed project will not result in a loss of wetland acreage. The loss to functional capacity is a temporal loss, which will be remedied with restoration. In consultation with the Coastal Commission, the project's wetland creation rate of 2.2 acres created for every 1 acre with temporary impacts is sufficient wetland mitigation. Coastal Commission staff has requested, and special condition 4 is offered to

require, higher performance standards for the percent of native vegetation cover achieved over the five year timeframe for the established wetland (see Table 3 of Attachment 2).

> Special Condition 4: The applicant shall achieve native vegetation percent cover for the Seasonal/Seed Wetland (Wetland E-6 and Establishment Area) as follows: Year 1, 25% native plant cover; Year 2, 40% native plant cover; Year 3, 60%; Year 4, 70%, and Year 5, 80% native plant cover.

As proposed through the Mitigation and Monitoring Plan the project complies with most of the remaining wetland mitigation requirements of the CLUDC which include:

1) Locating compensatory wetland adjacent to impacted wetlands;
2) Revegetation with site appropriate species;
3) Developing a wetland site that respects topography and hydrology; and
4) Timing the project for success. This project will happen just before the rainy season, which will help ensure success.

The only requirement that the project cannot meet is the requirement to reuse existing vegetation and soil in mitigation areas. The existing soil and plants cannot be reused for the restoration activities because they are contaminated with hazardous materials. They will be removed from site and disposed of in a land fill.

The CLUDC section 17.58.050C requires the applicant to submit a detailed implementation and monitoring plan which was has been provided (Attachment 2). The plan conforms to the requirements of the code. Special Condition 5 will ensure that the plan is implemented.

> Special Condition 5: The applicant shall implement, concurrently with the OUE RAW, the wetland restoration, creation and monitoring work tasks in the Operable Unit E Mitigation and Monitoring Plan and the SEIR Addendum.

The proposed project includes some activities which will take place within an ESHA buffer and policy OS-1.10 applies in a very limited way to the project.

Policy OS-1.10: Permitted Uses within ESHA Buffers. Development within an Environmentally Sensitive Habitat Area buffer shall be limited to the following uses:

a. Wetland Buffer.
    i. Uses allowed within the adjacent Wetland ESHA pursuant to Policy OS-1.3.
    ii. Nature trails and interpretive signage designed to provide information about the value and protection of the resources
    iii. Invasive plant eradication projects if they are designed to protect and enhance habitat values.
b. Riparian Buffer.
    i. Uses allowed within the adjacent River and Stream ESHA pursuant to Policy OS-1.5.
    ii. Uses allowed within the adjacent ESHA pursuant to Policy OS-1.6.
    iii. Buried pipelines and utility lines.
    iv. Bridges.
    v. Drainage and flood control facilities.

The proposed project will include limited use of equipment associated with the remediation and mitigation activities within the buffer. As these activities are required to achieve the restoration, these activities are permissible within the buffer.

Additionally, the City received a comment letter from the Water Board with regard to this project. Comments from the letter included special conditions related to the Wetland Mitigation and Monitoring Plan and are included here for consistency as a Special Condition of the CDP.

> Special Condition 6: Implement the requirements of the water board, which include:
> 1. If riparian trees are planted to replace removed trees greater that 4" diameter at breast height (dbh), than 85% of individual replacement trees must survive through the end of the 5 year monitoring period.
> 2. Conduct the final wetland re-delineation at the end of the spring growing season for optimal vegetation identification and to document optimal vegetative cover.

**Biological Resources.** A rare plant survey was completed for the project in April of 2016 and is attached (Attachment 7). The survey was conducted in all terrestrial areas slated for soil disturbance and found evidence of no rare plants. No additional measures are necessary for the protection of rare plants. Additionally, a number of biological resources studies have been completed for the entire Mill Site over the years which have included:

1. Avian Habitat Utilization And Impact Assessment, WRA 2006
2. Assessment of Environmentally Sensitive Habitat Areas, WRA 2005
3. Delineation of Potential Section 404 Jurisdictional Wetlands and Waters, WRA 2005
4. Biological Assessment, WRA 2005

Staff has reviewed all of these reports and relevant mitigation measures to address potential impacts to avian, mammalian, and amphibian organisms of special concern have been included in the SEIR Addendum.

**Archaeological and Cultural Resources.** A cultural resources investigation, completed in 2003, by TRC indicated a high potential for cultural resource sites on the Mill site, although all known cultural resource sites are located either on the bluff areas within the City's Coastal Trail property or on the northern portion of OUC in Parcel 1 and Parcel 2. No known cultural resources are located in the proposed excavation areas. However unknown historic or prehistoric resources could be located within the proposed areas of excavation. The City of Fort Bragg and DTSC engaged in consultation with the Sherwood Band of Pomo Indians (SVBP) as required by State law and the City's MOU with SVBP. Staff from the City and DTSC met with the tribal council on two occasions and with tribal staff on-site to identify and address cultural resources concerns of the tribe and to develop specific mitigation measures to address those concerns. The attached SEIR Addendum includes the requested mitigation measures of the tribe. Additionally, Arcadis prepared a Cultural Resources Coordination Plan to memorialize the agreements of the consultation process. The Cultural Resources Coordination Plan will be implemented as part of the OUE RAW project in order to protect and mitigate against impacts to cultural resources both of these activities are required for the effective protection of cultural resources on the site. The Cultural Resources Coordination Plan has not been attached to this staff report because it is a confidential document and

cannot be shared with the general public. It may be reviewed by Planning Commissioners at the Community Development Department.

> Special Condition 7: The applicant shall implement the Cultural Resources Coordination Plan and the Cultural Resources Mitigation Measures of the SEIR Addendum concurrently with the RAW.

These measures insure that the project complies with Policy OS-4.1 below and the archaeological protection regulations of the CLUDC.

> Policy OS - 4.1. Preserve Archaeological Resources. New development shall be located and/or designed to avoid archaeological and paleontological resources where feasible, and where new development would adversely affect archaeological or paleontological resources, reasonable mitigation measures shall be required.

**Erosion and Water Quality.** The project involves the removal of soils and sediments which are contaminated with hazardous materials. In order to improve post-construction storm water quality and infiltration on the mill site, the applicant has proposed to: 1) back fill and revegetate the upland sites that have been excavated and 2) backfill the removed sediments and restore the wetland sites. The proposed plans and the SEIR Addendum both include well defined strategies and mitigations to ensure that the project does not result in erosion or impacts to water quality and will result in compliance with Policy OS -3.1 and water quality regulations from the CLUDC.

The proposed project includes storage of materials for dewatering, drying and characterization prior to removal. The project Workplan includes a detailed description of storage pile cover techniques and dewatering techniques to be used to ensure that water from the dewater process flows back into wetlands and to ensure that dust is not produced from the pile during drying activities. However, due to the timing of the proposed excavations, there is some chance that excavation or some portion of the project may occur during the wet season. The CLUDC prohibits grading between November 1st and March 30th unless the City Engineer determines that the soil conditions at the site are suitable and sedimentation control measures are adequate. Staff recommends Special Condition 8 in the event that project activities extend into the rainy season.

> Special Condition 8: The applicant shall obtain permission from the City Engineer to continue work into the rainy season and the applicant shall comply with the stormwater management mitigation measure from the SEIR Addendum.

**Air Quality.** The City of Fort Bragg is located in the North Coast Air Basin and is within the jurisdiction of the Mendocino County Air Quality Management District (AQMD). Mendocino County is an “attainment area” for local, state and federal air quality standards except for suspended particulate matter (PM10). Excavation activities may result in temporary increases in airborne dust emissions. The applicant’s contractors may be required to obtain local air quality permits or state mobile equipment permits. The contractors for the project are encouraged to Call AQMD at (707)463-4354 with any questions. The AQMD will require that a fugitive dust permit be issued for this project prior to the issuance of a demolition permit. This

will establish measures to prevent dust from traveling off-site. Potential adverse impacts to air quality will be addressed through the following Special Condition:

> Special Condition 9: Particles generated in the remediation process will be minimized via dust suppression control. The applicant shall comply with the air quality mitigation measures required in the SEIR Addendum.

## Environmental Review

The City of Fort Bragg served as the Lead Agency under CEQA and prepared an SEIR for Phase II of the Coastal Trail. In order to avoid segmentation, as Resource Agency for the remediation, DTSC and the City prepared an SEIR Addendum for the implementation of the OUE RAW (see Attachment 3). The SEIR Addendum tiers off of the Coastal Trail SEIR for Phase II of the Coastal Trail.

The DTSC is in the final review and approval phase of the OUE Removal Action Workplan (RAW). However, in order for DTSC to approve the OUE RAW, the SEIR Addendum (CEQA document) must be adopted. Since the City is the Lead Agency for the Coastal Trail Subsequent SEIR and the SEIR Addendum, the City must complete its action before DTSC approves the RAW. Thus the SEIR Addendum must be adopted by the City concurrently with the CDP for the project, in advance of DTSC's approval of the OUE RAW. The applicant can begin implementation of the project only after the RAW is adopted by DTSC and City Council. Special Condition 10 has been added to ensure that this occurs.

Special Condition 10 requires that all of the mitigation measures of the SEIR Addendum are implemented.

> Special Condition 10: All mitigation measures of the SEIR Addendum and the Mitigation and Monitoring Plan shall be implemented with the OUE RAW, as detailed below:

1. The project contractor, on behalf of the project applicant, shall prepare a dust control plan for construction activities at the project site pursuant to the requirements of the MCAQMD. The project contractor shall be responsible for ensuring that all adequate dust control measures are implemented in a timely manner during all phases of construction and maintenance activities at the project site. The dust control plan shall include the following measures:
   a. Water shall be applied by means of truck(s), hoses, and/or sprinklers as needed prior to any land clearing or earth movement to minimize dust emissions.
   b. All material excavated, stockpiled, or graded shall be sufficiently watered to prevent fugitive dust from leaving the property boundaries or causing a public nuisance of an ambient air standard. Watering should occur at least twice daily, however frequency of watering shall be based on the type of operation, soil, and wind exposure.
   c. All on-site vehicle traffic shall be limited to a speed of 15 miles per hour on unpaved roads.
   d. All trucks hauling soil, sand, or other loose materials on public roads will be covered or required to maintain at least two feet of freeboard.
   e. All land clearing, grading, earth moving, and/or excavation activities shall be suspended as necessary, based on site conditions, to prevent excessive windblown dust when winds are expected to exceed 20 miles per hour.
   f. Excavation and grading activities shall be suspended when sustained winds exceed 25 mph, instantaneous gusts exceed 35 mph, or dust from construction might obscure driver visibility on public roads.
   g. All inactive portions of the construction site, including soil stockpiles, shall be covered, seeded, or watered until a suitable cover is established. Alternatively, apply City approved nontoxic soil

stabilizers (according to manufacturers' specifications) to all inactive construction areas (previously graded areas that remain inactive for four consecutive days). Acceptable materials that may be used for chemical soil stabilization include petroleum resins, asphaltic emulsions, acrylics, and adhesives that do not violate Regional Water Quality Control Board (RWQCB) or California Air Resources Board (CARB) standards.

h. Paved areas adjacent to construction sites (the abandoned runway) shall be swept or washed as required to remove excess accumulations of silt and/or mud, which may have resulted from grading and construction activities at the project site.

i. The project proponent shall re-establish ground cover on all disturbed portions of the project site through seeding and watering in accordance with the City of Fort Bragg Grading Ordinance and Local Coastal Program, which requires the application of native seed or terminal seed.

j. A publicly visible sign shall be posted with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 24-hours. The telephone number of the MCAQMD shall also be visible to ensure compliance with the Fugitive Dust Emissions requirements.

k. Construction workers shall park in designated parking area(s) to help reduce dust emissions.

2. Excavation activities for remedial activities will be suspended if winds exceed 15 miles per hour (mph) sustained (for 15 minutes) or 25 mph (instantaneous gusts).

Soil stockpiles associated with remedial activities will be placed atop and covered with heavy-duty plastic sheeting when they are not actively being managed Stockpile covering will be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate.

Open bodied trucks utilized for remedial activities shall be covered when used to transport materials with the potential for airborne dust.

The equipment (trucks, excavators) used for remedial activities will be primarily cleaned by sweeping or brushing to remove visible soil. Soil that cannot be removed by this procedure will be removed from equipment by washing in a contained area. Wash water will be collected, characterized, and appropriately disposed or recycled in accordance with applicable federal, state, and local requirements.

3. Temporary staging areas will be set up adjacent to OU-E RAW excavations for soil stockpiling. Excavated material will be placed on plastic sheeting and covered by plastic sheeting to mitigate migration of affected soil, shield the material from elements, and mitigate fugitive dust and stormwater run-on and runoff.

Visible soils carried onto Cypress Street and/or SR 1 via trucks, earth moving equipment, water, or other means that occurs from remediation activities shall be promptly removed.

4. If cultural materials are discovered during construction, all earth-moving activity within 100 feet of the immediate discovery area will halt until a qualified archaeologist can assess the nature and significance of the find.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the THPO who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the project archaeologist so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

The City shall require Native American monitoring of all construction activities that will result in grading or movement of native soils in cultural resource areas as identified in the Data Collection Plan.

5. A professional archaeologist, meeting the minimum requirements in accordance with the Secretary of Interior's Professional Qualifications, 36CFR Part 61, and a Native American tribal monitor, both Hazardous Waste Operations and Emergency Response (HazWOPER) trained and certified, will be on site during all ground disturbing activities implemented pursuant to the OU-E RAW. Copies of current HazWOPER certification will be provided to DTSC and the City prior to implementation of ground disturbing OU-E RAW activities.

6. Tribal monitoring services will be required whenever construction activities include ground disturbance of native or disturbed soils, as the site includes extensive areas of fill that may have been moved in the past from archaeological sites on the property. The tribal monitoring crew size shall be determined by the Project Archaeologist. At minimum, however, there shall be one tribal monitor for every separate area of native ground disturbing activity that is simultaneously occurring at least thirty (30) meters apart. A general rule of thumb when determining if a monitor is required is that one monitor in required for every piece of operational ground disturbing equipment in an area that requires monitoring.

7. During construction activities, if any archaeological artifacts or features are encountered, both the Project Archaeologist and the tribal monitors are empowered to stop construction activities within a 50 foot radius of the find. Work within this buffer shall temporarily cease until the Project Archaeologist, in consultation with the tribal monitor, make a determination on (1) whether the find is an archaeological artifact; (2)whether the find is located within an intact context (i.e. not within disturbed fill soils), (3) whether the find is an isolated item, (4) whether the find is part of a larger previously unknown archaeological site; and (5) the best course of action to avoid or minimize impacts to the resources as applicable. If the Project Archaeologist and the tribal monitor disagree about the nature of the find and/or any of items 1 through 5 above, the professional Archaeologist will e-mail a photo to the Tribal Chairman for additional input before construction in the buffer area may resume.

i. If the find is determined to be both in an intact context, and meets the standard for designation as an archaeological site or is a portion of a known archaeological site, then work shall cease and the DTSC shall determine the best course of action given the level and type of contamination and the type of archaeological resource. Appropriate courses of action include:

1. DTSC could halt excavation activities at the location, fill the excavation, and re-evaluate the remedial action of the location in the Operable Unit E Feasibility Study and Remedial Action Plan.
2. Leave the contaminated soils in place and cap the site as mitigation for the protection of the cultural resource site;
3. Remove the contaminated soils. Extract and clean artifacts from the contaminated soils for the tribe to rebury in the designated cultural resource reburial area on the City's Coastal Trail property.

ii. If the find is determined to be in a disturbed context or an isolated find that is clearly not associated with an archaeological site, all cultural items shall be recorded as such and then collected, cleaned and returned to the tribe for reburial in the designated cultural resource reburial area on the City's Coastal Trail property or other area as agreed upon in writing by the parties."

8. During construction, permanent and temporary impacts to ESHA natural communities shall be avoided/minimized to the extent feasible. The ESHA natural communities which have the potential to be disturbed by the project shall be shown on site plans. Areas in which grading or other disturbance is to occur shall be defined on-site by readily identifiable barriers that will protect the surrounding native habitat areas. Construction equipment and other vehicles shall be prevented from entering ESHA natural communities to be avoided through the use of exclusion zones or other barriers.

9. Prior to construction, the applicant will prepare a Hazardous Materials Response Plan or equivalent to allow for a prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur. All project-related hazardous materials spills within the project site will be cleaned up immediately by the contractor. Spill prevention and cleanup materials will be on-site at all times during construction.

10. During construction, to control erosion during and after project implementation, the applicant and contractors will implement standard Best Management Practices (BMPs).

11. During construction, the cleaning and refueling of equipment will occur only within a designated staging area and at least 65 ft from wetlands, other waters, or other aquatic areas. This staging area will conform to BMPs applicable to attaining zero discharge of stormwater runoff. At a minimum, all

equipment and vehicles will be checked and maintained on a daily basis to ensure proper operation and avoid potential leaks or spills.

12. During construction, trash will be contained, removed from the work site, and disposed of regularly by the contractor. Following construction, all trash and construction debris will be removed from work areas.

13. During construction, any disturbance within jurisdictional wetlands or other waters will take place between June 15 and October 31 in any given year, when the surface water is likely to be dry or at seasonal minimum. Deviations from this work window are not permitted by the City's Certified LCP.

14. If any native shoulderband snails are observed during ground disturbance activities in suitable habitat, such snails shall be relocated to suitable habitat outside of the area of disturbance to avoid/minimize injury or mortality.

15. Prior to construction, the City shall obtain a letter of permission or equivalent authorization from CDFG to relocate NRLF and other SSC species from work areas encountered during construction within the ADI as necessary. Qualified biologists shall capture and relocate any NRLF (if present) or other SSC species to suitable habitat outside of the area of impact. Observations of SSC species or other special-status species shall be documented on CNDDB forms and submitted to CDFG upon project completion.

16. Prior to and during construction, if project activities cannot feasibly avoid the typical nesting bird season (defined as occurring from March 15 to July 31 for most bird species), weekly bird surveys of the project areas that will be under construction shall be conducted by a qualified biologist with experience in conducting breeding bird surveys, beginning 30 days prior to the disturbance of suitable nesting habitat. If a protected native bird nest is found, clearance/construction will not occur within an appropriate buffer/exclusion zone (determined by a qualified biologist) delineated by highly visible flagging/stakes until August 1, or until any active nests are vacated and there is no evidence of a second attempt at nesting.

17. Prior to and during construction, if active northern harrier nests are observed, a minimum 300-ft buffer/exclusion zone delineated by highly visible flagging/stakes shall be established by a qualified biologist around each active nest until all young have fledged. During construction within 300 ft of grassland and freshwater marsh habitats during the northern harrier breeding season, a qualified biologist shall conduct weekly monitoring visits to assess the present status of breeding activity and establish exclusion zones as needed.

18. Prior to and during construction, if active white-tailed kite nests are observed, a minimum 300-ft buffer/exclusion zone delineated by highly visible flagging/stakes shall be established by a qualified biologist around each active nest until all young have fledged.

19. Prior to construction, nest surveys for Bryant's savannah sparrow shall be conducted by a qualified biologist if construction is proposed to occur within 100 ft of potential grassland and freshwater marsh nesting habitat during the breeding season for the species (April to July).

20. Prior to and during construction, if active Bryant's savannah sparrow nests are observed, a minimum 100-ft buffer/exclusion zone delineated by highly visible flagging/stakes shall be established by a qualified biologist around each active nest until all young have fledged. During construction within 100 ft of grassland and freshwater marsh habitats during the Bryant's savannah sparrow breeding season, a qualified biologist shall conduct weekly monitoring visits to assess the present status of breeding activity and establish exclusion zones as needed.

21. Temporary staging or stockpile areas will not be located within 100 feet of any sensitive habitats or ESHAs.

Prior to construction, vegetation removal shall be scheduled to avoid the typical nesting bird season (defined as occurring from March 15 to July 31 for most bird species), if feasible. Prior to construction, nest surveys for Bryant's savannah sparrow shall be conducted by a qualified biologist if construction is proposed to occur within 100 ft. of potential grassland and freshwater marsh nesting habitat during the breeding season for the species (April to July). Prior to and during construction, if active Bryant's savannah sparrow nests are observed, a minimum 100-ft buffer/exclusion zone delineated by highly visible flagging/stakes shall be established by a qualified biologist around each active nest until all young have fledged. During construction within 100 ft. of grassland and freshwater marsh habitats during the Bryant's savannah sparrow breeding season, a qualified biologist shall conduct weekly monitoring visits to assess the present status of breeding activity and establish exclusion zones as needed.

22. During construction, to control erosion during and after project implementation, the applicant and contractors for the remediation activities will implement standard California Department of Transportation (Caltrans) Best Management Practices (BMPs).

## PLANNING COMMISSION ACTION

1. Hold a hearing on the CDP 3-16, close the hearing, deliberate, and consider: 1) approving the Fort Bragg Coastal Trail SEIR Addendum; and 2) approving the Coastal Development Permit (CDP3-16) based on the findings and subject to the conditions cited.

### ALTERNATIVE ACTION

2. Hold a hearing, close the hearing, deliberate without a decision, provide direction to staff and revisit the application at the next scheduled meeting for a decision and the addition of any new findings.
3. Hold the hearing, and continue the hearing to a date certain if there is insufficient time to obtain all input from all interested parties. At the date certain the Commission may then deliberate and make a decision.

## RECOMMENDATION

**1. Staff recommends certification of the SEIR Addendum and approval of CDP 3-16 for the implementation of: 1) the Removal Action Workplan for Operable Unit E; 2) the Cultural Resources Coordination Plan; 3) the Wetland Mitigation and Monitoring Plan; and 4) the decommissioning of various monitoring wells and pits of the Georgia-Pacific Mill Site, based on the findings and subject to the conditions cited below:**

### FINDINGS

1. The remediation of OUE is necessary to eliminate safety concerns stemming from past contamination on the Mill Site. The remediation will remove a condition of blight on the property;
2. The proposed project is consistent with the purpose and intent of the Timber Resources Industrial (IT), as well as all other applicable provisions of Title 17 of the Fort Bragg Municipal Code, and applicable provisions of the Fort Bragg Municipal Code in general;
3. The proposed project is in conformity with the certified Local Coastal Program (LCP);

4. The site is physically suitable in terms of design, location, shape, size, operating characteristics, and the provision of public and emergency vehicle (e.g., fire and medical) access and public services and utilities (e.g., fire protection, police protection, potable water, schools, solid waste collection and disposal, storm drainage, wastewater collection, treatment, and disposal, etc.), to ensure that the type, density, and intensity of use being proposed would not endanger, jeopardize, or otherwise constitute a hazard to the public interest, health, safety, convenience, or welfare, or be materially injurious to the improvements, persons, property, or uses in the vicinity and zoning district in which the property is located;
5. As proposed, the development will not have any unmitigated adverse impacts to any known historical, archaeological or paleontological resource;
6. The proposed development will not have any significant adverse impacts on the environment within the meaning of the California Environmental Quality Act as provided by an SEIR Addendum (to the Fort Bragg Coastal Trail Phase II SEIR) that has been prepared for the project; and
7. The proposed development is in conformity with the public access and public recreation policies of the LCP and Chapter 3 of the California Coastal Act.

## COASTAL DEVELOPMENT PERMIT FINDINGS

1. The proposed development as described in the application and accompanying materials, as modified by any conditions of approval, is in conformity with the City of Fort Bragg's certified Local Coastal Program and will not adversely affect coastal resources;
2. The project is located between the first public road and the sea, that the project is in conformity with the public access and recreation policies of Chapter 3 of the Coastal Act of 1976 (commencing with Sections 30200 of the Public Resources Code);
3. Feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment;
4. The proposed use is consistent with the purposes of the zone in which the site is located;
5. The proposed development is in conformance with the City of Fort Bragg’s Coastal General Plan;
6. The proposed location of the use and conditions under which it may be operated or maintained will not be detrimental to the public health, safety, or welfare, or materially injurious to properties or improvements in the vicinity; and
7. Services, including but not limited to, water supply, sewage disposal, solid waste, and public roadway capacity have been considered and are adequate to serve the proposed development; and
10. Supplemental findings for projects located between the first public road and the sea required by Section 17.56.070 of this Development Code.

## SPECIAL CONDITIONS

1. Special Condition 1: Georgia-Pacific shall record a deed restriction on the OU-E Lowlands (the area illustrated as “A OUE Lowland” in Figure 2-2 of Attachment 1) limiting use of this area to Open Space.
2. Special Condition 2: DTSC must approve the OUE RAW, and the OUE RAW must be approved by City Council under its Polanco authority, prior to City approval of the Grading Permit for the implementation of the OUE RAW.

3. Special Condition 3: Prior to removal or decommissioning of monitoring and injection wells, the applicant shall obtain approval from DTSC.
4. Special Condition 4: The applicant shall achieve native vegetation percent cover for the Seasonal/Seed Wetland (Wetland E-6 and Establishment Area) as follows: Year 1, 25% native plant cover; Year 2, 40% native plant cover; Year 3, 60%; Year 4, 70%, and Year 5, 80% native plant cover.
5. Special Condition 5: The applicant shall implement, concurrently with the OUE RAW, the wetland restoration, creation and monitoring work tasks in the Operable Unit E Mitigation and Monitoring Plan and the SEIR Addendum.
6. Special Condition 6: Implement the requirements of the water board, which include:
   1. If riparian trees are planted to replace removed trees greater that 4" diameter at breast height (dbh), than 85% of individual replacement trees must survive through the end of the 5 year monitoring period.
   2. Conduct the final wetland re-delineation at the end of the spring growing season for optimal vegetation identification and to document optimal vegetative cover.
7. Special Condition 7: The applicant shall implement the Cultural Resources Coordination Plan and the Cultural Resources Mitigation Measures of the SEIR Addendum concurrently with the RAW.
8. Special Condition 8: The applicant shall obtain permission from the City Engineer to continue work into the rainy season and the applicant shall comply with the stormwater management mitigation measure from the SEIR Addendum.
9. Special Condition 9: Particles generated in the remediation process will be minimized via dust suppression control. The applicant shall comply with the air quality mitigation measures required in the SEIR Addendum
10. Special Condition 10: All mitigation measures of the SEIR Addendum and the Mitigation and Monitoring Plan shall be implemented with the OUE RAW

## STANDARD CONDITIONS

1. This action shall become final on the 11th working day following the Coastal Commission's receipt of the Notice of Final Action unless an appeal to the Coastal Commission is filed pursuant to Chapter 17.61.063 and 17.92.040. This action is appealable to the California Coastal Commission pursuant to Chapter 17.92.040.
2. The application, along with supplemental exhibits and related material, shall be considered elements of this permit, and compliance therewith is mandatory, unless an amendment has been approved by the City.
3. This permit shall be subject to the securing of all necessary permits for the proposed development from City, County, State and Federal agencies having jurisdiction. All plans submitted with required permit applications shall be consistent with this approval.
4. This permit shall be subject to revocation or modification upon a finding of any one or more of the following:
   (a) That such permit was obtained or extended by fraud.
   (b) That one or more of the conditions upon which such permit was granted have been violated.
   (c) That the use for which the permit was granted is so conducted as to be detrimental to the public health, welfare or safety or as to be a nuisance.
   (d) A final judgment of a court of competent jurisdiction has declared one or more conditions to be void or ineffective, or has enjoined or otherwise prohibited the enforcement or operation of one or more conditions.
5. This permit is issued without a legal determination having been made upon the number, size or shape of parcels encompassed within the permit described boundaries. Should, at

any time, a legal determination be made that the number, size or shape of parcels within the permit described boundaries are different than that which is legally required by this permit, this permit shall become null and void.

6. This Coastal Development Permit approval shall lapse and become null and void 24 months from the date of approval unless before the passing of 24 months, construction has commenced and is diligently pursued towards completion or an extension is requested and obtained.

## DISTRIBUTION

- Tom Lanphar, DTSC
- Cristin Kenyon, Coastal Commission

## ATTACHMENTS

Attachment 1: Removal Action Work Plan Operable Unit E, Arcadis, May 2016
Attachment 2: Operable Unit E Mitigation and Monitoring Plan (Wetland), Arcadis, July 2016
Attachment 3: Addendum to the Final Subsequent EIR for the Fort Bragg Coastal Restoration and Trail Phase II Project, City of Fort Bragg & DTSC, July 2016
Attachment 3A: SEIR Addendum Mitigation and Monitoring Plan, City of Fort Bragg, July 2016
Attachment 4: Proposed Well Decommissioning Map
Attachment 5: Figure of Pits to be filled
Attachment 6: Site Photos
Attachment 7: Rare Plant Survey OUE

Georgia-Pacific LLC

# REMOVAL ACTION WORK PLAN
# OPERABLE UNIT E

Former Georgia-Pacific Wood Products Facility

Fort Bragg, California

May 2016

© Georgia-Pacific LLC 2016

DRAFT

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# REMOVAL ACTION WORK PLAN, OPERABLE UNIT E

Former Georgia-Pacific Wood Products Facility, Fort Bragg, California

Jack Barry, EIT
Environmental Engineer II

Justin Sobieraj, PG (CA #8524)
Project Manager, Senior Geologist

Jeremie Maehr, PE (CA #C68970)
Program Manager, Principal Engineer

Prepared for:
Georgia-Pacific LLC

Prepared by:
Arcadis U.S., Inc.
100 Montgomery Street
Suite 300
San Francisco
California 94104
Tel 415 374 2744
Fax 415 374 2745

Our Ref.:
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May 2016

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# VERSION CONTROL

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AOC | Area of Concern |
| AOI | Area of Interest |
| AME | Acton•Mickelson•Environmental, Inc. |
| Arcadis | Arcadis U.S., Inc. |
| AST | aboveground storage tank |
| B(a)P | benzo(a)pyrene |
| BHHERA | Baseline Human Health and Ecological Risk Assessment – Operable Unit E |
| bgs | below ground surface |
| bss | below sediment surface |
| btoc | below top of casing |
| Cal/OSHA | California Division of Occupational Safety and Health |
| CCC | California Coastal Commission |
| CCR | California Code of Regulations |
| CEQA | California Environmental Quality Act |
| CFR | Code of Federal Regulations |
| City | City of Fort Bragg |
| COPC | chemical of potential concern |
| CY | cubic yards |
| dioxin | polychlorinated dibenzo-*p*-dioxin |
| DTSC | California Environmental Protection Agency, Department of Toxic Substances Control |
| ELCR | excess lifetime cancer risk |
| EPC | exposure point concentration |
| ERA | ecological risk assessment |
| ESA | environmental site assessment |
| ESHA | environmentally sensitive habitat area |
| FS | Feasibility Study, Operable Units C and D |
| furan | polychlorinated dibenzofuran |
| Georgia-Pacific | Georgia-Pacific LLC |
| HASP | Health and Safety Plan |

| | |
|---|---|
| HAZWOPER | hazardous waste site operations |
| HDPE | high-density polyethylene |
| HERO | Human and Ecological Risk Office |
| HSC | California Health and Safety Code |
| Hygienetics | Hygienetics Environmental Services, Inc. |
| IRM | Interim Remedial Measure |
| JSA | job safety analysis |
| LBP | lead-based paint |
| LOAEL | lowest observed adverse effect level |
| mg/kg | milligram(s) per kilogram |
| mg/kg-day | milligrams per kilogram per day |
| NAVD88 | North American Vertical Datum of 1988 |
| NCP | National Contingency Plan |
| NTE | not to exceed |
| ORM | oxygen-releasing material |
| OSHA | Occupational Safety and Health Administration |
| OU-C/D | Operable Unit C/D |
| OU-C/D RAP | *Remedial Action Plan Operable Units C and D* |
| OU-C/D RI | Remedial Investigation Operable Units C and D |
| OU-E | Operable Unit E |
| PAH | polycyclic aromatic hydrocarbon |
| pg/g | picogram per gram |
| Phase II ESA | Phase II Environmental Site Assessment |
| PPE | personal protective equipment |
| PSL | primary screening level |
| RAA | removal action area |
| RAG | removal action goal |
| RAW | Removal Action Work Plan Operable Unit E |
| RBTL | risk-based target levels |
| RDIP | remedial design and implementation plan |
| RI | remedial investigation |

| | |
|---|---|
| RI Report | Final Remedial Investigation Report Operable Unit E |
| SAP | Sampling and Analysis Plan |
| SEIR | Subsequent Environmental Impact Report |
| SF | square feet |
| site | former Georgia-Pacific Wood Products Facility located at 90West Redwood Avenue in Fort Bragg, Mendocino County, California |
| TEQ | toxic equivalent |
| TPH | total petroleum hydrocarbon |
| TPHd | total petroleum hydrocarbons in the diesel range |
| TRC | TRC Companies, Inc. |
| UCL | upper confidence limit |
| USEPA | U.S. Environmental Protection Agency |
| WRA | WRA Environmental Consultants |

# EXECUTIVE SUMMARY

On behalf of Georgia-Pacific LLC, Arcadis U.S., Inc. (Arcadis) prepared this Removal Action Work Plan (RAW) for Operable Unit E (OU-E) at the former Georgia-Pacific Wood Products Facility located at 90 West Redwood Avenue in Fort Bragg, Mendocino County, California (site), as shown on Figure 1-1. A RAW is a work plan that may be prepared for a hazardous substance release site pursuant to California Health and Safety Code Section 25356.1. The proposed removal action detailed in this RAW addresses impacted soil, groundwater, and sediment in OU-E. The proposed removal action will support the construction and public use of the central portion of the Fort Bragg Coastal Trail in 2017. The City of Fort Bragg plans to construct the central section of the Coastal Trail through this area in 2017. Public access will occur once construction is complete; therefore, this removal action is necessary in 2016 to be protective of human health once the Coastal Trail opens in 2017. Once the proposed activities are complete, risks to public health and the environment will be reduced and the areas addressed by the RAW will be acceptable for the planned recreational use.

The proposed removal action areas (RAAs) include the following: OU-E Lowland RAA, Southern Ponds RAA, Ponds 7 RAA, and Riparian RAA (Figures 2-8 through 2-14). For each RAA, removal action goals (RAGs) were established, with the primary RAG of this RAW being to accelerate remediation within the identified Areas of Concern (AOCs) by removing areas where elevated concentrations of chemicals of potential concern (COPCs) have been identified.

The RAW is an interim action and not the final cleanup. The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) will further evaluate the cleanup for these areas in a future Feasibility Study and future Remedial Action Plan. This RAW is appropriate for removal actions that are projected to cost less than $2,000,000 (DTSC 2016b), and concludes on the optimal alternative for a removal action.

This RAW includes a background of the site, description of removal action goals, evaluation and selection of removal actions, description of implementation, and reporting requirements and implementation schedule. Following the comparative analysis presented in this RAW, excavation and disposal was the selected removal action alternative for each Area of Concern (AOC)/Area of Interest. This selected alternative is estimated to cost $880,000.

OU-E is one of five operable units on the site (Figure 2-1), and consists of approximately 12 acres of man-made ponds and seasonal wetland areas and 45 terrestrial acres divided into eight AOCs (Figure 2-2). Based on the findings of the *Final Remedial Investigation Report Operable Unit E* (Arcadis 2013a) and the *Baseline Human Health and Ecological Risk Assessment – Operable Unit E* (Arcadis 2015a), removal action areas (RAAs) were developed. These RAAs include the following: OU-E Lowland RAA, Southern Ponds RAA, Ponds 7 RAA, and Riparian RAA (Figures 2-8 through 2-14). For each RAA, removal action goals (RAGs) were established, with the primary RAG of this RAW being to accelerate remediation within the identified AOCs by removing areas where elevated concentrations of chemicals of potential concern (COPCs) have been identified. The removal alternative selected (excavation and disposal) most effectively meets the RAG for this RAW.

Following a comparative analysis of three potential removal alternatives, the most effective removal action was concluded to be excavation and off-site disposal. This removal action alternative is easily

implementable and provides immediate and the most effective reduction of risks associated with the COPCs. This alternative can be implemented concurrently with excavation activities at Operable Unit C/D; therefore, the removal action can be conducted in 2016 to accelerate remediation in OU-E. Approximately 3,500 cubic yards are proposed for removal in OU-E, with a 27,000-square-foot footprint and a depth extending to a maximum of 9 feet below ground surface. Excavated soil and sediment will be disposed of off-site at permitted waste facilities. Approximately 175 truck trips are required to remove the soil and sediment. The total duration of removal activities at the excavations is anticipated to last approximately 5 weeks and cost approximately $880,000. Work will be conducted in accordance with applicable federal, state, and local regulations. The necessary permits (i.e., Coastal Development Permit, Grading Permit, Dust Control Permit, Section 401 of the Clean Water Act Permit, Section 404 of the Clean Water Act Permit, Section 1602 Streambed Alteration Agreement Permit, General Permit for Discharges of Storm Water Associated with Construction Activity, and Mendocino County Environmental Health Department Well Destruction Permits) and approvals will be obtained from agencies and acceptance by the state and the community. This RAW concludes that the excavation and disposal alternative is the preferred method of removal action for OU-E RAAs.

The City of Fort Bragg, as Lead Agency under California Environmental Quality Act (CEQA), prepared Subsequent Environmental Impact Report (SEIR) for the coastal trail. DTSC considered the effects described in the City's SEIR and concluded that approval of the Draft RAW would not result in significant impacts to the environment. DTSC has prepared an Addendum to the SEIR having determined this as the appropriate document under CEQA. Upon approval of the Draft RAW, DTSC will fi le a Notice of Determination to start the 30-day statute of limitations on court challenges to the approval under CEQA. The Addendum to the SEIR has identified mitigation measures necessary to protect public health (dust control and monitoring), biological resources, and cultural resources. The implementation plan for the RAW will include a Mitigation Monitoring Plan to ensure the implementation of the identified mitigation measures.

# 1 INTRODUCTION

On behalf of Georgia-Pacific LLC (Georgia-Pacific), Arcadis U.S., Inc. (Arcadis) prepared this Removal Action Work Plan (RAW) for Operable Unit E (OU-E) at the former Georgia-Pacific Wood Products Facility located at 90 West Redwood Avenue in Fort Bragg, Mendocino County, California (site), as shown on Figure 1-1. The proposed removal action detailed in this RAW addresses impacted soil, groundwater, and sediment in OU-E. The removal action will support the construction and public use of the central portion of the Fort Bragg Coastal Trail in 2017. The City of Fort Bragg (City) plans to construct the central section of the Coastal Trail through this area in 2017. Public access will occur once construction is complete; therefore, this removal action is necessary in 2016 to be protective of human health once the Coastal Trail opens in 2017. The proposed removal action areas (RAAs) include the following: OU-E Lowland RAA, Southern Ponds RAA, Ponds 7 RAA, and Riparian RAA (Figures 2-8 through 2-14). For each RAA, removal action goals (RAGs) were established, with the primary RAG of this RAW being to accelerate remediation within the identified Areas of Concern (AOCs) by removing areas where elevated concentrations of chemicals of potential concern (COPCs) have been identified. This RAW is appropriate for removal actions that are projected to cost less than $2,000,000 (California Environmental Protection Agency, Department of Toxic Substances Control [DTSC] 2016b) and concludes on the optimal alternative for a removal action). This RAW was prepared in accordance with Site Investigation and Remediation Order Docket No. HAS-RAO 06-07-150. Appendix A includes an administrative record.

## 1.1 Regulatory Framework

As indicated in DTSC's February 2016 letter, a RAW is a work plan that may be prepared for a hazardous substance release site pursuant to California Health and Safety Code (HSC) Section 25356.1 and is appropriate for removal actions that are projected to cost less than $2,000,000 (DTSC 2016b). As defined in HSC Section 25323.1, work conducted in accordance with a RAW must be performed in a manner that is protective of the public health and safety and the environment (HSC 2016). The RAW must include a detailed engineering plan for conducting the removal action, description of the onsite contamination, goals to be achieved by the removal action, and any alternative removal options that were considered and rejected and the basis for that rejection (HSC 2016).

## 1.2 Objectives

The objectives of this RAW are to:

- Summarize current site conditions and previous investigations relevant to the development of this RAW
- Develop RAAs based on the findings of the *Final Remedial Investigation Report Operable Unit E* (RI Report; Arcadis 2013a) and the *Baseline Human Health and Ecological Risk Assessment – Operable Unit E* (BHHERA; Arcadis 2015a)
- Develop RAGs for the identified RAAs

- Identify and evaluate potential RAAs that will accelerate remediation within the identified AOCs by removing areas where elevated concentrations of COPCs have been identified, resulting in the reduction of risk to human health and the environment.
- Provide comparative analysis of removal action alternatives and select a removal action alternative
- Describe the elements of the proposed removal action
- Achieve site conditions that are acceptable for the planned recreational use

## 1.3 Report Organization

This RAW was prepared based on the findings of the RI Report (Arcadis 2013a) and the BHHERA (Arcadis 2015a). This RAW presents information regarding environmental conditions at the site and proposes RAAs to reduce risk to human health and the environment. This RAW establishes RAGs to evaluate the effectiveness of RAAs at reducing risks identified in the BHHERA. Furthermore, this RAW identifies removal action alternatives and proposes the preferred course of removal action to achieve RAGs for each RAA.

This RAW is organized as follows:

- Section 2 presents background information relevant to the scope of this RAW, describes the findings of the BHHERA, and identifies RAAs addressed in this RAW.
- Section 3 summarizes RAGs to be achieved by the removal actions.
- Section 4 describes and evaluates the alternatives for removal actions, compares the alternatives for each RAA, and provides a recommended alternative for removal action proposed in OU-E.
- Section 5 provides the means and methods required to implement the removal action alternatives and details documentation to be submitted for implementation, including a Sampling and Analysis Plan (SAP) and Health and Safety Plan (HASP).
- Section 6 summarizes the reporting and schedule prior to, during, and following RAW implementation.
- Section 7 identifies references cited throughout this RAW.

# 2 SITE DESCRIPTION AND BACKGROUND

This section provides a summary of background information, as well as a summary of findings from the RI Report (Arcadis 2013a) and BHHERA (Arcadis 2015a). Additional detail regarding site history, background, setting, and investigation results is provided within the RI Report.

## 2.1 Facility Description

The 415-acre site is located west of Highway 1 along the Pacific Ocean coastline and is bounded by Noyo Bay to the south, the City to the east and north, and the Pacific Ocean to the west (Figure 1-1). Union Lumber Company began sawmill operations at the site in 1885. Georgia-Pacific acquired the site in 1973. Sawmill operations at the site included lumber production and power generation by burning residual bark and wood. Georgia-Pacific ceased operations on August 8, 2002. Much of the equipment and structures associated with sawmill operations have been removed. A northern public coastal trail extending 4.5 miles north of Fort Bragg Landing on 82 acres was opened in 2014. An additional public coastal trail extending from the southern end of the property 0.8 mile to the northern side of the City wastewater treatment plant on 5 acres was opened in 2015. With the exception of the public coastal trails, the site is fenced, security patrolled, and locked to restrict trespassers.

OU-E is one of five operable units on the site (Figure 2-1) and consists of approximately 12 acres of man-made ponds and seasonal poor-quality wetland areas and 45 terrestrial acres. In the near future, the ponds and other wetland areas will likely be classified as jurisdictional wetlands by the United States Army Corps of Engineers. Historically, the RI Report (Arcadis 2013a) identified five terrestrial Areas of Interest (AOIs) and 10 aquatic AOIs, which were incorporated into eight AOCs for evaluation in the BHHERA (Figure 2-2; Arcadis 2013b). In addition, three Operable Unit C/D (OU-C/D) AOIs (Interim Remedial Measure [IRM], West of IRM, Riparian) were transferred to OU-E for further evaluation in the *Feasibility Study, Operable Units C and D* (FS; Arcadis 2012).

Areas discussed within this RAW include the Lowland AOC, Southern Ponds AOC, Pond 7 AOC, and Riparian AOI (Figure 2-2). Details of the AOIs/AOCs not discussed in this RAW are provided in the RI Report (Arcadis 2013a), BHHERA (Arcadis 2015a), and the *Remedial Investigation Operable Units C and D* (OU-C/D RI; Arcadis 2011a).

## 2.2 Site Setting

### 2.2.1 Land Use

Most industrial features within OU-E have been removed, leaving OU-E generally vacant, with the exception of a few smaller features shown on Figure 2-2. Portions of the terrestrial area north of Pond 8 remain capped following previous foundation removal activities. There are no active structures or uses in terrestrial areas, and the primary use of aquatic areas is to provide stormwater management prior to discharge to the ocean. Portions of a public coastal trail extend north of Fort Bragg Landing and south from the City wastewater treatment plant. The foreseeable future use of OU-E is as continued stormwater management facilities, parkland, and recreational trail development. The site is fenced and locked to restrict trespassers.

Environmentally sensitive habitat areas (ESHAs[1]) comprise approximately 2.0 acres of the OU-E lowland and approximately 13.2 acres of the remaining OU-E area. The configuration of these ESHAs limits the use of this area.

### 2.2.2 Ecology

The majority of OU-E was previously developed industrial land characterized by large areas covered with structures/foundations, asphalt, crushed rock, or a mixture of both. Weedy ruderal vegetation is occasionally observed in these areas (WRA Environmental Consultants [WRA] 2005).

Within OU-E, identified wetlands and waters include ponds and ditches used in former sawmill operations and seasonal wetlands[2] and wetland seeps[3] (Figures 2-3 and 2-4). Most of the ponds at the site are dominated by species typical of freshwater marshes, although a few consist of open water with less than 5% cover by vegetation.

Two ESHA delineation efforts occurred to identify “any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments” (CCC 2000). In 2009, WRA delineated 20 waters, including wetlands, totaling 13.31 acres, including Ponds 1 through 9 and the North Pond (classified as industrial ponds) and three wetland seeps on the vegetated slope of the northern portion of OU-E (Wetlands B, C, and D, shown on Figure 2-3; WRA 2009).

In 2010, Arcadis identified three wetland seeps (the eastern portion of Wetland E-1, Wetland E-3, and Wetland E-8) and four seasonal wetlands in OU-E (the western portion of Wetland E-1, Wetland E-2, Wetland Complex E-5 and E-6, and Wetland E-7; Figure 2-3). One additional wetland classified as an industrial pond (Wetland E-4) was identified in a concrete-lined pit that was a remnant of a demolished building. Additional discussion of these areas is included in the *Environmentally Sensitive Habitat Areas Delineation Report* (Arcadis 2011b).

#### 2.2.2.1 Operable Unit E Flora and Fauna

In 2005, WRA conducted a biological assessment (WRA 2005) to identify potentially sensitive biological resources at the site. Non-sensitive plant communities identified at the site included developed industrial, non-native grassland, northern coastal bluff scrub, coastal strand, and planted coniferous woodland. Sensitive plant communities observed at the site included coastal terrace prairie, north coast riparian

[1] ESHAs are referred to as "environmentally sensitive habitat area[s]" in Section 30107.5 of the California Coastal Act, and are defined as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments". ESHAs in OU-E include wetland and open water habitats. Regulatory protection of ESHAs in the California Coastal Zone ultimately falls under the jurisdiction of the California Coastal Commission (CCC). The City administers CCC Coastal Act jurisdiction for the site under their Local Coastal Program.

[2] Seasonal wetland plant communities occur in depressions that are inundated during the rainy season for sufficient duration to support vegetation adapted to wetland conditions.

[3] Freshwater seep plant communities are wetlands containing perennial and annual herbs, including sedges and grasses, which occur in areas that receive perennial or semi-perennial hydrological input as a result of subsurface flow of water.

scrub, coastal and valley freshwater marsh, freshwater seep, riparian wetland, seasonal wetland, and seasonal wetland ditch.

### 2.2.3 Geology

#### 2.2.3.1 Regional

Fort Bragg is located along the northern California coastline within the Coast Range geomorphic province. The regional geology consists of complexly folded, faulted, sheared, and altered bedrock. The bedrock of the region is the Franciscan Complex of Cretaceous to Tertiary (late Eocene) age (40 to 70 million years old). The Franciscan Complex comprises a variety of rock types. In the north coast region, the Franciscan Complex is divided into two units: the Coastal Belt and the Melange. In Mendocino County, the Melange lies inland and is an older portion of the Franciscan Complex, ranging in age from the Upper Jurassic to the late Cretaceous. The Coastal Belt consists predominantly of greywacke sandstone and shale.

#### 2.2.3.2 Local

Besides the Coastal Belt, other geologic units present in Fort Bragg and nearby include surficial deposits of beach and dune sands, alluvium, and marine sediments. As discussed below, the most important of these at the site are the marine sediments, which cut bedrock surfaces along the coast and form much of the coastal bluff material overlying bedrock. Artificial fill (reworked native soil or imported material) is also prevalent at the site.

Figure 2-5 depicts the surficial geology of the site and environs. The site is underlain by Quaternary (less than 1.5 million years old) marine sediments deposited in thicknesses up to 30 feet on wave-cut surfaces parallel to the coast (Blackburn Consulting, Inc. 2006). These surfaces were created during the Pleistocene Epoch, when sea level fluctuations caused by glaciation created a series of terraces cut into the Franciscan bedrock by wave action (BACE Geotechnical 2004). The marine sediments comprise poorly to moderately consolidated silts, sands, and gravels, and in some locations, are overlain by a 3- to 4-foot-thick mantle of topsoil or up to a 20-foot-thick layer of artificial fill (BACE Geotechnical 2004). Both the topsoil and fill are generally relatively coarse in texture, ranging primarily from sandy silts to gravel. The marine sediments are also generally coarse, but appreciable thicknesses of finer materials are also found onsite. Beneath these Pleistocene materials are the Tertiary-Cretaceous rocks (approximately 65 million years old) of the Coastal Belt, composed of well-consolidated sandstone, shale, and conglomerate.

#### 2.2.3.3 Operable Unit E Specific

The shallow subsurface of the terrestrial portions of OU-E contain up to three lithologic units: artificial fill, marine sediments, and bedrock.

##### *2.2.3.3.1 Artificial Fill*

Soil borings, test pits, and potholes completed in the terrestrial portions of OU-E identified artificial fill in most areas. In general, the fill consists of reworked marine sediments with foreign materials. It can be

generally characterized as coarse-textured material (silty sands to silty gravels), often containing wood chips, bark, ash, sawdust, brick, scrap metal, charcoal, and plastic. Fill thicknesses greater than 30 feet below ground surface (bgs) have been observed along the eastern edges of Ponds 6 and 8, but thicknesses on the order of 5 to 10 feet bgs are more common in the terrestrial areas and around the ponds in Parcel 7.

##### *2.2.3.3.2 Marine Sediments and Bedrock*

Marine sediments and bedrock underlie the artificial fill (where present) in OU-E. Similar to other portions of the site, Franciscan bedrock is present beneath the upland portions of OU-E, but based on lithological information available from borings advanced at the site, its surface undulates and depths to bedrock can vary widely over short lateral distances. For example, within a 350-foot distance along the eastern edge of Pond 8, depths to bedrock vary from less than 10 feet bgs to greater than 40 feet bgs. Bedrock depths are generally shallow (approximately 10 feet bgs) near the ponds in Parcel 7, but in the formerly developed areas of Sawmill #1 and the Powerhouse, bedrock depths are generally no less than 30 feet bgs. In some locations around the margins of Pond 8, marine sediments are completely absent and artificial fill is in direct contact with bedrock.

### 2.2.4 Hydrogeology

#### 2.2.4.1 Regional

The Mendocino County Coastal Ground Water Study (California Department of Water Resources 1982) presents the regional hydrogeologic setting of the Mendocino County coast. The site is located in the western coastal area of Mendocino County, which was divided into five subunits in the study: Westport, Fort Bragg, Albion, Elk, and Point Arena, separated by the major rivers that discharge to the Pacific Ocean. The study included all areas where coastal terrace deposits had been mapped. The site is located within the Fort Bragg subunit, which extends from Big River to the south to Ten Mile River to the north.

Fresh groundwater is primarily obtained from shallow wells in the semi-consolidated marine terrace deposits or through municipal or privately owned water systems. These water systems divert surface flow and springs or tap shallow alluvial aquifers. A combination of wells and surface water diversions is commonly necessary to provide adequate water supply year round.

#### 2.2.4.2 Local

Based on quarterly monitoring from 2004 to 2012 and semi-annual monitoring from 2013 to 2015, groundwater generally flows radially at the site towards Fort Bragg Landing and the Pacific Ocean (Figure 2-6) under average horizontal hydraulic gradients ranging from approximately 0.016 to 0.034 foot per foot (Arcadis 2015c). Gradients are generally steeper in the central portion of the site and flatter in the northern and southern portions of the site. Depths to first-encountered groundwater have historically ranged from less than 1 foot to approximately 29 feet below top of casing (btoc). In terms of elevation, groundwater levels have ranged from approximately 8 to 104 feet relative to North American Vertical Datum of 1988 (NAVD88). Depending on location, groundwater levels have been observed to fluctuate seasonally up to 12 feet with the seasons; elevations are higher in the winter and spring and lower in the

summer and fall. During the September 2015 monitoring event, groundwater encountered ranged from 4.52 to 17.85 feet btoc. Groundwater elevations ranged from 17.66 to 83.25 feet relative to NAVD88, which is consistent with historical trends (Arcadis 2015c).

#### 2.2.4.3 Operable Unit E Specific

Much of OU-E lies at the lowest elevations at the site, and groundwater flow paths tend to converge in the areas around Fort Bragg Landing, with eventual discharge to the Pacific Ocean (Figure 2-6). In September 2015, groundwater encountered in the Lowland AOC of OU-E was measured at 4.80 feet btoc. Groundwater elevation in the OU-E Lowland AOC was measured at 17.66 feet relative to NAVD88. Depths to groundwater of approximately less than 1 foot btoc have been recorded in the center of the area north of Pond 8 (monitoring wells MW-4.4 and MW-5.16), with depths along the eastern (monitoring well MW-5.18) and western perimeters (monitoring well MW-4.6) increasing to more than 12 feet btoc.

### 2.2.5 Surface Water Hydrology

There are 10 man-made ponds (Ponds 1 through 9 and the North Pond) ranging in size from 0.1 acre to 7.29 acres. The ponds served operational purposes, and Pond 8 also receives stormwater from the City. Water transfer into and among the ponds was an integral part of the operational history of the site.

Most waters and wetland features rely on direct precipitation and surface water runoff. Some wetland seep features receive groundwater discharge as well. Most waters and wetlands in this area lack a direct hydrologic surface connection to Fort Bragg Landing. Pond 6 has a surface flow connection to Fort Bragg Landing via a corrugated high-density polyethylene culvert that discharges through the beach berm separating the OU-E Lowland from Fort Bragg Landing. Runoff into the OU-E Lowland also occurs from impervious surfaces (i.e., asphalt and concrete) in the higher elevation areas located to the north and east. Pond 8 receives runoff from the City stormwater collection system and discharges to Fort Bragg Landing over a spillway built into the mill pond dam.

In the past, the Southern Ponds (Ponds 1 through 4) received water from site operations. Currently, the Southern Ponds capture rainfall, stormwater runoff, and some groundwater seeps. Pond 2 is seasonal, but has some groundwater input as the water table can rise above the pond bottom during the rainy season. The southeastern and northwestern portions of Pond 3 generally have groundwater infiltration year round.

### 2.2.6 Cultural Resources

TRC Companies, Inc. (TRC; 2003, Undated #1, and Undated #2) conducted archival research and archeological surveys of the site and found that portions of the site are considered likely to contain intact prehistoric deposits, as well as historic sites. Areas that are likely to contain historic deposits are important in understanding the early settlement and development of the local community, as well as the lumber operations onsite.

Within OU-E, TRC identified moderate to high potential for prehistoric resources in the lowland terrestrial area. The area nearest to Fort Bragg Landing was identified as having a high potential for prehistoric cultural resources. Although subsequent industrial activities may have destroyed prehistoric deposits near Fort Bragg Landing, the road and sea wall may have preserved possibly significant prehistoric cultural

resources. OU-E was also identified as having high potential for historic resources. Historic buildings and infrastructure associated with past milling operations are found throughout the lowland terrestrial area (TRC 2003).

TRC considered the wooded area within the Riparian AOI to have a high potential to contain prehistoric cultural remains. This AOI has been largely untouched by the industrial development that occurred on the other portions of the site. Most of the Riparian AOI was categorized as having moderate potential for historic resources, with the exception of a small area on the southwestern boundary of the Riparian AOI. This area may contain debris that may relate to earlier phases of lumber operations (TRC 2003).

## 2.3 Operational History

A general summary of the operational history of the AOCs/AOIs included in the scope of this RAW is provided below.

### 2.3.1 Terrestrial Areas

The RI Report (Arcadis 2013a) identified one terrestrial AOC (OU-E Lowland AOC), which encompasses the Water Treatment and Truck Dump AOI, Sawmill #1 AOI, Compressor House and Lath Building AOI, and Powerhouse and Fuel Barn AOI. Terrestrial AOIs within the OU-E Lowland AOC addressed by this RAW are indicated on Figure 2-7 and discussed below. Operational history for terrestrial AOIs in OU-E not included in this RAW is provided in the RI Report.

#### 2.3.1.1 Water Treatment and Truck Dump Area of Interest

The Water Treatment and Truck Dump AOI is located in the northwestern section of OU-E. Former features in the area include the Alum Tank, Water Treatment Plant, Sewage Pump Station, Water Supply Switch Building, Water Valve Shed, Water Tower, Powerhouse Fuel Storage Shed, Chipper Building, Truck Dump, Truck Dump Hydraulic Unit Building, and the Bunker Fuel Aboveground Storage Tank (AST) Area.

Outside the plant, a concrete AST may have held a treated water supply for the Powerhouse. Approximately 300 feet northwest of the plant was a 4,000-gallon AST containing alum[4]. The Alum Tank and Water Treatment Plant foundation were broken up, and the concrete was moved to the concrete storage area in August 2006. After demolition of the foundations, a dry cap[5] was placed in the removal area.

The Chipper Building consisted of a wood structure with a concrete floor. The Truck Dump was located next to the Chipper Building. The Truck Dump included a hydraulic system formerly used to empty trucks of their wood fuel loads (it was assumed to have been built in the mid-1970s); inside the building was a transformer. A concrete slab was used for structural support at this location. The walls of the Chipper

[4] Alum is a combination of an alkali metal (such as sodium, potassium, or ammonium) and a trivalent metal (such as aluminum, iron, or chromium). In water treatment, alum is used as a coagulant, which binds together very fine suspended particles into larger particles that can be removed by settling and filtration.

[5] Dry caps were placed where groundwater was not considered likely to extend to the bottom of excavations. The caps consisted of a geosynthetic clay liner covered with clean fill material.

Building were left in place, as they support a slope north of the building. After demolition of the foundations in June and July 2006, a dry cap was placed in the area. The majority of the dry cap was later excavated with removal of the Fuel Oil Line in 2007 (Arcadis 2008a).

The Sewage Pumping Station consists of a concrete slab and an underground concrete tank.

The Water Supply Switch Building was constructed of corrugated metal with a concrete foundation. The foundation was removed and a dry cap installed in July 2006.

The Powerhouse Fuel Storage Shed was built in 1995 with corrugated metal, had a concrete floor and berm (secondary containment), and was open to the north and east. The shed contained three horizontal ASTs, each with a capacity of 10,000 gallons. In May 1999, 4,000 gallons of fuel spilled within secondary containment and was cleaned up. Soil and groundwater sampling conducted as part of the *Phase II Environmental Site Assessment* (Phase II ESA; TRC 2004b) showed concentrations of total petroleum hydrocarbons (TPH) below screening levels. To the west of the building, there was a 30,000-gallon Water Tower, built from wood with a concrete base. The Water Tower pad and the Fuel Storage Area were removed and a dry cap installed in July 2006.

Backup fuel was stored in two ASTs in the Former Bunker Fuel AST area north of the Powerhouse. Both ASTs had concrete secondary containment and were removed in 1996. Underground piping associated with the ASTs was excavated in 2007 (Arcadis 2008d).

#### 2.3.1.2 Sawmill #1 Area of Interest

Sawmill #1 AOI is an “L”-shaped area located north of the eastern half of Pond 8. Former features in the area include the Sawmill #1 Building, Press Building, Green Chain (and Elevated Roadway), Lath and Shake Mill, Refuse Wood for Fuel Area, Engine House Area, Number 5 Shingle Mill Area, and AST.

The Press Building was constructed of wood with a concrete floor and was located south of the former Sawmill #1 Building. The building contained a sugar cane press until the early 1990s when it was removed. Press Building pad and footings removal occurred in July 2006, followed by placement of a dry cap in the removal area.

The former Lath and Shake Mill, Refuse Wood for Fuel Area, Engine House Area, AST, and Number 5 Shingle Mill Area were also present in the Sawmill #1 AOI.

#### 2.3.1.3 Powerhouse and Fuel Barn Area of Interest

The Powerhouse and Fuel Barn AOI is located directly north of Pond 8. Former features in the area include the Dewatering Slabs, Equipment Fueling Area, Steam Dry Kilns, Former South Pond, Fuel Barn, Powerhouse Building, Transformer Pad, Oil Storage Shed, Chemical Storage Tank, Poly Tanks/Small Transformer Pad to the south, Paint Storage Shed, Fly Ash Reinjection System, Open Refuse Fire Area, and Cooling Towers (including the Poly Tank/Transformer Pad and the Cooling Towers Storage Shed). Features still present include the Concrete Lined Tank and Process Water Pumping Station.

### 2.3.2 Aquatic Areas

Seven aquatic AOCs were identified in the RI Report (Arcadis 2013a) as indicated on Figure 2-2: Southern Ponds, Pond 5, Pond 6, Pond 7, Pond 8, Pond 9, and North Pond. Aquatic AOCs addressed by this RAW are indicated on Figure 2-2 and discussed below. Operational history for aquatic AOCs not included in this RAW is provided in the RI.

#### 2.3.2.1 Ponds 1 through 4 (Southern Ponds)

Ponds 1 through 4 (a total of 2.8 acres), collectively known as the Southern Ponds, were a series of treatment ponds related to the operation of the former Powerhouse. Ponds 1 through 4 were settling ponds that treated water received from Pond 7 (see Section 2.3.2.2). The Southern Ponds discharge to the southwestern end of Pond 8 through a culvert system.

#### 2.3.2.2 Pond 7

Pond 7 (1 acre) received effluent from the wet scrubbers operating in the former Powerhouse power plant. From approximately the mid-1970s up until 1996, fly ash emissions from the boilers were controlled by multi-cyclone collectors, followed by wet scrubbers. Scrubber water from the boilers contained fly ash and was piped to two dewatering slabs where, after drying the residual, fly ash was placed in a dump hopper for removal and placement at an offsite location. Water on the dewatering slabs that did not evaporate was conveyed to Pond 7, and then pumped to Ponds 1 through 4 for further treatment. Pond 7 also received water from the dewatering slabs and wash water from the Powerhouse, as well as groundwater and surface water runoff from the Powerhouse area.

### 2.3.3 Riparian Area of Interest

The Riparian AOI was moved from OU-D to be further assessed in the FS (Arcadis 2012). This AOI consists of undeveloped, wooded land along the eastern boundary of the site (Figure 2-2). A riparian wetland and perennial surface drainage are present in the northern end of the AOI, and a seasonal wetland ditch runs along the western perimeter of the AOI. Shallow, unpaved drainage ditches run from the Former Log Storage and Sediment Stockpile AOI into the ditch in the Riparian AOI. Remnants of a corrugated metal drainage pipe have been observed in the stream bed approximately midway in the north-south section of the drainage. A water supply well on the western edge of this AOI contained a pump connected to an aboveground plastic pipeline used to transmit water to the onsite nursery (TRC 2004a). Sanitary sewer lines run through the northern end of this AOI. No other historical uses of this AOI have been identified.

## 2.4 Characterization History and Interim Remedial Actions

This section presents a brief summary of investigation activities conducted in OU-E to characterize site conditions to-date. This section also provides a discussion of interim remedial actions previously conducted in OU-E and a summary of the BHHERA (Arcadis 2015a). Detailed descriptions are provided in the RI Report (Arcadis 2013a) and BHHERA. These past site characterization and risk assessment activities identified hot spots in the terrestrial and aquatic areas that have been included in this RAW. The RAW RAAs were developed considering the results of the hot spot analysis included in the BHHERA

(Arcadis 2015a), to accelerate remediation within the identified AOCs by removing areas where elevated concentrations of COPCs have been identified, to reduce the risk to human health and the environment, and to support the construction and public use of the central portion of the Fort Bragg Coastal Trail. Once the proposed activities are complete, the risks to public health and the environment identified in the site characterization and risk assessment will be reduced and the areas addressed by the RAW will be acceptable for the planned recreational use.

### 2.4.1 Environmental Investigations

This section summarizes environmental investigations conducted at the site relevant to OU-E, including lead-based paint (LBP) investigations, Phase I and Phase II environmental assessments, 2004 and 2005 additional site assessments, and groundwater monitoring.

#### 2.4.1.1 Lead-Based Paint Investigation

In January 1998, TRC conducted a preliminary investigation of surface and shallow subsurface soil to evaluate paint on select buildings for elevated lead levels and to evaluate if chemicals associated with site operations were present in subsurface soil in the areas scheduled for demolition in Parcels 3, 4, and 5 (TRC 1998).

#### 2.4.1.2 Phase I Environmental Site Assessment

TRC performed a Phase I environmental site assessment (ESA) of the site between 2002 and 2004 (TRC 2004a). The Phase I ESA included visual inspections of each parcel; a site history survey, including historical Sanborn® maps, historical U.S. Geological Survey maps, and aerial photograph review; personal, telephone, and written communication with local and county regulatory agencies; interviews with current and past Georgia-Pacific employees with historical operational knowledge of the site; and a computer database search of sites with known environmental concerns within a 1-mile radius of the site.

As part of the Phase I ESA, Hygienetics Environmental Services, Inc. (Hygienetics) conducted an additional asbestos and LBP investigation in late 2002. Samples from the upland portion of OU-E were found to contain LBP in the Water Treatment Plant Building, Chipper Building, Sawmill #1 Building, Compressor House 1, and Powerhouse Building at concentrations up to 17,000 parts per million lead (Hygienetics 2003).

#### 2.4.1.3 Phase II Environmental Site Assessment

TRC conducted a Phase II ESA to characterize site soils and groundwater in the AOIs identified in the Phase I ESA (TRC 2004a), and to refine the understanding of the nature and extent of affected media. Preliminary Phase II activities were conducted in March and April 2003. Supplemental Phase II activities were conducted in December 2003 and January 2004. Activities included installation of seven monitoring wells within OU-E. The results are presented in the Phase II ESA (TRC 2004b).

#### 2.4.1.4 2004 Additional Site Assessment

TRC conducted additional assessment activities pursuant to recommendations for follow-up assessment presented in TRC's Phase I and Phase II ESAs (TRC 2014a, 2004b, respectively). The additional site investigation included completion of pothole investigations, geophysical investigation, and soil borings for the purpose of collecting additional soil samples, and to investigate surface anomalies and potential waste deposit areas. The results of the additional site assessment are presented in the *Additional Site Assessment Report* (TRC 2004c).

#### 2.4.1.5 2005 Additional Site Assessment

In 2005 and 2006, Acton•Michelson•Environmental, Inc. (AME) conducted additional site assessment work, including additional soil and groundwater sampling, geophysical surveys, and the installation of additional groundwater monitoring wells. Activities were conducted in general accordance with the *Work Plan for Additional Site Assessment* (AME 2005a). Analytical data were reported in the *Dioxin Sampling and Analysis Report* (AME 2006a) and the *Data Transmittal Report* (AME 2006b).

#### 2.4.1.6 Pond Sediment Investigations

##### *2.4.1.6.1 2008 Pond Sediment Investigations*

Arcadis conducted pond sediment sampling activities in March 2008, as described in the *Data Summary Report, Operable Unit E Pond Sediment* (Arcadis 2009). These activities were performed in general accordance with the *Preliminary Site Investigation Work Plan Operable Unit E – Onsite Ponds* (Arcadis BBL 2007). Sediment samples were collected from 26 locations in Ponds 1 through 9 and the North Pond. Sediment samples were collected from the intervals of 0 to 0.5 foot below sediment surface (bss) and 0.5 to 1.5 feet bss and analyzed for COPCs for which a data gap had been identified: metals, TPH as diesel (TPHd), TPH as motor oil, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls, and polychlorinated dibenzo-p-dioxin (dioxins) and polychlorinated dibenzofuran (furans). In some locations, samples were also collected at depths up to 9.5 feet bss. Sample locations were selected to characterize areas not previously addressed during historical investigations and/or to fill data gaps related to the spatial and vertical distribution of specific COPCs.

### 2.4.2 Biological Assessment

In 2005, WRA conducted a biological assessment at the site to identify biological resources at the site. Fifty-four special status species of wildlife were recorded in the site vicinity, but only three species (double-crested cormorant, California brown pelican, and osprey) have a potential for occurrence in the site vicinity. Although these species may be observed and/or occur at times onsite, these species do not nest onsite, and are not expected to obtain a significant portion of their diet from the site. Forty-seven special status plant species were identified in the site vicinity, 18 of which have a moderate potential to occur at the site. Three sensitive plant species were found onsite during the botanical surveys: Blasdale's bent grass, Mendocino Coast Indian paintbrush, and short-leaved evax; however, none of these special status plant species are likely to occur within OU-E, and monthly surveys conducted in OU-E from February to May 2010 did not identify any special status plant species (WRA 2005, updated 2007).

### 2.4.3 Interim Remedial Measures

IRM activities as described in the *Final Interim Action Remedial Action Plan and Feasibility Study* (Arcadis 2008b) and *Interim Action Completion Report, Operable Units C & E* (Arcadis 2010a) were initiated in 2008 and completed in 2009. IRM activities include the following:

- Foundation removal and cap placement
- Excavation of the former fuel pipe that extended from the former Fuel Storage Shed to the Powerhouse
- Excavation and disposal of soil impacted with metals near the former Compressor Houses
- Excavation and onsite treatment of TPH-affected soil near the former Compressor Houses
- In-situ groundwater treatment for TPH (biosparging and addition of oxygen-releasing material [ORM] before backfilling) near the former Compressor Houses
- Excavation and onsite treatment of TPH-affected soil within the IRM AOI and the West of IRM AOI
- In-situ groundwater treatment for TPH (biosparging and addition of ORM before backfilling) within the IRM AOI and the West of IRM AOI

### 2.4.4 Remedial Investigations

In June 2010, additional sampling was conducted at OU-E in accordance with the *Site Investigation Work Plan, Operable Unit E – Upland* (Arcadis 2010b) in preparation of the remedial investigation (RI). In October 2010, Arcadis evaluated the existing historical site data and the June 2010 sampling data, and identified data gaps that required step-out sampling to fully delineate chemical impact (Arcadis 2010c). Additional step-out sampling was conducted in November and December 2010 (Arcadis 2011c). Comprehensive analytical results were discussed in the RI Report to characterize the nature and extent of impacts (Arcadis 2013a).

The RI Report (Arcadis 2013a) recommended four of the five lowland terrestrial AOIs (Water Treatment and Truck Dump AOI, Sawmill #1 AOI, Compressor House and Lath Building AOI, and Powerhouse and Fuel Barn AOI) for further evaluation in the BHHERA (Arcadis 2015a). The RI Report recommended no further action for the Pond 8 Fill Area AOI, due to only a single zinc exceedance of the ecological primary screening level (PSL) and no exceedances of human health PSLs. All 10 OU-E aquatic AOIs (Ponds 1 through 9, and the North Pond) were recommended for further evaluation in the BHHERA. Additional site investigation and risk assessment activities conducted for the BHHERA are further discussed in Section 2.4.5.

The Riparian AOI was originally evaluated in the OU-C/D RI (Arcadis 2011a), and was further delineated during the investigation that accompanied the BHHERA (Arcadis 2015a).

### 2.4.5 Operable Unit E Baseline Human Health and Ecological Risk Assessment

The BHHERA was conducted to evaluate potential future receptors within OU-E and associated AOIs, including the Riparian AOI, based on reasonable likely future land use in accordance with state and

federal guidance and stakeholder input. Sources of stakeholder input on reasonable likely future land use include the City of Fort Bragg Mill Site Specific Plan (City 2015), City of Fort Bragg Draft Municipal Service Review (City 2013), and the CCC California Coastal Act (2014).

The BHHERA (Arcadis 2015a) relied on data presented in the RI Report (Arcadis 2013a) and additional sediment and porewater data collected in April 2013. Likely and reasonably anticipated current and future human receptors evaluated in the terrestrial exposure area of OU-E included construction workers, maintenance/utility workers, passive (occasional) child and adult recreational visitors, frequent adult recreational visitors, and commercial/industrial workers, while recreational visitors were the human receptors for the aquatic areas. Based on the information presented in DTSC-approved documents for OU-E and City planning documents, ESHA designations of OU-E ponds and wetlands, and state and federal regulations and guidance, residential receptors were not evaluated as an assessment endpoint for OU-E under current or reasonable future land uses. The OU-E ecological risk assessment (ERA) estimated exposure and characterized potential ecological risk in accordance with the methods described in the *Site-Wide Risk Assessment Work Plan* (Arcadis 2008c) and the *Revised Baseline Human Health and Ecological Risk Assessment (BHHERA) Work Plan – Operable Unit E (OU-E) Addendum* (Arcadis 2013b).

A hot spot analysis was also included in the BHHERA (Arcadis 2015a) in accordance with the requested DTSC approach (DTSC 2014) and included a comparison of soil data within the OU-E Lowland AOC to not-to-exceed soil values for benzo(a)pyrene [B(a)P] equivalents (0.90 milligram per kilogram [mg/kg]), dioxin toxicity equivalents (TEQ; 160 parts per trillion), and lead (320 mg/kg). To assess residual risks and hazards assuming hot spot removal, the BHHERA also included a comparison of residual exposure point concentrations (EPCs) to risk-based target levels identified by DTSC (DTSC 2014). A summary of results from the BHHERA pertinent to each RAA is provided in Section 2.5. Estimated risks for the AOCs/AOIs not included in this RAW are further discussed in the BHHERA.

## 2.5 Nature and Extent of Contaminants

The following subsections provide a summary of the nature and extent of contamination identified during RI activities, a summary of results from the BHHERA (Arcadis 2015a) relevant to this RAW, and volumes proposed for removal actions within each AOC/AOI. The RAW RAAs were developed considering the results of hot spot analysis included in the BHHERA (Arcadis 2015a), to accelerate remediation within the identified AOCs by removing areas where elevated concentrations of COPCs have been identified, to reduce the risk to human health and the environment, and to support the construction and public use of the central portion of the Fort Bragg Coastal Trail. Once the proposed activities are complete, the risks to public health and the environment will be reduced and the areas addressed by the RAW will be acceptable for the planned recreational use. A table summarizing the RAAs and volumes is included as Table 2-1.

### 2.5.1 Operable Unit E Lowland Area of Concern

As indicated on Figure 2-2, the Water Treatment and Truck Dump AOI, Sawmill #1 AOI, and the Powerhouse and Fuel Barn AOI are located within the OU-E Lowland AOC. Historical analytical data from the RI Report (Arcadis 2013a) and proposed removal areas are indicated on Figures 2-8 through 2-11. Hot spots identified in the BHHERA (Arcadis 2015a) are additionally indicated below.

#### 2.5.1.1 Summary of Baseline Human Health and Ecological Risk Assessment Findings

##### *2.5.1.1.1 Water Treatment and Truck Dump Area of Interest*

Based on the RI results, the BHHERA (Arcadis 2015a) identified two hot spots within this AOI based on B(a)P TEQ concentrations (OUE-DP-099 at 0.5 to 1.0 foot bgs and OUE-DP-100 at 2.5 to 3.5 feet bgs) as indicated on Figure 2-8.

##### *2.5.1.1.2 Sawmill #1 Area of Interest*

Based on the RI results, the BHHERA (Arcadis 2015a) identified hot spots for lead in soil near two sample locations (OUE-DP-070 from 3 to 4 feet bgs and DP-05.57 from 0.5 to 1 foot bgs) as indicated on Figure 2-9.

The BHHERA identified four hot spots based on B(a)P TEQ concentrations in soil within the Sawmill #1 AOI. The four sample locations (OUE-DP-073, OUE-DP-074, OUE-DP-075, and OUE-DP-026) range in depths from approximately 2 to 3.5 feet bgs as indicated on Figure 2-8. Based on communication with DTSC (DTSC 2016a) and the results of the RI Report (Arcadis 2013a), OUE-DP-025 was also identified as a RAA for TPHd.

##### *2.5.1.1.3 Powerhouse and Fuel Barn Area of Interest*

The BHHERA (Arcadis 2015a) identified hot spots for lead near two sample locations (OUE-DP-094 from 5.5 to 6 feet bgs and OUE-DP-090 from 5.5 to 6 feet bgs) as indicated on Figure 2-9. The BHHERA also identified a hot spot for dioxin TEQ (2.729 picograms per kilogram) at OUE-DP-052 from 0.5 to 1.5 feet bgs within the former Open Refuse Fire Area as depicted on Figure 2-11. The maximum B(a)P TEQ concentration detected in the Powerhouse and Fuel Barn AOI was 27 mg/kg at sample location HSA-4.3 from 2 to 2.5 feet bgs, at the northwestern corner of the former fuel barn. This location was identified as a B(a)P TEQ hot spot in the BHHERA as indicated on Figure 2-8.

#### 2.5.1.2 Development of Removal Action Areas

The RAW RAAs were developed considering the results of the hot spot analysis included in the BHHERA (Arcadis 2015a), to accelerate remediation within the identified AOCs by removing areas where elevated concentrations of COPCs have been identified, to reduce the risk to human health and the environment, and to support the construction and public use of the central portion of the Fort Bragg Coastal Trail. Once the proposed activities are complete, the risks to public health and the environment will be reduced and the areas addressed by this RAW will be acceptable for planned recreational use.

Each of the 12 hot spots identified in the OU-E Lowland AOC in the BHERRA (Arcadis 2015a) are RAAs. Four sample locations (OU-E-HA-023B, OU-E-DP-088, OUE-DP-076, and P4-40) were identified with lead concentrations exceeding the not to exceed (NTE) value established in the BHHERA (320 mg/kg). These locations were not previously identified as hot spots, as they are outside the depth interval evaluated in the BHHERA (0 to 6 feet bgs). However, these locations are co-located in the area and selected for removal based on their exceedance of NTE criteria. The area surrounding boring location

OUE-DP-025 is additionally identified for removal based on TPHd concentrations exceeding the soil remedial goal established in the *Remedial Action Plan Operable Units C and D* (OU-C/D RAP; Arcadis 2015b) for the protection of human health (10,772 mg/kg). Based on proximity, these locations have been grouped into 12 distinct RAAs as indicated on Figures 2-7 through 2-11.

The RAAs are listed below, by constituent:

- B(a)P TEQ (Figure 2-8):
  - RAA-B1 (Powerhouse and Fuel Barn AOI): includes one sample location (HSA-4.3 from 2 to 2.5 feet bgs)
  - RAA-B2 (Sawmill #1 AOI): includes four sample locations (OUE-DP-073 from 2 to 3 feet bgs, OUE-DP-074 at 2 to 3 feet bgs, OUE-DP-075 from 2 to 3 feet bgs, and OUE-DP-026 from 2 to 3.5 feet bgs)
  - RAA-B3 (Waste Treatment and Truck Dump AOI): includes two sample locations (OUE-DP-099 from 0.5 to 1.0 foot bgs and OUE-DP-100 from 2.5 to 3.5 feet bgs)
- Lead (Figure 2-9):
  - RAA-L1 (Sawmill #1 AOI): includes one sample location (OUE-DP-070 from 3 to 4 feet bgs)
  - RAA-L2 (Sawmill #1 AOI): includes one sample location (DP-05.57 from 0.5 to 1 foot bgs)
  - RAA-L3 (Powerhouse and Fuel Barn AOI): includes one sample location (OUE-DP-094 from 5.5 to 6 feet bgs)
  - RAA-L4 (Powerhouse and Fuel Barn AOI): includes one sample location (OUE-DP-090 from 5.5 to 6 feet bgs)
  - RAA-L5 (Powerhouse and Fuel Barn AOI): includes one sample location (OUE-DP-088 from 6 to 7 feet bgs)
  - RAA-L6 (Powerhouse and Fuel Barn AOI): includes two sample locations (OUE-HA-023B from 6.5 to 8 feet bgs and OUE-DP-076 from 6 to 7 feet bgs and 8 to 9 feet bgs)
  - RAA-L7 (Powerhouse and Fuel Barn AOI): includes one sample location: (P4-40 from 6.5 to 7 feet bgs)
- TPHd (Figure 2-10):
  - RAA-T1 (Sawmill #1 AOI): includes one sample location (OUE-DP-025 from 1.5 to 5 feet bgs)
- Dioxin TEQ (Figure 2-11):
  - RAA-D1 (Powerhouse and Fuel Barn AOI): includes one sample location (DP-052 from 0 to 0.5 foot bgs and 0.5 to 1.5 feet bgs)

Based on similarities in site conditions, evaluation and implementation of removal action alternatives for the 12 terrestrial RAAs will be addressed collectively as the OU-E Lowland RAA. Based on the nature and extent of COPCs identified above, a cumulative volume of 1,510 cubic yards (CY), with a depth extending to a maximum of 9 feet bgs, is assumed for removal action alternative development within the OU-E Lowland AOC. Dimensions of each RAA are provided on Figures 2-7 through 2-11. A summary of

earthwork is provided in Table 2-1. As summarized in the BHHERA (Arcadis 2015a), removal activities in these RAAs will reduce terrestrial EPCs of the B(a)P TEQ, lead, and dioxin TEQ to levels below the site-specific soil risk-based target levels (RBTLs) developed by DTSC (DTSC 2014).

### 2.5.2 Southern Ponds Area of Concern

#### 2.5.2.1 Summary of Baseline Human Health and Ecological Risk Assessment Findings

Potential ecological and human health aquatic risks were further evaluated in the BHHERA (Arcadis 2015a). For the human health evaluation of the Southern Ponds AOC, the BHHERA concluded that non-cancer hazards are below 1, while cumulative excess lifetime cancer risks (ELCRs) for an occasional recreator (assuming 50 days per year of exposure) are greater than $1x10^{-6}$. Potential exposure to arsenic and dioxin TEQ from sediment ingestion are primary contributors to the ELCRs, with the COPC-specific ELCRs for arsenic and dioxin TEQ greater than $1x10^{-6}$. The ELCRs for the aquatic recreator receptors in the Southern Ponds AOC were within the risk management range of $1x10^{-4}$ to $1x10^{-6}$ established in the National Contingency Plan (NCP; 40 Code of Federal Regulation [CFR] 300.430; 2014). The ERA concluded that unacceptable ecological risk is not likely for populations of plants, benthic organisms, birds, mammals, and amphibians exposed to sediment and surface water in the Southern Ponds AOC.

#### 2.5.2.2 Development of Removal Action Areas

For aquatic AOCs, RAAs were developed based on risk drivers identified in the BHHERA (Arcadis 2015a). As indicated above, arsenic and dioxin TEQ are the primary risk drivers in the Southern Ponds AOC; therefore, RAAs indicated on Figure 2-12 were defined to target locations with historically elevated concentrations of dioxins and arsenic. Removal activities in these portions of the Southern Ponds AOC will result in the reduction of arsenic and dioxin TEQ EPCs, thereby reducing potential risk.

A cumulative volume of 696 CY extending to a maximum depth of 2 feet bgs is assumed for the removal action alternative development within the Southern Ponds AOC. Dimensions of each RAA are provided on Figure 2-12. A summary of earthwork is provided in Table 2-1. The RAAs within the Southern Ponds AOC will be evaluated collectively for removal alternative development as the Southern Ponds RAA.

Pre-excavation delineation sampling will be conducted prior to excavation within the footprint of the Southern Ponds AOC. Delineation samples will be collected approximately 20 feet from each Southern Pond RAA sample location, at depths consistent with the depths of the existing RAA sample depths. The locations and sampling methods utilized will be detailed and submitted for DTSC approval prior to implementation.

### 2.5.3 Pond 7 Area of Concern

#### 2.5.3.1 Summary of Baseline Human Health and Ecological Risk Assessment Findings

Pond 7 was evaluated as an individual aquatic AOC in the BHHERA (Arcadis 2015a), assuming an exposure of 50 days per year. For the human health evaluation of the Pond 7 AOC, the BHHERA concluded that non-cancer hazards are below 1, while cumulative ELCRs for an occasional recreator (assuming 50 days per year of exposure) are greater than $1x10^{-6}$. Potential exposure to arsenic and dioxin TEQ from sediment ingestion are primary contributors to the ELCRs, with the COPC-specific ELCRs for arsenic and dioxin TEQ greater than $1x10^{-6}$. The ERA identified barium in Pond 7 sediment and porewater as a potential risk to benthic organisms based on comparison to the surface water screening level.

#### 2.5.3.2 Development of Removal Action Areas

For aquatic AOCs, RAAs will be developed based on risk drivers identified in the BHHERA (Arcadis 2015a). As indicated above, arsenic, dioxin TEQ, and barium are the primary risk drivers in the Pond 7 AOC; therefore, the RAA indicated on Figure 2-13 was defined to target locations with historically elevated concentrations of dioxins and arsenic. Removal activities in this RAA will result in the reduction of arsenic, dioxin TEQ, and barium exposures and thereby a reduction/elimination of potential risk.

A cumulative volume of 1,200 CY extending to a maximum depth of 7.5 feet bgs is assumed for removal action alternative development within the Pond 7 AOC. It is assumed that the entire footprint of Pond 7 will be excavated, as indicated on Figure 2-13. The RAA within the Pond 7 AOC is referred to as the Pond 7 RAA for removal alternative development. A summary of earthwork is provided in Table 2-1.

### 2.5.4 Riparian Area of Interest

#### 2.5.4.1 Summary of Baseline Human Health and Ecological Risk Assessment Findings

Based on the results of the human health and ERA presented in the OU-C/D RI, the OU-C/D RI recommended that Riparian AOI drainage area sediments should be carried forward into the FS due to potential ecological risk to benthic invertebrates (Arcadis 2011a).

Risks were further evaluated in the BHHERA (Arcadis 2015a), which indicated that the risks posed by metals, dioxin/furans, and PAHs in Riparian AOI sediment were negligible. However, subsequent to the BHHERA, DTSC requested further evaluation for dioxin in the Riparian AOI (DTSC 2016a). Based on the relatively limited extent of concentrations above unrestricted use criteria in the Riparian AOI, RAAs within the Riparian AOI have been evaluated given the potential to meet unrestricted use and achieve No Further Action status in this area.

#### 2.5.4.2 Development of Removal Action Areas

For the Riparian AOI, the RAAs were delineated based on samples OUD-HA-042, OUD-HA-044, OUD-HA-046, and OUD-SED-HA-049, which have dioxin TEQ concentrations that are relatively higher than other sediment samples collected in the Riparian AOI (Figure 2-14). Removal activities in the Riparian AOI will result in the reduction of dioxin TEQ EPCs and thereby a reduction in potential risk.

A cumulative volume of 32 CY, with a depth extending to a maximum of 0.5 foot bgs, is assumed for removal action alternative development within the Riparian AOI. Dimensions of each RAA are provided on Figure 2-14. A summary of earthwork is provided in Table 2-1. The RAAs within the Riparian AOI will be evaluated collectively for removal alternative development as the Riparian RAA.

# 3 REMOVAL ACTION GOALS

As defined in HSC Section 25323.1, a RAW must present the goals to be achieved by the removal action. The objective of this RAW is to select the appropriate response action to address COPCs in soil and sediment that could pose a significant risk to public health or to the environment. The removal action is focused on the reduction of risk to human health and the environment and to support the construction and public use of the central portion of the Fort Bragg Coastal Trail. Once the proposed activities are complete, the risks to public health and the environment will be reduced and the areas addressed by the RAW will be acceptable for the planned recreational use.

The RAAs identified in Section 2.5 were based on characterization data presented in the RI Report (Arcadis 2013a), as well as the results of the BHHERA (Arcadis 2015a). The primary RAG of this RAW is to accelerate remediation within the identified AOCs by removing areas where elevated concentrations of COPCs have been identified. Following removal of these RAAs, the resultant conditions will be evaluated for remedial alternative development in the forthcoming FS. In some cases, unrestricted use may be obtainable.

## 3.1 Soil Removal Action Goals

In an *Identification of Presumptive Remedy Areas on Operable Unit E* memorandum (DTSC 2014) and an email dated July 18, 2014, DTSC recommended the following site-specific soil RBTLs and NTE soil values for B(a)P TEQ, dioxin TEQ, and lead for the terrestrial Lowland AOC.

**Site-Specific Soil RBTLs and NTE Concentrations[6]**

| Constituent | Human Health RBTL | Ecological RBTL | Selected RBTL | NTE Value |
|---|---|---|---|---|
| B(a)P TEQ (mg/kg) | 0.3 | Not applicable[7] | 0.3 | 0.9 |
| Dioxin TEQ (pg/g) | 53 | 1,920 | 53 | 160 |
| Lead (mg/kg) | 320 | 127 | 127 | 320 |

**Notes:**
pg/g = picograms per gram

The site-specific soil RBTLs for the Lowlands AOC were developed according to the following methods:

- B(a)P TEQ: For the protection of human health, 0.3 mg/kg equates to the current Regional Screening Level for protection of the commercial/industrial worker (U.S. Environmental Protection Agency [USEPA] 2015). Note also that the B(a)P soil goal of 0.40 mg/kg [applicable to B(a)P TEQs for carcinogenic PAHs] was selected as the remedial goal for OU-C and OU-D based on the upper confidence limit (UCL) of urban background levels of PAHs converted to B(a)P TEQ concentrations in northern California (DTSC 2009).

[6] The recommended site-specific soil RBTLs and NTE soil concentrations for B(a)P TEQ, dioxin TEQ, and lead are presented in the BHHERA Section 5.1.1.1 – Hot Spot Analysis (Terrestrial Lowland AOC).

[7] B(a)P TEQ is not considered in the ecological evaluation; B(a)P toxicity to ecological receptors is evaluated as the high molecular weight PAH COPC. Therefore, a B(a)P TEQ RBTL is not calculated for ecological receptors.

- Dioxin TEQ: For the protection of human health, 53 pg/g equates to a soil concentration based on the BHHERA occasional recreator. Table 6-2 of the BHHERA presents the exposure parameters assumed for the occasional recreator in the terrestrial exposure area. For the protection of ecological receptors, 1,920 pg/g is the back-calculated soil concentration using the mammalian lowest observed adverse effect level (LOAEL) (i.e., $1.0 \times 10^{-5}$ milligrams per kilograms per day [mg/kg-day]), assuming 100% bioaccessibility and using a site-specific bioaccumulation regression to estimate uptake into soil invertebrates for the ornate shrew. Appendix F of the *Remedial Investigation Report, Operable Unit A – Coastal Trail and Parkland Zone* presents the site-specific regression equation (Arcadis BBL 2008).
- Lead: For the protection of human health, 320 mg/kg is the concentration recommended for the commercial/industrial worker in the DTSC Human and Ecological Risk Office (HERO) Human Health Risk Assessment Note Number 3 (DTSC/HERO 2015). For the protection of ecological receptors, 127 is the back-calculated soil concentration for the ornate shrew, which uses the mammalian LOAEL (i.e., 8.9 mg/kg-day), 100% bioaccessibility, and the literature-based ecological soil screening level bioaccumulation factor (USEPA 2007) to estimate uptake into soil invertebrates.

Quantile-quantile plots and summary statistics for baseline concentrations of B(a)P TEQ, dioxin TEQ, and lead data in the terrestrial Lowland AOC are presented in Appendix B. The plots highlight soil samples that are within the identified RAAs.

As summarized in the table below, in Appendix B, and in the BHHERA (Arcadis 2015a), removal activities in the identified RAAs in the Lowlands AOC will reduce terrestrial EPCs of B(a)P TEQ, dioxin TEQ, and lead to levels below the site-specific soil RBTLs. Note that, although residential use is not anticipated within OU-E, residual EPCs for lead and dioxin TEQ will also be below the residential use (i.e., unrestricted use) DTSC screening level for lead (80 mg/kg; DTSC Note 3) and the remedial goal for dioxin (50 mg/kg; DTSC Note 2), while the B(a)P TEQ residual EPCs will be below urban background levels of PAHs converted to B(a)P TEQ concentrations in northern California (DTSC 2009).

**Site-Specific Soil RBTLs compared to Residual Soil EPCs[8]**

| Constituent | Selected RBTL | Residual EPCs and Depth Interval** | | | |
|---|---|---|---|---|---|
| | | 0-0.5 foot bgs | 0-2 feet bgs | 0-6 feet bgs | 1-10 feet bgs |
| B(a)P TEQ (mg/kg) | 0.3 | 0.04 | 0.08 | 0.06 | 0.06 |
| Dioxin TEQ (pg/g) | 53 | 6.3 | 4.9 | 7.2 | 8.5 |
| Lead (mg/kg) | 127/320* | 49.5 | 39.5 | 48.7 | 44.9 |

**Notes:**
*The ecological lead RBTL of 127 mg/kg applies to soils less than 6 feet bgs, while the lead RBT of 320 applies to soils between 6 and 10 feet bgs.
**Residual soil EPCs are the 95% UCL on the mean for the dataset after removal of the identified RAA samples, with the exception of lead and B(a)P TEQ in the 0-0.5 foot bgs interval, which are the baseline EPCs. Maximum lead and B(a)P TEQ concentrations in the 0-0.5 foot bgs interval are below the NTE levels.

[8] The residual soil EPCs for B(a)P TEQ, dioxin TEQ, and lead are summarized in BHHERA Section 6.4.1.1 – Terrestrial Hot Spot Analysis. The actual residual EPC values are subject to the results of confirmation sampling.

In addition to risk-based goals for the constituents above, the remedial goal for TPHd in soil has been selected as the direct contact and indoor air remedial goal presented in the OU-C/D RAP (Arcadis 2015b) for the protection of human health (10,772 mg/kg).

## 3.2 Sediment Removal Action Goals

As specified in DTSC (2014), the recommended site-specific soil RBTLs are not applicable to the aquatic AOCs in OU-E. The planned RAAs in the aquatic AOCs have been defined to target locations with concentrations greater than sediment-specific NTE values derived for dioxin TEQ (503 pg/g) and arsenic (67 mg/kg). The site-specific sediment NTE values were developed according to the following methods:

- Dioxin TEQ: For the protection of human health, 503 pg/g equates to a sediment concentration based on the BHHERA passive child/adult recreator, with an assumed exposure to the sediments for a duration of 12 days per year. Table 6-2 of the BHHERA presents the exposure parameters assumed for the passive child/adult recreator in the aquatic AOCs.
- Arsenic: For the protection of human health, 67 mg/kg equates to a sediment concentration based on the BHHERA passive child/adult recreator, with an assumed exposure duration of 12 days per year. Table 6-2 of the BHHERA presents the exposure parameters assumed for the passive child/adult passive recreator in the aquatic AOCs. Consistent with the BHHERA, a relative bioavailability value of 60% was assumed for the soil ingestion pathway in the derivation of the arsenic NTE value.

Quantile-quantile plots and summary statistics for baseline sediment concentrations of dioxin TEQ and arsenic in the Southern Pond AOC and dioxin TEQ in the Riparian AOC are presented in Appendix B. The plots highlight sediment samples that exceed the site-specific NTE values and are, therefore, within the identified RAAs. As noted in the table below and in Appendix B, the targeted RAA will reduce EPCs of primary COPCs in the Southern Pond AOC and the Riparian AOC and thereby reduce potential risks in these areas. Note that residual dioxin TEQ EPCs in the riparian area are below the DTSC risk-based goal for unrestricted use (50 pg/g). Pond 7 is not included in the following table, as sediments in the accessible exposure intervals will be removed, thereby eliminating exposure and potential risk at that location.

**Residual sediment EPCs[9]**

| Aquatic Areas | Dioxin TEQ (pg/g) | | Arsenic (mg/kg) | |
|---|---|---|---|---|
| | BHHERA EPC | Residual EPC | BHHERA EPC | Residual EPC |
| Southern Ponds (0-2 feet bgs) | 441 | 248 - 390** | 46 | 40 |
| Riparian Area Sediments (0-2 feet bgs) | 127 | 19 | NA | NA |

**Note:**

NA = not applicable for this area

**Presented as a range to reflect the ProUCL 95th percentile value KM (Chebyshev) value (248 pg/g) and the recommended ProUCL 99th percentile KM (Chebyshev) value (390 pg/g). The BHHERA EPC of 441 pg/g is the ProUCL 95th percentile recommended value KM (Chebyshev) value.

[9] The actual residual EPC values are subject to the results of confirmation sampling.

As summarized in the BHHERA (Arcadis 2015a) for the 12-day recreator exposure scenario, baseline EPCs of arsenic and dioxin TEQ in the Southern Pond AOC result in compound-specific cancer risks equal to $1x10^{-6}$ and cumulative baseline risks equal to $2x10^{-6}$. The proposed removal actions will reduce risks to recreators in the Southern Pond AOC. Specifically, the proposed removal actions in the Southern Pond AOC decrease cumulative risks in the 0 to 2-foot bgs exposure interval for the 12-day recreator from $2x10^{-6}$ to $1x10^{-6}$ subsequent to the proposed removal actions.

# 4 EVALUATION AND SELECTION OF REMOVAL ACTIONS

This section identifies and screens possible removal action alternatives that may best achieve the RAGs discussed in Section 3. Based on the number of RAAs, the small volume within each RAA, and similarities between the nature and extent of COPCs, removal action alternatives were developed to address all RAAs with a single remedial approach. During removal action alternative development, several alternatives were preliminarily screened based on implementability and effectiveness and subsequently eliminated. For example, excavation and landfarming was considered as a potential alternative; however, the alternative would only be effective for TPH-related RAAs. Due to the presence of COPCs that would not be effectively reduced through landfarming (e.g., metals) and the small number of TPH-related RAAs, this alternative was deemed ineffective and was eliminated from further evaluation. Cost estimates and feasibility evaluations were based on knowledge of the site and previous experience for all alternatives passing the pre-screening process. Removal action alternatives retained beyond the pre-screening process are presented below.

## 4.1 Overview and Description of Removal Action Alternatives

The removal action alternatives to address COPCs in the RAAs include no action, vegetative covers, and excavation and offsite disposal. The removal action alternatives are described in more detail in Section 4.1.1 through 4.1.3.

### 4.1.1 No Action

The No Action Alternative is intended to serve as a baseline by which to compare the risk reduction effectiveness of other removal alternatives, as required by USEPA and NCP regulations (USEPA 1988). In this baseline, no removal actions would be performed. The site would be maintained by Georgia-Pacific in its current condition for the foreseeable future.

### 4.1.2 Excavation and Disposal

Excavation involves the physical removal of soil using standard excavation practices and equipment. Typical equipment used includes excavators, backhoes, drag lines, clamshells, vacuum trucks, and front-end loaders. Excavated soil is transported to a landfill offsite and is required to meet federal and state transportation and disposal regulations. Backfilling, grading, and revegetation are performed following excavation. Sampling and analysis of the backfill material source is typically performed to determine the acceptability of the backfill material. Suppressant, water spray, and other forms of dust control may be required during excavation, and workers may be required to use personal protective equipment (PPE) to reduce exposure to COPCs.

### 4.1.3 Vegetative Cover

Vegetative cover involves covering the RAAs with protective layers of liners and soil to isolate COPCs from direct contact with humans or the surrounding ecosystem, thereby mitigating potential risk identified in the BHHERA (Arcadis 2015a). Vegetative cover would include a high-density polyethylene (HDPE) liner, two non-woven geotextile layers, with 1 foot of soil covering the liner to support short-rooted

vegetative growth. The vegetative growth on the soil will prevent gullying and scouring by surface water and wind.

## 4.2 Evaluation Criteria

Each removal action alternative was independently analyzed without consideration to the other alternatives. Each of the removal action alternatives is screened based on effectiveness, implementability, and cost.

### 4.2.1 Effectiveness

This criterion evaluates how effectively a removal action alternative achieves the RAGs established in Section 3.

### 4.2.2 Implementability

This criterion evaluates the technical and administrative feasibility of implementing the alternative, as well as the availability of the necessary equipment and services. This includes the ability to design and perform a removal alternative, ability to obtain services and equipment, ability to monitor the performance and effectiveness of technologies, and the ability to obtain necessary permits and approvals from agencies, and acceptance by the state and the community.

### 4.2.3 Cost

This criterion evaluates the relative cost of each technology based on fixed cost to implement the remedial alternative for construction or initial implementation and ongoing operations and maintenance costs. The actual costs will depend on true labor and material cost, competitive market conditions, final project scope, and the implementation schedule. Costs were based on earthwork removal action estimates presented in Table 2-1.

## 4.3 Removal Action Alternative Evaluation

Each alternative for removal action of the collective RAAs is evaluated against the established criteria in the following subsections. Evaluation of cost for each alternative is completed by using the volumetric and excavation footprint estimates presented below and in Table 2-1.

### 4.3.1 Alternative 1 – No Action

#### 4.3.1.1 Effectiveness

This alternative would prove to be ineffective in mitigating potential human health and ecological risks associated with the COPCs in this RAA. Biodegradation of COPCs may occur; however, there is no certainty associated with this potential biodegradation. This alternative would not be effective in meeting the RAGs.

#### 4.3.1.2 Implementability

This alternative would be easily implementable, as it would require no action.

#### 4.3.1.3 Cost

This alternative would result in zero cost, as no action would be taken.

### 4.3.2 Alternative 2 – Excavation and Disposal

#### 4.3.2.1 Effectiveness

This alternative would be an effective alternative by immediately removing hot spots defining the RAAs. The removal of hot spots identified in the BHHERA (Arcadis 2015a) within the OU-E Lowland AOC will effectively reduce the potential risk and expedite remediation in OU-E, consistent with the RAGs.

#### 4.3.2.2 Implementability

Excavation and disposal is a well-proven, readily implementable technology that is a common method for remediation of impacted soils. It is a relatively simple process with proven results. Equipment and labor required to implement this alternative are uncomplicated and readily available. The depths of the identified soil for removal make excavation readily implementable. Additionally, implementation can be conducted concurrently with remedy implementation in OU-C/D scheduled to begin toward the end of summer 2016.

#### 4.3.2.3 Cost

Approximately 3,438 CY and a 27,000 square-foot (SF) footprint, with depth extending to a maximum of 9 feet bgs, is planned for removal action in OU-E. Assuming a production of 200 CY per day, 1 day for mobilization/demobilization activities, excavation implementation is expected to have a 19-day duration. Cost assumptions include a design, preparation, and coordination cost of $2.50 per SF; a flat rate of $5,000 for mobilization/demobilization; $230 per CY of excavation, transportation, disposal, and restoration; and a flat rate for reporting, deed restriction, and risk management plan of $15,000 (Arcadis 2012). Given these assumptions, the estimated cost of this alternative is $880,000.

### 4.3.3 Alternative 3 – Vegetative Cover

#### 4.3.3.1 Effectiveness

This technique of contaminant remediation proves to be effective in mitigating direct contact exposure to the COPCs; however, this technique is ineffective in removing the source and the toxicity and mobility of COPCs. Therefore, this method is an inadequate means of mitigating long-term exposure potential of COPCs.

#### 4.3.3.2 Implementability

This technique would be easily implementable. This alternative would involve placing two non-woven geotextile liners and one 40 mil HDPE liner on each RAA. Approximately 1 foot of nutrient-rich soil will be placed on top of the liners, as to promote vegetative growth.

#### 4.3.3.3 Cost

Approximately 27,000 SF of RAA footprint would be covered by vegetative cover. This would involve purchasing 27,000 SF of 40-mil HDPE liner and two layers of non-woven geotextile liner, 3,400 CY of nutrient-rich soil, and seeds for replanting. The cost for design, preparation, and coordination is assumed to be $4.12 per SF. The cost for installation of the cover, including the cost of HDPE, geotextile layers, soil, and seeds is assumed to be $12.42 per SF. The reporting and deed restriction cost for this alternative is estimated at $0.26 per SF. Given these assumptions, the total cost for this removal action alternative is estimated to be $455,000.

## 4.4 Comparative Analysis of Removal Action Alternatives

The No Action Alternative is the least desirable alternative when considering long-term effectiveness of risk mitigation. Natural biodegradation could potentially occur with this alternative; however, the degradation may not occur within a reasonable timeframe. Despite this option being the lowest cost alternative for each RAA, the high likelihood of ineffectual removal of COPCs renders this option unpredictable and ineffective in achieving the RAGs.

The Excavation and Disposal Alternative is a highly desirable option to reduce COPCs within the identified RAAs. Despite being comparatively the most expensive option, the Excavation and Disposal Alternative is easily implementable and provides immediate reduction of risks associated with the COPCs. This alternative can be implemented concurrently with excavation activities at OU-C/D; therefore, the removal action can be conducted in 2016 to accelerate remediation in OU-E.

The Vegetative Cover Alternative is an ineffective alternative in reducing long-term toxicity and mobility of COPCs and is solely effective in reducing the direct exposure pathway of COPCs. Given that this alternative would keep the source area of COPCs in place, this removal alternative would be ineffective at achieving the RAGs.

## 4.5 Selection of Preferred Alternative

Based on the evaluation of the alternatives with the established criteria and comparison between the alternatives, Excavation and Disposal is the preferred alternative for all RAAs identified in this RAW. Although the alternative presents higher costs, the long-term effectiveness and overall reduction of toxicity, mobility, and volume of COPCs within the RAAs offers the most certainty in human health and ecological risk reduction.

# 5 IMPLEMENTATION

This section summarizes the techniques and methods to be used for the removal action. Because the removal actions in OU-E will be implemented concurrently with the work approved in the OU-C/D RAP (Arcadis 2015b), the Implementation Plan will include design features, permit requirements, best management practices, and sampling requirements for the OU-C, OU-D, and OU-E AOIs recommended for soil excavation and disposal.

## 5.1 Permitting

Work will be conducted in accordance with applicable federal, state, and local regulations. These include, but are not limited to, the following:

- Section 401 of the Clean Water Act Permit,
- Section 404 of the Clean Water Act Permit,
- Section 1602 Streambed Alteration Agreement Permit,
- General Permit for Discharges of Storm Water Associated with Construction Activity,
- Mendocino County Environmental Health Department Well Destruction Permits
- Occupational Safety and Health Administration (OSHA), Title 29 CFR 1910.120. Regulations applicable to hazardous waste site operations (HAZWOPER)
- HSC Division 20, Chapters 6.5 and 6.8
- Title 8 CCR General Industry Safety Orders 5192 and Title 8 California Code of Regulations (CCR) 1532.1
- Title 22, CCR Sections 66261.2 and 66261.3
- CCC Grading Requirements
- Bay Area Air Quality Management District, Regulation 6

An archaeologist familiar with potential Native American artifacts will be consulted to determine which areas of the site contain moderate or high sensitivity ratings. If determined necessary, a pre-construction meeting will be held with key construction personnel to provide brief discussions pertaining to archeological resource significance, visual identification, and discovery notification procedures. Monitoring of excavation activities in potentially moderate or high sensitivity rating areas by a professional archeologist to identify, collect, curate, and correctly place significant cultural resource material could be required based on the archaeological consultation.

An appropriately qualified biologist will be present to monitor any work within 50 feet of biologically sensitive areas. Plans and measures have been developed for the site to mitigate potential impacts.

A qualified, HAZWOPER-trained, experienced engineering contractor licensed in the State of California will conduct excavation and soil handling using conventional earthwork equipment. The contractor will minimize idling time and maintain equipment properly. Contractors will conduct work in accordance with a

site-specific HASP, which addresses identification of hazards, hazard mitigation, safe work practices, and emergency response procedures for the project.

Prior to conducting the remediation, Underground Service Alert will be contacted to schedule visits by public and private utility companies.

Unauthorized access of vehicles and persons to uncovered hazardous soil at the site will be limited by the existing fencing and access controls around the work areas. There are several distinct areas proposed for soil excavation and removal. Temporary access controls, such as fencing or similar devices, will be used to limit access by non-construction exclusion zones, contaminant reduction zones, and support zones to avoid inadvertent transport of impacted soils beyond the individual construction areas. Traffic routing and controls to and from individual excavation areas within the property will also be established.

## 5.2 Contractor Health and Safety

A site-specific HASP and subsequent addendums are available for this project and have previously been submitted to DTSC (note, it is updated annually and the most recent update was produced in January 2015 [Arcadis 2015d]). An updated HASP for 2016 will be available prior to removal action implementation. The HASP follows both the California Division of Occupational Safety and Health (Cal/OSHA) and the federal OSHA standards for hazardous waste operations (8 CCR 5192 and 29 CFR 1910.120, respectively) and any other applicable health and safety standards. Among other things, the HASP includes a description of health and safety training requirements for onsite construction personnel, a description of PPE to be used, and any other applicable precautions to be undertaken to minimize direct contact with soil or groundwater. The HASP also includes job safety analyses (JSAs) for each task during construction activities that identifies both the potential hazards of a task and solutions for mitigating these potential hazards. All contractors will hold a joint site safety tailgate meeting each day before the start of work. As part of the safety meeting, JSAs will be reviewed before the start of each new task.

Site workers whose activities could potentially result in contact with contaminated soil and/or groundwater are required to have certification that they have completed OSHA 40-hour HAZWOPER training, annual 8-hour refresher training (as appropriate), and other training and monitoring as needed to meet OSHA and Cal/OSHA requirements. The construction contractor must have the HAZWOPER training certificates of the individual workers onsite during all construction activities.

## 5.3 Mobilization and Site Preparation

Prior to the removal action, the Contractor will perform mobilization and site preparation activities. At a minimum, it is anticipated that the following site preparation activities will be performed:

- Verify existing site conditions
- Identify the location of aboveground and underground utilities and/or obstructions
- Mobilize personnel, equipment, and materials to the site
- Clear and grub areas as necessary to perform interim remedial action activities
- Construct equipment and material staging/dewatering areas (as necessary)

- Prepare equipment and personnel decontamination areas
- Establish erosion and sedimentation control measures
- Construct temporary access roads (as needed) for ingress and egress of construction equipment, as well as offsite transportation of excavated materials
- Install temporary fencing or barriers as necessary to protect and secure the work areas.

## 5.4 General Excavation Procedures and Soil Management

The proposed excavation areas, depths, and cumulative volumes are indicated on Figures 2-8 through 2-14. These limits are based on investigation activities previously performed at the site, but may be modified based on field conditions. The proposed OU-E excavation activities amount to removing approximately 3,500 in-place CY at depths between 0.5 and 9 feet deep in an approximate 27,000 SF (0.57 acres) footprint. Excavation procedures are summarized below and will be detailed in the forthcoming Remedial Design and Implementation Plan (RDIP).

### 5.4.1 Excavation Procedures

Removal actions will be conducted using standard earthmoving equipment (e.g., excavator, backhoe, front-end loader). Following excavation, materials will be temporarily stockpiled for characterization prior to offsite disposal. Stockpiled soil will be placed on plastic sheeting and covered with plastic sheeting when not actively being worked on and at the end of each workday. Sandbags, or other weights, will be used to keep the plastic cover in place. Excavated soil will be segregated based on the COPCs identified within each RAA. Soil stockpile locations will be determined prior to initiation of remedial actions and are anticipated to be located adjacent to the excavation sites.

Sediment and soil removed from ponds or below the groundwater table may require time to drain and dry. Dewatering of sediment, if necessary, will occur in the upland area adjacent to the RAA. Sediment or wet soil will be placed temporarily near the edge of the pond or excavation, such that free flowing water will gravity drain back to excavation areas. After free water is allowed to drain from the excavated material, additional air drying of soil and sediment may be needed in staging and loading areas prior to transport offsite. Wet stockpiles may be uncovered to allow efficient drying. Dust is not expected from wet materials in need of drying, and stockpiles will be covered once materials are sufficiently dry for transportation.

Sediment and soil is planned to be removed below the groundwater table, which may result in accumulated water in the RAA excavations. Groundwater in the excavations with visible sheen or odor will be containerized onsite, sampled, and treated or disposed (if necessary). Water present in excavations without visible sheen or odor will be transferred to an adjacent excavation or pond area to allow backfilling and may be used to moisture condition backfill materials.

If entry into excavations is necessary, sidewalls of excavations extending deeper than 5 feet bgs will be sloped/benched in accordance with OSHA requirements for excavation, as outlined in 29 CFR 1926 Subpart P. In accordance with 8 CCR and the California Business and Professions Code, the sloping method will be approved by a California-registered civil engineer. It is not anticipated that personnel will enter the excavation; however, if personnel must enter the excavation, they will comply with state and

federal confined space requirements. The contractor will minimize idling time and properly maintain equipment.

### 5.4.2 Confirmation Sampling

Confirmation samples will be collected from the sidewalls and bottoms of excavations to document conditions following the removal activities. Samples will be collected with a frequency of one per sidewall up to 50 linear feet. Additional sidewall samples will be collected for excavation sidewalls longer than 50 feet. Bottom samples will be collected at a frequency of one per 2,500 SF, with a minimum of one sample per excavation. Because of the focused and limited scope of work expected to be implemented under this RAW, significant additional work is not expected based on confirmation sample results. The results will be compiled and presented to DTSC to confirm excavation completion or to initiate discussion of additional activities.

### 5.4.3 Air Monitoring

Excavation activities have the potential to generate airborne dust. Dust control measures will be performed to protect onsite and offsite receptors from chemicals in soil and nuisance dust. These measures include spraying water on the site, as needed, for dust control and covering stockpiles and trucks. Soils will be wetted as needed to reduce the occurrence of visible dust. Additionally, soil stockpiles and truck beds containing soil will be covered to minimize the potential for dust generation.

Air monitoring for particulates (dust) will be conducted during activities with the potential to generate dust (e.g., excavation, material handling, back filling) in accordance with an addendum to the site-specific HASP. Action levels for airborne monitoring are summarized in the HASP. The presence of airborne dust will be evaluated using real-time personal sampling equipment and perimeter air sampling compared with the site-specific dust action level. Information gathered will be used to confirm the adequacy of the levels of protection being employed at the site, and may be used as the basis for upgrading or downgrading levels of worker personal protection, at the discretion of the Site Safety Officer. Additional dust control methods (i.e., applying water to all disturbed areas) will be implemented if the action level in the site-specific HASP is exceeded. If dust levels cannot be controlled below the action level, work will cease until additional measures can be implemented.

### 5.4.4 Biological Monitoring

Biological monitoring is required prior to commencement of removal activities. As required by the Coastal Development Permit, monitoring for the presence of nesting birds and wetlands will be conducted prior to beginning work in RAAs. Figures 2-3 and 2-4 show the habitat areas, including rare plants, wetlands, and other features.

### 5.4.5 Decontamination

Equipment used to excavate and manage the affected soil will be decontaminated prior to leaving the site. The equipment will primarily be decontaminated by sweeping or brushing to remove visible soil. Soil that cannot be removed by this procedure will be removed from equipment by washing in a prepared decontamination area. The decontamination area will consist of a bermed containment pad constructed

using plastic sheeting to provide containment of the decontamination wash water. Decontamination wash water will be collected, characterized, and appropriately disposed or recycled in accordance with applicable federal, state, and local requirements.

### 5.4.6 Waste Disposal

Soil characterized as California hazardous waste will be transported offsite for disposal. The excavated material will be loaded onto trucks and transported under an appropriate waste manifest or bill-of-lading to an appropriately permitted landfill, depending on the characteristics of the waste. An estimated 175 truckloads will be required to transport the waste soil to the appropriate disposal facility. The soils will be wetted, as necessary, to reduce the potential for dust generation during loading and transportation activities. After each truck is filled, it will be inspected to confirm that the waste soil is securely covered and that the tires of the haul trucks are reasonably free of accumulated soil prior to leaving the site. The anticipated disposal facilities for hazardous and non-hazardous waste will be established in the Transportation Plan to be included in the RDIP. A SAP will also be included in the RDIP for characterization of excavated material prior to disposal. It is anticipated that one four-point composite sample will be collected and submitted for chemical analyses for characterization either at a frequency of one four-point composite sample analyzed for each 500 CY, or at a frequency dictated by the disposal facility.

The anticipated landfill facilities for disposal of non-hazardous excavated soil are the Class III Potrero Hills Landfill in Suisun City, California (Potrero Hills), Waste Management, Inc. Redwood Landfill in Novato, California (Redwood), or the Allied Waste Services Keller Canyon Landfill in Pittsburg, California (Keller Canyon; a Class II, Subtitle D, Comprehensive Environmental Response, Compensation, and Liability Act of 1980-approved landfill). The anticipated facility for disposal/recycling of non-hazardous concrete waste is Norcal Rock in Willits, California. Concrete waste classified as non-hazardous may be crushed and used onsite. The anticipated landfill facility for hazardous excavated soil or concrete is the Class I Waste Management, Inc. Kettleman Hills Landfill in Kettleman City, California. Additional appropriate facilities for each waste type may be proposed depending on factors such as volume and nature of waste to be disposed, availability of transportation services, and cost.

The anticipated facility for disposal of non-hazardous wastewater is the Waste Management, Inc. Altamont Landfill in Livermore, California. The anticipated facility for disposal of hazardous wastewater is the Clean Harbors San Jose Facility in San Jose, California. Additional options for water disposal will be evaluated based on the characteristics of the water. For example, the City wastewater treatment plant may be able to accept water from the site as they have in the past, reducing the need for offsite transportation.

### 5.4.7 Restoration Activities

Clean fill material will be used to restore the excavated cavities to pre-construction conditions. If suitable, backfill material from a borrow area adjacent to Pond 7 will be used to backfill excavations at the site. This will create additional wetland areas to provide additional mitigation for the temporary loss of function and any minor loss of wetland areas as a result of the work. The borrow area will be restored as emergent wetland similar to the surrounding wetlands present near Ponds 6 and 7. The fill material will be

placed with standard earthmoving equipment and compacted in areas where pedestrian or vehicular traffic is anticipated.

The excavated area will be restored to match existing grade. Backfilled and regraded areas will be revegetated with a native plant seed mix using a hydroseeder, as needed, to restore the RAAs to pre-construction conditions. To mitigate impacts to ecological and biological receptors, enhancement of wetlands present in the Lowland, Pond 2, Pond 3, Pond 7, and Riparian RAAs through removal of invasive/exotic vegetation and planting/seeding of native vegetation will be performed. In addition to RAA wetland enhancement, the borrow area adjacent to Pond 7 will result in the creation of a wetland habitat area. The creation of wetland habitat near Pond 7 will serve to offset any loss of wetlands in other site RAAs. Backfill and plant restoration in wetland and pond areas may be modified from the existing conditions as specified in the Section 401 of the Clean Water Act Permit, Section 404 of the Clean Water Act Permit, Section 1602 Streambed Alteration Agreement Permit to meet permit requirements and promote improvement of habitat.

# 6 REPORTING AND SCHEDULE

## 6.1 Reporting

Following implementation of the excavations at the OU-E AOCs/AOIs, a summary report documenting the implementation of removal actions will be submitted. The summary report will include a summary of the work that was performed, deviations from this RAW, and indicate that RAGs were achieved. Copies of field documentation will be submitted in the completion report.

## 6.2 Public Participation

The public participation process for the RAW process includes the following:

- Conducting a public workshop to provide information about the planned RAW implementation.
- Distributing a fact sheet to parties on the site mailing list describing the proposed remedy and the availability of the RAW.
- Making the draft RAW and other supporting documents (i.e., California Environmental Quality Act [CEQA] document) available for public review at the DTSC office and in the local information repositories.
- Public participation during the permitting process, including City Council and Planning Commission meetings for approval of permits.

## 6.3 California Environmental Quality Act

The City, as Lead Agency under CEQA, prepared a Subsequent Environmental Impact Report (SEIR) for the coastal trail. DTSC considered the effects described in the City's SEIR and concluded that approval of the draft RAW would not result in significant impacts to the environment. DTSC has prepared an Addendum to the SEIR having determined this as the appropriate document under CEQA. Upon approval of the draft RAW, DTSC will file a Notice of Determination to start the 30-day statute of limitations on court challenges to the approval under CEQA. The Addendum to the SEIR has identified mitigation measures necessary to protect public health (dust control and monitoring), biological resources, and cultural resources. The implementation plan for the RAW will include a Mitigation Monitoring Plan to ensure the implementation of the identified mitigation measures.

DTSC responses to public comments will be provided in the Responsiveness Summary included in Appendix C of the final RAW.

## 6.4 Schedule

The total duration of removal activities at the excavations is anticipated to last approximately 5 weeks, and will be conducted concurrent with OU-C/D implementation. Remedial construction activities will proceed after all required permits are acquired.

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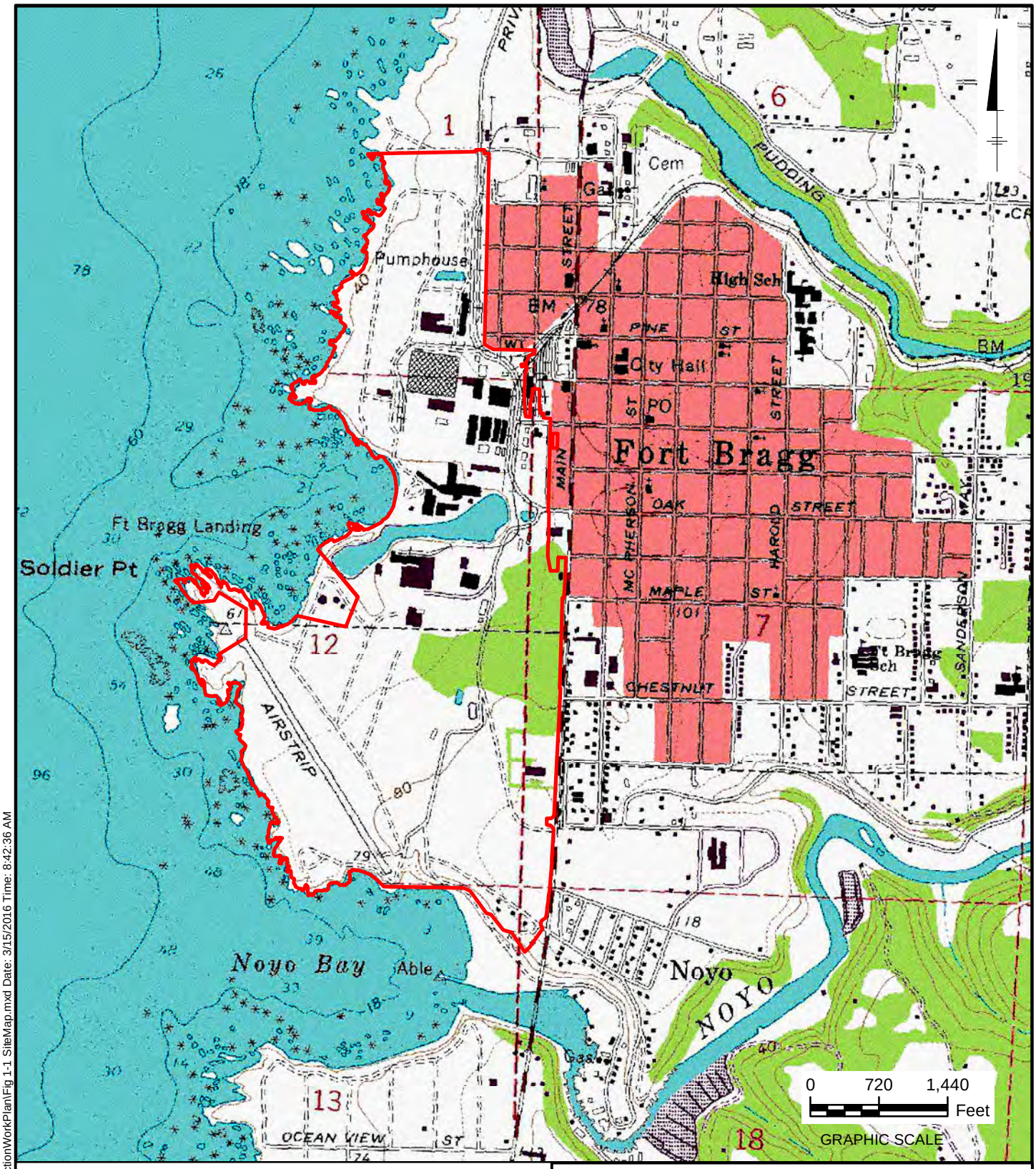
# FIGURES




LEGEND:

SITE BOUNDARY

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

**REMOVAL ACTION WORKPLAN OPERABLE UNIT E**

## SITE LOCATION MAP

ARCADIS

**FIGURE 1-1**

CITY: Highlands Ranch DIV/GROUP: IM GIS DB: Brianna Griffith
Project B0066142.2012 Task AS010
Path: G:\GIS\FortBragg\MXD\OUE RemovalActionWorkPlan\Fig 1-1 SiteMap.mxd Date: 3/15/2016 Time: 8:42:36 AM

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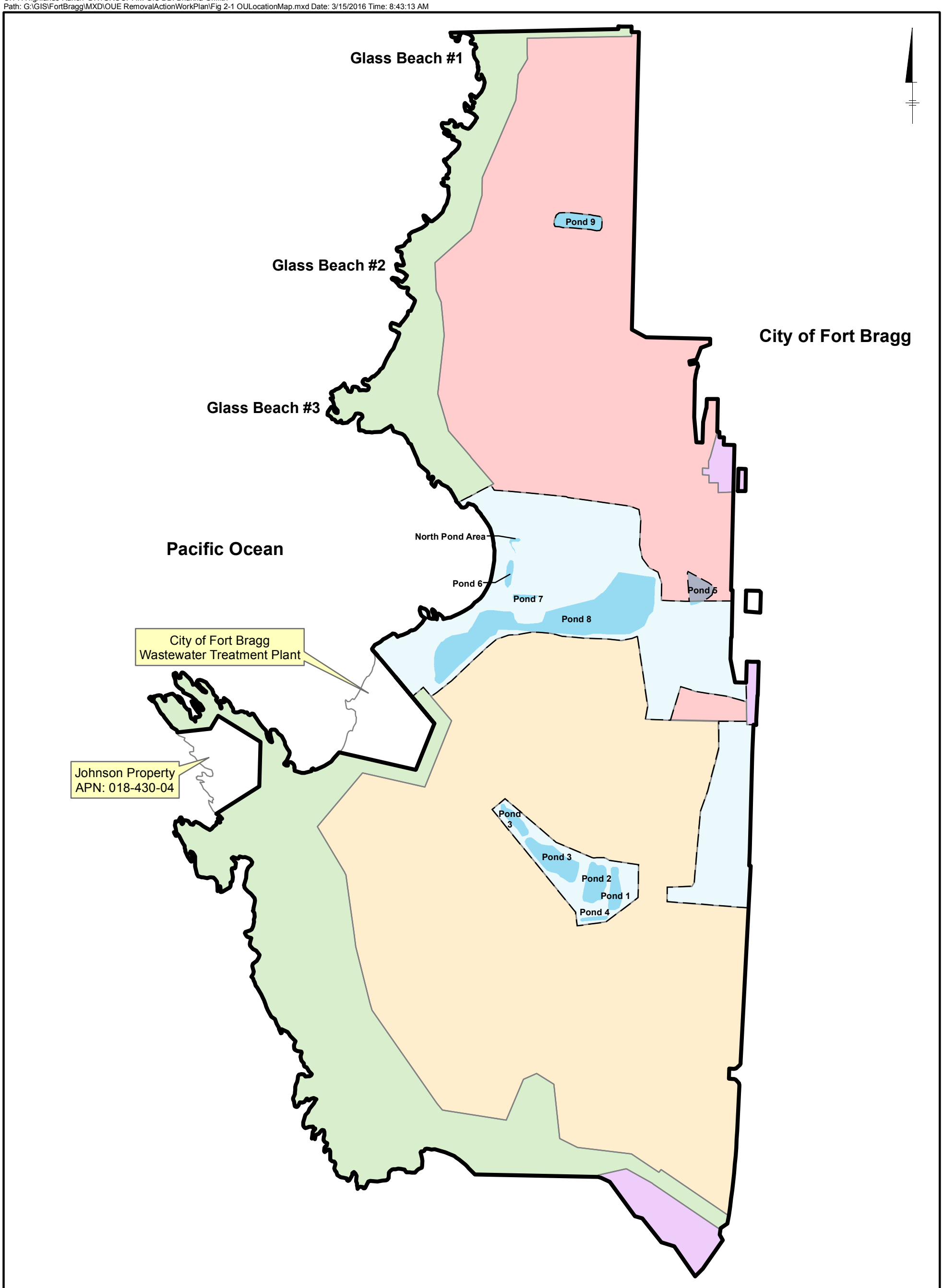


LEGEND:

POND

SITE BOUNDARY

OPERABLE UNITS

OU-A

"OFFSITE" NON-INDUSTRIAL (OU-B)

NORTHERN (OU-C)

SOUTHERN (OU-D)

PONDS (OU-E)

ABBREVIATION:

OU = OPERABLE UNIT

0 620 1,240 Feet

GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

**REMOVAL ACTION WORKPLAN OPERABLE UNIT E**

**OPERABLE UNITS LOCATION MAP**

ARCADIS

FIGURE
**2-1**

CITY: Highlands Ranch DIV/GROUP: IM GIS DB: Brianna Griffith
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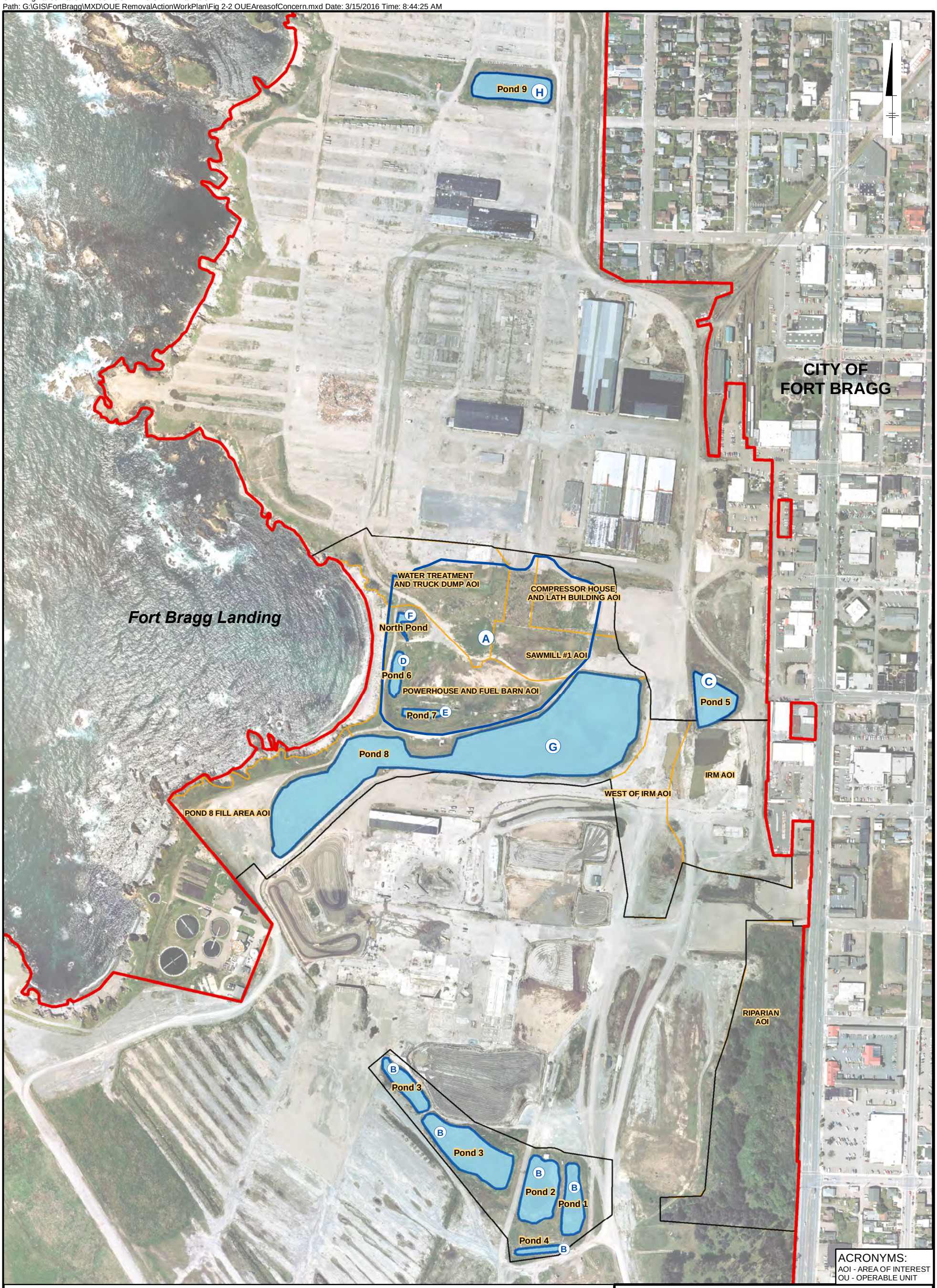


LEGEND:

- SITE BOUNDARY
- AOI BOUNDARY
- OU-E BOUNDARY
- PONDS
- AREA OF CONCERN BOUNDARY

**AREAS OF CONCERN:**

- A OUE LOWLAND
- B SOUTHERN PONDS
- C POND 5
- D POND 6
- E POND 7
- F NORTH POND
- G POND 8
- H POND 9

0 370 740 Feet
GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

**REMOVAL ACTION WORKPLAN OPERABLE UNIT E**

# OPERABLE UNIT E MAP AND AREAS OF CONCERN (AOC)

ARCADIS

FIGURE
**2-2**

NOTES:
1. NOT ALL DELINEATED WATERS/WETLANDS APPROVED BY THE USACE ARE WATERS/WETLANDS OF THE U.S.
2. ESHA - ENVIRONMENTALLY SENSITIVE HABITAT AREAS
3. THREE-PARAMETER WETLANDS ARE DEFINED AS WETLANDS WHERE:
   1) EVIDENCE OF WETLAND HYDROLOGY, HYDRIC SOIL, AND HYDROPHYTIC VEGETATION WERE PRESENT DURING FIELD INVESTIGATIONS, OR
   2) LACK OF EVIDENCE FROM ONE OR MORE OF THE THREE PARAMETERS WAS DUE TO PROBLEMATIC/DISTURBED CONDITIONS.

## LEGEND

- SOIL PIT LOCATION
- OPERATIONAL UNIT

**POTENTIAL ENVIRONMENTALLY SENSITIVE HABITAT AREAS (ESHA)**

- WIDTH OF DELINEATED GROUNDWATER SEEP/WATERS OF THE STATE (ARCADIS 2010; NOT YET APPROVED)
- DELINEATED WET ESHA (ARCADIS 2010; NOT YET APPROVED)
- DELINEATED WATERS/WETLANDS (WRA 2009; APPROVED BY THE USACE 3/15/10)
- SEASONAL WETLAND
- WETLAND SEEP
- INDUSTRIAL POND
- BEDROCK GROUNDWATER SEEP
- THREE-PARAMETER WETLAND

0 170 340 Feet
GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

**REMOVAL ACTION WORKPLAN OPERABLE UNIT E**

**WETLANDS AND OTHER WET ENVIRONMENTALLY SENSITIVE HABITAT AREA - CENTRAL**

ARCADIS

FIGURE
**2-3**

CITY: Highlands Ranch DIV/GROUP: IM GIS DB: Brianna Griffith
Project B0066142.2012 Task AS010
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CITY: Highlands Ranch DIV/GROUP: IM GIS DB: Brianna Griffith
Path: G:\GIS\FortBragg\MXD\OUE RemovalActionWorkPlan\Fig 2-4 WetlandsOtherEnviroSenHabitat_South.mxd Date: 4/20/2016 Time: 12:06:52 PM

NOTES:
1. NOT ALL DELINEATED WATERS/WETLANDS APPROVED BY THE USACE ARE WATERS/WETLANDS OF THE U.S.
2. THREE-PARAMETER WETLANDS ARE DEFINED AS WETLANDS WHERE:
   1) EVIDENCE OF WETLAND HYDROLOGY, HYDRIC SOIL, AND HYDROPHYTIC VEGETATION WERE PRESENT DURING FIELD INVESTIGATIONS, OR
   2) LACK OF EVIDENCE FROM ONE OR MORE OF THE THREE PARAMETERS WAS DUE TO PROBLEMATIC/DISTURBED CONDITIONS.

* WETLAND CHARACTERISTICS FOR WETLAND D-2 WERE ASSESSED FROM SOIL BORING P-22. DUE TO THE PRESENCE OF DENSE SHRUB AND BRAMBLE, WETLAND BOUNDARIES FOR WETLAND D-2 WERE DELINEATED FROM SOIL BORINGS P-21 AND P-22 AND VEGETATIVE CHARACTERISTICS IN AERIAL PHOTOGRAPHY. THEREFORE, THE BOUNDARIES OF WETLAND D-2 MAY CONTAIN AN UPLAND AND WETLAND MOSAIC.

REFERENCES:

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## LEGEND

- SOIL PIT LOCATION
- OPERATIONAL UNIT
- RIPARIAN AREA

**POTENTIAL ENVIRONMENTALLY SENSITIVE HABITAT AREAS (ESHA)**

- WIDTH OF DELINEATED GROUNDWATER SEEP/WATERS OF THE STATE (ARCADIS 2011; NOT YET APPROVED)
- DELINEATED WET ESHA (ARCADIS 2011; NOT YET APPROVED)
- DELINEATED WATERS/ WETLANDS (WRA 2009; APPROVED BY THE USACE 3/15/10)
- SEASONAL WETLAND
- WETLAND SEEP
- INDUSTRIAL POND
- SEASONAL WETLAND DITCH
- RIPARIAN WETLAND
- BEDROCK GROUNDWATER SEEP
- PERENNIAL WATERS
- THREE-PARAMETER WETLAND
- AREA NOT EVALUATED BASED ON ONGOING CONSTRUCTION ACTIVITIES
- FLOW DIRECTION OF RIPARIAN CREEK

0 300 600 Feet
GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA
**REMOVAL ACTION WORKPLAN OPERABLE UNIT E**

**WETLANDS AND OTHER WET ENVIRONMENTALLY SENSITIVE HABITAT AREA - SOUTHERN**

ARCADIS

FIGURE
**2-4**

CITY: Highlands Ranch DIV/GROUP: IM GIS DB: Brianna Griffith
Project B0066142.2012 Task AS010
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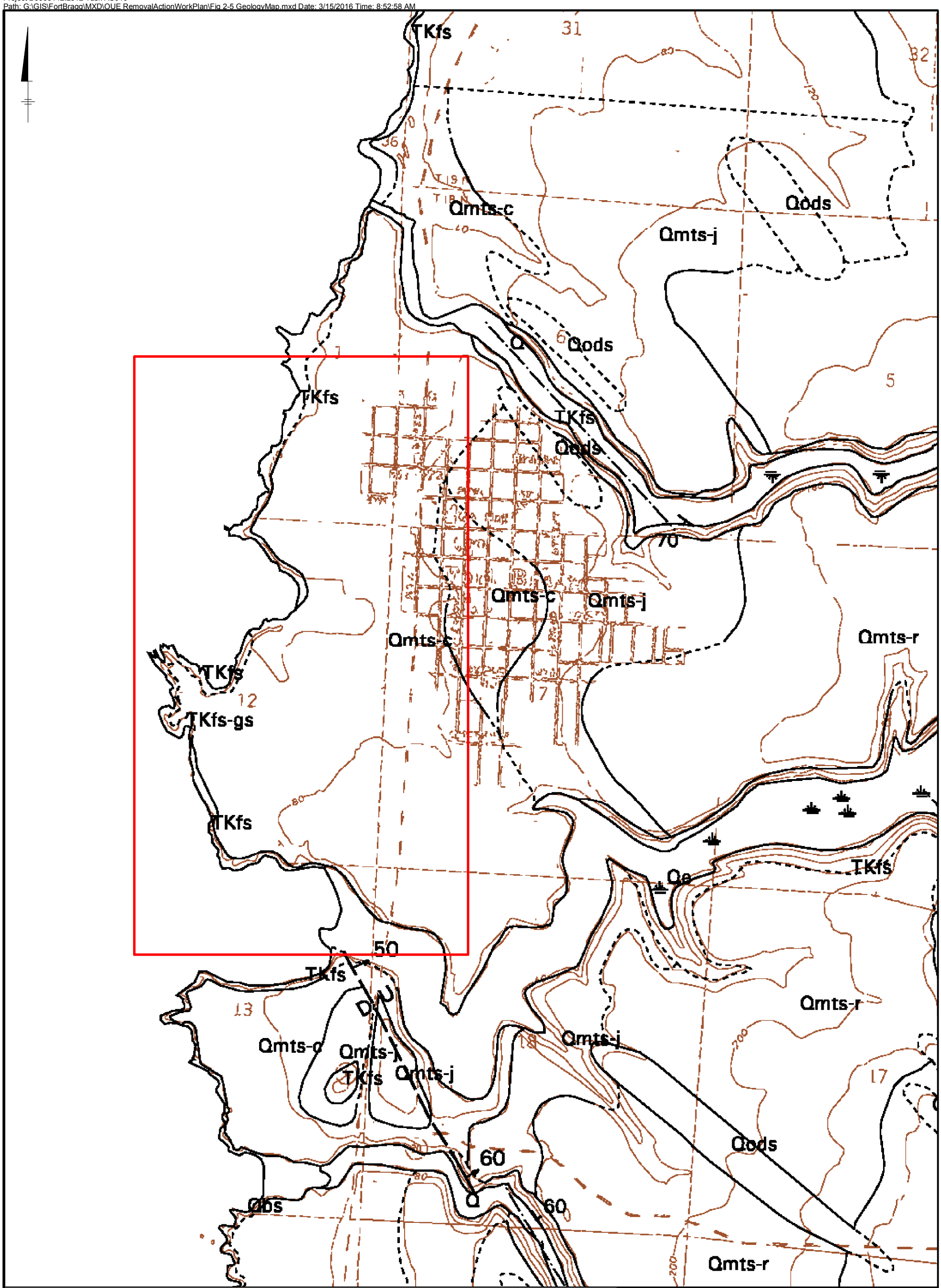


**LEGEND:**

APPROXIMATE SITE AREA

**NOTES:**

1. SOURCE: 1983, DMG OPEN-FILE REPORT 83-05, GEOLOGY AND GEOMORPHIC FEATURES RELATED TO LANDSLIDING, FORT BRAGG 7.5' QUADRANGLE, MENDOCINO COUNTY, CALIFORNIA

2. TKfs = COASTAL BELT FRANCISCAN COMPLEX
   TKfs-gs = COASTAL BELT FRANCISCAN COMPLEX, GREENSTONE
   Qmts-c = MARINE TERRACE DEPOSITS, CASPAR POINT
   Qmts-r = MARINE TERRACE DEPOSITS, CASPAR RAILROAD
   Qmts-j = MARINE TERRACE DEPOSITS, JUG HANDLE FARM
   Qods = OLDER DUNE SANDS

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

REMOVAL ACTION WORKPLAN OPERABLE UNIT E

## GEOLOGY MAP

ARCADIS

FIGURE
2-5

CITY: Highlands Ranch DIV/GROUP: AIT GIS DB:Brianna Griffith
Project # B0066142.0003.00002
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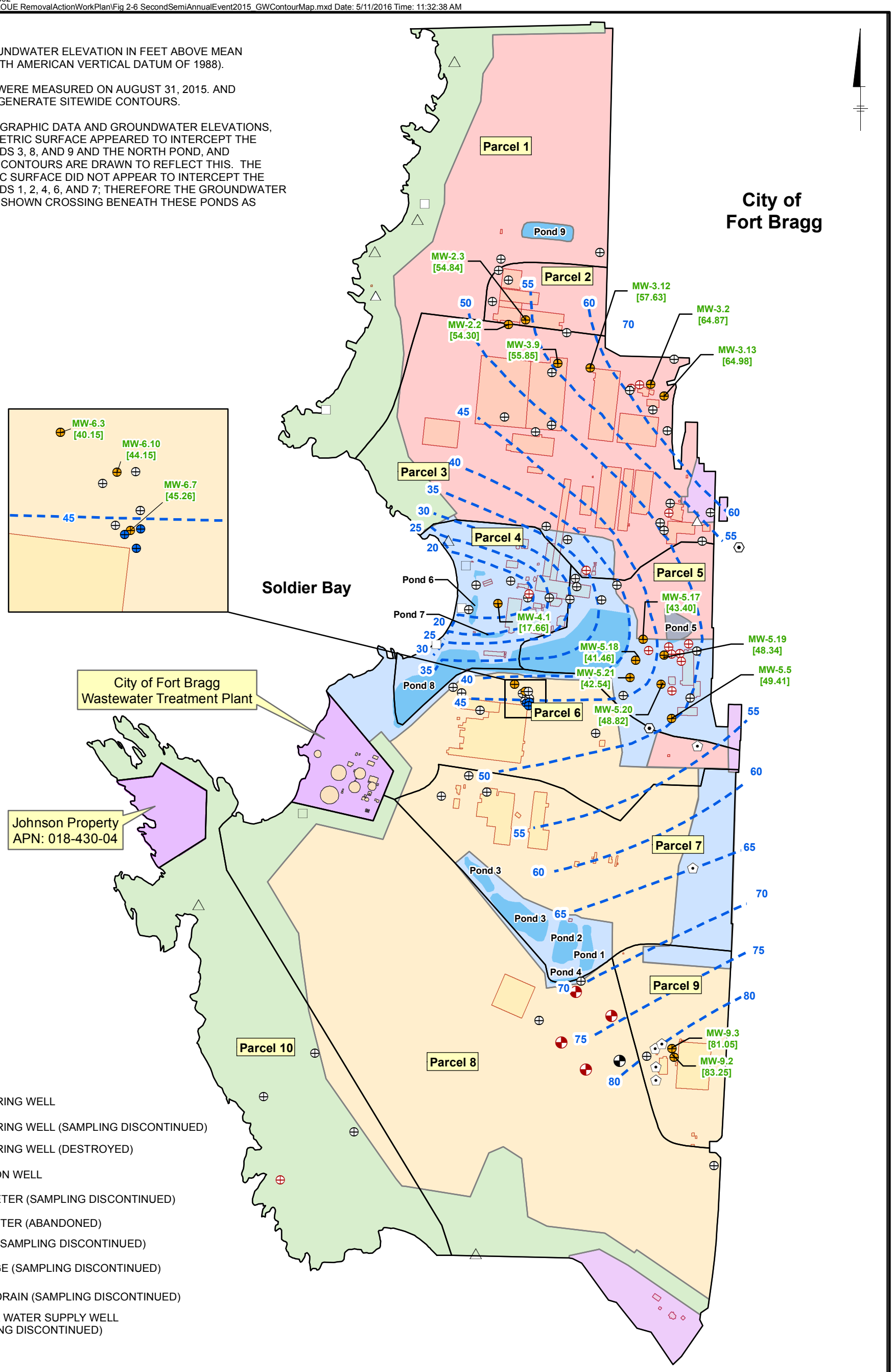
NOTES:

1. "[XX.XX]" = GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (NORTH AMERICAN VERTICAL DATUM OF 1988).
2. WATER LEVELS WERE MEASURED ON AUGUST 31, 2015. AND WERE USED TO GENERATE SITEWIDE CONTOURS.
3. BASED ON TOPOGRAPHIC DATA AND GROUNDWATER ELEVATIONS, THE POTENTIOMETRIC SURFACE APPEARED TO INTERCEPT THE FLOORS OF PONDS 3, 8, AND 9 AND THE NORTH POND, AND GROUNDWATER CONTOURS ARE DRAWN TO REFLECT THIS. THE POTENTIOMETRIC SURFACE DID NOT APPEAR TO INTERCEPT THE FLOORS OF PONDS 1, 2, 4, 6, AND 7; THEREFORE THE GROUNDWATER CONTOURS ARE SHOWN CROSSING BENEATH THESE PONDS AS APPROPRIATE.




LEGEND:

- MONITORING WELL
- MONITORING WELL (SAMPLING DISCONTINUED)
- MONITORING WELL (DESTROYED)
- INJECTION WELL
- PIEZOMETER (SAMPLING DISCONTINUED)
- PIEZOMETER (ABANDONED)
- SPRING (SAMPLING DISCONTINUED)
- DRAINAGE (SAMPLING DISCONTINUED)
- STORM DRAIN (SAMPLING DISCONTINUED)
- FORMER WATER SUPPLY WELL (SAMPLING DISCONTINUED)

LEGEND:

- POND
- STRUCTURE
- FORMER STRUCTURE
- FACILITY PARCEL

OPERABLE UNITS

- COASTAL TRAIL/PARK ACQUISITION (OU-A)
- "OFFSITE" NON-INDUSTRIAL (OU-B)
- NORTHERN (OU-C)
- SOUTHERN (OU-D)
- PONDS/PARK (OU-E)
- PROPERTY OWNED BY OTHERS

0 620 1,240 Feet
GRAPHIC SCALE

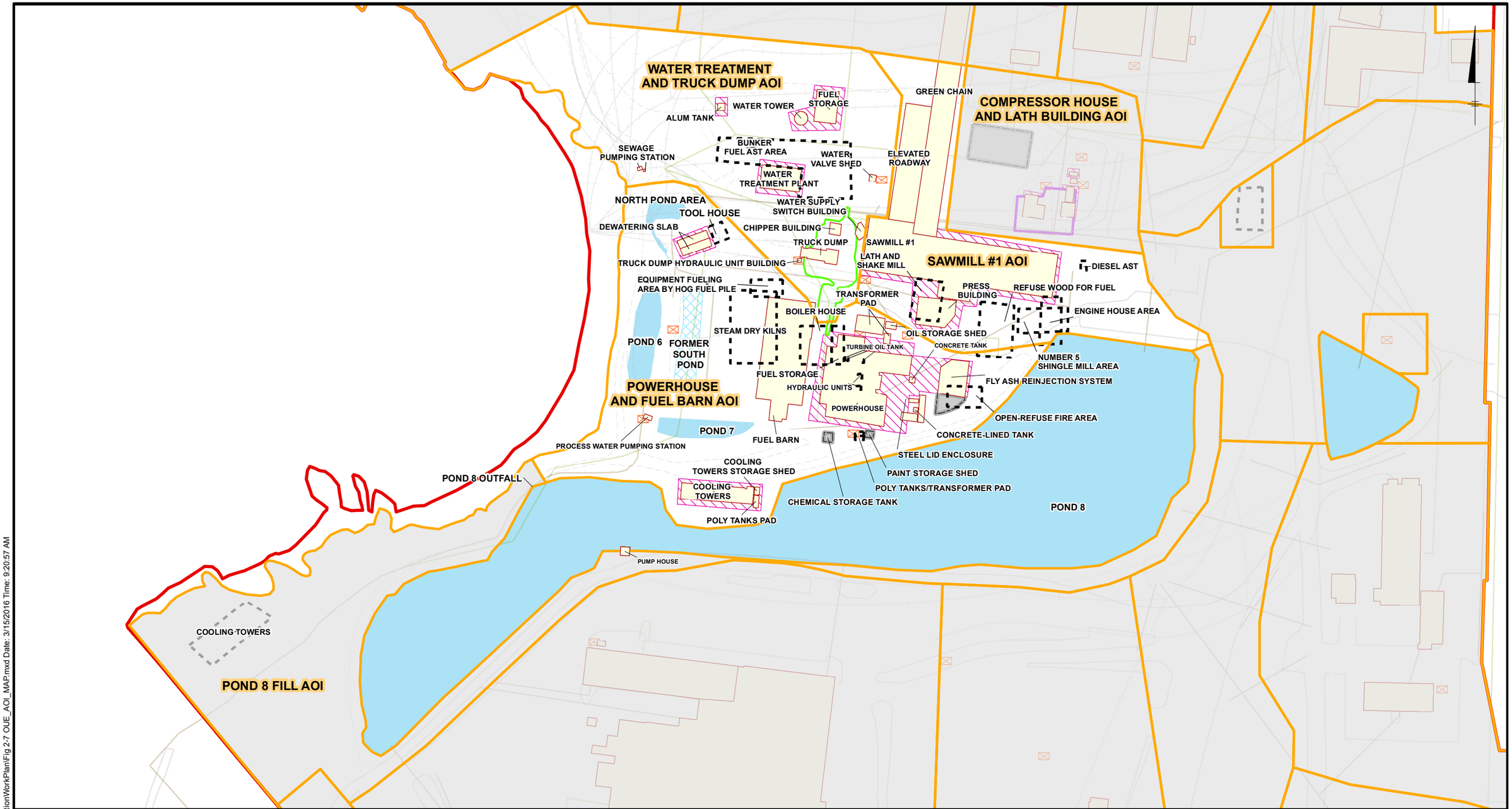
FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

**REMOVAL ACTION WORKPLAN OPERABLE UNIT E**

**SECOND SEMI-ANNUAL EVENT 2015 GROUNDWATER CONTOUR MAP**

ARCADIS

FIGURE 2-6




LEGEND:

- AOI BOUNDARY
- SITE BOUNDARY
- STRUCTURE
- FORMER STRUCTURE
- FORMER STRUCTURE-FOUNDATION INTACT
- OTHER OPERABLE UNITS/AOIs
- POND
- FORMER POND
- COMPRESSOR HOUSE EXCAVATION BOUNDARY
- FUEL LINE EXCAVATION BOUNDARY
- APPROXIMATE CAP BOUNDARIES
- FORMER INDUSTRIAL USE (APPROXIMATE LOCATION)
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE
- UNPAVED ROADWAY
- PAVED ROADWAY
- FORMER RAIL LINES
- FORMER TRANSFORMER LOCATION (APPROXIMATE)

ABBREVIATIONS:

AOI = AREA OF INTEREST
AST = ABOVEGROUND STORAGE TANK

0 170 340 Feet

GRAPHIC SCALE

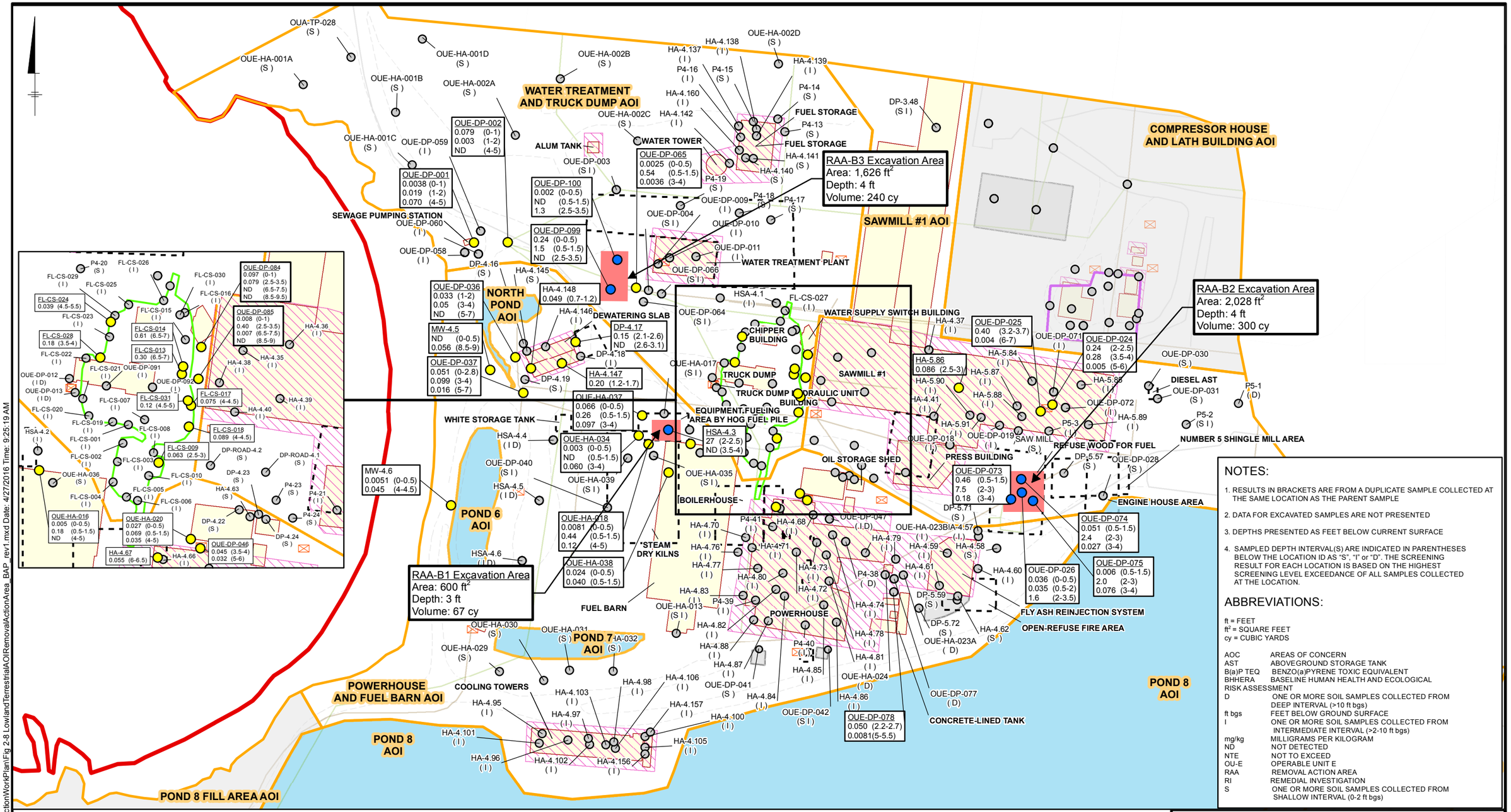
FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA
**REMOVAL ACTION WORKPLAN OPERABLE UNIT E**

## OU-E TERRESTRIAL AOIs INCLUDED IN THE RAW

ARCADIS

FIGURE 2-7

CITY: Highlands Ranch DIV/GROUP: IM GIS DB: Brianna Griffith
Project B0066142.2012 Task AS010
Path: G:\GIS\FortBragg\MXD\OUE RemovalActionWorkPlan\Fig 2-7 OUE_AOI_MAP.mxd Date: 3/15/2016 Time: 9:20:57 AM



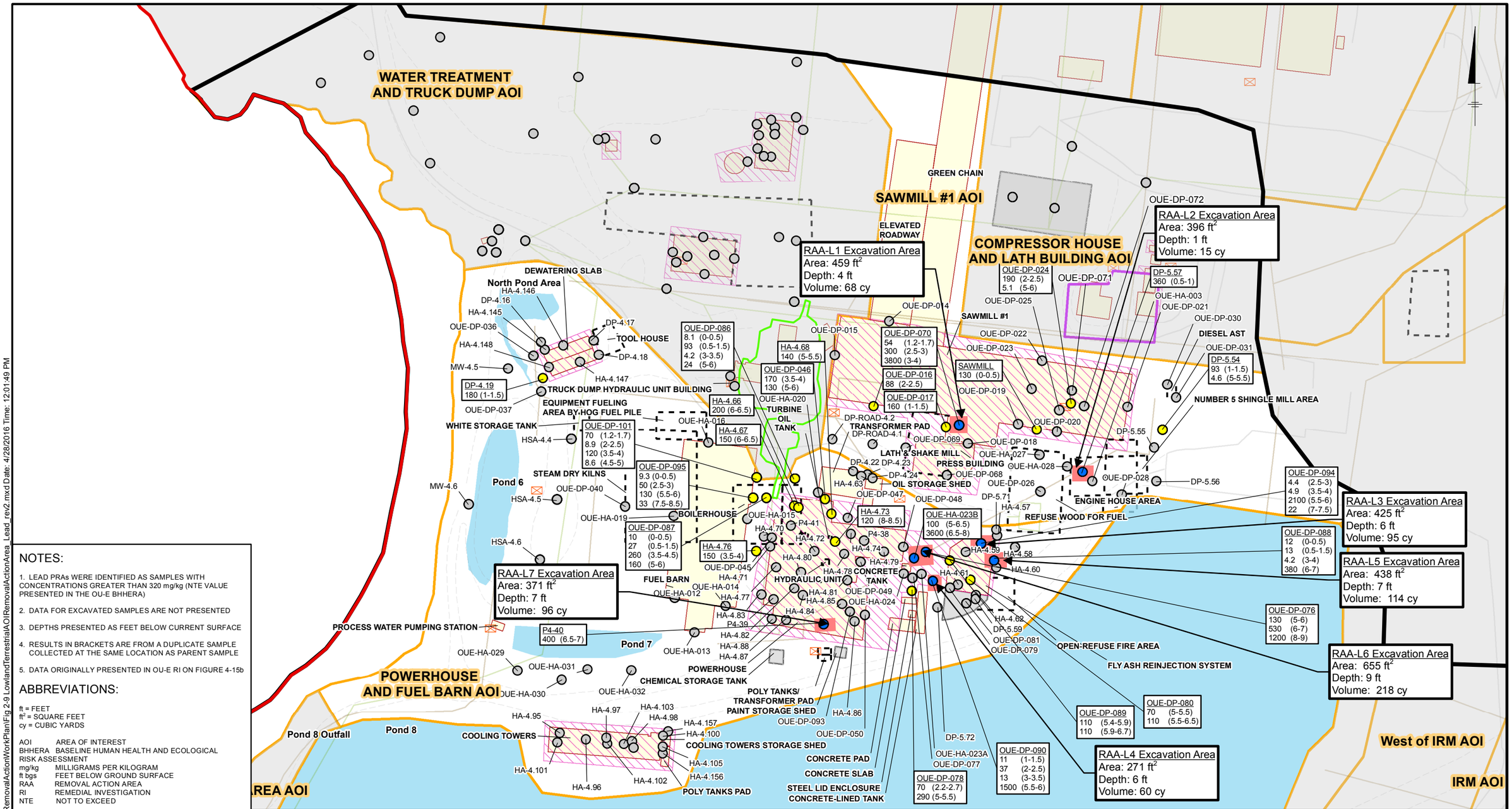

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

**REMOVAL ACTION WORKPLAN OPERABLE UNIT E**

# LOWLAND TERRESTRIAL AOIs REMOVAL ACTION AREAS (B(a)P)

ARCADIS

FIGURE
**2-8**




NOTES:

1. LEAD PRAs WERE IDENTIFIED AS SAMPLES WITH CONCENTRATIONS GREATER THAN 320 mg/kg (NTE VALUE PRESENTED IN THE OU-E BHHERA)
2. DATA FOR EXCAVATED SAMPLES ARE NOT PRESENTED
3. DEPTHS PRESENTED AS FEET BELOW CURRENT SURFACE
4. RESULTS IN BRACKETS ARE FROM A DUPLICATE SAMPLE COLLECTED AT THE SAME LOCATION AS PARENT SAMPLE
5. DATA ORIGINALLY PRESENTED IN OU-E RI ON FIGURE 4-15b

ABBREVIATIONS:

ft = FEET
ft² = SQUARE FEET
cy = CUBIC YARDS

AOI AREA OF INTEREST
BHHERA BASELINE HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT
mg/kg MILLIGRAMS PER KILOGRAM
ft bgs FEET BELOW GROUND SURFACE
RAA REMOVAL ACTION AREA
RI REMEDIAL INVESTIGATION
NTE NOT TO EXCEED

LEGEND:

- NOT DETECTED OR DETECTED BELOW SCREENING LEVELS USED IN THE OU-E RI
- DETECTED ABOVE SCREENING LEVELS USED IN THE OU-E RI, BUT BELOW NTE VALUES PRESENTED IN THE OU-E BHHERA
- SAMPLE LOCATION FOR REMOVAL ACTION
- PROPOSED REMOVAL ACTION AREAS
- AOI BOUNDARY
- SITE BOUNDARY
- OUE BOUNDARY
- EXISTING STRUCTURE
- FORMER STRUCTURE
- FORMER STRUCTURE - FOUNDATION INTACT
- OTHER OPERABLE UNITS/AOIs
- POND
- COMPRESSOR HOUSE EXCAVATION BOUNDARY
- FUEL LINE EXCAVATION BOUNDARY
- APPROXIMATE CAP BOUNDARIES
- FORMER INDUSTRIAL USE (APPROXIMATE LOCATION)
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE
- UNPAVED ROADWAY
- PAVED ROADWAY
- FORMER TRANSFORMER LOCATION APPROXIMATE)

HA-4.68 (Sample ID)
140 (5.5-6) (Depth (ft bgs))
Lead Concentration in mg/kg

0 110 220 Feet
GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA
REMOVAL ACTION WORKPLAN OPERABLE UNIT E

# LOWLAND TERRESTRIAL AOIs REMOVAL ACTION AREAS (LEAD)

ARCADIS

FIGURE 2-9

CITY: HR DIV/GROUP: GIS DB: BG
Document Path: G:\GIS\FortBragg\MXD\OUE RemovalActionWorkPlan\Fig 2-9 LowlandTerrestrialAOIRemovalActionArea_Lead_rev2.mxd Date: 4/28/2016 Time: 12:01:49 PM

NOTES:

1. DATA FOR EXCAVATED SAMPLES ARE NOT PRESENTED
2. DEPTHS PRESENTED AS FEET BELOW CURRENT SURFACE ELEVATION
3. DATA FOR ALL SAMPLES REPORTED AS TOTAL (C10-C24)
4. SAMPLED DEPTH INTERVAL(S) ARE INDICATED IN PARENTHESES BELOW THE LOCATION ID AS "S", "I" or "D".
5. EXCAVATION EXTENT, DEPTH, AND VOLUME ARE APPROXIMATE VALUES, TO BE DETERMINED BY FIELD CONDITIONS

ABBREVIATIONS:

ft = FEET
ft² = SQUARE FEET
cy = CUBIC YARDS

| | |
|---|---|
| AOI | AREA OF INTEREST |
| BHHERA | BASELINE HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT |
| D | ONE OR MORE SOIL SAMPLES COLLECTED FROM DEEP INTERVAL (>10 ft bgs) |
| cy | CUBIC YARD |
| ft | FOOT/FEET |
| ft2 | FOOT/FEET SQUARED |
| ft bgs | FEET BELOW GROUND SURFACE |
| I | ONE OR MORE SOIL SAMPLES COLLECTED FROM INTERMEDIATE INTERVAL (>2-10 ft bgs) |
| mg/kg | MILLIGRAMS PER KILOGRAM |
| OU-E | OPERABLE UNIT E |
| RAA | REMOVAL ACTION AREA |
| RI | REMEDIAL INVESTIGATION |
| NTE | NOT TO EXCEED |
| S | ONE OR MORE SOIL SAMPLES COLLECTED FROM SHALLOW INTERVAL (0-2 ft bgs) |
| TPHd | TOTAL PETROLEUM HYDROCARBONS AS DIESEL |

TOTAL TPHd: TOTAL TPHd (C10-C24)

LEGEND:

- NOT DETECTED OR DETECTED BELOW SCREENING LEVELS USED IN THE OU-E RI
- DETECTED ABOVE SCREENING LEVELS USED IN THE OU-E RI, BUT BELOW NTE VALUES PRESENTED IN THE OU-E BHHERA
- SAMPLE LOCATION FOR REMOVAL ACTION
- AOI BOUNDARY
- EXISTING STRUCTURE
- FORMER STRUCTURE
- FORMER STRUCTURE - FOUNDATION INTACT
- OTHER OPERABLE UNITS/AOIs
- POND
- COMPRESSOR HOUSE EXCAVATION BOUNDARY
- FUEL LINE EXCAVATION BOUNDARY
- APPROXIMATE CAP BOUNDARIES
- FORMER INDUSTRIAL USE (APPROXIMATE LOCATION)
- PROPOSED REMOVAL ACTION AREA
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE
- UNPAVED ROADWAY
- PAVED ROADWAY
- FORMER TRANSFORMER LOCATION (APPROXIMATE)
- SITE BOUNDARY
- OU-E BOUNDARY

Sample ID
HA-4.37
308 (3-3.5)
Depth (ft bgs)
Total TPHd Concentration (C10-C24) in mg/kg

0 110 220 Feet
GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

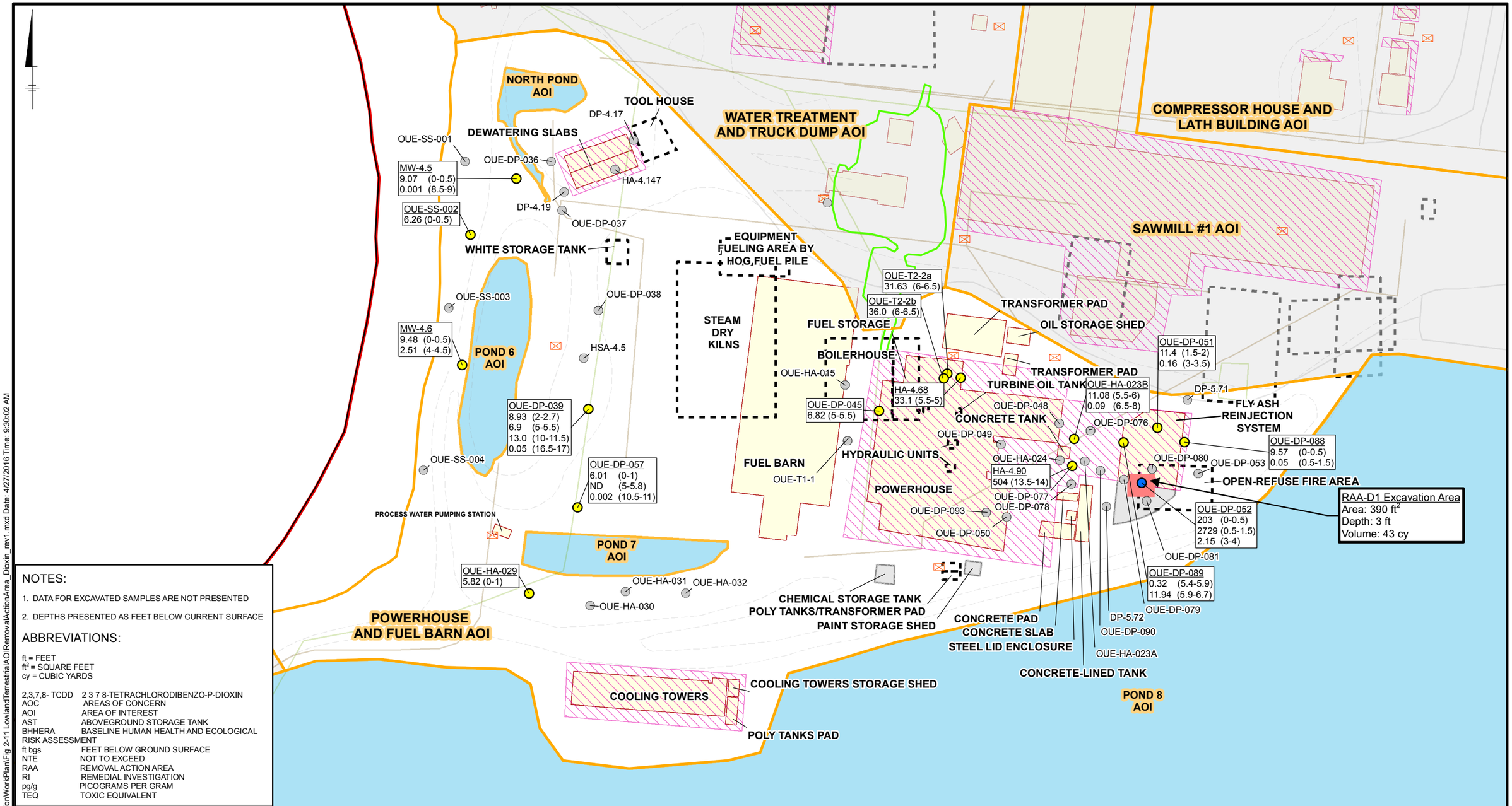
REMOVAL ACTION WORKPLAN OPERABLE UNIT E

## LOWLAND TERRESTRIAL AOIs REMOVAL ACTION AREAS (TPH(d))

ARCADIS

FIGURE 2-10

CITY: Highlands Ranch DIV/GROUP: IM GIS DB: Brianna Griffith
Path: G:\GISFortBragg\MXD\OUE RemovalActionWorkPlan\Fig 2-10 LowlandTerrestrialAOIRemovalActionArea_TPHd_rev1.mxd Date: 4/27/2016 Time: 9:25:09 AM




NOTES:

1. DATA FOR EXCAVATED SAMPLES ARE NOT PRESENTED
2. DEPTHS PRESENTED AS FEET BELOW CURRENT SURFACE

ABBREVIATIONS:

ft = FEET
ft² = SQUARE FEET
cy = CUBIC YARDS

| | |
|---|---|
| 2,3,7,8- TCDD | 2 3 7 8-TETRACHLORODIBENZO-P-DIOXIN |
| AOC | AREAS OF CONCERN |
| AOI | AREA OF INTEREST |
| AST | ABOVEGROUND STORAGE TANK |
| BHHERA | BASELINE HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT |
| ft bgs | FEET BELOW GROUND SURFACE |
| NTE | NOT TO EXCEED |
| RAA | REMOVAL ACTION AREA |
| RI | REMEDIAL INVESTIGATION |
| pg/g | PICOGRAMS PER GRAM |
| TEQ | TOXIC EQUIVALENT |

LEGEND:

- NOT DETECTED OR DETECTED BELOW SCREENING LEVELS USED IN THE OU-E RI
- DETECTED ABOVE SCREENING LEVELS USED IN THE OU-E RI, BUT BELOW NTE VALUES PRESENTED IN THE OU-E BHHERA
- SAMPLE LOCATION FOR REMOVAL ACTION
- AOI BOUNDARY
- EXISTING STRUCTURE
- FORMER STRUCTURE
- FORMER STRUCTURE - FOUNDATION INTACT
- OTHER OPERABLE UNITS/AOIs
- POND
- FUEL LINE EXCAVATION BOUNDARY
- APPROXIMATE CAP BOUNDARIES
- FORMER INDUSTRIAL USE (APPROXIMATE LOCATION)
- FORMER TRANSFORMER LOCATION (APPROXIMATE)
- SITE BOUNDARY
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE
- UNPAVED ROADWAY
- PAVED ROADWAY
- PROPOSED REMOVAL ACTION AREAS
- OU-E BOUNDARY

HA-4.90 (Sample ID)
504 (2-2.5) (Depth (ft bgs))
2,3,7,8-TCDD TEQ Concentration in pg/g

0 80 160 Feet
GRAPHIC SCALE

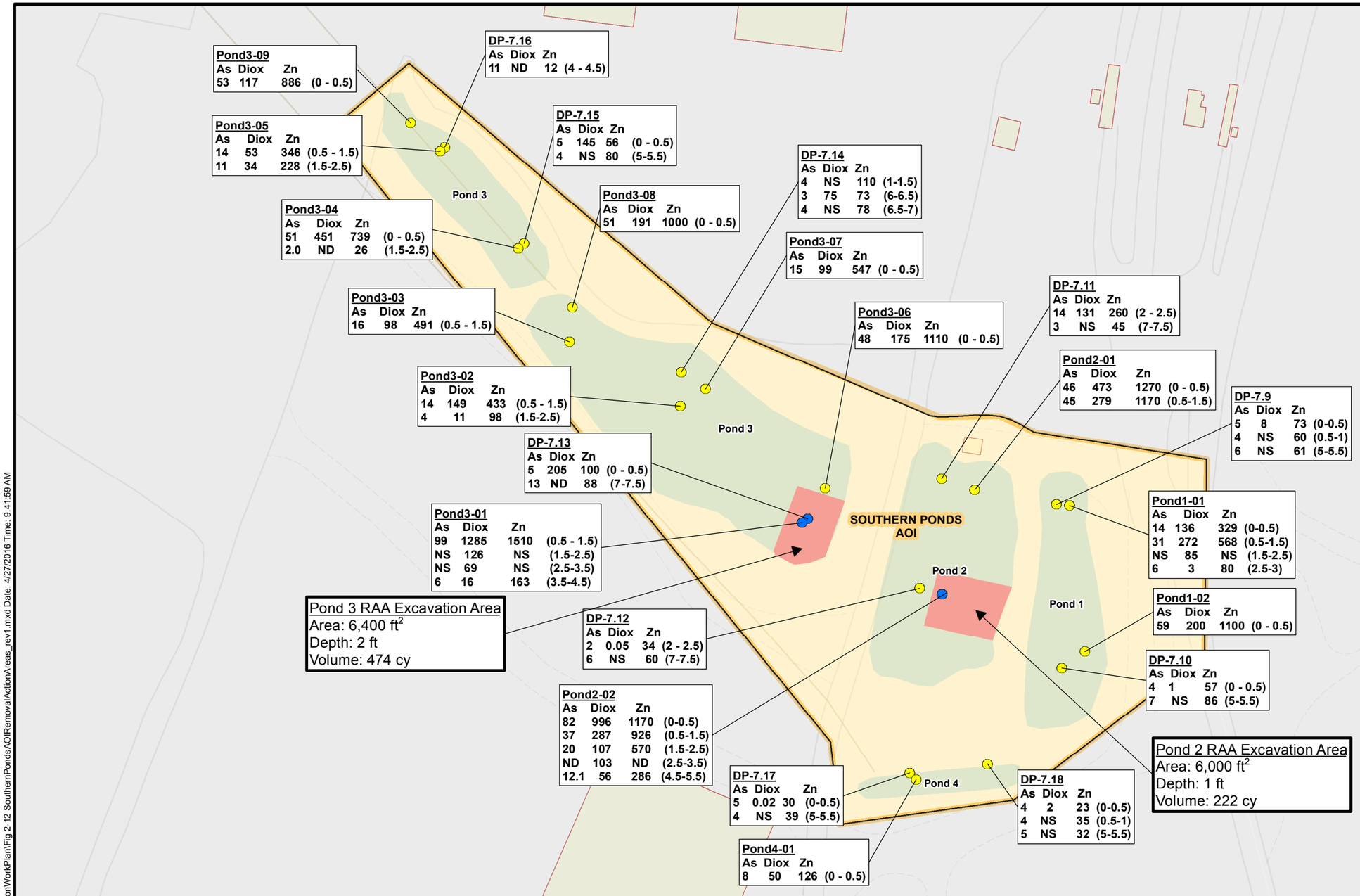
FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA
REMOVAL ACTION WORKPLAN OPERABLE UNIT E

**LOWLAND TERRESTRIAL AOIs REMOVAL ACTION AREA (DIOXIN)**

ARCADIS

FIGURE 2-11

CITY: HR DIV/GROUP: GIS DB: BG
Project #B0066142.0006.00001
Path: G:\GIS\FortBragg\MXD\OUE RemovalActionWorkPlan\Fig 2-11 LowlandTerrestrialAOIRemovalActionArea_Dioxin_rev1.mxd Date: 4/27/2016 Time: 9:30:02 AM




NOTES:

1. DATA FOR EXCAVATED SAMPLES ARE NOT PRESENTED
2. DEPTHS PRESENTED AS FEET BELOW CURRENT SURFACE
3. SAMPLED DEPTH INTERVAL(S) ARE INDICATED IN PARENTHESES BELOW THE LOCATION ID AS "S", "I" or "D".
4. EXCAVATION EXTENT, DEPTH, AND VOLUME ARE APPROXIMATE VALUES, TO BE DETERMINED BY FIELD CONDITIONS.

ABBREVIATIONS:

ft = FEET
$ft^2$ = SQUARE FEET
cy = CUBIC YARDS

| | |
|---|---|
| As | ARSENIC |
| BHHERA | BASELINE HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT |
| D | ONE OR MORE SOIL SAMPLES COLLECTED FROM DEEP INTERVAL (>10 ft bss) |
| DIOX | DIOXIN |
| cy | CUBIC YARDS |
| ft | FOOT/FEET |
| ft2 | FOOT/FEET SQUARED |
| ft bss | FEET BELOW SEDIMENT SURFACE |
| I | ONE OR MORE SOIL SAMPLES COLLECTED FROM INTERMEDIATE INTERVAL (>2-10 ft bss) |
| mg/kg | MILLIGRAM PER KILOGRAM |
| ND | NOT DETECTED |
| NS | NOT SAMPLED |
| NTE | NOT TO EXCEED |
| OU-E | OPERABLE UNIT E |
| RAA | REMOVAL ACTION AREA |
| RI | REMEDIAL INVESTIGATION |
| S | ONE OR MORE SOIL SAMPLES COLLECTED FROM SHALLOW INTERVAL (0-2 ft bss) |
| TCDD | TETRACHLORODIBENZO-P-DIOXIN |
| TEQ | TOXIC EQUIVALENT |
| Zn | ZINC |

LEGEND:

- NOT DETECTED OR DETECTED BELOW SCREENING LEVELS USED IN THE OU-E RI
- DETECTED ABOVE SCREENING LEVELS USED IN THE OU-E RI, BUT BELOW NTE VALUES PRESENTED IN THE OU-E BHHERA
- SAMPLE LOCATION FOR REMOVAL ACTION
- OU-E BOUNDARY
- POND
- SOUTHERN PONDS
- PROPOSED REMOVAL ACTION AREAS
- OTHER OPERABLE UNITS/AOIs
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE
- UNPAVED ROADWAY
- PAVED ROADWAY
- EXISTING STRUCTURE
- FORMER STRUCTURE

Sample ID
Pond4-01
As Diox Zn
8 50 126 (0-0.5)
Arsenic Concentration in mg/kg
Dioxin Concentration in pg/g
Zinc Concentration in mg/kg
Depth (ft bss)

0 120 240 Feet
GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

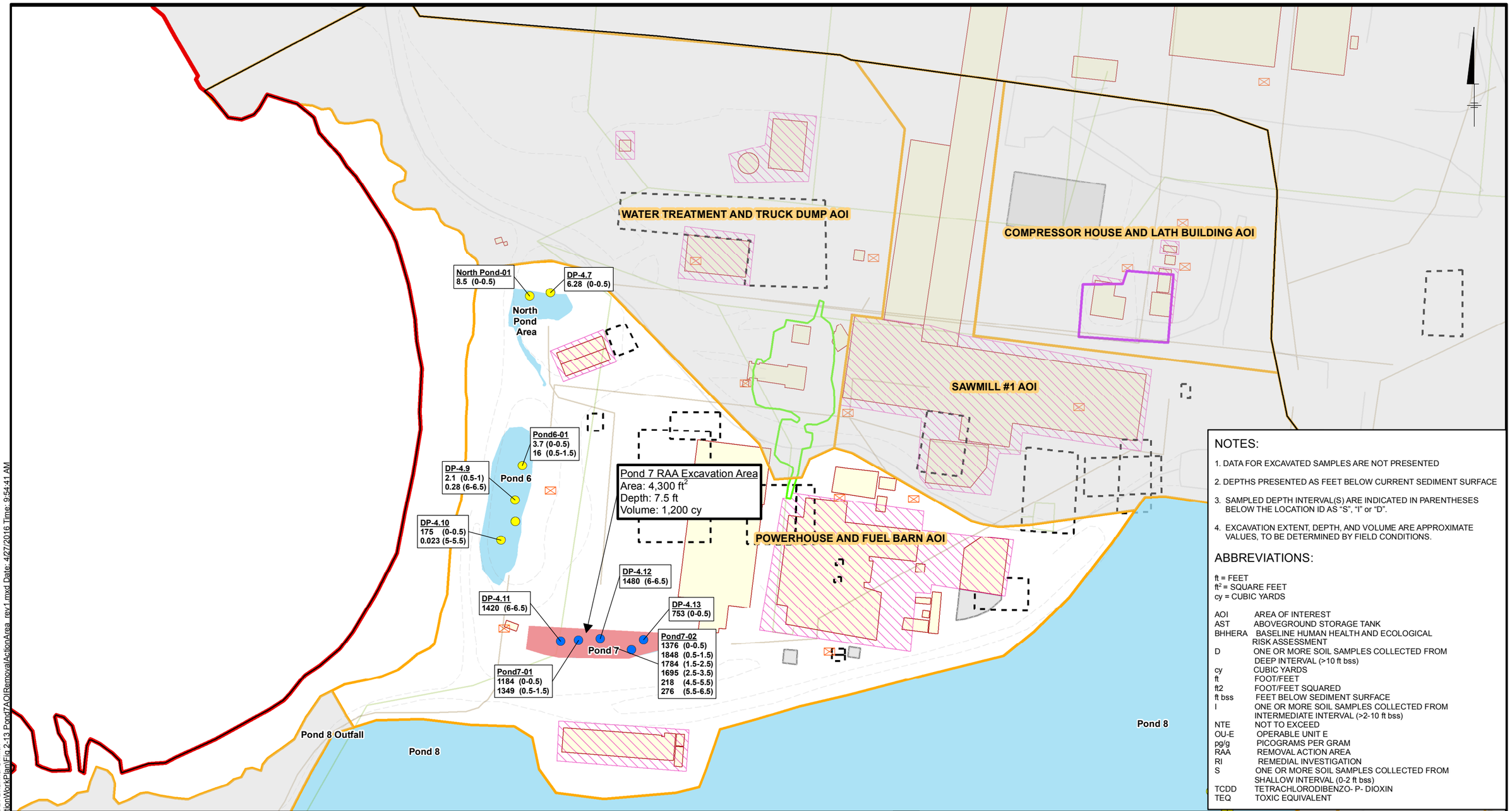
REMOVAL ACTION WORKPLAN OPERABLE UNIT E

# SOUTHERN PONDS AOI REMOVAL ACTION AREAS

ARCADIS

FIGURE 2-12

CITY: Highlands Ranch DIV/GROUP: IM GIS DB: Brianna Griffith
Project B0066138.0006 task 1
Path: G:\GIS\FortBragg\MXD\OUE RemovalActionWorkPlan\Fig 2-12 SouthernPondsAOIRemovalActionAreas_rev1.mxd Date: 4/27/2016 Time: 9:41:59 AM




NOTES:

1. DATA FOR EXCAVATED SAMPLES ARE NOT PRESENTED
2. DEPTHS PRESENTED AS FEET BELOW CURRENT SEDIMENT SURFACE
3. SAMPLED DEPTH INTERVAL(S) ARE INDICATED IN PARENTHESES BELOW THE LOCATION ID AS "S", "I" or "D".
4. EXCAVATION EXTENT, DEPTH, AND VOLUME ARE APPROXIMATE VALUES, TO BE DETERMINED BY FIELD CONDITIONS.

ABBREVIATIONS:

ft = FEET
ft² = SQUARE FEET
cy = CUBIC YARDS

| | |
|---|---|
| AOI | AREA OF INTEREST |
| AST | ABOVEGROUND STORAGE TANK |
| BHHERA | BASELINE HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT |
| D | ONE OR MORE SOIL SAMPLES COLLECTED FROM DEEP INTERVAL (>10 ft bss) |
| cy | CUBIC YARDS |
| ft | FOOT/FEET |
| ft2 | FOOT/FEET SQUARED |
| ft bss | FEET BELOW SEDIMENT SURFACE |
| I | ONE OR MORE SOIL SAMPLES COLLECTED FROM INTERMEDIATE INTERVAL (>2-10 ft bss) |
| NTE | NOT TO EXCEED |
| OU-E | OPERABLE UNIT E |
| pg/g | PICOGRAMS PER GRAM |
| RAA | REMOVAL ACTION AREA |
| RI | REMEDIAL INVESTIGATION |
| S | ONE OR MORE SOIL SAMPLES COLLECTED FROM SHALLOW INTERVAL (0-2 ft bss) |
| TCDD | TETRACHLORODIBENZO- P- DIOXIN |
| TEQ | TOXIC EQUIVALENT |

LEGEND:

- NOT DETECTED OR DETECTED BELOW SCREENING LEVELS USED IN THE OU-E RI
- DETECTED ABOVE SCREENING LEVELS USED IN THE OU-E RI, BUT BELOW NTE VALUES PRESENTED IN THE OU-E BHHERA
- SAMPLE LOCATION FOR REMOVAL ACTION
- AOI BOUNDARY
- EXISTING STRUCTURE
- FORMER STRUCTURE
- FORMER STRUCTURE - FOUNDATION INTACT
- OTHER OPERABLE UNITS/AOIs
- POND
- COMPRESSOR HOUSE EXCAVATION BOUNDARY
- FUEL LINE EXCAVATION BOUNDARY
- APPROXIMATE CAP BOUNDARIES
- PROPOSED REMOVAL ACTION AREA
- FORMER INDUSTRIAL USE (APPROXIMATE LOCATION)
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE
- UNPAVED ROADWAY
- PAVED ROADWAY
- FORMER TRANSFORMER LOCATION (APPROXIMATE)
- SITE BOUNDARY
- OU-E BOUNDARY

Pond8-14 (Sample ID)
85.7 (0-0.5) (Depth (ft bss))
2,3,7,8-TCDD TEQ Concentration in pg/g

0 110 220 Feet
GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

REMOVAL ACTION WORKPLAN OPERABLE UNIT E

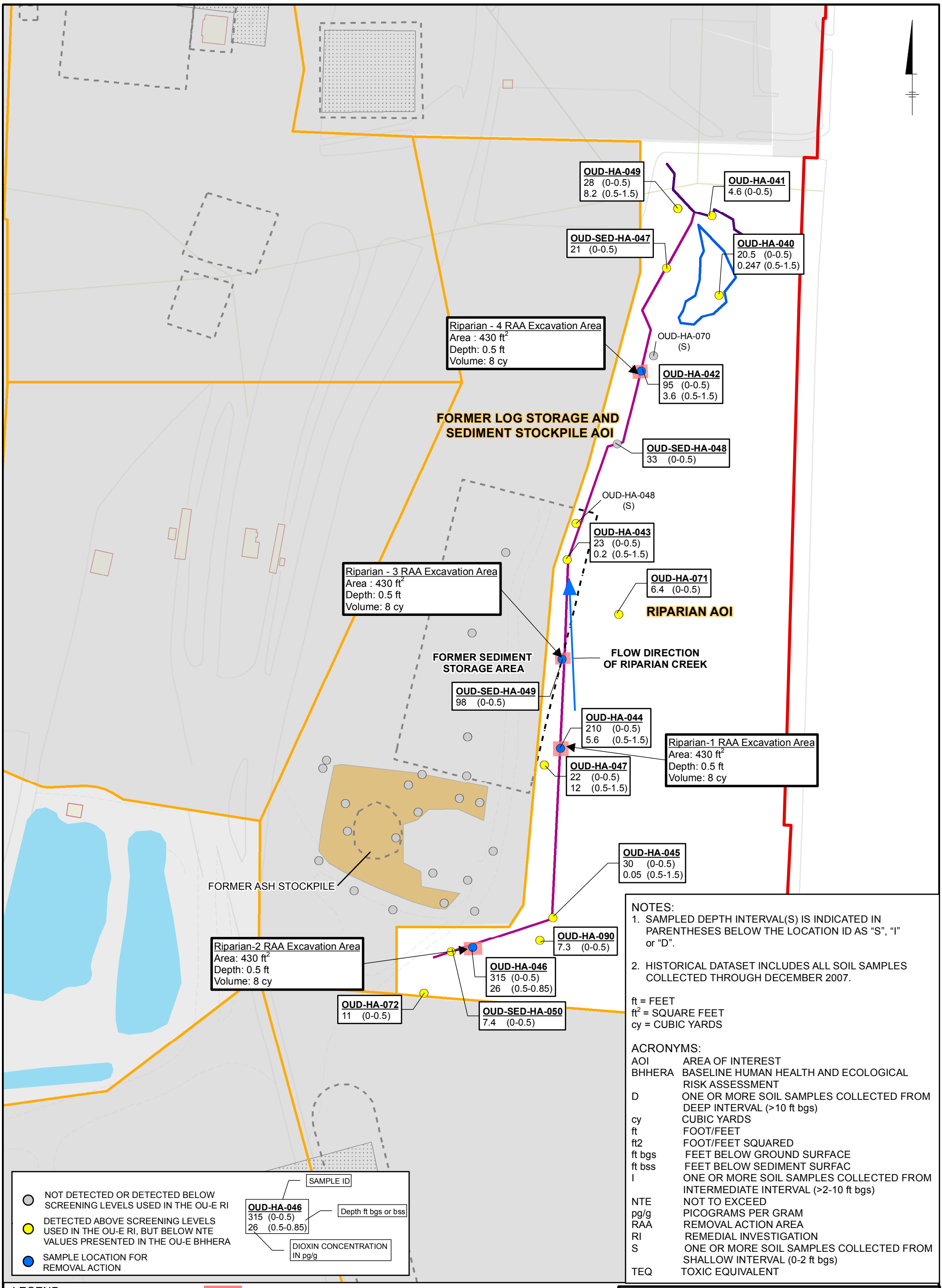
POND 7 AOI REMOVAL ACTION AREA

ARCADIS

FIGURE 2-13

CITY: Highlands Ranch DIV/GROUP: IM GIS DB: Brianna Griffith
Path: G:\GIS\FortBragg\MXD\OUE RemovalActionWorkPlan\Fig 2-13 Pond7AOIRemovalActionArea rev1.mxd Date: 4/27/2016 Time: 9:54:41 AM

CITY: Highlands Ranch DIV/GROUP: AIT GIS DB:BCG
Path: G:\GIS\FortBragg\MXD\OUE RemovalActionWorkPlan\Fig 2-14 RiparianAOIRemovalActionAreas_rev1.mxd Date: 4/27/2016 Time: 10:21:32 AM




NOTES:
1. SAMPLED DEPTH INTERVAL(S) IS INDICATED IN PARENTHESES BELOW THE LOCATION ID AS "S", "I" or "D".
2. HISTORICAL DATASET INCLUDES ALL SOIL SAMPLES COLLECTED THROUGH DECEMBER 2007.

ft = FEET
$ft^2$ = SQUARE FEET
cy = CUBIC YARDS

ACRONYMS:

| | |
|---|---|
| AOI | AREA OF INTEREST |
| BHHERA | BASELINE HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT |
| D | ONE OR MORE SOIL SAMPLES COLLECTED FROM DEEP INTERVAL (>10 ft bgs) |
| cy | CUBIC YARDS |
| ft | FOOT/FEET |
| ft2 | FOOT/FEET SQUARED |
| ft bgs | FEET BELOW GROUND SURFACE |
| ft bss | FEET BELOW SEDIMENT SURFAC |
| I | ONE OR MORE SOIL SAMPLES COLLECTED FROM INTERMEDIATE INTERVAL (>2-10 ft bgs) |
| NTE | NOT TO EXCEED |
| pg/g | PICOGRAMS PER GRAM |
| RAA | REMOVAL ACTION AREA |
| RI | REMEDIAL INVESTIGATION |
| S | ONE OR MORE SOIL SAMPLES COLLECTED FROM SHALLOW INTERVAL (0-2 ft bgs) |
| TEQ | TOXIC EQUIVALENT |

LEGEND:
- SITE BOUNDARY
- AOI BOUNDARY
- OTHER OPERABLE UNIT/AOIs
- POND
- ASH PILE REMOVAL AREA
- PREVIOUS GEOPHYSICAL INVESTIGATION
- PROPOSED REMOVAL ACTION AREA
- FORMER STRUCTURE
- STRUCTURE
- (FORMER) INDUSTRIAL USE
- PAVED ROADWAY
- UNPAVED ROADWAY
- FLOW DIRECTION OF RIPARIAN CREEK
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE
- PERENNIAL DRAINAGE
- RIPARIAN WETLAND
- SEASONAL WETLAND DITCH

0 130 260 Feet
GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

**REMOVAL ACTION WORKPLAN OPERABLE UNIT E**

**RIPARIAN AOI REMOVAL ACTION AREAS**

ARCADIS

FIGURE
**2-14**

# TABLES

**Table 2-1**
**Earthwork Estimates**
**Removal Action Work Plan, Operable Unit E**
**Former Georgia-Pacific Wood Products Facility**
**Fort Bragg, California**

| Removal Action Area | Surface Area ($ft^2$) | Depth (ft) | Volume (CY) |
|---|---|---|---|
| RAA-B1 | 600 | 3.0 | 67 |
| RAA-B2 | 2,028 | 4.0 | 300 |
| RAA-B3 | 1,626 | 4.0 | 240 |
| RAA-L1 | 459 | 4.0 | 68 |
| RAA-L2 | 396 | 1.0 | 15 |
| RAA-L3 | 425 | 6.0 | 95 |
| RAA-L4 | 271 | 6.0 | 60 |
| RAA-L5 | 438 | 7.0 | 114 |
| RAA-L6 | 655 | 9.0 | 218 |
| RAA-L7 | 371 | 7.0 | 96 |
| RAA-T1 | 875 | 6.0 | 194 |
| RAA-D1 | 390 | 3.0 | 43 |
| Pond 2 RAA | 6,000 | 1.0 | 222 |
| Pond 3 RAA | 6,400 | 2.0 | 474 |
| Pond 7 (pond area only) | 4,300 | 7.5 | 1,200 |
| Riparian-1 RAA | 430 | 0.5 | 8 |
| Riparian-2 RAA | 430 | 0.5 | 8 |
| Riparian-3 RAA | 430 | 0.5 | 8 |
| Riparian-4 RAA | 430 | 0.5 | 8 |
| | | **Subtotal (Soil)** | 1,510 |
| | | **Subtotal (Sediment)** | 1,928 |
| | | **TOTAL** | 3,438 |

**Notes:**
CY = cubic yards
$ft^2$ = square feet
ft = feet

# APPENDIX A
# Administrative Record

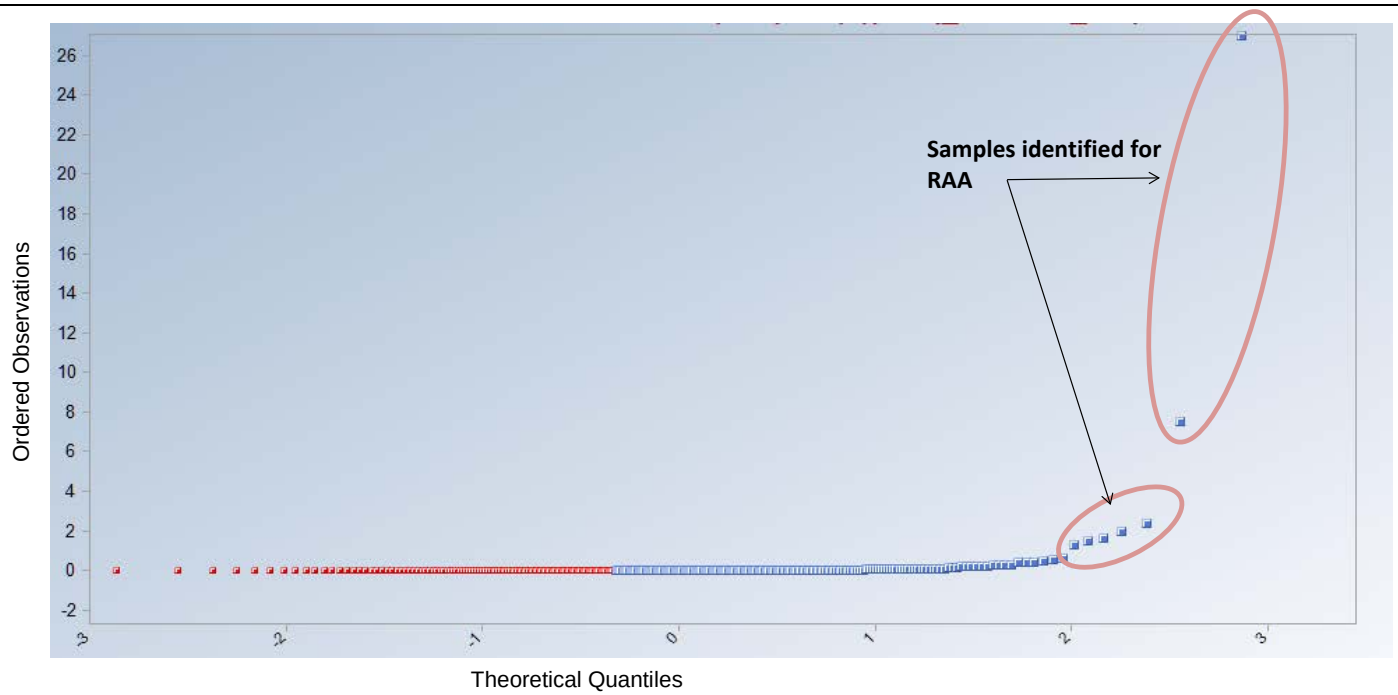
| Date | Author | Receiver | Title of Document |
|---|---|---|---|
| Undated #1 | TRC Companies, Inc. | North Coast Regional Water Quality Control Board | Phase II Determination of Significance Standing Structures Georgia Pacific Lumber Mill Fort Bragg, California. TRC Companies, Inc. Draft Report. |
| Undated #2 | TRC Companies, Inc. | North Coast Regional Water Quality Control Board | Site Specific Treatment Plan for Cultural Resources. TRC Companies, Inc. Draft Report |
| 06/1982 | California Coastal Commission | Public | Mendocino County Coastal Ground Water Study |
| 10/1988 | U.S. Environmental Protection Agency (USEPA) | Public | Guidance for Conducting Remedial Investigations and Feasibility Studies (RI/FS) under CERCLA. EPA/540/G-89/004. |
| 10/1994 | U.S. Environmental Protection Agency (USEPA) | Public | How to Evaluate Alternative Cleanup Technologies for Underground Storage Tank Sites: A Guide for Corrective Action Plan Reviewers. EPA 510-B-94-003. Available online at: http://www.epa.gov/swerust1/pubs/tum_ch5.pdf . |
| 04/01/1998 | TRC Companies, Inc. | Georgia-Pacific Corporation | Letter from Mr. Mohammad Bazargani, Project Manager, and Dr. Jonathan Scheiner, Senior Project Scientist, to Mr. Larry L. Lake, Environmental Site Coordinator, Georgia-Pacific Corporation, re: Report of Findings, Preliminary Investigation Demolition Support Services, Georgia-Pacific Fort Bragg Facility, Fort Bragg, California. Project No. 97 734. |
| 06/13/2002 | California Coastal Commission | Public | Statewide Interpretive Guidelines. Revised June 13, 2000. California Department of Water Resources. 1982. Mendocino County Coastal Ground Water Study. |
| 02/2003 | Hygienetics Environmental Services, Inc | North Coast Regional Water Quality Control Board | Asbestos and Lead Based Paint Inspection Report, Georgia Pacific Site, 90 West Redwood Avenue, Fort Bragg, California |
| 03/2003 | TRC Companies, Inc. | North Coast Regional Water Quality Control Board | Archaeological Survey of the Georgia Pacific Lumber Mill Fort Bragg, California. |
| 03/2004 | TRC Companies, Inc. | North Coast Regional Water Quality Control Board | Phase I Environmental Site Assessment, Georgia-Pacific California Wood Products Manufacturing Division, 90 West Redwood Avenue, Fort Bragg, California. Prepared for Georgia-Pacific Corporation, 133 Peachtree Street, NE, Atlanta, Georgia. Project No. 41 041901. |
| 05/14/2004 | TRC Companies, Inc. | North Coast Regional Water Quality Control Board | Phase II Environmental Site Assessment, Georgia-Pacific, 90 West Redwood Avenue, Fort Bragg, California 95437. Prepared for Georgia-Pacific, 133 Peachtree Street, NE, Atlanta, Georgia. Project No. 41 041908. |
| 10/2004 | TRC Companies, Inc. | North Coast Regional Water Quality Control Board | Additional Site Assessment Report, Georgia Pacific Former Sawmill Site, 90 West Redwood Avenue, Fort Bragg, California. Prepared for Georgia-Pacific, 133 Peachtree Street, NE, Atlanta, Georgia. |
| 06/2005 | Acton•Mickelson•Environmental, Inc. | North Coast Regional Water Quality Control Board | Work Plan for Additional Site Assessment, Georgia-Pacific California Wood Products Manufacturing Facility, 90 West Redwood Avenue, Fort Bragg, California. |
| 02/2006 | BACE Geotechnical, a division of Brunsing Associates, Inc | North Coast Regional Water Quality Control Board | Engineering Geologic Reconnaissance Report, Planned Blufftop Access Trail, Georgia-Pacific Property, Fort Bragg, California. |
| 02/2006 | Blackburn Consulting, Inc. | Acton•Mickelson•Environmental, Inc. | Letter from Mr. Rick Sowers, PE, CEG, Senior Project Manager, and Mr. Tom Blackburn, GE, Principal, to Mr. John Mattey, Acton•Mickelson•Environmental, Inc., re: Geotechnical Evaluation, Bearing Support for Heavy Equipment Loads, Georgia-Pacific Mill Site, Fort Bragg, California. |
| 07/2006 | Acton•Mickelson•Environmental, Inc. | North Coast Regional Water Quality Control Board | Dioxin Sampling and Analysis Report, Georgia-Pacific California Wood Products Manufacturing Facility, 90 West Redwood Avenue, Fort Bragg, California. |
| 08/14/2006 | Acton•Mickelson•Environmental, Inc. | North Coast Regional Water Quality Control Board | Data Transmittal Report, Georgia-Pacific California Wood Products Manufacturing Facility, 90 West Redwood Avenue, Fort Bragg, California. |
| 11/2005 (Species list updated 2007) | WRA Environmental Consultants (WRA) | Georgia-Pacific Corporation | Biological Assessment, Georgia Pacific Fort Bragg Sawmill Factory, Fort Bragg, Mendocino County, California. Prepared for Georgia Pacific, Atlanta, Georgia. WRA Environmental Consultants, Inc. |
| 12/2007 (Revised 05/2008) | ARCADIS BBL | California Department of Toxic Substances Control (DTSC) | Preliminary Site Investigation Work Plan Operable Unit E – Onsite Ponds, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 05/2008 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Site-Wide Risk Assessment Work Plan (Site-Wide RAWP), Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 06/2008 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Interim Action Remedial Action Plan, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 06/2008 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Final Interim Action Remedial Action Plan and Feasibility Study, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |

| Date | Author | Receiver | Title of Document |
|---|---|---|---|
| 05/2009 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Data Summary Report, Operable Unit E Pond Sediment, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 11/2009 | WRA Environmental Consultants (WRA) | Georgia-Pacific Corporation | Delineation of Potential Section 404 Jurisdictional Wetlands and Waters, Former Georgia-Pacific Wood Products Facility, Fort Bragg, Mendocino County, California. |
| 04/2010 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Interim Action Completion Report, Operable Units C & E, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 05/2010 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Site Investigation Work Plan, Operable Unit E – Upland, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 10/2010 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Site Investigation Summary and Step-out Evaluation, Operable Unit E, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 2011 | U.S. Environmental Protection Agency (USEPA) | Public | ProUCL Version 4.1.00. U.S. Environmental Protection Agency. Available online at http://www.epa.gov/esd/tsc/software.htm |
| 03/02/2011 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Operable Unit E Upland – Site Investigation Sampling Summary, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 04/2011 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Remedial Investigation Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 04/2011 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Environmentally Sensitive Habitat Areas Delineation Report, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 04/2011 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Data Summary Report – Additional Investigation Pond 8 Sediment, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 01/2012 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Feasibility Study, Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 01/2012 | Mill Site Coordinating Committee | Public | Mill Site Specific Plan Preliminary. Prepared for Georgia-Pacific Sawmill Facility, Fort Bragg, California. Available online at: http://ca-fortbragg.civicplus.com/DocumentCenter/Home/View/1786. |
| 12/2012 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Mill Pond (Pond 8) Geotechnical and Chemical Characterization Results, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 01/2013 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Final Remedial Investigation Report Operable Unit E (RI Report), Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 02/2013 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Revised Baseline Human Health and Ecological Risk Assessment (BHHERA) Work Plan – Operable Unit E (OU-E) Addendum, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 06/25/2014 | California Department of Toxic Substances Control (DTSC) | | Identification of Presumptive Remedy Areas on Operable Unit E Georgia Pacific Former Sawmill Site, Fort Bragg. PCA: 11018. Site Code: 200402-00. |
| 08/2015 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Baseline Human Health and Ecological Risk Assessment – Operable Unit E, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 12/2015 | ARCADIS U.S., Inc. | California Department of Toxic Substances Control (DTSC) | Remedial Action Plan Operable Units C and D, Former Georgia-Pacific Wood Products Facility. Fort Bragg, California. Prepared for Georgia-Pacific LLC. |
| 01/20/2016 | California Department of Toxic Substances Control (DTSC) | Mr. Dave Massengill, Senior Director, Georgia-Pacific LLC | Letter from Mr. Thomas P. Lanphar, Senior Environmental Scientist, Brownfields and Environmental Restoration Branch – Berkeley, to Mr. Dave Massengill, Senior Director, Georgia-Pacific LLC, re: Draft Operable Unit E Feasibility Study, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. |
| 02/24/2016 | California Department of Toxic Substances Control (DTSC) | Mr. Dave Massengill, Senior Director, Georgia-Pacific LLC | Letter from Mr. Thomas P. Lanphar, Senior Environmental Scientist, Brownfields and Environmental Restoration Branch – Berkeley, to Mr. Dave Massengill, Senior Director, Georgia-Pacific LLC, re: Proposed Removal Action for Sites Within Operable Unit E Feasibility Study, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |

| Date | Author | Receiver | Title of Document |
|---|---|---|---|
| 03/07/2016 | State of California | Public | California Health and Safety Code (HSC) 2016. Chapter 6.8, Section 25323.1. Available online at: http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=25001-26000&file=25310-25327 |

# APPENDIX B
# Quantile-Quantile Plots for Terrestrial Lowlands AOC, Southern Ponds AOC, and Riparian AOC

**OU-E Hotspot evaluation**
**OU-E Lowland AOC (0-6 ft bgs)**
**Former Georgia-Pacific Wood Products Facility**
**Fort Bragg, CA**

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**Normal Quantile-Quantile Plot**
**B(a)P TEQ**
**Terrestrial (0 - 10 ft)**
Former Georgia-Pacific Wood Products Facility, Fort Bragg, California

**Figure 1**

| Constituent | Units | Sample Size | | | ND Range (mg/kg) | | Detects (mg/kg) | | | | | Percentiles in mg/kg (All Data) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NDs | Detects | Total | Min | Max | Min | Max | Mean | Median | SD | 25th | 50th | 75th | 95th (EPC) |
| USEPA B(a)P TEQ | mg/kg | 112 | 189 | 301 | 9.3E-06 | 9.3E-06 | 9.3E-06 | 27 | 0.275 | 0.013 | 2.049 | 9.3E-06 | 0.003 | 0.023 | 0.759 |

**Notes:**
Normal Q-Q plot generated using ProUCL version 4.1.00. Reporting limit used for non-detects
Sample identified for RAA based on outlier analysis and exceedance of the soil not-to-exceed value (0.9 mg/kg).
Samples identifed for RAA based on exceedance of soil not-to-exceed value (0.9 mg/kg).
Non-detect  Detect

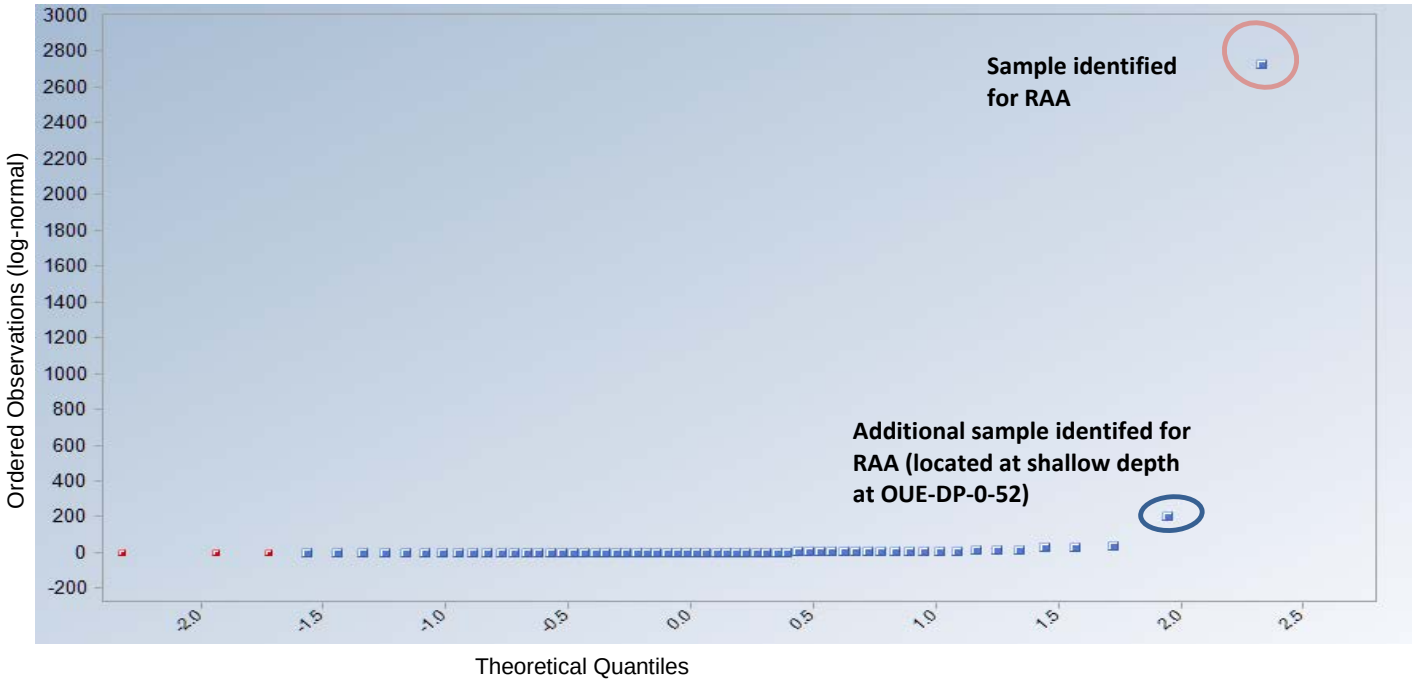
**Abbreviations:**
bgs = below ground surface
EPC = exposure point concentration
ft = feet
mg/kg = milligrams(s) per kilogram
NA = not available
ND = nondetect
RAA = Removal Action Area
RBTL = Risk Based Target Level
SD = standard deviation

**Reference:** DTSC. 2014. Identification of Presumptive Remedy Areas on Operable Unit E Georgia Pacific Former Sawmill Site, Fort Bragg. June 25.

**OU-E Lowland AOC (0-10 ft bgs): 10 Highest Detects Rank Ordered**

| Rank Order | Units | Result (mg/kg) | Sample ID | Depth Interval (feet bgs) | Post removal EPC (mg/kg) | No. of Samples in EPC | EPC Notes |
|---|---|---|---|---|---|---|---|
| 1 | mg/kg | 27 | HSA-4.3 | 2 - 2.5 | | | Removal of RAA samples results in an EPC less than the soil RBTL (0.3 mg/kg) and a maximum concentration less than the not-to-exceed value (0.9 mg/kg; DTSC 2014). |
| 2 | mg/kg | 7.5 | OUE-DP-073 | 2 - 3 | | | |
| 3 | mg/kg | 2.4 | OUE-DP-074 | 2 - 3 | | | |
| 4 | mg/kg | 2 | OUE-DP-075 | 2 - 3 | | | |
| 5 | mg/kg | 1.6 | OUE-DP-026 | 2 - 3.5 | | | |
| 6 | mg/kg | 1.5 | OUE-DP-099 | 0.5 - 1.5 | | | |
| 7 | mg/kg | 1.3 | OUE-DP-100 | 2.5 - 3.5 | | | |
| 8 | mg/kg | 0.61 | FL-CS-014 | 6.5-7 | 0.059 | 294 | Assumes removal of the 7 highest samples. |
| 9 | mg/kg | 0.54 | OUE-DP-065 | 0.5 - 1.5 | | | |
| 10 | mg/kg | 0.46 | OUE-DP-073 | 0.5 - 1.5 | | | |

**OU-E Hotspot evaluation**
**OU-E Lowland AOC (0-6 ft bgs)**
**Former Georgia-Pacific Wood Products Facility**
**Fort Bragg, CA**

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**Lognormal Quantile-Quantile Plot**
**2,3,7,8-TCDD TEQ (Human/Mammal)**
**Terrestrial (0 - 10 ft)**
Former Georgia-Pacific Wood Products Facility, Fort Bragg, California

**Figure 2**

| Constituent | Units | Sample Size | | | ND Range (pg/g) | | Detects (pg/g) | | | | | Percentiles in pg/g (All Data) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NDs | Detects | Total | Min | Max | Min | Max | Mean | Median | SD | 25th | 50th | 75th | 95th (EPC) |
| 2,3,7,8-TCDD TEQ (Human/Mammal) | pg/g | 3 | 59 | 62 | 0.0010 | 0.0010 | 0.001 | 2,729 | 54.03 | 1.65 | 355 | 0.32 | 1.5 | 6.0 | 326 |

**Notes:** Normal Q-Q plot generated using ProUCL version 4.1.00. Reporting limit used for non-detects

Sample identified for RAA based on outlier analysis and exceedance of the soil not-to-exceed value (160 pg/g).

Sample located for RAA based on exceedance of the soil not-to-exceed value (160 pg/g). Sample at the same location at a shallower depth.

Non-detect  Detect

**Abbreviations:**

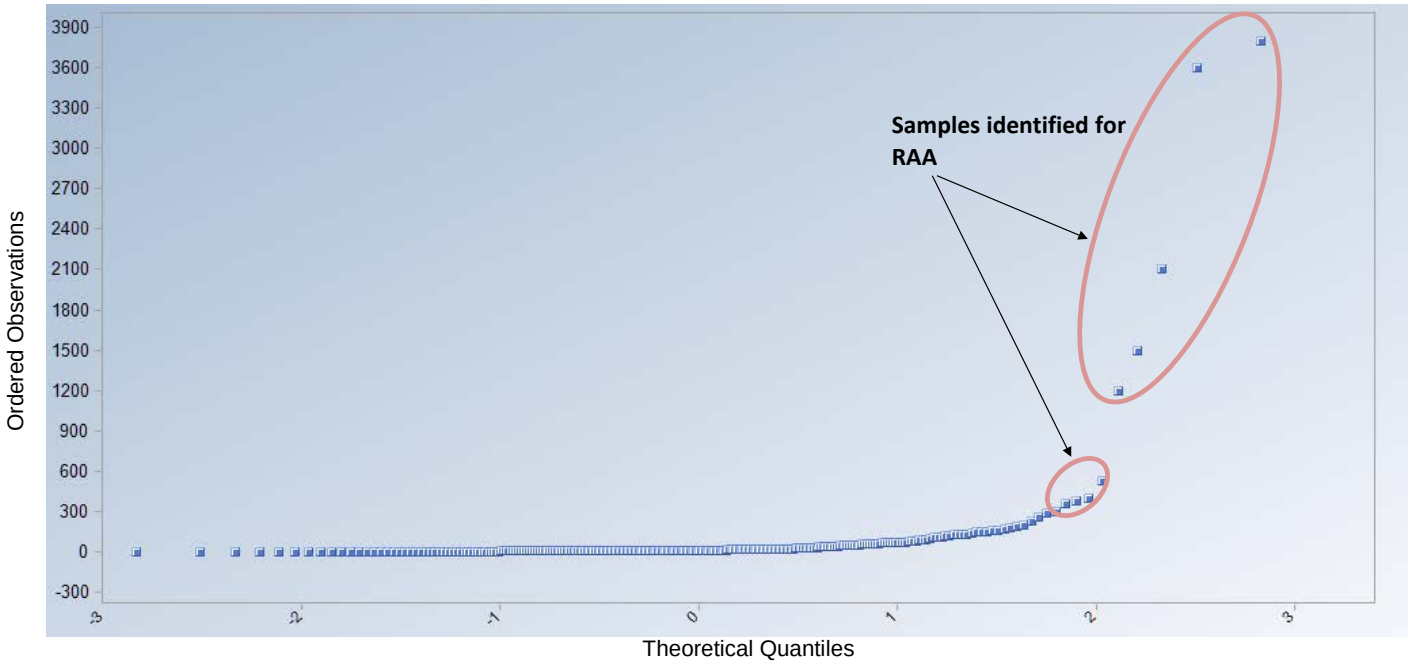
2,3,7,8-TCDD = 2,3,7,8-Tetrachlorodibenzo-p-dioxin
bgs = below ground surface
EPC = exposure point concentration
ft = feet
NA = not available
ND = nondetect
pg/g = picrogram(s) per gram
RAA = Removal Action Area
RBTL = Risk Based Target Level
SD = standard deviation
TEQ = toxic equivalent

**Reference:** DTSC. 2014. Identification of Presumptive Remedy Areas on Operable Unit E Georgia Pacific Former Sawmill Site, Fort Bragg. June 25.

**OU-E Lowland AOC (0-10 ft bgs): 10 Highest Detects Rank Ordered**

Same location

| Rank Order | Units | Result (pg/g) | Sample ID | Depth Interval (feet bgs) | Post removal EPC (pg/g) | No. of Samples in EPC | EPC Notes |
|---|---|---|---|---|---|---|---|
| 1 | pg/g | 2729 | OUE-DP-052 | 0.5 - 1.5 | | | Removal of RAA samples results in EPC less than the soil RBTL (53 pg/g) and maximum concentration less than the not-to-exceed value (160 pg/g; DTSC 2014). |
| 2 | pg/g | 203 | OUE-DP-052 | 0 - 0.5 | | | |
| 3 | pg/g | 36 | OUE-T2-2b | 6-6.5 | 8.5 | 60 | Assumes removal of the 2 highest samples. |
| 4 | pg/g | 33 | HA-4.068 | 5-5.5 | | | |
| 5 | pg/g | 32 | OUE-T2-2a | 6-6.5 | | | |
| 6 | pg/g | 12 | OUE-DP-089 | 5.9-6.8 | | | |
| 7 | pg/g | 11 | OUE-DP-051 | 1.5-2 | | | |
| 8 | pg/g | 11 | OUE-HA-023B | 5-6.5 | | | |
| 9 | pg/g | 9.6 | OUE-DP-088 | 0-0.5 | | | |
| 10 | pg/g | 9.5 | MW-4.6 | 0-0.5 | | | |

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**Normal Quantile-Quantile Plot**
**Lead**
**Terrestrial (0 - 10 ft)**
Former Georgia-Pacific Wood Products Facility, Fort Bragg, California

**Figure 3**

| Constituent | Units | Sample Size | | | ND Range | | Detects (mg/kg) | | | | | Percentiles in mg/kg (All Data) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NDs | Detects | Total | Min | Max | Min | Max | Mean | Median | SD | 25th | 50th | 75th | 95th (EPC) |
| Lead | mg/kg | 0 | 266 | 266 | NA | NA | 0.93 | 3,800 | 84.23 | 13 | 365 | 8.1 | 13 | 43 | 182 |

**Notes:** Normal Q-Q plot generated using ProUCL version 4.1.00. Reporting limit used for non-detects

Sample identified for the RAA based on outlier analysis and exceedance of the soil not-to-exceed value (320 mg/kg).

Sample identified for the RAA based on exceedance of the soil not-to-exceed value (320 mg/kg).

Sample identified for RAA based on co-location with other sample identified for removal.

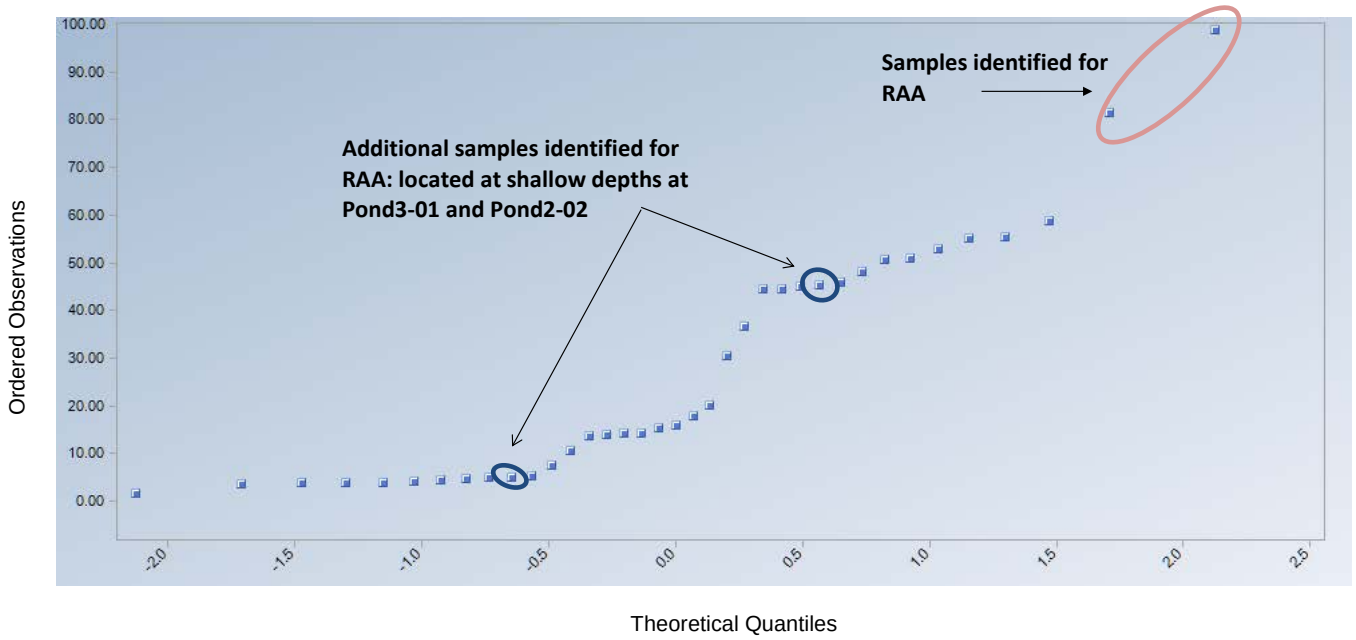
Detect

**Abbreviations:**
bgs = below ground surface
EPC = exposure point concentration
ft = feet
mg/kg = milligrams(s) per kilogram
NA = not available
ND = nondetect
RAA = Removal Action Area
RBTL = site-specific risk-based target level
SD = standard deviation

**Reference:** DTSC. 2014. Identification of Presumptive Remedy Areas on Operable Unit E Georgia Pacific Former Sawmill Site, Fort Bragg. June 25.

**OU-E Lowland AOC (0-10 ft bgs): 10 Highest Detects Rank Ordered**

| Rank Order | Units | Result (mg/kg) | Sample ID | Depth Interval (feet bgs) | Post Removal EPC (mg/kg) | No. of Samples in EPC | EPC Notes |
|---|---|---|---|---|---|---|---|
| 1 | mg/kg | 3800 | OUE-DP-070 | 3-4 | | | Removal of RAA samples results in EPC less than the soil RBTL (127 mg/kg) and a maximum concentration less than the not-to-exceed value (320 mg/kg; DTSC 2014). |
| 2 | mg/kg | 3600 | OUE-HA-023B | 6.5-8 | | | |
| 3 | mg/kg | 2100 | OUE-DP-094 | 5.5-6 | | | |
| 4 | mg/kg | 1500 | OUE-DP-090 | 5.5-6 | | | |
| 5 | mg/kg | 1200 | OUE-DP-076 | 8-9 | | | Assumes removal of the 9 samples above the NTE value and associated shallow samples at the same locations (shallow samples are not all shown within top ten ranked data). |
| 6 | mg/kg | 530 | OUE-DP-076 | 6-7 | | | |
| 7 | mg/kg | 400 | P04-40 | 6.5-7 | | | |
| 8 | mg/kg | 380 | OUE-DP-088 | 6-7 | | | |
| 9 | mg/kg | 360 | DP-05.57 | 0.5-1 | | | |
| 10 | mg/kg | 300 | OUE-DP-070 | 2.5-3 | 45 | 244 | |

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**Normal Quantile-Quantile Plot**
**Arsenic**
**Southern Ponds Aquatic (0 - 2 ft)**
Former Georgia-Pacific Wood Products Facility, Fort Bragg, California

**Figure 4**

| Constituent | Units | Sample Size | | | ND Range | | Detects (mg/kg) | | | | | Percentiles in mg/kg (All Data) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NDs | Detects | Total | Min | Max | Min | Max | Mean | Median | SD | 25th | 50th | 75th | 95th (EPC) |
| Arsenic | mg/kg | 0 | 37 | 37 | NA | NA | 1.66 | 98.9 | 28.03 | 15.9 | 24.8 | 5.2 | 15.9 | 46 | 46 |

**Notes:** Normal Q-Q plot generated using ProUCL version 4.1.00. Reporting limit used for non-detects

Sample identified for RAA based on exceedance of the not-to-exceed value (57 mg/kg).

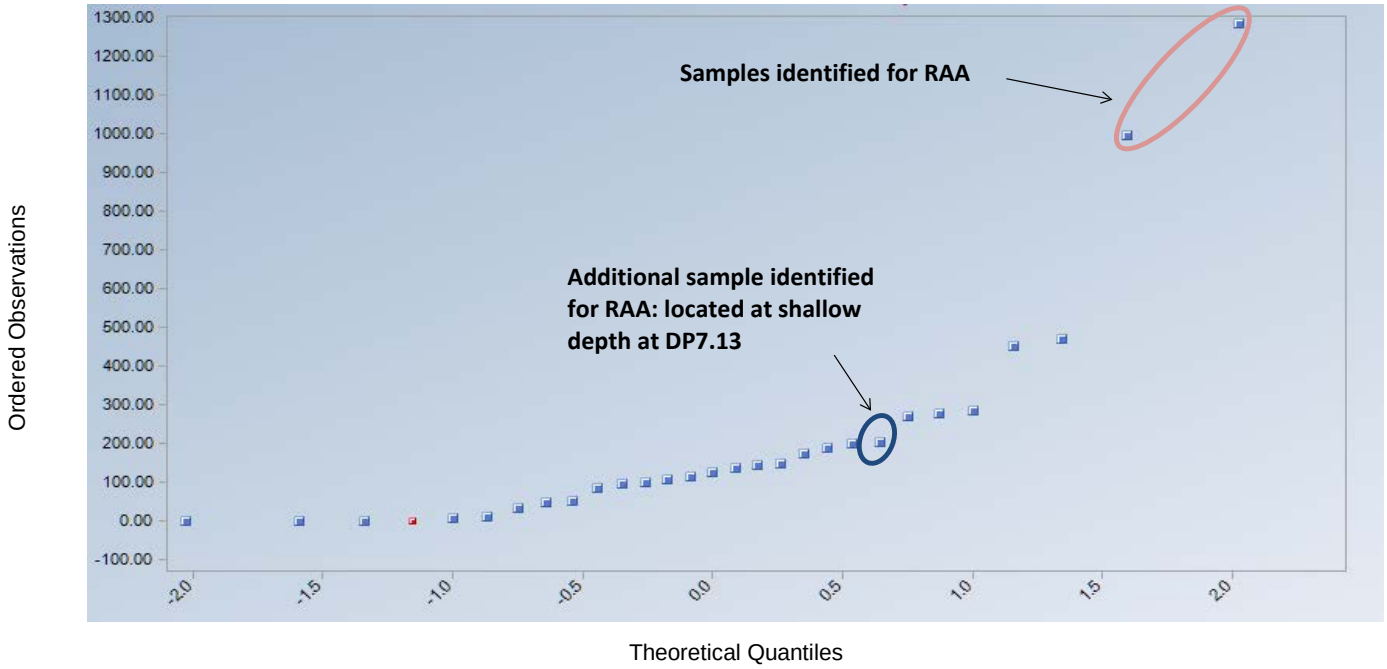
Detect

**Abbreviations:**

bgs = below ground surface
EPC = exposure point concentration
ft = feet
NA = not available
ND = nondetect
mg/kg = milligram(s) per kilogram
RAA = remedial action area
SD = standard deviation

**OU-E Southern Ponds (Ponds 1, 2, 3, 4) AOC (0-2 ft bgs): 10 Highest Detects Rank Ordered**

| Rank Order | Units | Result (mg/kg) | Sample ID | Depth Interval (feet bgs) | Post Removal EPC (mg/kg) | No. of Samples in EPC | EPC Notes |
|---|---|---|---|---|---|---|---|
| 1 | mg/kg | 99 | Pond3-01 | 0.5-1.5 | | | Sample removals result in maximum concentration less than the not-to-exceed value (67 mg/kg). |
| 2 | mg/kg | 82 | Pond2-02 | 0-0.5 | | | |
| 3 | mg/kg | 59 | Pond1-02 | 0-0.5 | 40 | 33 | Assumes the removal of four samples: Pond3-01, two samples collected at Pond2-02 (one ranked at 11), and one additional sample (DP7.13@0-0.5ft) |
| 4 | mg/kg | 55 | Pond3-07 (2013) | 0-0.5 | | | |
| 5 | mg/kg | 55 | Pond1-02 (2013) | 0-0.5 | | | |
| 6 | mg/kg | 53 | Pond3-09 | 0-0.5 | | | |
| 7 | mg/kg | 51 | Pond3-04 | 0-0.5 | | | |
| 8 | mg/kg | 51 | Pond3-08 | 0-0.5 | | | |
| 9 | mg/kg | 48 | Pond3-06 | 0-0.5 | | | |
| 10 | mg/kg | 46 | Pond2-01 | 0-0.5 | | | |

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**Normal Quantile-Quantile Plot**
**2,3,7,8-TCDD TEQ (Human/Mammal)**
**Southern Ponds: Aquatic (0 - 2 ft)**
Former Georgia-Pacific Wood Products Facility, Fort Bragg, California

**Figure 5**

| Constituent | Units | Sample Size | | | ND Range | | Detects (mg/kg) | | | | | Percentiles in mg/kg (All Data) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NDs | Detects | Total | Min | Max | Min | Max | Mean | Median | SD | 25th | 50th | 75th | 95th (EPC) |
| 2,3,7,8- tcdd teq (human/mammal) | pg/g | 1 | 28 | 29 | 1.81 | 1.81 | 0.02 | 1285 | 215.6 | 131.1 | 291.1 | 50.48 | 125.9 | 205 | 441.9 |

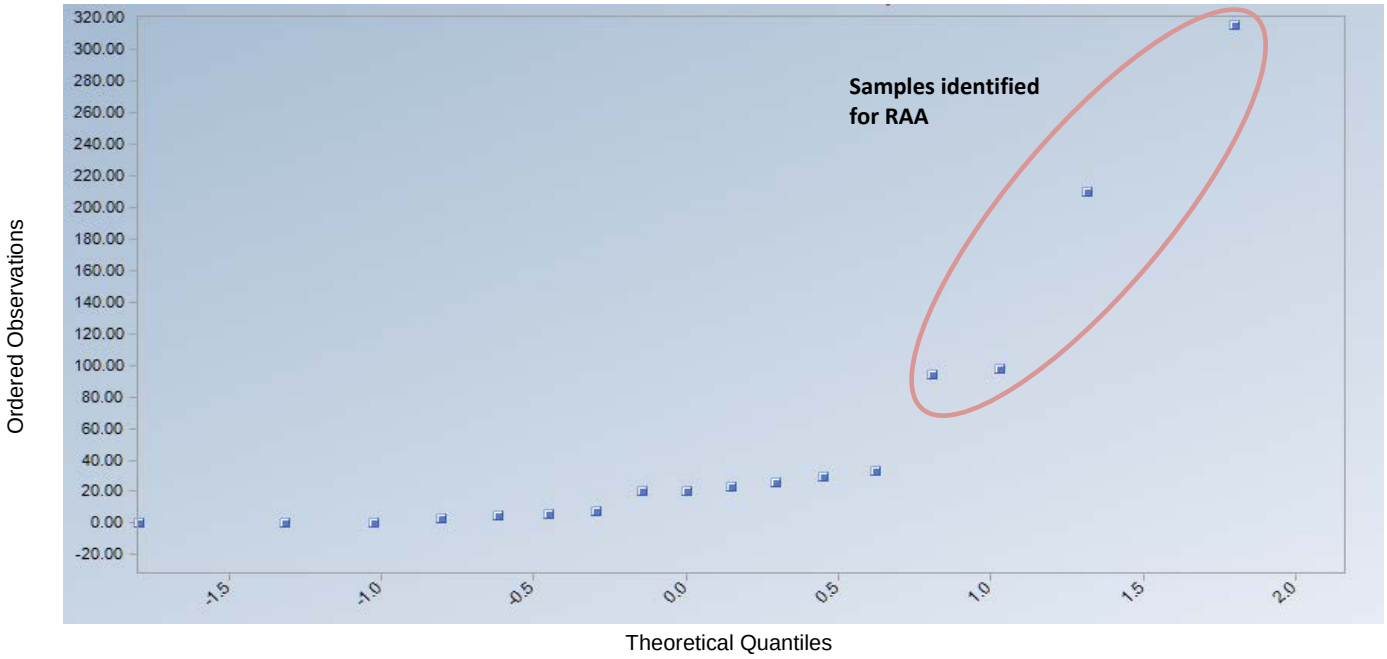
**Notes:**
Normal Q-Q plot generated using ProUCL version 4.1.00. Reporting limit used for non-detects
Sample identified fpr RAA based on exceedance of the not-to-exceed value (503 mg/kg).
Sample identified fpr RAA based on co-location with other samples identfied for RAA.
Detect  Non-detect

**Abbreviations:**

2,3,7,8-TCDD = 2,3,7,8-Tetrachlorodibenzo-p-dioxin
bgs = below ground surface
EPC = exposure point concentration
ft = feet
NA = not available
ND = nondetect
pg/g = picrogram(s) per gram
RAA = remedial action area
SD = standard deviation
TEQ = toxic equivalent

**OU-E Southern Ponds (Ponds 1, 2, 3, 4) AOC (0-2 ft bgs): 10 Highest Detects Rank Ordered**

| Rank Order | Units | Result (mg/kg) | Sample ID | Depth Interval (feet bgs) | Post Removal EPC (mg/kg) | No. of Samples in EPC | EPC Notes |
|---|---|---|---|---|---|---|---|
| 1 | pg/g | 1285 | Pond3-01 | 0.5-1.5 | | | Sample removals result in maximum concentration less than the not-to-exceed value (503 pg/g). |
| 2 | pg/g | 996 | Pond2-02 | 0-0.5 | | | |
| 3 | pg/g | 473 | Pond2-01 | 0-0.5 | | | |
| 4 | pg/g | 451 | Pond3-04 | 0-0.5 | | | |
| 5 | pg/g | 287 | Pond2-02 | 0.5-1.5 | | | |
| 6 | pg/g | 279 | Pond2-01 | 0.5-1.5 | | | |
| 7 | pg/g | 272 | Pond1-01 | 0.5-1.5 | | | |
| 8 | pg/g | 205 | DP7.13 | 0-0.5 | | | Sample colocated with Pond2-02 |
| 9 | pg/g | 200 | Pond1-02 | 0-0.5 | 390 | 26 | Assumes removal of three samples (Pond2-02, Pond3-01, and DP7.13) |
| 10 | pg/g | 191 | Pond3-08 | 0-0.5 | | | |

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**Normal Quantile-Quantile Plot**
**2,3,7,8-TCDD TEQ (Human/Mammal)**
**Riparian: Aquatic (0 - 2 ft)**
Former Georgia-Pacific Wood Products Facility, Fort Bragg, California

**Figure 6**

| Constituent | Units | Sample Size | | | ND Range | | Detects (mg/kg) | | | | | Percentiles in mg/kg (All Data) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NDs | Detects | Total | Min | Max | Min | Max | Mean | Median | SD | 25th | 50th | 75th | 95th (EPC) |
| 2,3,7,8- tcdd teq (human/mammal) | pg/g | 0 | 17 | 17 | NA | NA | 0.052 | 315 | 52.46 | 20.9 | 86.31 | 4.69 | 20.9 | 33 | 127.1 |

**Notes:** Normal Q-Q plot generated using ProUCL version 4.1.00. Reporting limit used for non-detects

Samples identified for RAA

Detect

**Abbreviations:**

2,3,7,8-TCDD = 2,3,7,8-Tetrachlorodibenzo-p-dioxin
bgs = below ground surface
EPC = exposure point concentration
ft = feet
NA = not available
ND = nondetect
pg/g = picrogram(s) per gram
RAA = Remedy Action Area
RBTL = site-specific risk-based target level
SD = standard deviation

**OU-D Riparian Area (0-2 ft bgs): 10 Highest Detects Rank Ordered**

| Rank Order | Units | Result (mg/kg) | Sample ID | Depth Interval (feet bgs) | Post Removal EPC (mg/kg) | No. of Samples in EPC | EPC Notes |
|---|---|---|---|---|---|---|---|
| 1 | mg/kg | 315 | OUD-HA-046 | 0-0.5 | | | |
| 2 | mg/kg | 210 | OUD-HA-044 | 0-0.5 | | | |
| 3 | mg/kg | 97.9 | OUD-SED-HA-049 | 0-0.5 | | | |
| 4 | mg/kg | 94.6 | OUD-HA-042 | 0-0.5 | | | |
| 5 | mg/kg | 33 | OUD-SED-HA-048 | 0-0.5 | 19 | 13 | Assumes removal of the 4 highest samples. |
| 6 | mg/kg | 29.5 | OUD-HA-045 | 0-0.5 | | | |
| 7 | mg/kg | 25.5 | OUD-HA-046 | 0.5-0.8 | | | |
| 8 | mg/kg | 23.2 | OUD-HA-043 | 0-0.5 | | | |
| 9 | mg/kg | 20.9 | OUD-SED-HA-047 | 0-0.5 | | | |
| 10 | mg/kg | 20.5 | OUD-HA-040 | 0-0.5 | | | |

# APPENDIX C
# Responsiveness Summary (to be included in final RAW)

Arcadis U.S., Inc.

100 Montgomery Street

Suite 300

San Francisco, California 94104

Tel 415 374 2744

Fax 415 374 2745

**www.Arcadis.com**

Georgia-Pacific, LLC

# OPERABLE UNIT E MITIGATION AND MONITORING PLAN

Fort Bragg Former Wood Products Facility

July 2016

# OPERABLE UNIT E MITIGATION AND MONITORING PLAN

Fort Bragg Former Wood Products Facility

Alex Francisco
Principal Ecologist

Joshua Tallis
Project Ecologist

Rebecca Andresen
Vice President

Prepared for:

Dave Massengill
Senior Director
Georgia-Pacific, LLC
133 Peachtree Street NE
PO Box 105605
Atlanta, GA 30348-5605

Prepared by:

Arcadis U.S., Inc.
2999 Oak Road
Suite 300
Walnut Creek
California 94597
Tel 925 274 1100
Fax 925 274 1103

Our Ref.:

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Date:

July 2016

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# APPENDIX

A California Rapid Assessment Methodology Data

# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AJD | Approved Jurisdictional Determination |
| Arcadis | Arcadis U.S., Inc. |
| CDFW | California Department of Fish and Wildlife |
| City | City of Fort Bragg |
| CRAM | California Rapid Assessment Method |
| dbh | diameter at breast height |
| DTSC | Department of Toxic Substances Control |
| Georgia-Pacific | Georgia-Pacific, LLC |
| mg/kg | milligrams per kilogram |
| MMP | Mitigation and Monitoring Plan |
| NFA | No Further Action |
| OU-E | Operable Unit E |
| OU-E Lowlands | portion of OU-E direct north of Pond 8 |
| OU-E Removal Action | OU-E soil and sediment removal action |
| pg/g | pictograms per gram |
| RBTLs | risk based tolerance levels |
| RWQCB | North Coast Regional Water Quality Control Board |
| Site | Georgia-Pacific former wood products facility |
| USACE | United States Army Corps of Engineer |
| WRA | WRA, Inc. |

# EXECUTIVE SUMMARY

This Mitigation and Monitoring Plan (MMP) details proposed compensatory mitigation activities to address impacts to waters of the United States and waters of the State anticipated to result from the Operable Unit E (OU-E) Soil and Sediment Removal Action (OU-E Removal Action) at the Georgia-Pacific, LLC former Fort Bragg Wood Products Facility located at 90 Redwood Avenue in Fort Bragg, California (the Site). Proposed OU-E Removal Action activities involve excavation and off-site disposal of approximately 2,263 cubic yards of soil and sediment in habitats potentially jurisdictional as waters of the United States or waters of the State. OU-E Removal Action activities are being conducted in accordance with Department of Toxic Substance Control Investigation and Remediation Order Docket No. HAS-RAO-06-07-150. Excavation activities in OU-E are proposed to occur in conjunction with excavation activities proposed in developed upland areas of Operable Units C and D to facilitate construction of the Coastal Trail, as proposed by the City of Fort Bragg (the City).

Proposed OU-E Removal Action activities are anticipated to impact approximately 0.064 acre of waters of the United States (0.055 acre of wetland habitat and 0.009 acre of stream habitat), approximately 0.476 acre of waters of the State (which includes the 0.064 acre of impacts to waters of the United States), and approximately 0.020 acre of upland riparian habitat. Anticipated impacts will be temporary in nature, and restoration activities proposed in this MMP will occur immediately following completion of OU-E Removal Action activities. Impacts to waters of the United States, waters of the State, and upland riparian areas are being authorized under permits from the United States Army Corps of Engineers (Clean Water Act Section 404), North Coast Regional Water Quality Control Board (Clean Water Act Section 401), California Department of Fish and Wildlife (Lake and Streambed Alteration Notification), and the City (Coastal Development Permit).

Compensatory mitigation activities proposed in this MMP include in-kind, in-place restoration of wetland, stream, and upland riparian habitats at a 1:1 ratio and establishment of an additional 0.548 acre of wetlands in the portion of OU-E immediately north of Pond 8 (OU-E Lowlands). The proposed restoration and establishment activities will result in a mitigation ratio of approximately 16:1 for waters of the United States and 2.2:1 for waters of the State[1]. This MMP presents the following aspects to detail the compensatory mitigation approach: description of impacted areas, mitigation objectives, mitigation site selection considerations, mitigation activities, mitigation performance standards, mitigation monitoring and reporting activities, adaptive management planning, long-term maintenance, and mitigation site protection instrument.

[1] Total acreage of waters and wetland restoration and establishment is 1.024 acre. The waters of the United States impact is 0.064 acre. The waters of the State impact, inclusive of waters of the United States impact, is 0.476 acre.

# 1 INTRODUCTION

Arcadis U.S., Inc. (Arcadis) has prepared the following Mitigation and Monitoring Plan (MMP) on behalf of Georgia-Pacific, LLC (Georgia-Pacific) to support permit applications submitted to regulatory agencies to authorize Operable Unit E (OU-E) Soil and Sediment Removal Action (OU-E Removal Action) at the Georgia-Pacific former Fort Bragg Wood Products Facility located at 90 Redwood Avenue in Fort Bragg, California (the Site; Figure 1). Permit applications have been submitted to the following agencies to authorize the OU-E Removal Action: San Francisco District United States Army Corps of Engineers (USACE; Clean Water Act Section 404), North Coast Regional Water Quality Control Board (RWQCB; Clean Water Act Section 401), California Department of Fish and Wildlife (CDFW; Lake and Streambed Alteration Notification), and the City of Fort Bragg (the City; Coastal Development Permit). Proposed OU-E Removal Action activities are anticipated to temporarily impact waters of the United States; waters of the State; and upland riparian areas in the portion of OU-E immediately north of Pond 8 (OU-E Lowlands), South Ponds, and Riparian Area on the Site. Potentially jurisdictional waters and associated wetlands on the Site in and adjacent to the OU-E removal Action project area are presented on Figures 2 and 3. Features that have not yet received a formal jurisdictional determination from the USACE and/or RWQCB (e.g., wetlands in the OU-E Lowlands) are assumed to be jurisdictional waters of the United States/waters of the State.

## 1.1 Proposed Activities and Regulatory Context

The Proposed OU-E Removal Action activities involve excavation and off-site disposal of approximately 2,263 cubic yards of soil and sediment in habitats potentially jurisdictional as waters of the United States or waters of the State. OU-E Removal Action activities are being conducted in accordance with Department of Toxic Substance Control (DTSC) Investigation and Remediation Order Docket No. HAS-RAO-06-07-150. Excavation activities in OU-E are proposed to occur in conjunction with excavation activities proposed in developed upland areas of Operable Units C and D to facilitate construction of the Coastal Trail, as proposed by the City of Fort Bragg.

Proposed OU-E Removal Action activities will temporarily impact waters of the United States, waters of the State, and upland riparian habitat. Figures 4 and 5 depict the estimated impact areas associated with excavation, staging, and access as they overlap with the delineated waters of the United States, waters of the State, and upland riparian habitat. Access pathways to the work locations will be established to minimize impacts to waters, wetlands, and riparian areas. Staging areas will be located in upland areas, primarily on existing pavement. If necessary, sediment will be dewatered in upland areas and the water will be allowed to drain back to the excavation area by gravity. The equipment work area and dewatering activities adjacent to Pond 7 may overlap with a seasonal wetland area (Wetland E-6) to the north of Pond 7 due to space constraints. Table 1 presents an accounting of estimated maximum extent of impact areas and a summary of the habitats in each impact area. Approximate areas of impacts anticipated are summarized as follows.

- Waters of the United States
    - 0.056 acre (emergent wetlands, Wetland E-1 and Wetland E-6)

  - 0.008 acre (seasonal wetland ditch, Wetland L)
  - Total: 0.064 acre
- Waters of the State[2]
  - 0.412 acre (ponded wetlands, Ponds 2, 3, and 7)
  - 0.056 acre (emergent wetland, Wetland E-1 and Wetland E-6)
  - 0.008 acre (seasonal wetland ditch, Wetland L)
  - Total: 0.476 acre
- Upland Riparian Habitat: 0.020 acre

Impacts anticipated to occur as a result of proposed OU-E Removal Action activities will be temporary. Excavations will be backfilled to approximately original grade and revegetated immediately following completion of excavation activities. If it is necessary to lay down crushed gravel in wetland areas to facilitate equipment access or staging, then the gravel will be removed from the wetland areas immediately following completion of excavation and regrading. Areas impacted by staging or access will be revegetated immediately following completion of excavation, regrading, and removal of crushed gravel pads, if such pads are necessary.

Proposed OU-E Removal Action activities will occur within the Coastal Zone. The City addresses Costal Zone permitting through the Local Coastal Program. Impacts proposed to waters of the United States on the Site are permitted by the USACE under a Clean Water Act Section 404 permit and by the RWQCB under a Clean Water Act Section 401 Water Quality Certification. Impacts proposed to waters of the State on the Site are permitted by the RWQCB under a Clean Water Act Section 401 Water Quality Certification. Impacts to ponded wetland habitats, habitats with bed and bank (i.e., the seasonal wetland ditch), and upland riparian habitats are permitted by the CDFW through a Lake and Streambed Alteration Notification. Georgia-Pacific submitted permit applications to each of these agencies on June 9, 2016, and this MMP provides details regarding proposed compensatory mitigation activities to support those permit applications.

Georgia-Pacific has designated financial funding to complete the anticipated OU-E Removal Action and associated compensatory mitigation activities in the 2016 budget for the Site.

## 1.2 Proposed Compensatory Mitigation

Proposed compensatory mitigation activities includes restoration of areas temporarily disturbed by proposed OU-E removal Action activities to pre-remediation conditions at a 1:1 ratio and establishment of 0.548 acre of new wetland areas in the OU-E Lowlands adjacent to Wetland E-6 (Figures 4 and 6). Restoration and establishment activities will occur concurrent with and immediately following OU-E Removal Action activities. Proposed compensatory mitigation activities will result in a mitigation ratio of

[2] Estimated acreage of impacts to waters of the State include impacts to waters of the United States.

approximately 16.3:1 for impacts to waters of the United States and 2.1:1 for waters of the State and upland riparian areas[3].

Objectives of the compensatory mitigation program are as follow.

- Restore waters of the United States, waters of the State, and upland riparian areas disturbed by OU-E Removal Action activities to pre-remediation conditions.
- Establish approximately 0.548 acre of seasonal wetland/seep wetland habitat in the OU-E Lowlands with function similar to that provided by Wetland E-6.

Restoration activities in each disturbed area will be conducted immediately following backfill of excavation areas to pre-remediation grades, or immediately following removal of gravel access paths/pads, if necessary, in access and staging areas. Restoration activities will primarily consist of returning disturbed areas to pre-remediation grade, seeding with appropriate native seed mixes, and planting replacement trees if trees greater than 4 inches diameter at breast height (dbh) have been removed. Initial grading of establishment wetland areas will occur concurrent with OU-E Removal Action activities in the OU-E Lowlands; final grading and seeding in the establishment area will occur immediately following completion of OU-E Removal Action activities. Specific restoration and establishment activities are detailed in Section 3.

The wetland establishment site was selected based on geographic proximity to the impact areas, ability to create wetland hydrology without using permanent artificial means, and ability of Georgia-Pacific to control final disposition of the property. Since the establishment area is adjacent to Ponds 6 and Wetland E-6, these wetland areas, not proposed to be impacted by OU-E Removal Action activities, will provide the establishment area with a native seed source to aid in natural colonization for revegetation. The geographic proximity of these areas provides opportunity for the establishment area to create a larger interconnected wetland system in the OU-E Lowlands. Groundwater beneath the establishment area is currently near the surface, and wetland hydrology can be easily created by lowering the ground surface elevation of the establishment area approximately 12 to 18 inches to create a ground surface that contacts groundwater or is within 12 inches of groundwater. Since Georgia-Pacific owns the property on which the establishment area is proposed, Georgia-Pacific can establish appropriate site protection instruments.

[3] Total acreage of waters and wetland restoration and establishment is 1.024 acre. The waters of the United States impact is 0.064 acre. The waters of the State impact, inclusive of waters of the United States impact, is 0.476 acre

# 2 SITE CONDITIONS

## 2.1 Site Description

The approximately 415-acre Site is located west of Highway 1 along the Pacific Ocean coastline, and is bounded by the City to the north and east, Noyo Bay to the south, and the Pacific Ocean to the west. Union Lumber Company began sawmill operations at the Site in 1885, and Georgia-Pacific acquired the Site in 1973 and ceased lumber operations on August 8, 2002. Public access to the Site is currently restricted. The Site is largely developed and contains many paved and unpaved roads and former industrial relics, but few buildings. The OU-E Lowlands are currently undeveloped; prior to 2008, when the buildings were demolished, the OU-E Lowlands was completely developed. Shallow groundwater and high organic content substrate resulting from wood mulch materials have allowed wetlands to develop in the OU-E Lowlands (Figure 2) since demolition activities in 2008. Ponds 2 and 3 (Figure 3) and Pond 7 (Figure 2) are historical industrial process ponds that have been abandoned since Site operations ceased in 2002. The Riparian Area and the associated seasonal wetland ditch (Wetland L) depicted on Figure 3 are undeveloped areas of the Site that have been relatively undisturbed throughout the operational history of the Site.

## 2.2 Mitigation Area Descriptions

Existing condition in the OU-E Lowland wetlands; Ponds 2, 3, and 7; and the Riparian Area are described in more detail below. Wetlands on the Site were delineated by WRA Inc. (WRA) in 2009 (WRA 2009) and by Arcadis in 2010 (Arcadis 2011). On March 15, 2010, the USACE issued an Approved Jurisdictional Determination (AJD) for wetlands delineated on the Site by WRA in 2009 (File # 2009-00372N). Jurisdictional status of those waters and wetlands included in the 2010 AJD are assumed to be the same currently as they were presented in the AJD because conditions and circumstances of these features have not changed since the AJD was issued. On June 21, 2016, the USACE conducted verification of wetlands delineated in the OU-E Lowlands, the shoreline area of Fort Bragg Landing adjacent to the OU-E Lowland, and the Riparian Area. Due to changes in Site conditions since the Arcadis 2010 delineation, some wetland boundaries were revised based on the USACE site visit. Results of the USACE site visit were documented in a July 7, 2016 memorandum (Arcadis 2016a), and wetland boundaries presented in figures contained within this MMP represent modifications made to incorporate USACE input. USACE jurisdictional status of the waters and wetlands delineated by Arcadis in 2010 and verified in 2016 have not been finalized. The RWQCB has not issued a jurisdictional determination for any of the wetlands on the Site.

### 2.2.1 OU-E Lowlands

The OU-E Lowlands contains  seep wetlands, seasonal wetlands, and uplands. Waters and wetlands delineated in the OU-E Lowlands, excluding Pond 7, have been previously determined to be waters of the United States or are assumed to be waters of the United States in the absence of an AJD from the USACE. All waters and wetlands in the OU-E Lowlands are assumed to be waters of the State. Based on the verification survey, a total of 2,455 square feet of emergent wetlands may be impacted by the

excavation, staging, and access routes for the proposed OU-E Removal Action activities (Table 1). Conditional assessments of the OU-E Lowland wetlands, conducted in 2010 to support of the Mill Pond Complex conceptual restoration design using the California Rapid Assessment Method (CRAM), indicated that Wetland E-1 and Wetland E-6 have functional capacities of 57 and 58 percent, respectively. Appendix A presents the CRAM data collected for Wetlands E-1 and E-6. CRAM evaluations demonstrate that functional capacity of these wetlands is limited by a relatively low diversity in the plant community with buffer conditions and physical structure limited by historical and surrounding development. Emergent wetland plant communities present in the OU-E Lowland wetlands are described in Section 2.3 and presented in Table 1.

### 2.2.2 Pond 7

Pond 7, originally constructed as an ash dewatering pond during mill operations, is located in the southwest corner of OU-E Lowlands (Figure 2). Pond 7 is identified as an isolated wetland not subject to Section 404 of the Clean Water Act in the AJD. Pond 7 is assumed to be a jurisdictional water of the State. Pond 7 is a combination of small areas of open water and ponded water with emergent wetlands dominated by cattails, and is surrounded by a retaining wall with sharp transition from wetland to upland. Conditional assessments of Pond 7 conducted in 2010 using the CRAM (Appendix A) indicated that the Pond 7 functional capacity is 43 percent. CRAM evaluations demonstrate that functional capacity of these wetlands is limited by a relatively low diversity in the plant community, lack of hydrologic connectivity, and buffer conditions and physical structure limited by historical and surrounding development. Ponded wetland plant communities present in Pond 7 are described in Section 2.3 and presented in Table 1.

### 2.2.3 South Ponds (Ponds 2 and 3)

Ponds 2 and 3, originally constructed as part of the mill's wastewater treatment system, are located in the South Ponds area of OU-E (Figure 3). The South Ponds received process water that was pumped from Pond 7 while the Site was active. Currently  Ponds 2 and 3 are identified as isolated wetlands not subject to Section 404 of the Clean Water Act in the AJD. Hydrology in Ponds 2 and 3 is dependent on shallow groundwater, precipitation, and surface water runoff from surrounding areas. Both ponds are approximately 5 to 10 feet below the surrounding flat paved former log deck area. Pond 2 is primarily open water with emergent vegetation dominated by cattail around the edges. Pond 3 contains a mix of ponded wetland and emergent vegetation, dominated by cattails, spread throughout the wetland. Conditional assessments of Ponds 2 and 3 conducted in 2010 using the CRAM (Appendix A) indicated that the Ponds 2 and 3 have functional capacities of 43 and 42 percent, respectively. CRAM evaluations demonstrate that functional capacity of these wetlands is limited by a relatively low diversity in the plant community, lack of hydrologic connectivity, and buffers conditions and physical structure limited by historical and surrounding development. Ponded wetland plant communities present in Pond 7 are described in Section 2.3 and presented in Table 1.

### 2.2.4 Riparian Area

A small seasonal wetland ditch (Wetland L) flows to the north in the Riparian Area (Figure 3) to a culvert that drains the feature to Maple Creek. Flow in the channel is minimal and is dominated by small amounts of groundwater through most of the year. Flow remains low during the rainy season, when flow in the

channel is supplemented by precipitation and surface water runoff from the surrounding area due to the small catchment size of the channel (i.e. approximately 16.6 acres [Arcadis 2012]). Flow in the channel is approximately 0.55 cubic foot per second after a 1.2-inch 24-hour storm. There is little to no vegetation growing within the bank of the channel of the seasonal wetland ditch, but hydrophytic vegetation does grow adjacent to the channel banks (Section 2.3 and Table 1). No CRAM evaluation has been conducted for the seasonal wetland ditch. The Riparian Area surrounding the ditch is an upland forested canopy composed of mature trees and shrubs and an herbaceous understory. Riparian forest plant communities present in the Riparian Area are described in Section 2.3 and presented in Table 1.

## 2.3 Wetland Plant Communities

Three wetland communities and one upland plant community found on the Site will be impacted during the OU-E Removal Action activities. These are ponded wetlands, emergent wetlands, seasonal wetland ditch, and riparian forest. The following are the native plant species common in these areas (Table 1).

- Ponded wetlands are dominated by cattails; however, other wetland species, such as marsh pennywort (*Hydrocotyl ranunculoides*) and water parsely (*Oenanthe sarmentosa*), are present depending on the depth of water.
- Emergent wetlands in the areas potentially impacted by OU-E Removal Action activities are largely wet meadows. The wet meadows are heterogeneous with a mosaic of upland areas of non-native grasses and wetlands in the depressions containing meadow barley (*Hordeum brachyantherum*), tall cyperus (*Cyperus eragrostis*), common rush (*Juncus effusus*), and other sedges (Cyperaceae) and rushes (Juncaceae).
- The seasonal wetland ditch contains California blackberry (*Rubus ursinus*), California wax myrtle (*Myrica californica*), red alder (*Alnus rubra*), red elderberry (*Sambucus racemosa*), and willow (*Salix* sp.) on the banks adjacent to the channel.
- Riparian forest has a heterogeneous plant community. At each of the excavation locations, the vegetation differs significantly. At the southernmost excavation is lodgepole pine (*Pinus contorta*) with a largely un-vegetated understory. In the northernmost excavation, red elderberry (*Sambucus racemosa*), California blackberry, and English ivy (*Hedera helix*) dominate. The two middle excavations contain a range of red alder (*Alnus rubra*), willow, lodgepole pine, cypress, and other shrub and tree species.

## 2.4 Non-native and Weedy Vegetation

Historical development on the Site has resulted in an abundance of non-native weedy plants. Some of the more ubiquitous species are pampas grass (*Cortaderia sp.*), Italian thistle (*Carduus pycnocephalus*), Himalayan blackberry (*Rubus armeniacus*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus Hordeaceus*), wild radish (*Raphanus sativa),* cut-leaf geranium (*Geranium Dissectum),* Italian rye grass *(Festuca perennis),* common velvetgrass (*Holcus lanatus),* sub clover (*Trifolium subterraneum),* iceplant (*Carpobrotus edulis*), and English ivy. In this report, the term “Target Invasive Species” refers to the four following particularly noxious species: pampas grass, Himalayan blackberry, iceplant, and English ivy.

# 3 MITIGATION ACTIVITIES

Georgia-Pacific is the responsible party for compensatory mitigation activities proposed as part of the OU-E Removal Action activities. Table 2 presents a summary of compensatory mitigation activities proposed for implementation. Details regarding specific activities and methods that will be implemented to accomplish the mitigation objectives (Section 1.2) are presented below.

## 3.1 Restoration Techniques

### 3.1.1 Backfill and Grading

Following excavation, impacted areas (i.e., Wetland E-1, Ponds 2, 3 and 7, and Wetland L) will be backfilled with clean fill to pre-excavation grades. Backfilling will occur with low-pressure tracked equipment (e.g., bulldozer or excavator, depending on site conditions). Backfill will be generated from on-site sources to the extent possible. On-site sources proposed consist of soil removed from the wetland establishment area in the OU-E Lowlands (Figure 4).

Fill generated from on-site areas will have concentrations that are below appropriate selected risk-based tolerance levels (RBTLs) or background for Site constituents that were identified as either defining hot spots or posing potential risk to human or ecological receptors on the Site (i.e., benzo[a]pyrene toxic equivalence quotient, dioxin toxic equivalence quotient, lead, and arsenic). No other constituents detected on the Site were identified as potentially posing risk to human or ecological receptors and do not require consideration for fill suitability when evaluating fill generated from on site. Arsenic concentrations in potential fill material will be compared to the Site background value of 10 milligrams per kilogram (mg/kg), as identified in the Baseline Human Health and Ecological Risk Assessment – Operable Unit E (Arcadis 2015). RBTLs identified in the OU-E Remedial Action Workplan (Arcadis 2016b), with DTSC consultation, are as follow: benzo[a]pyrene toxic equivalence quotient – 0.3 mg/kg, dioxin toxic equivalence quotient – 53 picograms per gram (pg/g), lead – 127 mg/kg.

When generated off site, fill used will have constituent concentrations similar to or lower than the unexcavated media in the area where the fill will be used (i.e., baseline conditions in the fill area). Fill will also be identified for use if constituent concentrations are above baseline conditions but below RBTLs values identified in the OUE Remedial Action Workplan (Arcadis 2016b).

The ground surface elevation in the wetland establishment area (Figure 4) will be lowered approximately 12 to 18 inches to create a ground surface that contacts groundwater or is within 12 inches of groundwater. Wetland establishment areas will be regraded with low-pressure tracked equipment (e.g., bulldozer or excavator, depending on site conditions). Figure 6 presents a cross-section depicting the ground surface elevation, estimated groundwater elevation for current conditions, and proposed conditions of the wetland establishment area and adjacent areas. Regraded portions of the wetland establishment area (i.e., 0.548 acres of new wetlands included in the proposed compensatory mitigation) will be connected to Wetland E-6, Pond 6, and Pond 7 to create a large interconnected system of seep wetlands, seasonal wetlands, and ponded wetlands.

Areas disturbed by access or staging will be restored by removing crushed gravel pads, if used, and regrading the surface.

Impact and wetland establishment areas will be revegetated following completition of backfill/grading materials.

### 3.1.2 Seed Collection

Seeds will be collected on Site from native wetland species (e.g., cattails, sedges, and rushes) by cutting seed heads of the tops of plants prior to implementation of OU-E Removal Action activities and mitigation monitoring events in subsequent years. Seed harvesting will be limited to 10 to 20 percent of the flowering seed heads of individual plants. Seeds will be stored in paper bags in a cool dry place until used for seeding. The seeds will be stored for days, or at most weeks, until being broadcast into wetlands. Care will be taken to avoid collecting Invasive Target Species seeds by training seed collection personnel in invasive species identification. To enhance local genetic diversity of commercial seed mixes used in the wetland restoration and establishment areas (Section 3.1.3), these seeds will be broadcast into these areas following completion of backfilling and grading activities and mitigation monitoring events.

### 3.1.3 Seed Mixes

The following seed mixes will be used in their respective habitats in restoration and establishment areas. Seeds will be sourced from commercial vendors and collected on the Site. Commercial seeds will be certified invasive species free and sourced from genetic sources as close to the Site as practicable. Each species will be seeded at a rate of 25 total pounds of seed per acre. For example, seeds needed for 1 acre with a rate of 40% seed A and 60% seed B would have 10 pounds of seed A and 15 pounds of seed B.

- Wet Meadow Mix (Wetland E-1, Wetland E-6, and Wetland Establishment Area): 25% tall cyperus, 50% meadow barley, 25% creeping wild rye. The aforementioned seed mix will be supplemented with seeds from locally collected native sedges, rushes, and/or grasses found on the Site.
- Ponded Wetland Mix (Ponds 2, 3, and 7): 70% cattail and 30% common rush. The aforementioned seed mix will be supplemented with seeds from locally collected native sedges, rushes, and/or grasses found on the Site.
- Riparian Forest Mix (Upland Riparian Area): 30% California brome (*Bromus diandrus*), 30% blue wild rye, 20% creeping wild rye, 10% small fescue (*Festuca microstachya*), and 10% California blackberry.

### 3.1.4 Seeding

The amount of native seed needed will be measured out for the area to be seeded based on 25 pounds per acre. Seeding will be done either by dry seed broadcast seeding or hydroseeding. Dry seeds will be hand-broadcast evenly across the target area and then coarsely hand-raked to cover seeds with soil and reduce chances of seed predation. Hydroseeding will be accomplished using a truck broadcaster to spray a slurry mixture of seeds and hydromulch. Seeding activities will follow completion of backfilling and grading portions of the OU-E Removal Action activities and, as needed, during the fall mitigation

monitoring activities. Irrigation will not be necessary due to the high groundwater level in restoration and establishment areas and the fall planting schedule.

### 3.1.5 Container Planting

Contained planting will be done for cattails and riparian trees, if any trees greater than 4 inches dbh are damaged or removed during Riparian Area access.

Cattails will be restored in ponded wetlands using 1-gallon containers, in addition to seeding, to accelerate restoration of impacted ponded wetland areas. Cattail containers will be planted in disturbed ponded areas (Pond 2, 3, and 7) unless water is present that will submerge greater than 75 percent of the height of the leaves or if planting is otherwise unsafe for field crews. In areas that are ponded, and where cattails can be planted without submerging the leaves more than 75 percent of the leaf height, the plastic pots will be removed and the root ball covered with burlap. Planting will be accomplished by placing the burlapped plant into water and wedging it into sediment to keep the plant upright. Irrigation will not be necessary due to the high groundwater level and the fall planting schedule.

One-gallon container trees will be planted in the Riparian Area corridor if trees greater than 4 inches dbh are damaged or removed. Planted species will be selected by the species that is damaged or removed, because species diversity varies along the Riparian Area corridor ranging from cypress, alder, willow, pine, and other species. Two container plants will be planted for every one damaged or removed. This will help increase the probability that the same number of damaged/removed trees are present at the end of the mitigation monitoring period.

A water well will be created around each tree and filled every day for 3 days during the restoration activities. No further watering is proposed unless an unusual dry spell and/or unusually low groundwater conditions exist. Precipitation will be monitored in the weeks after planting to evaluate if additional watering is needed. Additionally, adaptive management activities in the restoration areas (Section 6) will include additional planting and/or irrigation if mitigation monitoring events indicate high mortality of planted trees.

Deer are common on the Site, so trees planted in the riparian corridor will be protected with 5-foot-tall Tubex tree shelters. Each tree will be stabilized with two 2 x 2 inch 5-foot-tall stakes to prevent deer from pushing over the tree shelter. Netting will cover the tops of tree tubes to minimize potential for bird nesting or mortality.

### 3.1.6 Erosion Control

Erosion control of restoration and establishment areas will be provided according to the Site Stormwater Pollution Prevention Plan. Restoration and establishments areas will be revegetated through seeding of herbaceous species as described in Sections 3.1.3 and 3.1.4. Disturbed upland soil will be seeded with native species to stabilize soil using the following seed mix.

- Upland Mix: 30% California brome, 30% yarrow, 20% California poppy, 10% California meadow barley, and 10% small fescue.

Hydromulch stabilization, straw wattles, and/or erosion control blanket will be used to stabilize slopes as needed based on slope grade.

In locations where hydromulching is necessary to stabilize soil, the native upland seed mix will be included in the mulch materials as they are being wetted in the hydroseeder unit.

## 3.2 Restoration of Pond 7 in OU-E Lowlands

Pond 7 will be a restored in-kind and in-place. The wooden retaining walls to the north, east, and west will be removed, and a more gradual slope will be created on these sides. The south side butts up against the steep slope of the Pond 8. The elevation of the pond bottom will be approximately the same as the pre-remediation elevation. The restored habitat will be a ponded wetland with cattail emergent habitat and open water, similar to baseline conditions. The new sloped north, east, and west sides will provide new topographic complexity, compared to the current retaining wall edge, that will transition to the wetland establishment area and may support smaller emergent species such as sedges, rushes, and similar. The retaining wall on the west, north, and east sides will be removed, and the banks graded to slope into the ponded wetland, allowing for a transition around the wetland for wetland plants that grow from saturated soil, to shallow water, to deep water. After final grading, Pond 7 will be seeded with Ponded Wetland Seed Mix and planted with 20 cattail container plants.

## 3.3 Restoration and Establishment of Emergent Wetlands in OU-E Lowlands

The disturbed emergent wetlands in OU-E will be restored in-kind and in-place. Separately, emergent seep/seasonal wetlands will be established in areas adjacent to Wetland E-6 that are currently ruderal uplands. Restoration and establishment will be accomplished by 1) either backfilling to pre-disturbance elevation (restoration) or creating suitable elevation (establishment) and de-compacting soil if it has been compacted (using excavator bucket or a tractor disk), 2) roughening soil surface and creating undulations for water capture, and 3) seeding with the Wet Meadow Seed Mix.

## 3.4 Restoration of Ponds 2 and 3

Ponds 2 and 3 will be restored to in-kind and in-place. Excavated areas, if excavated to the maximum anticipated extent as shown on current plans, will be backfilled to pre-excavation elevations. As a result of likely scope reductions in this area due to recent data collection, excavation areas less than 1,000 square feet (approximately 30 feet square) will not be backfilled, rather surrounding sediment will be allowed to collapse around the edges and seek a new equilibrium with surrounding conditions. Revegetation will come mainly from adjacent vegetation propagules. Cattails are expected to start spreading immediately by rhizomes. In addition to the natural spread of propagules, the restoration team will conduct broadcast seeding with Ponded Wetland Seed Mix to accelerate restoration. Similar to current baseline conditions, restored Pond 2 habitats are expected to be vegetated emergent wetlands along the pond edges (i.e., approximately 15 to 20 feet from the berm edge), and open water pond in the remaining areas. Pond 3 will be a mix of open water and emergent vegetation.

## 3.5 Restoration of Stream and Riparian Corridor

Sediment excavation in the four stream locations will be backfilled with soil of grain size comparable to that which was removed. After backfilling, channel material will be lightly compacted to minimize soil movement during rain events. The current channel bottom is relatively flat and un-vegetated. Therefore, the stream channel will not be planted to reflect baseline conditions. During excavation, the banks will be protected to keep them intact. Erosion control blanket will be installed along the banks, if necessary, to stabilize conditions if they are disturbed during excavation and access activities. Disturbed upland riparian areas will be seeded with the Riparian Forest Mix and trees greater than 4 inches dbh removed or injured during OU-E Removal Activities will be replanted at a 2:1 ratio.

# 4 MITIGATION MONITORING AND REPORTING

Annual monitoring will be conducted based on the following methods to assess whether the mitigation is meeting performance criteria. The outcome of monitoring will be documented in annual reports. Once performance criteria have been met, a wetland delineation will be conducted.

## 4.1 Performance Standards

Performance criteria (Table 3) are proposed to reflect the expected rate at which the restoration will progress and to achieve a 5-year target of a functional self-sustaining ecosystem. It is expected that, during the years after meeting these criteria, the ecosystem will continue to develop and mature as vegetation ages, fauna use the system with increasing frequency, and soil structure and chemistry develop.

Plant species richness and percent native species cover in restoration and establishment areas are based on data obtained from the CRAM evaluations and the 2010 wetland delineation (Arcadis 2011). Percent native species cover performance standards for the year 5 monitoring event were selected to be 80 percent of the percent native cover observed for adjacent wetland areas the in the 2010 wetland delineation (Arcadis 2011). Percent native cover in the Riparian Area has not been previously quantitated, and the percent native performance standard for this area will be evaluated for suitability prior to implementing OU-E Removal Action activities. Less than 5 percent invasive species cover was selected to reduce probability of invasive species outcompeting native species. Ponded water and wetland hydrology indicators are necessary performance standards to confirm establishment of ponded wetlands and seep/seasonal wetlands, respectively.

## 4.2 Monitoring Methodology

Mitigation monitoring will occur once a year for 5 years. The annual monitoring event will occur in late early summer to early fall (e.g., August or September). Mitigation performance will be measured for each location as described below. Health and safety of monitoring personnel is of primary importance. Therefore, monitoring protocols may be revised if as-built conditions, vegetation changes, or other mitigation site characteristics make monitoring unsafe.

### 4.2.1 Ponded Wetland Habitat

Ponds 2, 3, and 7 monitoring will involve the following measurements.

- Native wetland plant species richness: Document vascular plant species in the restored pond.
- Native and invasive vegetation percent cover: Measure cover of submerged, emergent, floating leaf, and free-floating leaf plants. A transect/quadrat method will be used to record percent cover of each plant species. Quadrats, 3 feet by 3 feet in size, will be established approximately every 50 feet along transects spaced approximately 100 feet apart. Transects and quadrats will be established during the first mitigation monitoring event and transect start locations and locations of the quadrats along the

transect will be randomly placed. Data will be collected from the same quadrat during every monitoring event.

- Ponded water indicators present: Record presence of ponded water or moistness of soil if no water is present (saturated, moist, or dry).

### 4.2.2 Seep/Seasonal Wetland Habitat

Wetland E-1, Wetland E-6, and establishment wetlands will involve the following measurements.

- Native wetland plant species richness: Document vascular plant species in the restored and established wetland areas.
- Native and invasive vegetation percent cover: Measure cover of vegetation. A transect/quadrat method will be used to record percent cover of each plant species. Quadrats, 3 feet by 3 feet in size, will be established approximately every 50 feet along transects spaced approximately 100 feet apart. Transects and quadrats will be established during the first mitigation monitoring event, and transect start locations and locations of the quadrats along the transect will be randomly placed. Data will be collected from the same quadrat during every monitoring event.
- Wetland hydrology indicators present: Document presence or absence of primary and secondary wetland hydrology indicators, as provided in the USACE Regional Supplement to the Corps of Engineers Wetland Delineation manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (USACE 2010).
- Delineated acreage of wetland: During the final anticipated year of monitoring (i.e., year 5), delineate the total added acres of wetland adjacent to Wetland E-6, Pond 6, and Pond 7, compared to 2016 documented conditions.

Depth to groundwater in Wetland E-6 and the Wetland Establishment Area will be estimated based on depth to groundwater measurements collected during each monitoring event at the groundwater monitoring wells MW-4.1, MW-4.6, MW-4.2, and MW-4.3R (Figure 4) that are currently established in the OU-E Lowland and at a soil pit that will be dug in the Wetland Establishment Area adjacent to Pond 7.

### 4.2.3 Seasonal Wetland Ditch Habitat

Wetland L (seasonal wetland ditch) will involve the following measurements.

- Flow unimpeded, channel and banks stable: Record presence and depth of water in the stream. If no water is present, then document soil moisture (e.g., saturated, moist, or dry). Photodocument any instance of substantive stream bed or bank erosion and record measurement (i.e., width, length, and depth) and location of each erosion instance, as necessary.
- Invasive vegetation percent cover: Measure cover of vegetation at each excavation area.

### 4.2.4 Upland Riparian Habitat

Portions of the Riparian Area impacted by OU-E Removal Action activities will involve the following measurements.

- Native and invasive vegetation percent cover: Measure cover of vegetation. A transect/quadrat method will be used to record percent cover of each plant species. Vegetative cover will be measured in one quadrat, 3 feet by 3 feet in size, in each access path location where riparian habitat was disturbed during OU-E Removal Action activities.
- Planted native tree/shrub percent survival: Record survival and health of all planted trees/shrubs.

### 4.2.5 Photodocumentation

Photodocumentation monitoring point locations will be established to provide a visual indication of change through time. Prior to beginning OU-E removal Action activities, following completion of final grading, and during each monitoring event, monitoring personnel will collect photographs from established photodocumentation locations indicated on Figures 4 and 5 in the directions indicated by the photodocumentation location arrows.

## 4.3 Reporting

An annual monitoring and maintenance report will be submitted to USACE, RWQCB, CDFW, DTSC, and the City every year for 5 years or until performance criteria are met. The report will be sent by the first quarter of the following calendar year. The annual report will include results of annual monitoring, progress toward meeting performance criteria, representative photodocumentation, maintenance activities, and any adaptive management actions taken during the year.

In addition to annual monitoring and maintenance reports, following completion of OU-E Removal Action activities, an as-built memo report will be completed and submitted to regulatory agencies within 3 months of completing all grading and reseeding in the restoration and establishment areas. The memo report will document final grades and restoration/establishment actions. Photodocumentation, at the locations indicated on Figure 4 and 5, will be included to show conditions prior and subsequent to OU-E Removal Action activity implementation.

# 5 ADAPTIVE MANAGEMENT

Adaptive management is the continuous process of monitoring the mitigation project and taking appropriate action when it is not meeting performance criteria or not on a trajectory to meet these criteria.

Monitoring will be conducted annually. Observations from the field and analysis of monitoring data help the team identify whether the restoration is meeting criteria. When it does not meet criteria, the team works to identify the cause. This could be due to a lack of sufficient weeding that allows native species to be outcompeted, it could be plant herbivory resulting in lower vegetative cover than expected, or it could be inappropriate grading that results in water movement conducive to upland conditions when the goal is a wetland.

Every year, an assessment will be made as to whether actions need to be taken to assist nature to restore the mitigation site besides routine maintenance. In addition to observations made during annual monitoring events, the maintenance crews and other field crews will observe conditions and bring concerns to the restoration team. Possible requirements may include additional seeding, replanting trees, additional weeding, installation of irrigation, and/or erosion repair.

# 6 MAINTENANCE AND SITE PROTECTION

Maintenance of the mitigation areas during the mitigation monitoring period will primarily involve invasive species control, but may involve other tasks as they are identified during the adaptive management process. Pampas grass control is an ongoing task on the Site that pre-dates the proposed mitigation activities. Control of Target Invasive Species in the restoration areas will be conducted twice per year, in April and August. Invasive species control crews will be trained to identify the weeds from the seedling stage so young plants can be controlled before maturation and seed set. Young weeds will be controlled via spot spraying of herbicide approved for use in aquatic habitats (e.g., glyphosate) to avoid overspray of pesticide onto native species.

Long-term maintenance of the mitigation areas will consist of invasive species control. Control of Target Invasive Species will occur once a year in April using the same methods as those described above. Georgia-Pacific will be responsible for long-term maintenance activities while they own the Site. When the Site or portion of the compensatory mitigation area is purchased or deeded to another entity, Georgia-Pacific will include continuation of the long-term invasive species control in the deed transfer.

Georgia-Pacific will implement a deed restriction for the OU-E Lowlands area to provide a site protection instrument for the wetland establishment area. The deed restriction will specify that land use on the OU-E Lowlands is limited to open space use.

# 7 REFERENCES

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Arcadis 2015. Baseline Human Health and Ecological Risk Assessment – Operable Unit E, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. Submitted to DTSC, August 2015.

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Arcadis. 2016b. Georgia-Pacific LLC, Removal Action Workplan Operable Unit E. May 2016.

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Grace, J. B. 1989. Effects of water depth on *Typha latifolia* and *Typha domingensis*. American Journal of Botany. 76(5): 762-768.

Jones, Marie. 2014. Fort Bragg Coastal Restoration and Trail project Phase II Subsequent Environmental Impact Report (EIR). Mendocino County, California City of Fort Bragg. November 2014. Copy on file with the City of Fort Bragg Community Development Director.

Sholars, Theresa. Botanical Survey of some of the bluff areas at the GP Mills site. June 2001.

United States Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation manual: Western Mountains, valleys, and Coast Region (Version 2.0). ERDC/EL TR-103. May.

WRA Environmental Consultants. 2005*. Biological Assessment, Georgia Pacific Fort Bragg Sawmill Factory, Fort Bragg, Mendocino County, California.* Prepared for Georgia Pacific, Atlanta, Georgia. WRA Environmental Consultants, Inc. November. Species lists updated 2007.

# TABLES

**Table 1**
**OU-E Removal Action Impact Accounting**
**Former Wood Products Facility**
**Georgia-Pacific, LLC**
**Fort Bragg, California**

| Location ID | Habitat Type | Cowardin Classification | Vegetation Species Observed | Water of the United States | Water of the State | CRAM Score[1] | Acres Impacted (Temporary) |
|---|---|---|---|---|---|---|---|
| **OU-E Lowlands** | | | | | | | |
| Wetland H (Pond 7) | Ponded Wetland | PEM1H | Cattail (*Typha latifolia*), marsh pennywort (*Hydrocotyl ranunculoides*), water parsely (*Oenanthe sarmentosa*) | N | Y | 43% | 0.127 |
| Wetland E-6 | Seasonal Wetland | PEM2D | Bolander's rush (*Juncus bolanderi*), cattail, meadow barley (*Hordeum brachyantherum*), soft rush (*Juncus effusus*), tall flatsedge (*Cyperus eragrositis)*, tufted hairgrass *(Deschampsia cespitosa)* | Y | Y | 58%[2] | 0.033 |
| Wetland E-1 | Wetland Seep | PEM1E | | Y | Y | 57% | 0.023 |
| **South Ponds** | | | | | | | |
| Wetland N (Pond 2) | Ponded Wetland | PUBH | Cattail, soft rush | N | Y | 43% | 0.138 |
| Wetland O (Pond 3) | Ponded Wetland | PEM1E | | N | Y | 42% | 0.147 |
| **Riparian Area** | | | | | | | |
| Wetland L | Seasonal Wetland Ditch | R4SB | California blackberry (*Rubus ursinus*), California wax myrtle (*Myrica californica*), red alder (*Alnus rubra*), red elderberry (*Sambucus racemosa*), willow (*Salix sp.*) | Y | Y | -- | 0.008 |
| Riparian Area | Riparian Upland | NA | California blackberry, California wax myrtle, red alder, red elderberry, willow | N | Y | -- | 0.020 |
| | | | | | | Waters of the United States Impact Total | **0.064** |
| | | | | | | Waters of the State Impact Total[3] | **0.476** |
| | | | | | | Riparian Area Impact Total | **0.020** |

**Notes:**
All anticipated impacts will be temporary, and restoration will occurr immediately following completion of permitted activites.
NA: not applicable
OU-E: Operable Unit E
--: not available
PEM1H: palustrine emergent, persistent, permanently flooded
PEM2D: palustrine emergent, nonpersistent, continuously saturated
PEM1E: palustrine emergent, persistent, seasonally flooded/saturated
PUBH: palustrine unconsolidated bottom, permanently flooded
R4SB: riverine, intermittent, streambed
CRAM: California Rapid Assessment Methodology
[1]CRAM scores based on data collected in 2010.
[2]CRAM score for wetland E6 is based on data collected for the E5 and E6 wetland complex.
[3]Waters of the State Impact Total includes Waters of the United States Impact Total.

**Table 2**
**OU-E Removal Action Proposed Compensatory Mitigation**
**Former Wood Products Facility**
**Georgia-Pacific, LLC**
**Fort Bragg, California**

| Location ID | Pre-Mitigation Haibtat Type | Post-Mitigation Habitat Type | Cowardin Classification | Hydrology | Mitigation Method | Mitigation Acres |
|---|---|---|---|---|---|---|
| Establishment Area | Annual grassland | Seasonal Wetland/ Wetland Seep | PEM2D/PEM1E | continuously saturated to seasonally flooded/saturated | Establishment | 0.548 |
| Wetland H (Pond 7) | Ponded Wetland | Ponded Wetland | PEM1H | permanently flooded | Restoration | 0.127 |
| Wetland E-6 | Seasonal Wetland | Seasonal Wetland | PEM2D | continuously saturated | Restoration | 0.033 |
| Wetland E-1 | Wetland Seep | Wetland Seep | PEM1E | seasonally flooded/saturated | Restoration | 0.023 |
| Wetland N (Pond 2) | Ponded Wetland | Ponded Wetland | PUBH | permanently flooded | Restoration | 0.138 |
| Wetland O (Pond 3) | Ponded Wetland | Ponded Wetland | PEM1E | seasonally flooded/saturated | Restoration | 0.147 |
| Wetland L | Seasonal Wetland Ditch | Seasonal Wetland Ditch | R4SB | intermittent | Restoration | 0.008 |
| Riparian Area | Riparian Upland | Riparian Upland | NA | NA | Restoration | 0.020 |
| | | | | | **TOTAL** | **1.044** |

**Notes:**
NA: not applicable
OU-E: Operable Unit E
--: not available
PEM1H: palustrine emergent, persistent, permanently flooded
PEM2D: palustrine emergent, nonpersistent, continuously saturated
PEM1E: palustrine emergent, persistent, seasonally flooded/saturated
PUBH: palustrine unconsolidated bottom, permanently flooded
R4SB: riverine, intermittent, streambed

**Table 3**
**OU-E Removal Action Mitigation Performance Standards**
**Former Wood Products Facility**
**Georgia-Pacific, LLC**
**Fort Bragg, California**

| Mitigation Area | Performance Standard | Field Indicator by Monitoring Year | | | | |
|---|---|---|---|---|---|---|
| | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| **OU-E Lowlands** | | | | | | |
| Ponded Wetlands (Pond 7) | Native wetland plant species richness | 0 | 1 | 1 | 3 | 3 |
| | Native vegetation percent cover | 5 | 25 | 50 | 75 | 80 |
| | Invasive vegetation percent cover[1] | <5 | <5 | <5 | <5 | <5 |
| | Ponded water indicators present | Y | Y | Y | Y | Y |
| Seep Wetland (Wetland E-1) | Native wet meadow plant species richness | 1 | 2 | 3 | 5 | 6 |
| | Native vegetation percent cover | 5 | 20 | 40 | 60 | 70 |
| | Invasive vegetation percent cover[1] | <5 | <5 | <5 | <5 | <5 |
| | Wetland hydrology indictors present | Y | Y | Y | Y | Y |
| Seasonal/Seep Wetland (Wetland E-6 and Establishment Area) | Native wet meadow plant species richness | 1 | 2 | 3 | 4 | 4 |
| | Native vegetation percent cover | 5 | 15 | 25 | 40 | 50 |
| | Invasive vegetation percent cover[1] | <5 | <5 | <5 | <5 | <5 |
| | Depth to groundwater (inches) | <12 | <12 | <12 | <12 | <12 |
| | Wetland hydrology indictors present | Y | Y | Y | Y | Y |
| | Delineated acerage of wetland[2] | -- | -- | -- | -- | 0.54 |
| **South Ponds** | | | | | | |
| Ponded Wetlands (Ponds 2 and 3) | Native wetland plant species richness | 1 | 2 | 3 | 4 | 4 |
| | Emergent native vegetation percent cover[3] | 5 | 25 | 50 | 75 | 80 |
| | Invasive vegetation percent cover[1] | <5 | <5 | <5 | <5 | <5 |
| | Ponded water indicators present | Y | Y | Y | Y | Y |
| **Riparian Area** | | | | | | |
| Seasonal Wetland Ditch (Wetlands L) | Flow unimpeded, channel and bank stable | Y | Y | Y | Y | Y |
| | Invasive vegetation percent cover[1] | <5 | <5 | <5 | <5 | <5 |
| Upland Riparian Habitat | Native vegetation percent cover[4] | 5 | 20 | 40 | 60 | 70 |
| | Planted native tree/shrub percent survival | 100 | 80 | 70 | 60 | 60 |
| | Invasive vegetation percent cover[1] | <5 | <5 | <5 | <5 | <5 |

**Notes:**

[1]Target invasive species are pampas grass (*Cortaderia sp.*), English ivy (*Hedera helix*), ice plant (*Carpobrotus edulis*), and Himalayan blackberry (*Rubus armeniacus*).

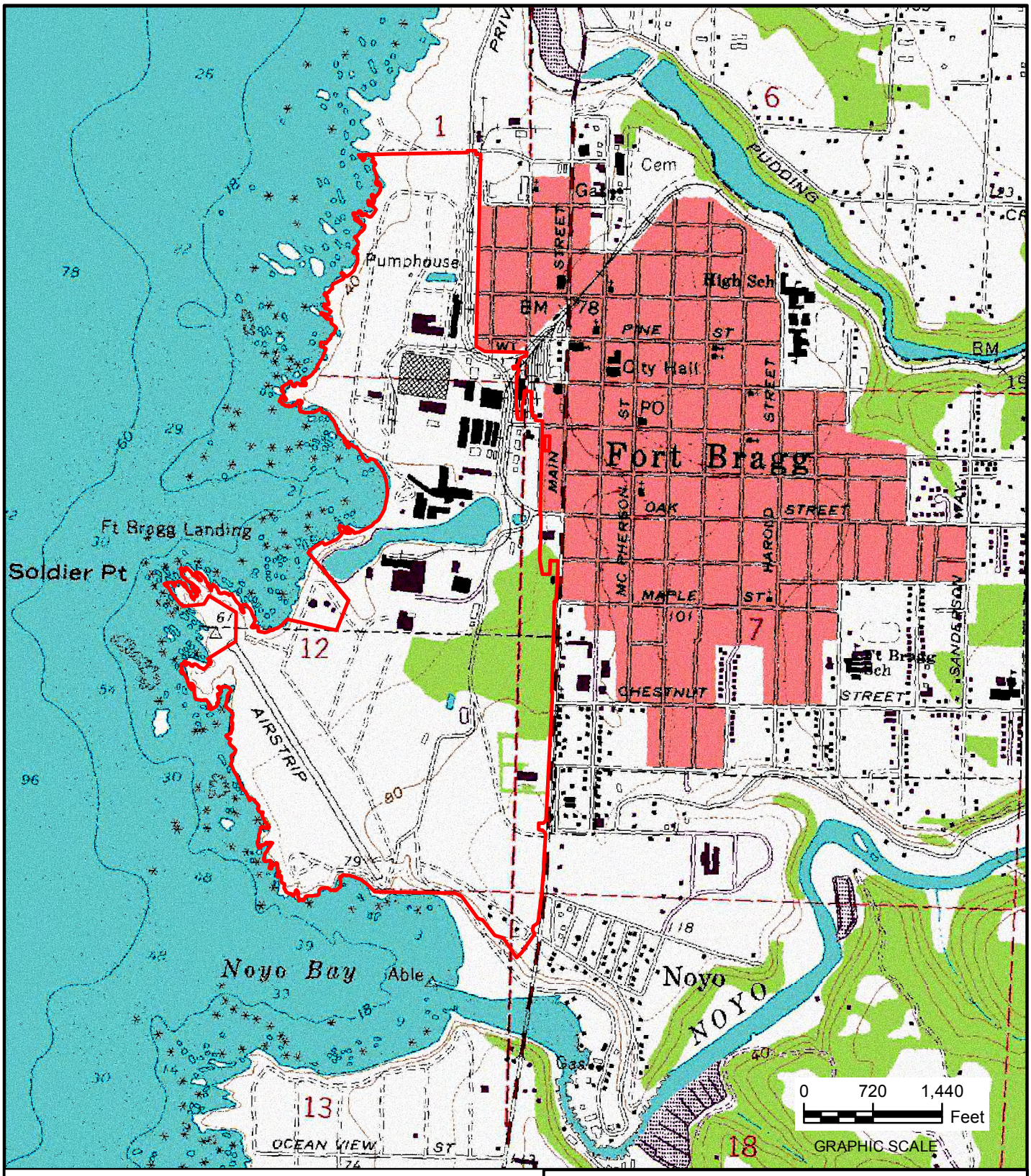
[2]Wetland acreage will only be delineated during the expected final year of mitigation monitoring (i.e. year 5), and the target acreage will be the total added acres of wetland adjacent to Wetland E-6, Pond 6, and Pond 7 compared to 2016 documented conditions.

[3]Percent cover performance standard for Pond 2 is only applicable to vegetated emergent wetland edges that lie approximately 15 to 20 feet from the pond berm edge.

[4]Percent native cover performance standard will be reevaluated during construction to quantitate percent cover by native vegetation prior to construction.

OU-E: Operable Unit E

# FIGURES




LEGEND:

SITE BOUNDARY

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

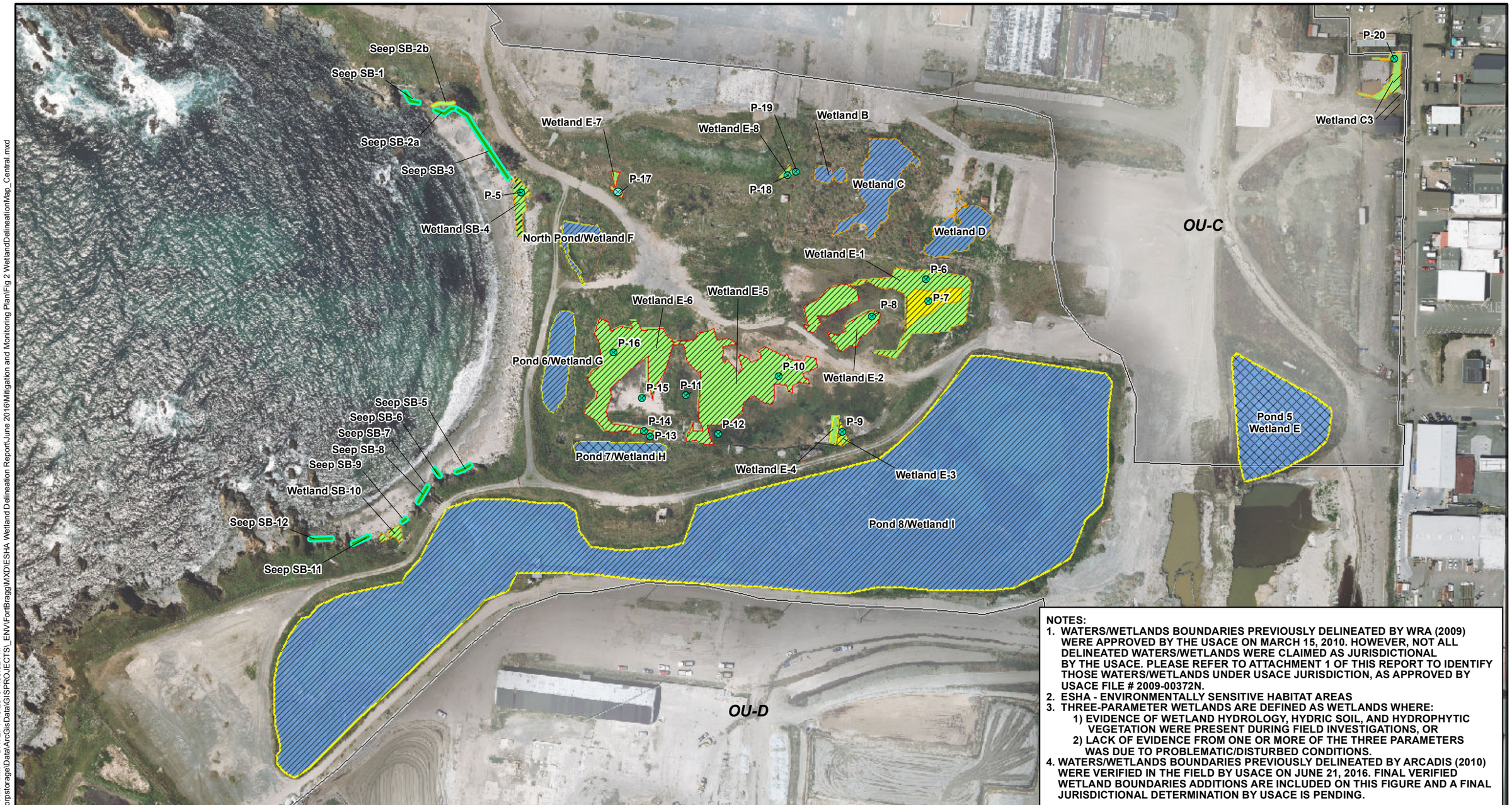
**MITIGATION AND MONITORING PLAN**

## SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1

CITY: HR DIV/GROUP: IM GIS DB: BCG
Project B0066116.0000




NOTES:
1. WATERS/WETLANDS BOUNDARIES PREVIOUSLY DELINEATED BY WRA (2009) WERE APPROVED BY THE USACE ON MARCH 15, 2010. HOWEVER, NOT ALL DELINEATED WATERS/WETLANDS WERE CLAIMED AS JURISDICTIONAL BY THE USACE. PLEASE REFER TO ATTACHMENT 1 OF THIS REPORT TO IDENTIFY THOSE WATERS/WETLANDS UNDER USACE JURISDICTION, AS APPROVED BY USACE FILE # 2009-00372N.
2. ESHA - ENVIRONMENTALLY SENSITIVE HABITAT AREAS
3. THREE-PARAMETER WETLANDS ARE DEFINED AS WETLANDS WHERE:
   1) EVIDENCE OF WETLAND HYDROLOGY, HYDRIC SOIL, AND HYDROPHYTIC VEGETATION WERE PRESENT DURING FIELD INVESTIGATIONS, OR
   2) LACK OF EVIDENCE FROM ONE OR MORE OF THE THREE PARAMETERS WAS DUE TO PROBLEMATIC/DISTURBED CONDITIONS.
4. WATERS/WETLANDS BOUNDARIES PREVIOUSLY DELINEATED BY ARCADIS (2010) WERE VERIFIED IN THE FIELD BY USACE ON JUNE 21, 2016. FINAL VERIFIED WETLAND BOUNDARIES ADDITIONS ARE INCLUDED ON THIS FIGURE AND A FINAL JURISDICTIONAL DETERMINATION BY USACE IS PENDING.

## LEGEND

- SOIL PIT LOCATION
- OPERATIONAL UNIT

**POTENTIAL ENVIRONMENTALLY SENSITIVE HABITAT AREAS (ESHA)**

- WIDTH OF DELINEATED GROUNDWATER SEEP/WATERS OF THE STATE (ARCADIS 2010; NOT YET APPROVED)
- DELINEATED WET ESHA (ARCADIS 2010; NOT YET APPROVED)
- DELINEATED WATERS/WETLANDS (WRA 2009; APPROVED BY THE USACE 3/15/10)
- WET ESHA DELINEATED DURING JUNE 21, 2016 FIELD VERIFICATION WITH USACE
- SEASONAL WETLAND
- WETLAND SEEP
- INDUSTRIAL POND
- BEDROCK GROUNDWATER SEEP
- THREE-PARAMETER WETLAND
- DELINEATED ISOLATED WETLAND (WRA 2009, APPROVED BY THE USACE 3/15/10

0 170 340 Feet
GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

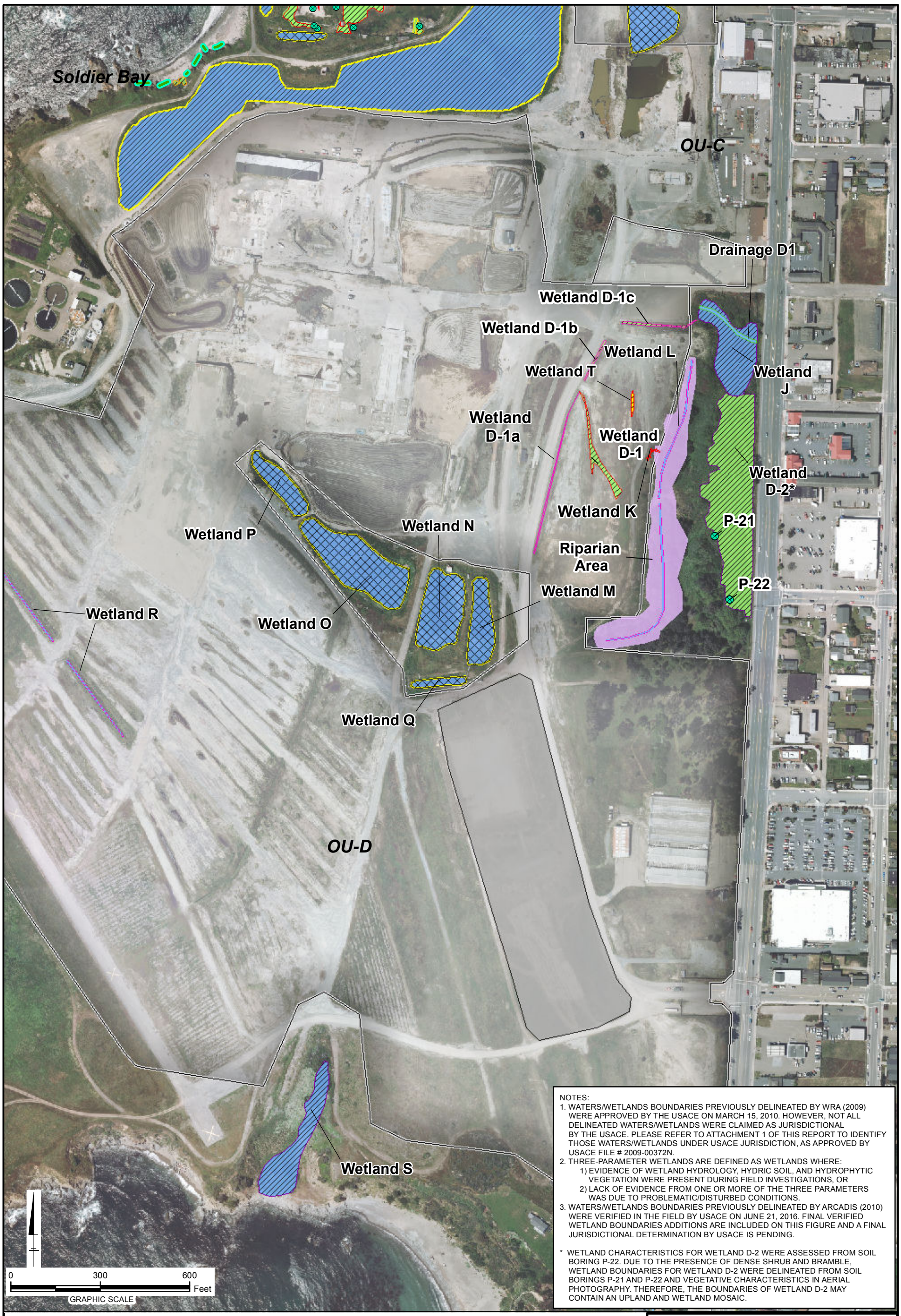
**MITIGATION AND MONITORING PLAN**

**WETLANDS AND OTHER WET ENVIRONMENTALLY SENSITIVE HABITAT AREA - CENTRAL**

ARCADIS Design & Consultancy for natural and built assets

**FIGURE 2**

DIV/GROUP: ENV/MDV DB: sbell LD: PIC: PM: TM: DATE: 7/19/2016 4:53:32 PM
PROJECT: B0066116.0000.00011 PATH: \\corpstorage\Data\ArcGis\Data\GIS\PROJECTS_ENV\FortBragg\MXD\ESHA Wetland Delineation Report\June 2016\Mitigation and Monitoring Plan\Fig 2 WetlandDelineationMap_Central.mxd




NOTES:
1. WATERS/WETLANDS BOUNDARIES PREVIOUSLY DELINEATED BY WRA (2009) WERE APPROVED BY THE USACE ON MARCH 15, 2010. HOWEVER, NOT ALL DELINEATED WATERS/WETLANDS WERE CLAIMED AS JURISDICTIONAL BY THE USACE. PLEASE REFER TO ATTACHMENT 1 OF THIS REPORT TO IDENTIFY THOSE WATERS/WETLANDS UNDER USACE JURISDICTION, AS APPROVED BY USACE FILE # 2009-00372N.
2. THREE-PARAMETER WETLANDS ARE DEFINED AS WETLANDS WHERE:
   1) EVIDENCE OF WETLAND HYDROLOGY, HYDRIC SOIL, AND HYDROPHYTIC VEGETATION WERE PRESENT DURING FIELD INVESTIGATIONS, OR
   2) LACK OF EVIDENCE FROM ONE OR MORE OF THE THREE PARAMETERS WAS DUE TO PROBLEMATIC/DISTURBED CONDITIONS.
3. WATERS/WETLANDS BOUNDARIES PREVIOUSLY DELINEATED BY ARCADIS (2010) WERE VERIFIED IN THE FIELD BY USACE ON JUNE 21, 2016. FINAL VERIFIED WETLAND BOUNDARIES ADDITIONS ARE INCLUDED ON THIS FIGURE AND A FINAL JURISDICTIONAL DETERMINATION BY USACE IS PENDING.

* WETLAND CHARACTERISTICS FOR WETLAND D-2 WERE ASSESSED FROM SOIL BORING P-22. DUE TO THE PRESENCE OF DENSE SHRUB AND BRAMBLE, WETLAND BOUNDARIES FOR WETLAND D-2 WERE DELINEATED FROM SOIL BORINGS P-21 AND P-22 AND VEGETATIVE CHARACTERISTICS IN AERIAL PHOTOGRAPHY. THEREFORE, THE BOUNDARIES OF WETLAND D-2 MAY CONTAIN AN UPLAND AND WETLAND MOSAIC.

## LEGEND

- SOIL PIT LOCATION
- OPERATIONAL UNIT

**POTENTIAL ENVIRONMENTALLY SENSITIVE HABITAT AREAS (ESHA)**

- WIDTH OF DELINEATED GROUNDWATER SEEP/WATERS OF THE STATE (ARCADIS 2010; NOT YET APPROVED)
- RIPARIAN AREA
- DELINEATED WET ESHA (ARCADIS 2010; NOT YET APPROVED)
- DELINEATED WATERS/ WETLANDS (WRA 2009; APPROVED BY THE USACE 3/15/10)
- WET ESHA DELINEATED DURING JUNE 21, 2016 FIELD VERIFICATION WITH USACE
- SEASONAL WETLAND
- WETLAND SEEP
- INDUSTRIAL POND
- SEASONAL WETLAND DITCH
- RIPARIAN WETLAND
- BEDROCK GROUNDWATER SEEP
- PERENNIAL WATERS
- THREE-PARAMETER WETLAND
- AREA NOT EVALUATED BASED ON ONGOING CONSTRUCTION ACTIVITIES
- DELINEATED ISOLATED WETLAND (WRA 2009, APPROVED BY THE USACE 3/15/10

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

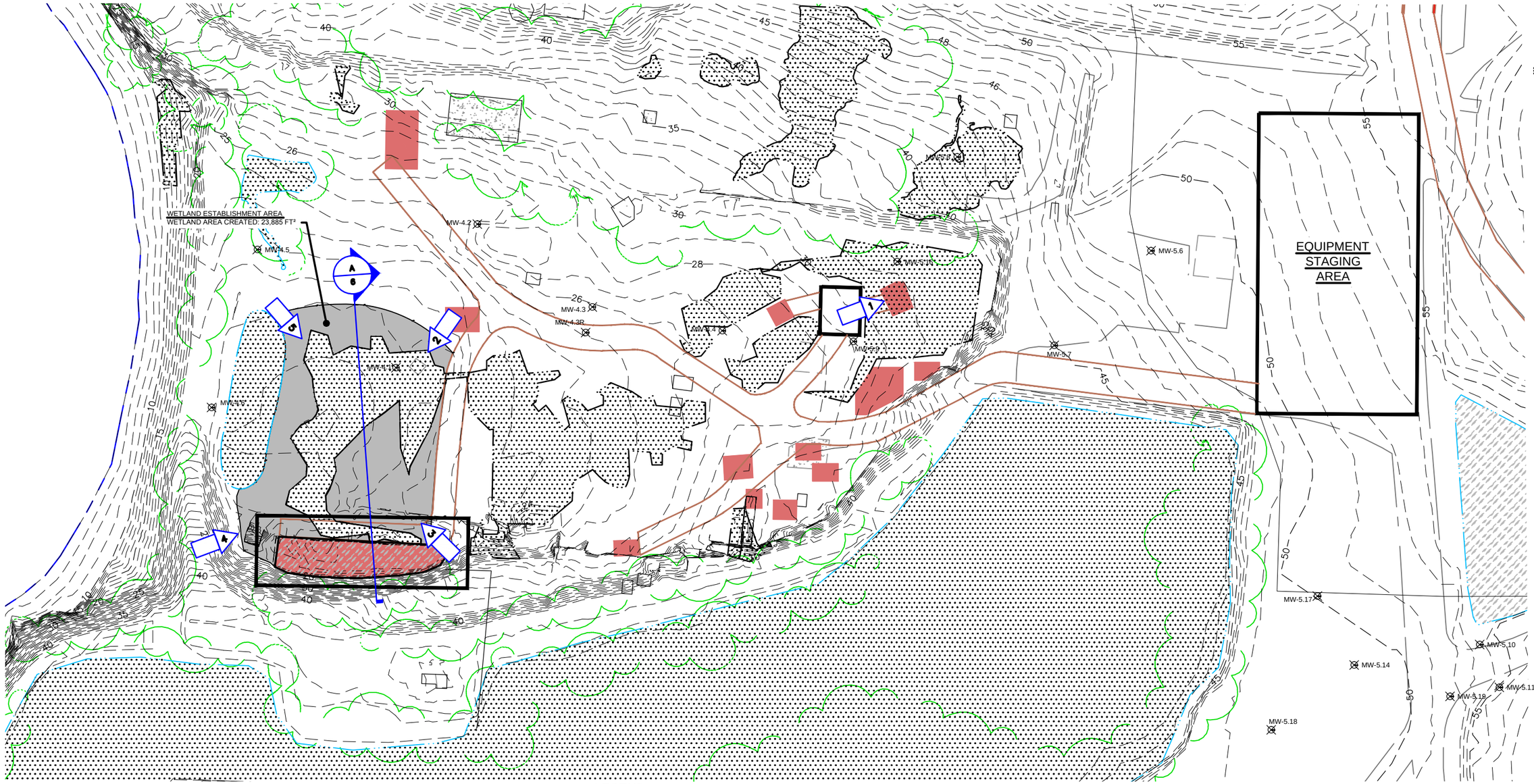
**MITIGATION AND MONITORING PLAN**

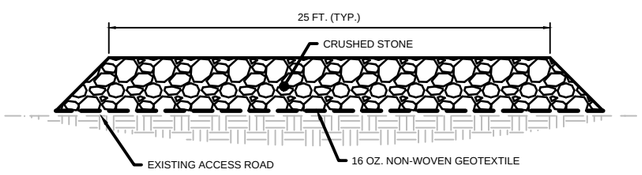
**WETLANDS AND OTHER WET ENVIRONMENTALLY SENSITIVE HABITAT AREA - SOUTHERN**

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

DIV/GROUP: ENV/IMDV DB: sbell LD: PIC: PM: TM: DATE: 7/19/2016 4:56:47 PM
PROJECT: B0066116.0000.00011 PATH: \\corpstorage\Data\ArcGis\Data\GIS\PROJECTS_ENV\FortBragg\MXD\ESHA Wetland Delineation Report\June 2016\Mitigation and Monitoring Plan\Fig 3 WetlandDelineationMap_South.mxd




TEMPORARY GRAVEL PAD (1)
NOT TO SCALE

## LEGEND

- STAGING/WORK AREA BOUNDARY
- ACCESS ROUTES
- PROPOSED EXCAVATION AREAS
- ISOLATED WETLAND AREA (PER 2010 USACE AUTHORIZED JURISDICTIONAL DETERMINATION)
- MW-3.1 MONITORING WELL
- WETLAND ESTABLISHMENT AREA
- WETLAND AREA
- EXISTING CONCRETE
- PROPOSED PHOTO LOCATION AND PHOTOGRAPH DIRECTION

NOTES:

1. APPARENT HORIZONTAL DATNUM IS NAD83 CALIFORNIA STATE PLANES, ZONE II (CA83-IIF).
2. VERTICAL DATUM IS SITE SPECIFIC WITH BASED ON NGS BENCHMARK "SOLDIER" WITH ELEVATION = 64.0' NAVD88.
3. TEMPORARY GRAVEL PAD MAY BE USED IN AREAS WHERE SOFT CONDITIONS IMPEDE MOVEMENT. CRUSHED GRAVEL WILL BE USED TO IMPROVE DRIVING CONDITIONS. GRAVEL PAD WILL BE REMOVED DURING SITE RESTORATION.

0 50' 100'
GRAPHIC SCALE

# DRAFT
NOT FOR CONSTRUCTION

GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

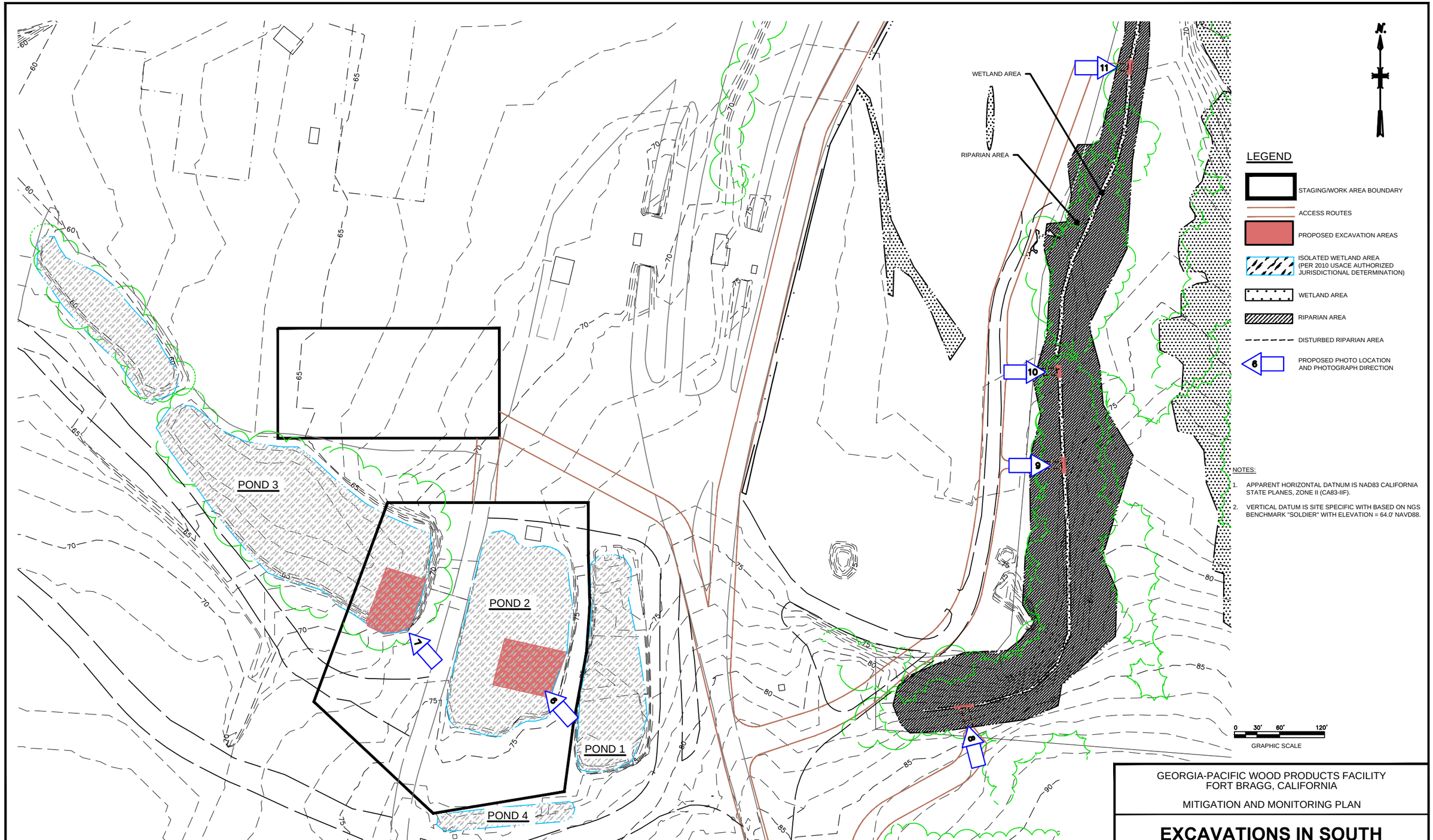
MITIGATION AND MONITORING PLAN

# EXCAVATIONS IN OU-E LOWLANDS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
4

CITY: DETROIT DIV/GROUP: WR DB: LD: PIC: PM: JG TM: LYR:ON=*;OFF=*REF*
G:\PROJECT_Project Stuff\OTHER OFFICE WORK\B0066125.0000 (FORT BRAGG)\B0066142.2016.ED700\PERMIT SUBMITTALS\SUBMITTAL BIO\FIG-4.dwg LAYOUT: 4 SAVED: 7/18/2016 4:23 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 7/19/2016 10:37 AM
BY: DAVIS, GLENN II
XREFS: IMAGES:
0036XLD
SITE-R2004
CONTOURS-R2004
Fort Bragg - Information




DRAFT

NOT FOR CONSTRUCTION

GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

MITIGATION AND MONITORING PLAN

# EXCAVATIONS IN SOUTH PONDS AND RIPARIAN AREA

ARCADIS Design & Consultancy for natural and built assets

FIGURE 5

CITY: DETROIT DIV/GROUP: WR DB: LD: PIC: PM: JG TM: LYR:ON=*;OFF=REF*
G:\PROJECT_Project Stuff\OTHER OFFICE WORK\B0066125.0000 (FORT BRAGG)\B0066142.2016.ED700\PERMIT SUBMITTAL\SUBMITTAL BIO\FIG-5.dwg LAYOUT: 5 SAVED: 7/18/2016 4:16 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 7/19/2016 10:54 AM
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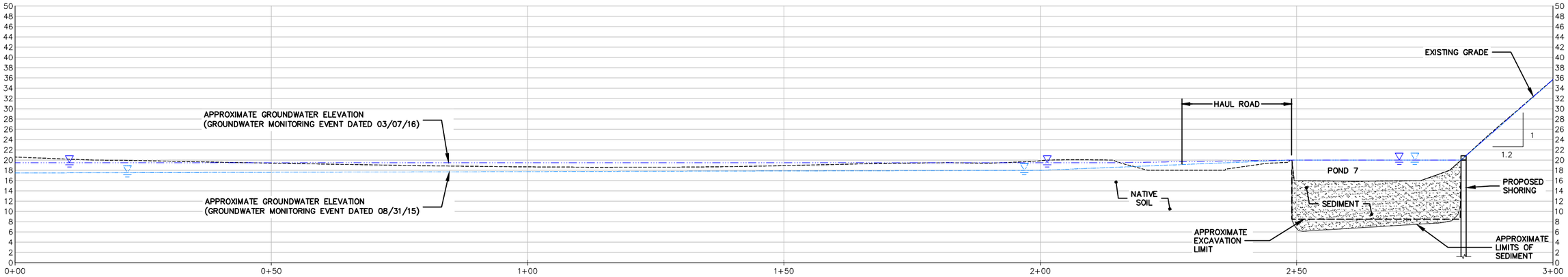
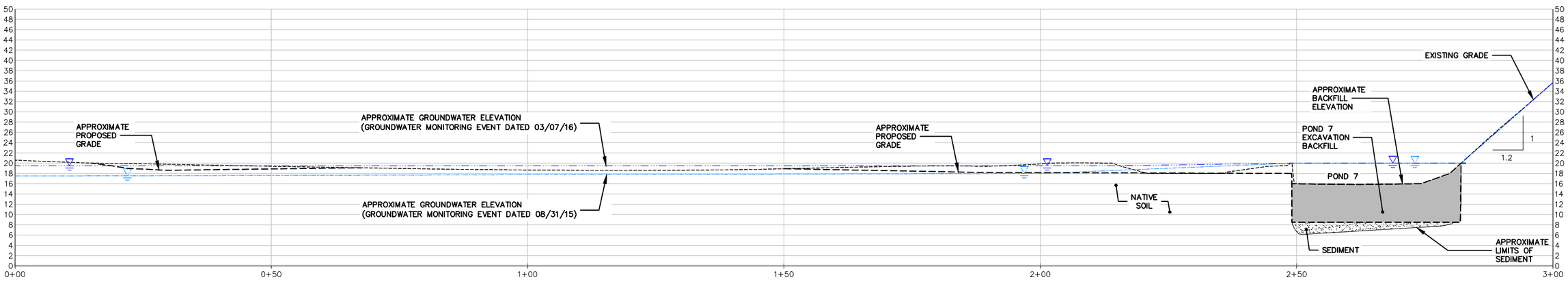
XREFS: IMAGES:
0036XLD
SITE-R2004
CONTOURS-R2004
Fort Bragg - Information




## SECTION A - CURRENT ELEVATION AND EXCAVATION LIMITS

0 10' 20'
GRAPHIC SCALE




## SECTION A - WETLAND ESTABLISHMENT ELEVATION

0 10' 20'
GRAPHIC SCALE

NOTES:

1. EXTENT OF NATIVE SAND INFERRED BASED ON DATA PRESENTED IN THE DATA SUMMARY REPORT OPERABLE UNITE E – POND SEDIMENT, PRODUCED BY ARCADIS IN MAY OF 2009.
2. ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88).
3. FINAL GRADING FOR MITIGATION AREA WILL HAVE GENTLE UNDULATIONS AND SLIGHT IRREGULARITY TO CAPTURE WATER. GRADING WILL BE BASED ON FIELD CONDITIONS UNDER THE SUPERVISION OF A RESTORATION ECOLOGIST.
4. PROPOSED EXCAVATION LIMITS AND ELEVATIONS ARE APPROXIMATE AND MAY VARY BASED ON FIELD CONDITIONS.
5. POND 7 REMEDIAL AREA SHALL BE EXCAVATED PRIOR TO WETLAND MITIGATION EXCAVATION AREA.

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GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

MITIGATION AND MONITORING PLAN

**WETLAND ESTABLISHMENT AREA ELEVATIONS**

ARCADIS Design & Consultancy for natural and built assets

FIGURE
6

XREFS: 0039XLD
IMAGES:
PROJECTNAME: ---
Fort Bragg - Information

# APPENDIX A

## California Rapid Assessment Method Data

**Pond 7**

| Attribute | Metric | Value | Rating | Value |
|---|---|---|---|---|
| Landscape Connectivity | Average Percentage of Transect Length with Wetland Habitat | 37% | C | 6 |
| Buffers | Percent of AA Perimeter with Buffer | 100% | A | 12 |
| | Average Buffer Width | 183.00 | B | 9 |
| | Buffer Condition | Highly disturbed | D | 3 |
| Raw Attribute Score | | | | 11.58363 |
| Final Attribute Score | | | | 48% |

**Wetland N (Pond 2)**

| Attribute | Metric | Value | Rating | Value |
|---|---|---|---|---|
| Landscape Connectivity | Average Percentage of Transect Length with Wetland Habitat | 5% | D | 3 |
| Buffers | Percent of AA Perimeter with Buffer | 100% | A | 12 |
| | Average Buffer Width | 83 | C | 6 |
| | Buffer Condition | Highly disturbed | D | 3 |
| Raw Attribute Score | | | | 8.04537849 |
| Final Attribute Score | | | | 34% |

**Wetland E-5 and E-6**

| Attribute | Metric | Value | Rating | Value |
|---|---|---|---|---|
| Landscape Connectivity | Average Percentage of Transect Length with Wetland Habitat | 34% | C | 6 |
| Buffers | Percent of AA Perimeter with Buffer | 100% | A | 12 |
| | Average Buffer Width | 175 | B | 9 |
| | Buffer Condition | Highly disturbed | D | 3 |
| Raw Attribute Score | | | | 11.58363 |
| Final Attribute Score | | | | 48% |

**Wetland O (Pond 3 SE)**

| Attribute | Metric | Value | Rating | Value |
|---|---|---|---|---|
| Landscape Connectivity | Average Percentage of Transect Length with Wetland Habitat | 8% | C | 6 |
| Buffers | Percent of AA Perimeter with Buffer | 54% | B | 9 |
| | Average Buffer Width | 84 | C | 6 |
| | Buffer Condition | Highly disturbed | D | 3 |
| Raw Attribute Score | | | | 10.6952537 |
| Final Attribute Score | | | | 45% |

**Wetland E-1**

| Attribute | Metric | Value | Rating | Value |
|---|---|---|---|---|
| Landscape Connectivity | Average Percentage of Transect Length with Wetland Habitat | 22% | D | 3 |
| Buffers | Percent of AA Perimeter with Buffer | 100% | A | 12 |
| | Average Buffer Width | 140 | B | 9 |
| | Buffer Condition | Highly disturbed | D | 3 |
| Raw Attribute Score | | | | 8.583629 |
| Final Attribute Score | | | | 36% |

**Pond 7**

| Plant Layer | Co-dominant Species Observed | Native (N) or Invasive (I) |
|---|---|---|
| Short | Hydrocotyl ranunculoides | N |
| Medium | Oenanthe sarmentosa | N |
| Tall | Typha latifolia | N |
| 3 layers | 3 co-dominant species | 0% invasive |

**Wetland N (Pond 2)**

| Plant Layer | Co-dominant Species Observed | Native (N) or Invasive (I) |
|---|---|---|
| Short | Myriophyllum aquaticum | I |
| Medium | Cakile edula | N |
| Tall | Typha latifolia | N |
| 3 layers | 3 co-dominant species | 33% invasive |

**Wetland E-5 and E-6**

| Plant Layer | Co-dominant Species Observed | Native (N) or Invasive (I) |
|---|---|---|
| Short | Cotula coronopifolia | I |
| | Grass (unknown) | - |
| | Plantago coronopus | N |
| | Lotus corniculatus | N |
| Medium | Holcus lanatus | I |
| | Deschampsia cespitosa | N |
| | Cyperus eragrostis | N |
| Tall | Cortaderia selloana | I |
| 3 layers | 8 co-dominant species | ~38% invasive |

**Wetland O (Pond 3 SE)**

| Plant Layer | Co-dominant Species Observed | Native (N) or Invasive (I) |
|---|---|---|
| Short | Lemna minor | N |
| Medium | Scirpus microcarpus | N |
| | Carex obnupta | N |
| | Juncus effusus | N |
| Tall | Typha latifolia | N |
| 3 layers | 5 co-dominant species | 0% invasive |

**Wetland E-1**

| Plant Layer | Co-dominant Species Observed | Native (N) or Invasive (I) |
|---|---|---|
| Short | Unknown | - |
| | Juncus bolanderi | N |
| | Deschampsia cespitosa | N |
| Medium | Cyperus eragrostis | N |
| | Deschampsia cespitosa | N |
| | Polypogon monspeliensis | I |
| | Juncus effusus | N |
| Tall | Cortaderia jubata | I |
| | Typha latifolia | N |
| 3 layers | 9 co-dominant species | ~ 22% invasive |

| AA Name: Pond 7 | | | | (m/d/y) | 6 | 15 | 10 |
|---|---|---|---|---|---|---|---|
| **Attributes and Metrics** | | **Scores** | | | | | |
| **Buffer and Landscape Context** | | | | | | | |
| Landscape Connectivity (D) | | C | | | | | |
| *Buffer submetric A: Percent of AA with Buffer* | A | | | | | | |
| *Buffer submetric B: Average Buffer Width* | B | | | | | | |
| *Buffer submetric C: Buffer Condition* | D | | | | | | |
| D + [ C x (A x B) $^{1/2}$] $^{1/2}$ = **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 11.58 | 48% | (Raw Score/24)100 | | | |
| **Hydrology** | | | | | | | |
| Water Source | | C | | | | | |
| Hydroperiod or Channel Stability | | C | | | | | |
| Hydrologic Connectivity | | D | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 15 | 42% | (Raw Score/36)100 | | | |
| **Physical Structure** | | | | | | | |
| Structural Patch Richness | | D | | | | | |
| Topographic Complexity | | D | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 6 | 25% | (Raw Score/24)100 | | | |
| **Biotic Structure** | | | | | | | |
| *Plant Community submetric A: Number of Plant Layers* | B | | | | | | |
| *Plant Community submetric B: Number of Co-dominant species* | D | | | | | | |
| *Plant Community submetric C: Percent Invasion* | A | | | | | | |
| Plant Community Metric *(average of submetrics A-C)* | | 8 | | | | | |
| Horizontal Interspersion and Zonation | | C | | | | | |
| Vertical Biotic Structure | | C | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 20 | 56% | (Raw Score/36)100 | | | |
| **Overall AA Score** | | 43% | | **Average of Final Attribute Scores** | | | |

| AA Name: Wetland E-5 and E-6 | | | | (m/d/y) | 12 | 7 | 10 |
|---|---|---|---|---|---|---|---|
| **Attributes and Metrics** | | **Scores** | | | | | |
| **Buffer and Landscape Context** | | | | | | | |
| Landscape Connectivity (D) | | C | | | | | |
| *Buffer submetric A: Percent of AA with Buffer* | A | | | | | | |
| *Buffer submetric B: Average Buffer Width* | B | | | | | | |
| *Buffer submetric C: Buffer Condition* | D | | | | | | |
| D + [ C x (A x B) $^{1/2}$] $^{1/2}$ = **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 11.58 | 48% | (Raw Score/24)100 | | | |
| **Hydrology** | | | | | | | |
| Water Source | | A | | | | | |
| Hydroperiod or Channel Stability | | B | | | | | |
| Hydrologic Connectivity | | A | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 33 | 92% | (Raw Score/36)100 | | | |
| **Physical Structure** | | | | | | | |
| Structural Patch Richness | | D | | | | | |
| Topographic Complexity | | C | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 9 | 38% | (Raw Score/24)100 | | | |
| **Biotic Structure** | | | | | | | |
| *Plant Community submetric A: Number of Plant Layers* | B | | | | | | |
| *Plant Community submetric B: Number of Co-dominant species* | C | | | | | | |
| *Plant Community submetric C: Percent Invasion* | C | | | | | | |
| Plant Community Metric *(average of submetrics A-C)* | | 7 | | | | | |
| Horizontal Interspersion and Zonation | | C | | | | | |
| Vertical Biotic Structure | | C | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 19 | 53% | (Raw Score/36)100 | | | |
| **Overall AA Score** | | 58% | | **Average of Final Attribute Scores** | | | |

| AA Name: Wetland E-1 | | | | (m/d/y) | 12 | 7 | 10 |
|---|---|---|---|---|---|---|---|
| **Attributes and Metrics** | | **Scores** | | | | | |
| **Buffer and Landscape Context** | | | | | | | |
| Landscape Connectivity (D) | | D | | | | | |
| *Buffer submetric A: Percent of AA with Buffer* | A | | | | | | |
| *Buffer submetric B: Average Buffer Width* | B | | | | | | |
| *Buffer submetric C: Buffer Condition* | D | | | | | | |
| D + [ C x (A x B) $^{1/2}$] $^{1/2}$ = **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 8.584 | 36% | (Raw Score/24)100 | | | |
| **Hydrology** | | | | | | | |
| Water Source | | A | | | | | |
| Hydroperiod or Channel Stability | | B | | | | | |
| Hydrologic Connectivity | | B | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 30 | 83% | (Raw Score/36)100 | | | |
| **Physical Structure** | | | | | | | |
| Structural Patch Richness | | D | | | | | |
| Topographic Complexity | | C | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 9 | 38% | (Raw Score/24)100 | | | |
| **Biotic Structure** | | | | | | | |
| *Plant Community submetric A: Number of Plant Layers* | B | | | | | | |
| *Plant Community submetric B: Number of Co-dominant species* | B | | | | | | |
| *Plant Community submetric C: Percent Invasion* | B | | | | | | |
| Plant Community Metric *(average of submetrics A-C)* | | 9 | | | | | |
| Horizontal Interspersion and Zonation | | B | | | | | |
| Vertical Biotic Structure | | B | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 26 | 72% | (Raw Score/36)100 | | | |
| **Overall AA Score** | | 57% | | **Average of Final Attribute Scores** | | | |

| AA Name: Wetland N (Pond 2) | | | | (m/d/y) | 12 | 7 | 10 |
|---|---|---|---|---|---|---|---|
| **Attributes and Metrics** | | **Scores** | | | | | |
| **Buffer and Landscape Context** | | | | | | | |
| Landscape Connectivity (D) | | D | | | | | |
| *Buffer submetric A: Percent of AA with Buffer* | A | | | | | | |
| *Buffer submetric B: Average Buffer Width* | C | | | | | | |
| *Buffer submetric C: Buffer Condition* | D | | | | | | |
| D + [ C x (A x B) $^{1/2}$] $^{1/2}$ = **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 8.045 | 34% | (Raw Score/24)100 | | | |
| **Hydrology** | | | | | | | |
| Water Source | | C | | | | | |
| Hydroperiod or Channel Stability | | D | | | | | |
| Hydrologic Connectivity | | D | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 12 | 33% | (Raw Score/36)100 | | | |
| **Physical Structure** | | | | | | | |
| Structural Patch Richness | | D | | | | | |
| Topographic Complexity | | C | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 9 | 38% | (Raw Score/24)100 | | | |
| **Biotic Structure** | | | | | | | |
| *Plant Community submetric A: Number of Plant Layers* | B | | | | | | |
| *Plant Community submetric B: Number of Co-dominant species* | D | | | | | | |
| *Plant Community submetric C: Percent Invasion* | C | | | | | | |
| Plant Community Metric *(average of submetrics A-C)* | | 6 | | | | | |
| Horizontal Interspersion and Zonation | | C | | | | | |
| Vertical Biotic Structure | | A | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 24 | 67% | (Raw Score/36)100 | | | |
| **Overall AA Score** | | 43% | | **Average of Final Attribute Scores** | | | |

| AA Name: Wetland O (Pond 3 SE) | | | | (m/d/y) | 12 | 7 | 10 |
|---|---|---|---|---|---|---|---|
| **Attributes and Metrics** | | **Scores** | | | | | |
| **Buffer and Landscape Context** | | | | | | | |
| Landscape Connectivity (D) | | C | | | | | |
| *Buffer submetric A: Percent of AA with Buffer* | B | | | | | | |
| *Buffer submetric B: Average Buffer Width* | C | | | | | | |
| *Buffer submetric C: Buffer Condition* | D | | | | | | |
| D + [ C x (A x B) $^{1/2}$] $^{1/2}$ = **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 10.7 | 45% | (Raw Score/24)100 | | | |
| **Hydrology** | | | | | | | |
| Water Source | | D | | | | | |
| Hydroperiod or Channel Stability | | D | | | | | |
| Hydrologic Connectivity | | D | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 9 | 25% | (Raw Score/36)100 | | | |
| **Physical Structure** | | | | | | | |
| Structural Patch Richness | | D | | | | | |
| Topographic Complexity | | D | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 6 | 25% | (Raw Score/24)100 | | | |
| **Biotic Structure** | | | | | | | |
| *Plant Community submetric A: Number of Plant Layers* | B | | | | | | |
| *Plant Community submetric B: Number of Co-dominant species* | D | | | | | | |
| *Plant Community submetric C: Percent Invasion* | A | | | | | | |
| Plant Community Metric *(average of submetrics A-C)* | | 8 | | | | | |
| Horizontal Interspersion and Zonation | | C | | | | | |
| Vertical Biotic Structure | | A | | | | | |
| **Attribute Score** | | Raw | Final | Final Attribute Score = | | | |
| | | 26 | 72% | (Raw Score/36)100 | | | |
| **Overall AA Score** | | 42% | | **Average of Final Attribute Scores** | | | |

Arcadis U.S., Inc.

2999 Oak Road

Suite 300

Walnut Creek, California  94597

Tel 925 274 1100

Fax 925 274 1103

**www.arcadis.com**

**ADDENDUM TO THE FINAL SUBSEQUENT ENVIRONMENTAL IMPACT REPORT FOR THE FORT BRAGG COASTAL RESTORATION AND TRAIL PROJECT PHASE II PROJECT**
**JULY 20 2016**

## I. INTRODUCTION

Pursuant to the provisions of the California Environmental Quality Act (CEQA), the City of Fort Bragg, (City), acting in the capacity of Lead Agency, distributed a Draft Subsequent Environmental Impact Report (State Clearinghouse No.: 2014102014) for the Fort Bragg Coastal Restoration and Trail Project Phase II (Coastal Trail) for public review and comment from November 25, 2014 to January 8, 2015. The Final Subsequent Environmental Impact Report (SEIR) was certified by the City on January 12, 2015.

As a Responsible Agency, the Department of Toxic Substances Control (DTSC) have amendied the Final SEIR to incorporate activities anticipated as a result of implementation of a draft Interim Removal Action Workplan (RAW) and related activities, for Operating Unit (OU-E) (approximately 12 acres) which was completed after adoption of the Final SEIR. This Addendum has been prepared to supplement the project description and the analysis in the SEIR.

DTSC and the City have determined that an Addendum is the appropriate subsequent CEQA document for the RAW activities pursuant to the CEQA Guidelines [Cal. Code Regs., tit. 14, § 15164(b)] because none of the conditions described in Section 15162 of the CEQA guidelines apply. Pursuant to Section 15164(c) of the CEQA Guidelines, this Addendum is not being circulated for public review and comment, but will be attached to the Final SEIR. A Notice of Determination will be filed with the State of California Office of Planning and Research, State Clearinghouse following approval of the RAW.

## II. BACKGROUND

The SEIR for the Coastal Trail Project evaluated impacts resulting from restoration, construction of a multi-use trail, installation of pedestrian-only side trails, and installation of related improvements. The restoration would encompass approximately five acres between the bluff edge and the City's property line on the north side of the Waste Water Treatment Plant. Restoration would involve creating locally appropriate native habitats and include the importation of approximately 5,000 cubic yards of a mix of sand, soil and composted grain/woodchips for restoration purposes. The multi-use trail would be approximately 0.8 miles in length and would be 8 feet wide, constructed on top of existing developed areas throughout the length of the project site. The pedestrian-only side trails will be installed in the area known as Johnson point.

While the SEIR provided information regarding the contamination at the former Georgia-Pacific Lumber Mill Site (Mill Site) and the need for remediation to occur in the OU-E area, the document failed to identify DTSC as a CEQA Responsible Agency or provide information regarding the possible impacts that would occur from the remedial activities needed at OU-E. DTSC has determined that project elements have changed: detailed remedial activities described in the Draft Removal Action Work Plan - Operable Unit E (Arcadis, May 2016) must be incorporated as part of the Coastal Trail Project to ensure adequate environmental impact review for all components of the Coastal Trail Project.

## III. PURPOSE OF ADDENDUM AND CEQA REQUIREMENTS

The purpose of this Addendum is to address the environmental effects of the DTSC's RAW for OU-E, as set forth in the Explanation of Significant Differences, in order to determine whether any significant environmental impacts which were not identified in the SEIR would result, or, whether previously identified significant impacts would be substantially more severe. This document has been prepared in accordance with the CEQA Guidelines, [Cal. Code Regs., tit. 14, §15164 and §15162].

The CEQA Guidelines[Cal. Code Regs., tit. 14, §15162(a)] provides that, for a project covered by a certified Environmental Impact Report (EIR) or adopted negative declaration, preparation of a subsequent EIR or negative declaration rather than an Addendum is required only if one or more of the following conditions occur:

1. *Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;*

2. *Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of the previously identified significant effects; or*

3. *New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time of the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:*

   *a) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;*

   *b) Significant effects previously examined will be substantially more severe than shown in the previous EIR or negative declaration;*

   *c) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or*

   *d) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR or negative declaration would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measures or alternative.*

Cal. Code Regs.,tit., § 15164(a) and (b) of the CEQA Guidelines state:

*(a) The lead agency or a responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred.*

*(b) An addendum to an adopted negative declaration may be prepared if only minor technical changes or additions are necessary <u>or</u> none of the conditions described in*

*Section 15162 calling for the preparation of a subsequent EIR or negative declaration have occurred."* (underline added)

Based on the analysis presented herein, it has been determined that an Addendum to the SEIR is the appropriate CEQA document to address the RAW activities given that none of the conditions described in the CEQA Guidelines [ Cal. Code Regs., tit. 14, § 15162] calling for the preparation of a subsequent EIR or negative declaration have occurred, but that there are changes and additions necessary to attach to the certified SEIR. The environmental analysis relies on the analyses completed in the SEIR and directly references the SEIR where appropriate.

## IV. APPLICATION OF PREVIOUSLY CERTIFIED ENVIRONMENTAL DOCUMENTATION TO OU-E RAW

### Description of OU-E RAW within SEIR

The Project Description in the SEIR for the Coastal Trail project indicated that the project site included an approximately 12 acre area (OU-E), formerly occupied by the Georgia-Pacific Lumber Mill Site. The project's purpose includes 1) restoring native habitats throughout the proposed parkland and 2) establishing public access to the site. The existing conditions at the Coastal Trail project site that require remediation are described, utilizing information from the Final Remedial Investigation Report Operable Unit E (Arcadis, 2013). The Areas of Concern (AOCs) with respective contaminants of concern (COCs) are also described and include metals, PAHs, dioxins/furans, TPH, PCB, and VOCs.

The City reviewed technical reports that had been prepared in support of remediation activities, and specified that Georgia-Pacific would be submitting a Remedial Action Plan (RAP) for addressing the types and areas of contamination. This RAP will provide the final remedial plan for the entire 415 acre site, including OU-E. The SEIR revealed that there would be a potentially significant impact for the Coastal Trail project to expose visitors to hazardous substances that pose a risk to human health if the areas within OU-E were not remediated. This impact was mitigated to a less-than-significant level by prohibiting Coastal Trail project activities within the Mill Complex Area (a portion of OU-E) until after implementation of the RAP for the entire site, including OU-E. Subsequent to the certification of the SEIR, DTSC determined that prior to proceeding with the RAP for the entire site, an interim RAW for OU-E would be required. This RAW would remediate the area that would be affected by the proposed Coastal Trail project and would provide the necessary protection for human health that the RAP, as noted in the Final SEIR, would have done. The implementation of the RAW will serve the same function in OU-E that the RAP would have done and will serve as the mitigation for the impact identified in the SEIR.

### Overview of OU-E RAW Activities

The OU-E RAW is an interim action to address impacted soil, groundwater, and sediment within OU-E on an accelerated basis to support the construction and public use of the Coastal Trail project, which is anticipated to occur in 2017. Once the proposed RAW activities are complete, risks to public health and the environment will be mitigated and the areas identified in the RAW will be acceptable for the planned recreational use.

DTSC's removal and restoration activities primarily consist of excavation of soil or sediment to reduce overall potential risk to human health and ecological receptors, as well as restore areas with native species to improve aquatic ecosystems. In total, proposed OU-E excavation activities amount to

removing approximately 3,500 cubic yards (cy) at depths between 0.5 and 7.5 feet below ground surface (bgs) in an approximate 24,630 square foot (sf) footprint.

As a CEQA Responsible Agency, DTSC's remedial activities as outlined in the OU-E RAW must be included within the SEIR because implementation of the Coastal Trail project cannot occur without approval and completion of the RAW activities.

***Therefore, the following has been added to the Project Description of the SEIR as Section 2.4.5, beginning on page 2-9 to ensure the document includes all reasonably foreseeable related activities***:

The Removal Action Workplan calls for removing and transporting approximately 3,500 cubic yards (cy) of chemically-impacted soil to an appropriate, permitted off-Site landfill for disposal. The soil would be removed over an area of less than one acre, within a 12 acre OU-E site.

Lowland Terrestrial Soil

The *Baseline Human Health and Ecological Risk Assessment, Operable Unit E* (BHHERA; Arcadis U.S., Inc. 2015) identified 12 sample locations with elevated concentrations of either benzo(a)pyrene (B(a)P) toxic equivalent (TEQ), 2,3,7,8-TCDD (dioxin) TEQ, or lead, which were developed into eight areas for hot spot excavation. Adding one additional hot spot excavation area for total petroleum hydrocarbons as diesel (TPHd), there are nine areas for hot spot excavation located in the terrestrial lowland (Figures 4 through 7 of the OU-E RAW, respectively). The three excavations for B(a)P TEQ amount to approximately 607 cy with a maximum excavation depth of 4 feet below ground surface (bgs). The one excavation for dioxin TEQ amounts to approximately 43 cy with a depth of 3 feet bgs. The seven lead excavations amount to approximately 666 cy with a maximum excavation depth of 6 feet bgs. The TPHd hot Soil Contamination spot excavation area amounts to approximately 194 cy with an excavation depth of 6 feet bgs. Sidewall and bottom confirmation samples will be collected during the excavations. Soil will be excavated using conventional construction equipment and would be either temporarily stockpiled and managed to prevent dust and odors or directly loaded into truck beds.

Approximately 175 truckloads will be required to transport soil for disposal to a nonhazardous waste disposal facility. Clean on-site materials will be utilized for excavation backfill material. If on-site material is not available, additional truckloads will be required to transport clean imported soil for backfill, obtained from a local source and tested for quality control. Assuming a production of 200 cy per day, 1 day for mobilization/demobilization activities, and 0.5 day for delineation activities, excavation is expected to take 14 - 18 days.

Ponds 2 and 3 (Southern Ponds) Sediment

Sediment in Ponds 2 and 3 is proposed to be excavated due to elevated dioxin TEQ concentrations. Excavation in Pond 2 amounts to approximately 474 cy with excavation to a depth of 2 feet bgs, and hot spot excavation in Pond 3 amounts to approximately 222 cy with excavation to a depth of 1 foot bgs (Figure 8 of the OU-E RAW). Sidewall and bottom confirmation samples will be collected. Sediment will be excavated using conventional construction equipment and would be either temporarily stockpiled and managed to prevent dust and odors or directly loaded into truck beds. Assuming a load capacity of 20 cy per truck, approximately 35 truckloads will be required to transport sediment for disposal to a nonhazardous waste disposal facility. The pond extent will be reseeded with native plant species to restore ecological conditions. The pond depth may be allowed to increase depending on the resulting geometry and agency permit requirements. Assuming a production of 200 cy per day, 0.5 day for reseeding activities, and 1 day for

mobilization/demobilization activities, implementation is expected to take 5 days.

Pond 7 Sediment

Sediment in Pond 7 is proposed to be excavated due to elevated dioxin TEQ concentrations. Resulting excavation amounts to approximately 1,200 cy with excavation to a depth of 7.5 feet bgs (Figure 9 of the OU-E RAW). Sidewall and bottom confirmation samples will be collected. Sediment will be excavated using conventional construction equipment and would be either temporarily stockpiled and managed to prevent dust and odors or directly loaded into truck beds. Assuming a load capacity of 20 cy per truck, approximately 60 truckloads will be required to transport sediment for disposal to a nonhazardous waste disposal facility. The pond depth and size may be allowed to increase depending on the resulting geometry and agency permit requirements. Assuming a production of 200 cy per day and 1 day for mobilization/demobilization activities, implementation is expected to take 7 days.

Riparian Area

Sediment in the riparian area is proposed to be excavated due to elevated dioxin TEQ concentrations. Approximately 32 cy with excavation to a depth of 0.5 feet bgs will be excavated using conventional construction equipment and would be either temporarily stockpiled and managed to prevent dust and odors or directly loaded into truck beds. Sidewall and bottom confirmation samples will be collected during the excavations. Assuming a load capacity of 20 cy per truck, approximately 2 truckloads will be required to transport sediment for disposal to a nonhazardous waste disposal facility. The excavation extent will be reseeded with native plant species to restore ecological conditions. Implementation is expected to take 1-2 days.

**Wetland Creation**

RAW activities will impact approximately 0.064 acre of waters of the United States (0.055 acre of wetland habitat and 0.009 acre of stream habitat), and approximately 0.476 acre of waters of the State (which includes the 0.064 acre of impacts to waters of the United States), and approximately 0.020 acre of upland riparian habitat. The impacts will be temporary in nature, and restoration activities would occur immediately following completion of OU-E Removal and through a five year monitoring and adaptive management program.

The applicant proposes to create in-kind, in-place restoration of wetland, stream, and upland riparian habitats at a 1:1 ratio and establish 0.548 acre of new wetlands in the portion of OU-E immediately north of Pond 7 and to the east of Pond 6. The proposed restoration and wetland establishment activities will result in a mitigation ratio of approximately 16:1 for waters of the United States and 2.2:1 for waters of the State. The applicant also proposes to implement a wetland mitigation and adaptive management plan (Attachment 2) to ensure successful establishment of a native plant community within the impacted and established wetlands.

**Well Decommissioning**

Fifty-seven of the wells proposed for decommissioning are located in areas recommended for no further action (NFA) for groundwater, or are locations at which sampling has been discontinued per the approved CMP and associated updates. See Attachment 4 to view wells proposed for decommissioning. Thirty-one monitoring wells located in OU-B, OU-C, OU-D, and OU-E are proposed for decommissioning due to historical concentrations of COIs primarily below detection limits or below applicable screening levels. Six monitoring wells are proposed for decommissioning in OU-D and three monitoring wells are proposed for decommissioning in OU-E because existing infrastructure is sufficient to characterize groundwater quality. Three monitoring wells are proposed for decommissioning in OU-A and one well is proposed for decommissioning in OU-D due to

remediation and redevelopment of the applicable parcels to form the City of Fort Bragg Coastal Trail Property, which are also within areas with NFA status. Two monitoring wells and two piezometers are proposed for decommissioning in OU-D due to removal of the consolidation cell. Three injection wells are proposed for decommissioning in OU-D due to association with the former in-situ chemical oxidation (ISCO) treatability test. ISCO was not recommended after further evaluation. Six former water supply wells are proposed for decommissioning in OU-C and OU-D because they are no longer needed for water supply and are not used for monitoring groundwater quality.
One of the wells proposed for decommissioning is actively monitored. Completing the excavation activities will require the abandonment of currently sampled monitoring well MW-3.12. Following implementation of the excavation activities, a replacement monitoring well MW-3.12R is proposed to be installed with similar construction in the same vicinity or slightly down gradient of abandoned MW-3.12 and developed for routine sampling.

**Fill Four Pits with Clean Fill**
Four pits, remnants from the industrial operations, are located in the lowland area (see Attachment 5). These pits do not have wetland features, because they are deep non-vegetated pits. The applicant proposes to fill these pits with clean soil as they are an attractive nuisance that could result in injury, should people trespass and fall into one of the pits.

***end of addition to the Final SEIR Project Description***

**Environmental Impact Analysis**

As noted previously, the remediation activities outlined in the OU-E RAW are not included in the SEIR. However, the activities described within the OU-E RAW will not impact the following issue areas and there will be no change to the analyses and findings presented in the SEIR: aesthetics, agricultural resources, geology and soils, land use and planning, mineral resources, population and housing, public services, recreation, and utilities and service systems. In addition, the OU-E RAW will have no new significant impacts associated with: air quality and greenhouse gases (GHGs), biological resources, cultural resources, hazards and hazardous materials, hydrology and water quality, noise, and transportation and traffic. Therefore, the impacts associated with the OU-E RAW for these issue areas will be within the scope of impacts identified in the SEIR, as described below.

**A. Air Quality and Greenhouse Gas Emissions**

*SEIR.* The SEIR noted that Mendocino County is considered a non-attainment area for particulate matter less than 10 microns in size ($PM_{10}$) under the California Clean Air Act standard. However, the SEIR concluded that the dust generated during construction and grading activities and construction period air pollutant emissions for the development of the proposed project would not exceed criteria pollutant daily emissions thresholds established by the Mendocino County Air Quality Management District (MCAQMD) or the Federal Environmental Protection Agency (EPA). The SEIR concluded that Coastal Trail project activities are in accordance with the existing MCAQMD plans and rules, and also determined that there is no impact with regard to exposure of sensitive receptors to substantial objectionable odors. The SEIR provided Mitigation Measure 9 to reduce any impacts to $PM_{10}$ to a less-than-significant level.

The SEIR concluded that the Coastal Trail project activities will contribute a relatively small amount of Green House Gas (GHG) emissions; however the amount is not significant. Operationally there is no parking associated with the multi-use trail project, so it will not result in additional vehicular trips.

Additionally as the trail head to this facility is more than 1.5 miles from either the north or south parking lots on the associated Phase I Fort Bragg Coastal Trail project, the addition of this trail segment is not likely to lead to additional vehicular trips to either parking lot.

*OU-E RAW*. DTSC's excavation, backfilling, grading, and transportation activities were not analyzed within the Final SEIR.

***Therefore, the following has been added to the Air Quality analysis of the SEIR in Section 3.2.4.1 (Regulatory Setting), beginning on page 3-57 to ensure the document includes the relevant threshold information for remedial activities***:

DTSC's excavation, backfilling, grading, and transportation activities may result in temporary increases in airborne dust emissions during remediation. These activities are subject to MCAQMD Rule 1-430, which includes requirements that best management practices (BMPs) be utilized as reasonable precautions to prevent particulate matter from becoming airborne. As part of an effort to attain and maintain ambient air quality standards for $PM_{10}$, MCAQMD has established rules regulating activities that can generate fugitive and permit requirements for construction projects with over 1 acre of disturbance.

***The following has been added to the Air Quality analysis of the SEIR in Section 3.2.4.3 (Environmental Consequences – Impacts – Short-term Construction Emissions), beginning at the bottom of page 3-59***

In total, proposed OU-E excavation activities amount to removing approximately 3,000 cubic yards (cy). However, excavation and off-site disposal activities are not likely to generate significant emissions as the volume of soil is moderate and falls below the less than one acre (one acre = 43,560 sq ft) of disturbed area threshold for the MCAQMD. Because the OU-E RAW implementation will occur generally at the same time as Phase 1 of the OU-C and OU-D RAP, these projects were combined to calculated air emissions using the CalEEMod model, version 2013.2.2 (Environs, 2013). OU-C and OU-D RAP Phase I includes the excavation and off-site disposal of approximately 360 cubic yards of soil. OU-C and OU-D Phase II will include an additional 750 to 1,500 cy of soil excavated and disposed of off-site.

Table 1 below lists the estimated daily emissions for specific contaminants including Reactive Organic Gases (ROG), Nitrous Oxides ($NO_x$), Carbon monoxide (CO), sulfur dioxide ($SO_2$), and $PM_{2.5}$ and $PM_{10}$. These amounts are then added to the Coastal Trail project calculations, and the cumulative amount is compared the contaminants to the MCAQMD standards (MCAQMD, Rule 1-130(s2) Definitions). Even when calculated as concurrent activities, the annual emissions are insignificant when compared to the MCQAMD standards.

Table 1. Operational Emissions Georgia-Pacific Former Mill Site, Fort Bragg

| **Annual Operational Emissions OU C and D RAP and OUE RAW combined** | | | | | | |
|---|---|---|---|---|---|---|
| Facility Operations | Maximum Estimated Emissions (pounds per day) | | | | | |
| | ROG | $NO_x$ | CO | $SO_2$ | $PM_{2.5}$ | $PM_{10}$ |
| Site Preparation, Excavation, Transport, Disposal, and Restoration[1] | 8.6 | 86.9 | 58.52 | 0.0945 | 5.2608 | 6.4028 |
| Cumulative Emissions | 9.9 | 97.27 | 58.52 | 0.0945 | 17.8108 | 19.0628 |

| Annual Operational Emissions OU C and D RAP and OUE RAW combined | | | | | | |
|---|---|---|---|---|---|---|
| Facility Operations | Maximum Estimated Emissions (pounds per day) | | | | | |
| | ROG | $NO_x$ | CO | $SO_2$ | $PM_{2.5}$ | $PM_{10}$ |
| Mendocino County Air Quality Management District Standards[2] | NA | 220 | 550 | 220 | 135 | 80 |

1. CalEEMod, Version 2013.2.2. Model Run Date: 4/7/2016
2. MCAQMD, Rule 1-130 (s2): Significant definition.

***end of addition to the Final SEIR Air Quality Analysis***

Therefore, the OU-E RAW activities will not alter the impact findings for air quality presented in the SEIR. The inclusion of Mitigation Measure 9.1 will provide more protective measures for several components of Mitigation Measure 9 and will address the hazardous nature of the soil and sediment transported for the OU-E RAW activities:

***The following has been added to the Air Quality analysis of the SEIR in Section 3.2.4.6 (Avoidance, Minimization, and/or Mitigation Measures), beginning after (j) on page 3-61***

*Mitigation Measure 9.1*

- Excavation activities for remedial activities will be suspended if winds exceed 15 miles per hour (mph) sustained (for 15 minutes) or 25 mph (instantaneous gusts).
- Soil stockpiles associated with remedial activities will be placed atop and covered with heavy-duty plastic sheeting when they are not actively being managed Stockpile covering will be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate.
- Open bodied trucks utilized for remedial activities shall be covered when used to transport materials with the potential for airborne dust.
- The equipment (trucks, excavators) used for remedial activities will be primarily cleaned by sweeping or brushing to remove visible soil. Soil that cannot be removed by this procedure will be removed from equipment by washing in a contained area. Wash water will be collected, characterized, and appropriately disposed or recycled in accordance with applicable federal, state, and local requirements.

***end of addition to the Final SEIR Air Quality Mitigation Measures***

***The following has been added to the Climate Change discussion of the SEIR on page 3-1***

The MCAQWMD has not adopted a Green House Gas (GHG) plan using CEQA; therefore local GHG thresholds are not available for comparison. The MCAQMD has requested that Bay Area Air Quality Management District (BAAQMD) CEQA Air Quality Guidelines (BAAQMD Guidelines) adopted on June 6, 2010, be used for projects in Mendocino County. The BAAQMD guidance does not include a threshold for construction projects; therefore, a comparison to the BAAQMD Significance Threshold for non-stationary projects is used as a surrogate and this threshold is 1,100 metric tons per year. Projects that exceed the thresholds are considered to result in a cumulatively considerable contribution of GHG emissions and a cumulatively significant impact to global climate change. Because the OU-E RAW implementation will take place concurrently or immediately after the OU-C and OU-D RAP implementation, the green gas emissions from the OU-C and OU-D RAP implementation and the OU-E RAW implementation have been calculated and used to identify potential impacts.

DTSC's activities will be occurring prior to the City, and have been analyzed in Table 2, below. The impacts remain less than significant.

Table 2. GHG Emissions for Construction Activities - $CO_{2e}$

| **Activity** | **$CO_2e$ pounds / day** | **Number of Days for Activity** | **Total $CO_2$ Emissions** |
|---|---|---|---|
| Site Preparation | 1,030.8469 | 5 | 5,154.24 pounds (lbs.) |
| Excavation (grading) | 1,205.7861 | 25 | 13.67 metric tons |
| Hauling (round trip transport to off-site disposal facility) | 32,455.3046 | 25 | 368.04 metric tons |
| Paving (site restoration including local backfill) | 1,244.2120 | 5 | 2.82 metric tons |
| **Totals** | **34,742.942** | | **384.53 metric tons** |
| **Applied BAAQMD Threshold** | | | **1,100 metric tons per year** |

Source: CalEEMOD analysis completed by DTSC

***end of addition to the Final SEIR Climate Change***

**B. Biological Resources**

*SEIR*. The SEIR concluded that there were less-than-significant impacts to Environmentally Sensitive Habitat Areas (ESHAs), three special-status plant species with known populations within the Biological Study Area (BSA), 10 special-status animal species and/or types, and nesting birds protected under the federal Migratory Bird Treaty Act. All impacts included associated mitigation to result in a determination of less than significant.

The BSA, which includes the OU-E RAW project site, was identified as containing United States Army Corps of Engineers (USACE) jurisdictional wetlands, potential USACE wetlands, drainages, riparian areas under California Department of Fish & Wildlife (CDFW) jurisdiction, and California Coastal Commission wetlands. In addition, eight acres of ESHA wetlands were found within the Study Area, however the Coastal Trail project was designed to avoid the wetlands and any impacts were not reviewed in the SEIR. Mitigation measures were approved that will provide restoration of land adjacent to wetlands.

*OU-E RAW.* DTSC's excavation, backfilling, grading, and transportation activities and their impacts on biological resources were not analyzed within the Final SEIR.

***Therefore, the following has been added to the Biological Environment analysis of the SEIR in Section 3.2.5.2 (Natural Communities – Environmental Consequences), beginning on page 3-71 to ensure the document includes the information related to remedial activities**:*

Pond and wetland ESHAs within OU-E are shown on Figures 2-3 and 2-4 from the Draft RAW (Arcadis, May 2016). Locations of excavation in relation to the ponds and wetland ESHAs is shown in Figure C-3 and C-4 of the draft OU-E RAW Excavation Implantation Plan. Many of the OU-E excavation areas are within or near these pond and wetland ESHAs. Excavations and sediment removal are

planned within USACE jurisdictional wetlands (Wetland L) and other identified wetlands in OU-E. OU-E RAW, Table 2-1 list estimates of material to be removed from the excavation sites. Excavation of sediment is planned in Ponds 2 (Wetland N), Pond 3 (Wetland O), and Pond 7 (Wetland H). In 2010, the USACE determined that wetlands N, O and H respectively, are isolated and not subject to federal jurisdiction (Section 404). The OU-E RAW involves the removal of dioxin and arsenic contaminated sediment from Pond 2 (222 cubic yards), Pond 3 (474 cubic yards), and Pond 7 (1,200 cubic yards). Ponds 1 through 4 and 7 were created to treat fly-ash containing wastewater from the former powerhouse and as a result are degraded and known to contain sediment contaminated with arsenic, lead, copper and zinc at levels that are above DTSC thresholds for humans, mammals, birds, and fish.

The OU-E RAW will result in approximately 1,500 cubic yards of contaminated soil being removed from 12 locations in the OU-E terrestrial lowland area. However, only approximately 0.05 acre of approximately 3 acres of wetlands in the terrestrial lowland is directly impacted (i.e. excavation within the wetland area) by the excavations. The OU-E RAW includes activities that protect and restore any affected wetlands.

Temporary staging or stockpile areas will not be located within or near sensitive habitats or ESHAs as described in mitigation measure 10.1, below. Because some of the soil excavation and sediment removals are within protected wetlands, permits for the project are needed from the USACE (Nationals Permit Number 38), SWRCB 401 Certification, and a Coastal Development Permit from the City of Fort Bragg or the California Coastal Commission. In addition, a Section 1602 Streambed Alteration Agreement with the CDFW is required for the OU-E RAW as it affects riparian areas and riparian wetlands. BMPs identified in the Stormwater Pollution Prevention Plan (SWPPP) will be implemented to reduce the potential of indirect impacts on waters of the U.S. by reducing or eliminating erosion and sedimentation during earth moving activities.

On April 20, 2016, ARCADIS performed a site survey which involved visual observation of areas that could be safely accessed within the plant survey area. All excavation sites including in the OU-E RAW are located within this survey area. During the April 2016 rare plant survey activities, no special status species or areas that would likely qualify as ESHAs under the California Coastal Act were observed in the survey area. The undeveloped portions of the survey area are estimated to be covered by 70-90% non-native invasive species. Native cattail (*Typha* sp.) is one of the most abundant natives and is found in the ponded habitats within the survey area. Vegetative communities that would likely qualify as ESHAs under the California Coastal Act were not identified in the survey area.

***end of addition to the Final SEIR Biological Environment – Natural Communities***

***The following has been added to the Biological Environment analysis of the SEIR in Section 3.2.5.3 (Jurisdictional Wetlands, Other Waters, and Riparian Areas – Environmental Consequences), on page 3-76, to ensure the document includes the information related to remedial activities***:

In a letter dated March 15, 2010, the US Army Corp of Engineers (USACE) informed Georgia-Pacific of their Section 404 determination for the former Georgia-Pacific Mill Site. Of the wetlands and ponds included in the OU-E RAW project, only Wetland L (0.11 acre) – the seasonal wetland ditch – was designated as a Section 404 wetland (USACE, 2010). As indicated above, the OU-E site contains manmade ponds and seasonal poor-quality wetland areas. The OUE RAW project includes the removal of approximately 24 cy of dioxin-contaminated sediment in Wetland L. The OUE RAW

will not have a substantial adverse effect on the Wetland L because of the short duration of the project (1 – 2 days), the small amount of contaminated material to be removed, and the restoration activities included in the project (ARCADIS, Draft OUE RAW Remedial Design and Implementation Plan, May 2016). There will be no direct removal of wetlands, filling, hydrological disruptions, or other impacts that would substantially adversely affect Section 404 wetlands. Indeed, the project provides beneficial effects due to the removal of approximately 24 yards of dioxin contaminated-material and subsequent full restoration and/or enhancement of any disturbed area in the riparian wetlands.

In 2010, the USACE determined that Ponds 2, 3 and 7 (wetlands N, O and H respectively) are isolated and not subject to federal jurisdiction (Section 404). In an email from the USACE to ARCADIS, dated April 7, 2016, the USACE stated that an Authorized Jurisdictional Determination is valid for 5 years and the site wetlands would require re-authorization. The April 7, 2016 email also stated that, "If the site conditions are the same it is reasonable to assume for project planning purposes that the wetlands are the same." Site conditions for wetlands N, O and H have not changed and currently isolated; therefore, not subject to Section 404 federal jurisdiction.

Additional wetlands have been identified in the OU-E lowland terrestrial area (ARCADIS, Environmentally Sensitive Habitat Area Delineation Report, April 2011). These wetlands were not included in the USACE 2010 jurisdictional determination. The USACE will make a determination for these wetlands during the 404 permit review process. While these lowland terrestrial wetlands might qualify for 404 jurisdiction, the OU-E RAW excavation areas are, with a small exception, outside of the identified wetlands (ARCADIS, draft OU-E RAW Remedial Design and Implementation Plan, figure C-3, May 2016). Three of the excavation sites within the lowland terrestrial area extend into Wetlands E1 East, E2, and E5. Less than 0.03 acres of these wetlands will be affected by the excavations. The project activities include restoration and enhancement of the wetlands; therefore, the project will not have a substantial adverse effect on the potential 404 jurisdictional wetlands in the OU-E lowland terrestrial area.

***end of addition to Final SEIR Biological Environment - Jurisdictional Wetlands, Other Waters, and Riparian Areas***

Therefore, the OU-E RAW activities will not alter the impact findings for biological resources presented in the SEIR. The inclusion of the following mitigation measures will provide clarifying information for remedial activities related to the timing of OU-E RAW implementation during Summer/Fall 2016:

***The following has been added to the Biological Environment analysis of the SEIR on pages 3-72 and 3-83***

*Mitigation Measure 10.1*

- Temporary staging or stockpile areas will not be located within 100 feet of any sensitive habitats or ESHAs.

*Mitigation Measure 12.1*

- During construction, to control erosion during and after project implementation, the applicant and contractors for the remediation activities will implement standard California Department of Transportation (Caltrans) Best Management Practices (BMPs).

*Mitigation Measure 26.1*

- Prior to construction, vegetation removal shall be scheduled to avoid the typical nesting bird season (defined as occurring from March 15 to July 31 for most bird species), if feasible.
- Prior to construction, nest surveys for Bryant's savannah sparrow shall be conducted by a qualified biologist if construction is proposed to occur within 100 ft. of potential grassland and freshwater marsh nesting habitat during the breeding season for the species (April to July).
- Prior to and during construction, if active Bryant's savannah sparrow nests are observed, a minimum 100-ft buffer/exclusion zone delineated by highly visible flagging/stakes shall be established by a qualified biologist around each active nest until all young have fledged. During construction within 100 ft. of grassland and freshwater marsh habitats during the Bryant's savannah sparrow breeding season, a qualified biologist shall conduct weekly monitoring visits to assess the present status of breeding activity and establish exclusion zones as needed.

***end of addition to Final SEIR Biological Environment Mitigation Measures***

**C. Cultural Resources**

*SEIR.* The concluded the project's impact on Cultural Resources was less than significant with mitigation incorporated. The site is located in an archaeologically sensitive area, as the Fort Bragg Native American Archaeological District reflects persistent and intensive Native American use of two sites found within the Coastal Trail project area. The archaeological district is also a Traditional Cultural Property for members of the Sherwood Valley Rancheria. Given the sensitivity of the area, there is a strong potential for archaeological resources to be discovered during construction activities. The Georgia-Pacific Lumber Mill property is not eligible for listing in the CRHR or NRHP as a historic district, as 21 of the 22 historic district contributors have been demolished since 2003. There are also no remaining historic buildings within the project site.

Due to the strong presence of tribal cultural resources, the City engaged in consultation with the Sherwood Valley Band of Pomo Indians (SVBP) in 2012, 2013, and 2014 regarding Phase I of the Coastal Trail project. The City has entered into a Memorandum Of Understanding (MOU) regarding the consultation process with the SVBP, as well as entered into a Native American monitoring agreement with regard to the Coastal Trail project site. Investigations revealed, and the State Historic Preservation Officer concurred, that there are cultural resources on the project site that are eligible for inclusion in the National Register of Historic Places. In addition, since the site is a Traditional Cultural Property, there may be impacts to Culturally Significant Places which may have been used in the past and are currently used by members of the Native American community for spiritual purposes and/or resources gathering, and which are areas that may be important due to their intimate relationship with native oral tradition/oral history. Mitigation measures 2 and 3 were identified in the SEIR that will reduce the potential impacts to a less-than-significant level.

*OU-E RAW*. While the OU-E RAW activity locations are not within any areas where archaeological resources were identified in the City's surveys, there is still a potential for impacts because the remedial activities are within the boundaries of the Historic Mendocino Indian Reservation and the Fort Bragg Native American Archaeological District.

***The following has been added to the Cultural Resources analysis of the SEIR in Section 3.1.4.3 (Environmental Consequences – Methodology - Consultation), on page 3-39, to ensure the document includes the information related to DTSC's Native American outreach and consultation***:

On March 28, 2014 DTSC sent Native American consultation letters to 19 Tribes and interested Native American community members that were identified on the Native American Heritage Commission's (NAHC) Contact List for Mendocino County. Three response letters were received, and only the SVBP responded with an interest to participate in further consultation. They also requested tribal monitors at any excavation site. While engaged in ongoing consultation with DTSC, the SVBP identified the mitigation measures found within the SEIR as appropriate for mitigating potentially significant impacts for OU-E RAW activities and requested the additional mitigation measures below.

***end of addition to Final SEIR Cultural Resources analysis***

Therefore, the OU-E RAW activities will not alter the impact findings for cultural resources presented in the SEIR. DTSC will be required to implement mitigation measures 2 and 3 from the SEIR, and the following mitigation measures address the hazardous nature of the soil and sediment found where tribal monitoring would occur:

***The following has been added to the Cultural Resources analysis of the SEIR in Section 3.1.4.6 (Avoidance, Minimization, and/or Mitigation Measures), on page 3-42***:

*Mitigation Measure 2.1*

A professional archaeologist, meeting the minimum requirements in accordance with the Secretary of Interior's Professional Qualifications, 36CFR Part 61, and a Native American tribal monitor, both Hazardous Waste Operations and Emergency Response (HazWOPER) trained and certified, will be on site during all ground disturbing activities implemented pursuant to the OU-E RAW. Copies of current HazWOPER certification will be provided to DTSC and the City prior to implementation of ground disturbing OU-E RAW activities.

Mitigation Measure 2.2

Tribal monitoring services will be required whenever construction activities include ground disturbance of native or disturbed soils, as the site includes extensive areas of fill that may have been moved in the past from archaeological sites on the property. The tribal monitoring crew size shall be determined by the Project Archaeologist. At minimum, however, there shall be one tribal monitor for every separate area of native ground disturbing activity that is simultaneously occurring at least thirty (30) meters apart. A general rule of thumb when determining if a monitor is required is that one monitor in required for every piece of operational ground disturbing equipment in an area that requires monitoring.

Mitigation Measure 2.3

During construction activities, if any archaeological artifacts or features are encountered, both the Project Archaeologist and the tribal monitors are empowered to stop construction activities within a 50 foot radius of the find. Work within this buffer shall temporarily cease until the Project Archaeologist, in consultation with the tribal monitor, make a determination on (1) whether the find is an archaeological artifact; (2)whether the find is located within an intact context (i.e. not within disturbed fill soils), (3) whether the find is an isolated item, (4) whether the find is part of a larger previously unknown archaeological site; and (5) the best course of action to avoid or minimize impacts to the resources as applicable. If the Project Archaeologist and the tribal monitor disagree about the nature of the find

and/or any of items 1 through 5 above, the professional Archaeologist will e-mail a photo to the Tribal Chairman for additional input before construction in the buffer area may resume.

a. If the find is determined to be both in an intact context, and meets the standard for designation as an archaeological site or is a portion of a known archaeological site, then work shall cease and the DTSC, in consultation with the tribe, shall determine the best course of action given the level and type of contamination and the type of archaeological resource. Appropriate courses of action include:

   i. DTSC could halt excavation activities at the location, fill the excavation, and re-evaluate the remedial action of the location in the Operable Unit E Feasibility Study and Remedial Action Plan.

   ii. Leave the contaminated soils in place and cap the site as a mitigation for the protection of the cultural resource site;

   iii. Remove the contaminated soils. Extract and clean artifacts from the contaminated soils for the tribe to rebury in the designated cultural resource reburial area on the City's Coastal Trail property.

b. If the find is determined to be in a disturbed context or an isolated find that is clearly not associated with an archaeological site, all cultural items shall be recorded as such and then collected, cleaned and returned to the tribe for reburial in the designated cultural resource reburial area on the City's Coastal Trail property or other area as agreed upon in writing by the parties.

***end of addition to Final SEIR Cultural Resources Mitigation Measures***

**D. Hazards and Hazardous Materials**

*SEIR*. The SEIR concluded that the Coastal Trail project's potential to expose visitors to hazardous substances within the soil and sediment would be a less-than-significant impact. Mitigation was adopted that requires the Coastal Trail project components within the area known as the Mill Pond Complex to delay construction until after OU-E RAP implementation. In addition, any potential impacts to construction workers for the Coastal Trail project would be mitigated through compliance with a DTSC-approved Soil Management Plan for the site, if one is deemed necessary. Other hazardous materials may be handled during fueling and servicing of construction equipment, but the SEIR concluded that no adverse impacts would result.

*OU-E RAW*. DTSC's removal and restoration activities were not analyzed within the Final SEIR's Hazardous Waste/Materials section.

***Therefore, the following has been added to the Hazardous Waste/Materials analysis of the SEIR in Section 3.2.3.3 (Environmental Consequences - Impacts), on page 3-55 to ensure the document includes the information related to remedial activities***:

DTSC's removal and restoration activities primarily consist of excavation of soil or sediment to reduce overall potential risk to human health and ecological receptors, as well as restore areas with native species to improve aquatic ecosystems. OU-E areas included in the RAW include areas within the Lowland Terrestrial area, Pond 7, sediment within Ponds 2 and 3, and sediment in the Riparian area. In total, proposed OU-E excavation activities amount to removing approximately 3,500 cubic yards (cy) at depths between 0.5 and 7.5 feet below ground surface (bgs) in an approximate 24,630 square foot (sf) footprint.

Prior to the commencement of excavations, the contractor would submit waste profiling information to the landfills. Waste profiling will be based on a rate of sampling of 1 sample per 1,000 cy. Non-

hazardous waste soils will be transported to either Keller Canyon Landfill in Pittsburg or Hay Road Landfill in Vacaville. Both Keller Canyon and Hay Road have sufficient capacity to accept all or part of this amount. If one facility were to accept all 3,500 cy it would not significantly reduce overall capacity of the facility and therefore impacts related to capacity of landfill facilities would be less than significant. If any soils are determined to be a hazardous waste, these soils will be transported to a permitted hazardous waste disposal facility. An Implementation Plan, submitted to DTSC for review and approval will detail methods and procedures for the excavation, storage, and loading of soil.

The OU-E RAW includes BMPs designed to ensure that the potential for accidents and releases of pollutants are minimized to the greatest extent possible. In the unlikely event of an accidental release of hazardous materials (dust) to the environment, various dust control measures will be implemented to control these potential releases. Access to the former Georgia-Pacific mill site is controlled through fencing and security. Public access to the site is restricted and controlled through the Cypress Gate and on-site security personnel. Signs will be posted identifying the persons to contact in case of an emergency, questions or concerns.

The OU-E RAW project is the remediation of the site listed as a hazardous materials site (Cortese List) pursuant to Government Code Section 65962.5. DTSC oversees the remediation of the former Georgia-Pacific lumber mill site, pursuant to regulatory authority granted under Chapter 6.8, Division 20 of the Health and Safety Code. DTSC issued a Site Investigation and Remediation Order (Docket Number HAS-RAO 06-07-150) to Georgia-Pacific in 2007. However, the proposed project is not expected to result in significant impacts related to risks of exposure of contaminants to the environment or the public. Overall, the proposed project is protective of human health and the environment by removing contaminated soil and sediment from locations where it could come into contact with the public or wildlife. Therefore, the proposed project would not expose people or the environment to a significant hazard related to hazardous materials sites subject to Cortese List requirements.

***end of addition to Final SEIR Hazardous Waste/Materials analysis***

Therefore, the OU-E RAW project activities will not alter the impact findings for hazards/hazardous materials presented in the SEIR. The following mitigation measures will provide clarifying information to address the hazardous nature of the soil and sediment excavated as part of the OU-E RAW project:

***The following has been added to the Air Quality analysis of the SEIR in Section 3.2.4.6 (Avoidance, Minimization, and/or Mitigation Measures), beginning after Mitigation Measure 9.1 on page 3-61***

*Mitigation Measure 9.2*

- Temporary staging areas will be set up adjacent to OU-E RAW excavations for soil stockpiling. Excavated material will be placed on plastic sheeting and covered by plastic sheeting to mitigate migration of affected soil, shield the material from elements, and mitigate fugitive dust and stormwater run-on and runoff.
- Visible soils carried onto Cypress Street and/or SR 1 via trucks, earth moving equipment, water, or other means that occurs from remediation activities shall be promptly removed.

***end of addition to Final SEIR Air Quality Mitigation Measures***

**E. Hydrology and Water Quality**

*SEIR.* The SEIR concluded that there would be no impact to water quality standards, waste discharge requirements, and the project would not otherwise substantially degrade water quality. In addition, there would be no alteration of the existing drainage pattern of the Site, contribution of runoff which would result in exceeding the capacity of existing or planned stormwater drainage systems, or contribution of substantial additional sources of polluted runoff. The project site is located within a 500 year floodplain, except for the beach berm and the beach which are subject to Flood Zone V, consisting of coastal flood with velocity hazard (wave action). To mitigate for potential impacts that would expose people to potential coastal flooding, the SEIR includes measures to install signage to warn people of high surf conditions during storm events along all improvements on the Beach Berm, and to temporarily close the berm section of the project trail and access to the beach in high surf conditions.

*OU-E RAW*. DTSC's removal and restoration activities were not analyzed within the Final SEIR's Water Quality and Stormwater Runoff section.

***Therefore, the following has been added to the Water Quality and Stormwater Runoff analysis of the SEIR in Section 3.2.1.3 (Environmental Consequences), on page 3-44, to ensure the document includes the information related to remedial activities***:

Wastewater generated by the remedial activities at OU-E is expected to be limited in scope and volume. Wastewater generated by the decontamination of field equipment would be placed in drums and tested. An off-site contractor would pick up the drums for treatment and disposal. Water for dust suppression and decontamination may be obtained from onsite sources or taken from a hydrant. Pudding Creek reservoir has an existing pump system that can fill the onsite Pond 5 if water is needed during low-flow times. Although water would be used for dust control, the proposed construction work being conducted is during the dry season (Summer through October 31) so erosion control measures will be in place in accordance with the Stormwater Pollution Prevention Permit (SWPPP) for the closed Georgia-Pacific Mill Site. The proposed project is not expected to generate any wastewater discharge.

The removal of sediment from Ponds 2, 3, and 7, and from the drainage ditch located in the Riparian Area will require a Section 404 permit from the USACE, a 1602 Agreement Certification from CDFW, and a Section 401 Certification from NCRWQCB. These permit requirements will ensure that the project does not substantially alter the existing drainage pattern or create substantial erosion or siltation. Excavation of the soil in the terrestrial area also will not substantially alter the existing drainage pattern or create substantial erosion or siltation – all areas would be restored to preconstruction. In addition, because the stockpiled soils are temporary and would be occurring during the dry season, they would not alter existing drainage patterns. If any stockpiles remain after the start of the rainy season, Georgia-Pacific will follow the requirements established for stockpile management and stormwater control measures specified in the closed Georgia-Pacific mill site SWPPP.

***end of addition to Final SEIR Water Quality and Stormwater Runoff analysis***

Therefore, the OU-E RAW activities will not alter the impact findings for hydrology and water quality

presented in the SEIR.

**F. Noise**

*SEIR*. The SEIR concluded that noise generated by the proposed Coastal Trail project would be short term and construction-related (paving, haul trucks for restoration materials, etc.). Construction will not include pile driving or use of explosives for demolition, activities which are most likely to exceed noise thresholds and result in intensive vibration. No long term noise impacts would result from the proposed project, and no mitigation measures are required. Therefore, there is no impact with regard to noise.

*OU-E RAW.* Noise-generating equipment that would be used at the site, which would affect noise levels in areas near the work site, includes various pieces of earth moving equipment (i.e., front loaders, backhoes, tractors, compactors, and rollers), generators, and compressors. The noise levels for such equipment can often reach or exceed 85 dBA at a distance of 50 feet.

***Therefore, the following has been added to the Noise analysis of the SEIR in Section 3 on page 3-2 to ensure the document includes information related to remedial activities***:

Hours of operation for remedial activity equipment shall be limited to between 7:30am and 5:00pm and noise from the associated activities will comply with the Noise Element of the City's General Plan, Table N-5; therefore, the increase in ambient noise levels associated with construction of the proposed project is expected to be minimal and is considered less than significant.

In addition, earth-moving equipment (i.e. front loaders, backhoes, tractors, compactors, and rollers) would be used for the proposed remediation activities at OU-E. Because vibrations associated with earth moving equipment would be localized, the implementation of the OU-E RAW would not generate excessive ground borne vibrations or ground borne noise that would be noticeable to the nearest sensitive receptor, located approximately 1000 feet offsite.

***end of addition to Final SEIR Noise analysis***

Therefore, the OU-E RAW activities will not alter the impact findings for noise presented in the SEIR.

**G. Transportation and Traffic**

*SEIR*. The SEIR concluded that the Coastal Trail project activities would result in no impact with regard to transportation and traffic. The project will not provide any direct automobile access or additional parking for the site, and would not create a substantial increase in traffic in relation to existing traffic load and capacity or exceed a level of service standard for congestion of roadways. It was concluded that activities would not interfere with emergency access, result in inadequate parking capacity, or conflict with alternative transportation.

*OU-E RAW.* The Final SEIR did not include an analysis of the truck trips required to implement the O-E RAW.

***Therefore, the following has been added to the Traffic and Transportation analysis of the SEIR in Section 3.1.2 (Impacts – Short-term (construction) Impacts), on page 3-20, to ensure the document includes information related to remedial activities***:

The OU-E RAW would require approximately 175 trucks trips to haul excavated soil and sediment from the site for transport to an approved off-site disposal area. These 175 truck trips are in addition to the 60 to 90 truck trips that are included in the OU-C and OU-D Remedial Action Plan implantation. This would increase traffic on local streets by approximately 25 trucks per day over a six week phased construction period (OU-C and OU-D RAP and OU- E RAW combined). This is based on excavation of 3,500 cy of contaminated soil and sediments and use of heavy-duty diesel trucks with a capacity to hold approximately 20 cy of soil each.

Trucks would leave the site via Main Street (SR 1) to access State Route (SR) 20 and then U.S. Highway 101. This haul route would avoid residential areas, schools, and playgrounds. Trucks would start arriving on site at 7 a.m. and would typically depart no later than 1 p.m. in order to arrive at the permitted landfill facilities before closing, which would also avoid both morning and afternoon traffic peaks. The 7 a.m. arrival time and early departure time would avoid both the morning and afternoon traffic peaks. Operations would occur from Monday through Saturday.

Traffic related to OU-E RAW implementation would be short-term in nature and limited in scope. Current Level of Service for the transportation route is level-of-service (LOS) B and the volume-to-capacity ratio for this area is identified at approximately 0.61 – 0.70 indicating that it is at an acceptable level. Traffic related to OU-E RAW implementation is expected to have a less than significant impact on existing traffic and circulation patterns in the City and surrounding areas, and the increase in traffic is not expected to be substantial in relation to the existing traffic load and/or capacity of the street system

***end of addition to Final SEIR Traffic and Transportation analysis***

Therefore, the OU-E RAW activities will not alter the impact findings for transportation and traffic presented in the SEIR.

## IV. CONCLUSION

The OU-E RAW will not alter the impact findings and mitigation measures for air quality and GHGs, biological resources, cultural resources, hazards and hazardous materials, hydrology and water quality, noise, and transportation and traffic presented in the SEIR. With implementation of the OU-E RAW activities, adoption of the clarifying mitigation measures outlined above, and DTSC's incorporation of the relevant mitigation measures from the SEIR, there will be no new significant impacts and no substantial increase in the severity of any impacts identified in the SEIR. The mitigation measures which are included in Section III are measures which address an impact already reviewed and mitigated within the SEIR, and merely provide clarifying information or slight modifications to address the hazardous soil and sediment that is the focus of the OU-E RAW. Therefore, the impacts for the OU-E RAW are within the scope of impacts identified in the SEIR, and the SEIR adequately addressed all potentially significant environmental impacts of the project.

Based on the above, an Addendum is the appropriate CEQA document for the OU-E RAW pursuant to the CEQA Guidelines [Cal. Code Regs., tit. 14, § 15164(b)] because none of the conditions described in Section 15162 of the CEQA Guidelines calling for the preparation of a subsequent EIR or negative declaration have occurred. This addendum has appropriately disclosed the

potential impacts from the OU-E RAW and will be included as part of the CEQA record for the Coastal Restoration and Trail Project. A Notice of Determination for this Addendum to the SEIR will be filed with the California State Clearinghouse within the State of California Office of Planning and Research.

**CERTIFICATION**

I hereby certify that the statements furnished above and in the exhibits, attached or incorporated by reference, present the data and information required for this evaluation to the best of my ability and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

_____ _____

Signature Date

_____

Julie Pettijohn/Unit Chief/510-540-3843

Attachments:

Appendix A – CalEEMod model for the OUE RAW Implementation
Appendix B – Rare Plant Survey in OUE-E Soil and Sediment Removal Work Areas
Appendix C – Section 404 Jurisdictional Delineation Map

# Appendix A

CalEEMod model, Version 2013.2.2 (Environs, 2013)
for the OUE RAW Implementation, April 7, 2016

# Appendix B

Rare Plant Survey in OUE-E Soil and Sediment Removal Work Areas, (Arcadis, April 19, 2016)

# Appendix C

Section 404 Jurisdictional Delineation Map, Appendix A of letter to Mr. Justin Semion, WRA Environmental Consultants from Ms. Jane M. Hicks, Chief, Regulatory Division, United States Army Corps of Engineers, March 15, 2010.

# Mitigation and Monitoring Plan: OUE RAW Implementation

| Mitigation Measure | Requirements of Measure | Applicant Responsibilities | Party Responsible for Verification | Method of Verification | Verification Timing |
|---|---|---|---|---|---|
| ***Air Quality*** | | | | | |
| **AQ/mm-1** | The project contractor, on behalf of the project applicant, shall prepare a dust control plan for construction activities at the project site pursuant to the requirements of the MCAQMD. The project contractor shall be responsible for ensuring that all adequate dust control measures are implemented in a timely manner during all phases of construction and maintenance activities at the project site. The dust control plan shall include, the following measures:<br><br>a. Water shall be applied by means of truck(s), hoses, and/or sprinklers as needed prior to any land clearing or earth movement to minimize dust emissions.<br><br>b. All material excavated, stockpiled, or graded shall be sufficiently watered to prevent fugitive dust from leaving the property boundaries or causing a public nuisance of an ambient air standard. Watering should occur at least twice daily, however frequency of watering shall be based on the type of operation, soil, and wind exposure.<br><br>c. All on-site vehicle traffic shall be limited to a speed of 15 miles per hour on unpaved roads.<br><br>d. All trucks hauling soil, sand, or other loose materials on public roads will be covered or required to maintain at least two feet of freeboard.<br>e. All land clearing, grading, earth moving, and/or excavation activities shall be suspended as necessary, based on site conditions, to prevent excessive windblown dust when winds are expected to exceed 20 miles per hour.<br><br>f. Excavation and grading activities shall be suspended when sustained winds exceed 25 mph, instantaneous gusts exceed 35 mph, or dust from construction might obscure driver visibility on public roads.<br><br>g. All inactive portions of the construction site, including soil stockpiles, shall be covered, seeded, or watered until a suitable cover is established. Alternatively, apply City approved nontoxic soil stabilizers (according to manufacturers' specifications) to all inactive construction areas (previously graded areas that remain inactive for four consecutive days). Acceptable materials that may be used for chemical soil stabilization include petroleum resins, asphaltic emulsions, acrylics, and adhesives that do not violate Regional Water Quality Control Board (RWQCB) or California Air Resources Board (CARB) standards.<br><br>h. Paved areas adjacent to construction sites (the abandoned runway) shall be swept or washed as required to remove excess accumulations of silt and/or mud, which may have resulted from grading and construction activities at the project site.<br><br>i. The project proponent shall re-establish ground cover on all disturbed portions of the project site through seeding and watering in accordance with the City of Fort Bragg Grading Ordinance and Local Coastal Program, which requires the application of native seed or terminal seed.<br><br>j. A publicly visible sign shall be posted with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 24-hours. The telephone number of the MCAQMD shall also be visible to ensure compliance with the Fugitive Dust Emissions requirements.<br><br>k. Construction workers shall park in designated parking area(s) to help reduce dust emissions. | Prepare and implement a dust control plan for construction activities | City of Fort Bragg | Review plan and onsite monitoring | Prior to and during construction |

# Mitigation and Monitoring Plan: OUE RAW Implementation

| Mitigation Measure | Requirements of Measure | Applicant Responsibilities | Party Responsible for Verification | Method of Verification | Verification Timing |
|---|---|---|---|---|---|
| **EIR Addendum Mitigation Measure 9.1** | o Excavation activities for remedial activities will be suspended if winds exceed 15 miles per hour (mph) sustained (for 15 minutes) or 25 mph (instantaneous gusts).<br>o Soil stockpiles associated with remedial activities will be placed atop and covered with heavy-duty plastic sheeting when they are not actively being managed Stockpile covering will be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate.<br>o Open bodied trucks utilized for remedial activities shall be covered when used to transport materials with the potential for airborne dust.<br>o The equipment (trucks, excavators) used for remedial activities will be primarily cleaned by sweeping or brushing to remove visible soil. Soil that cannot be removed by this procedure will be removed from equipment by washing in a contained area. Wash water will be collected, characterized, and appropriately disposed or recycled in accordance with applicable federal, state, and local requirements. | Monitor wind conditions, stop excavation if winds exceed 15MPH, cover soil stockpiles, cover trucks for transport, clean equipment | City of Fort Bragg | Monitor construction | During construction |
| **EIR Addendum Mitigation Measure 9.2** | o Temporary staging areas will be set up adjacent to OU-E RAW excavations for soil stockpiling. Excavated material will be placed on plastic sheeting and covered by plastic sheeting to mitigate migration of affected soil, shield the material from elements, and mitigate fugitive dust and stormwater run-on and runoff.<br>o Visible soils carried onto Cypress Street and/or SR 1 via trucks, earth moving equipment, water, or other means that occurs from remediation activities shall be promptly removed. | Soil stockpiling on plastic sheeting, clean streets and SR1 of soils, materials and water | City of Fort Bragg | Monitor construction | During construction |
| ***Cultural Resources*** | | | | | |
| AR/mm-4: | If cultural materials are discovered during construction, all earth-moving activity within 100 feet of the immediate discovery area will hault until a qualified archaeologist can assess the nature and significance of the find. | Hault Construction and determine course of action | Project Archaeologist | Visual | During grading activities |
| AR/mm-5: | If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the THPO who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the project archaeologist so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable. | Hault construction and contact NAHC if human remains are found | Project Archaeologist | Visual | During grading activities |
| AR/mm-6: | The City shall require native American monitoring of all construction activities that will result in grading or movement of native soils in cultural resource areas as identified in the Data Collection Plan. | Hire native american monitors and notify of need | Project Archaeologist | Visual | During grading activities within cultural resource |
| EIR Addendum Mitigation Measure 2.1 | o A professional archaeologist, meeting the minimum requirements in accordance with the Secretary of Interior's Professional Qualifications, 36CFR Part 61, and a Native American tribal monitor, both Hazardous Waste Operations and Emergency Response (HazWOPER) trained and certified, will be on site during all ground disturbing activities implemented pursuant to the OU-E RAW. Copies of current HazWOPER certification will be provided to DTSC and the City prior to implementation of ground disturbing OU-E RAW activities. | Hazwoper Trained archaeologist and tribal monitors | DTSC | Certificate | Prior to construction |

# Mitigation and Monitoring Plan: OUE RAW Implementation

| Mitigation Measure | Requirements of Measure | Applicant Responsibilities | Party Responsible for Verification | Method of Verification | Verification Timing |
|---|---|---|---|---|---|
| EIR Addendum Mitigation Measure 2.2 | Tribal monitoring services will be required whenever construction activities include ground disturbance of native or disturbed soils, as the site includes extensive areas of fill that may have been moved in the past from archaeological sites on the property. The tribal monitoring crew size shall be determined by the Project Archaeologist. At minimum, however, there shall be one tribal monitor for every separate area of native ground disturbing activity that is simultaneously occurring at least thirty (30) meters apart. A general rule of thumb when determining if a monitor is required is that one monitor in required for every piece of operational ground disturbing equipment in an area that requires monitoring. | Tribal monitoring, Section 106 consultation, stop work as required, notification, remediation alternatives | City of Fort Bragg, DTSC | Tribal monitoring, reports, consultation | During and after contruction and ongoing |
| EIR Addendum Mitigation Measure 2.3 | During construction activities, if any archaeological artifacts or features are encountered, both the Project Archaeologist and the tribal monitors are empowered to stop construction activities within a 50 foot radius of the find. Work within this buffer shall temporarily cease until the Project Archaeologist, in consultation with the tribal monitor, make a determination on (1) whether the find is an archaeological artifact; (2)whether the find is located within an intact context (i.e. not within disturbed fill soils), (3) whether the find is an isolated item, (4) whether the find is part of a larger previously unknown archaeological site; and (5) the best course of action to avoid or minimize impacts to the resources as applicable. If the Project Archaeologist and the tribal monitor disagree about the nature of the find and/or any of items 1 through 5 above, the professional Archaeologist will e-mail a photo to the Tribal Chairman for additional input before construction in the buffer area may resume.<br>i. If the find is determined to be both in an intact context, and meets the standard for designation as an archaeological site or is a portion of a known archaeological site, then work shall cease and the DTSC shall determine the best course of action given the level and type of contamination and the type of archaeological resource. Appropriate courses of action include:<br>1. DTSC could halt excavation activities at the location, fill the excavation, and re-evaluate the remedial action of the location in the Operable Unit E Feasibility Study and Remedial Action Plan.<br>2. Leave the contaminated soils in place and cap the site as a mitigation for the protection of the cultural resource site;<br>3. Remove the contaminated soils. Extract and clean artifacts from the contaminated soils for the tribe to rebury in the designated cultural resource reburial area on the City's Coastal Trail property.<br>ii. If the find is determined to be in a disturbed context or an isolated find that is clearly not associated with an archaeological site, all cultural items shall be recorded as such and then collected, cleaned and returned to the tribe for reburial in the designated cultural resource reburial area on the City's Coastal Trail property or other area as agreed upon in writing by the parties. | Tribal monitoring, Section 106 consultation, stop work as required, notification, remediation alternatives | City of Fort Bragg, DTSC | Tribal monitoring, reports, consultation | During and after contruction and ongoing |
| **Biological Resources** | | | | | |
| BR/mm-1 | During construction, permanent and temporary impacts to ESHA natural communities shall be avoided/minimized to the extent feasible. The ESHA natural communities which have the potential to be disturbed by the project shall be shown on site plans. Areas in which grading or other disturbance is to occur shall be defined on-site by readily identifiable barriers that will protect the surrounding native habitat areas. Construction equipment and other vehicles shall be prevented from entering ESHA natural communities to be avoided through the use of exclusion zones or other barriers. | Avoid/minimize permanent and temporary ESHA impacts. | City of Fort Bragg | Review project plans, inspect installation for accuracy | Prior to and during construction |

# Mitigation and Monitoring Plan: OUE RAW Implementation

| Mitigation Measure | Requirements of Measure | Applicant Responsibilities | Party Responsible for Verification | Method of Verification | Verification Timing |
|---|---|---|---|---|---|
| BRmm-3 | Prior to construction, the applicant will prepare a Hazardous Materials Response Plan or equivalent to allow for a prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur. All project-related hazardous materials spills within the project site will be cleaned up immediately by the contractor. Spill prevention and cleanup materials will be on-site at all times during construction. | Prepare a Hazardous Materials Response Plan. | City of Fort Bragg | | Prior to construction. |
| BR/mm-4 | During construction, to control erosion during and after project implementation, the applicant and contractors will implement standard Best Management Practices (BMPs). | Implement BMPs. | City of Fort Bragg | Field inspection | During construction. |
| BR/mm-5 | During construction, the cleaning and refueling of equipment will occur only within a designated staging area and at least 65 ft from wetlands, other waters, or other aquatic areas. This staging area will conform to BMPs applicable to attaining zero discharge of stormwater runoff. At a minimum, all equipment and vehicles will be checked and maintained on a daily basis to ensure proper operation and avoid potential leaks or spills. | Avoid discharge of hazardous materials. | City of Fort Bragg | Field inspection | During construction. |
| BR/mm-6 | During construction, trash will be contained, removed from the work site, and disposed of regularly by the contractor. Following construction, all trash and construction debris will be removed from work areas. | Contain and remove trash. | City of Fort Bragg | Field inspection | During construction. |
| BR/mm-8 | During construction, any disturbance within jurisdictional wetlands or other waters will take place between June 15 and October 31 in any given year, when the surface water is likely to be dry or at seasonal minimum. Deviations from this work window are not permitted by the City's Certified LCP. | Avoid jurisdictional wetlands during rainy season. | City of Fort Bragg | Review of construction schedule/activities. | During construction. |
| BR/mm-22 | If any native shoulderband snails are observed during ground disturbance activities in suitable habitat, such snails shall be relocated to suitable habitat outside of the area of disturbance to avoid/minimize injury or mortality. | Relocate shoulderband snails observed in area of disturbance. | City of Fort Bragg | Biological monitoring reports. | During construction. |
| BR/mm-23 | Prior to construction, the City shall obtain a letter of permission or equivalent authorization from CDFG to relocate NRLF and other SSC species from work areas encountered during construction within the ADI as necessary. Qualified biologists shall capture and relocate any NRLF (if present) or other SSC species to suitable habitat outside of the area of impact. Observations of SSC species or other special-status species shall be documented on CNDDB forms and submitted to CDFG upon project completion. | Obtain a letter of permission or equivalent authorization from CDFG to relocate NRLF and other SSC species from work areas encountered during construction | City of Fort Bragg | Letter on file. Biological monitoring reports. | Prior to and during construction. |
| BR/mm-27 | Prior to and during construction, if project activities cannot feasibly avoid the typical nesting bird season (defined as occurring from March 15 to July 31 for most bird species), weekly bird surveys of the project areas that will be under construction shall be conducted by a qualified biologist with experience in conducting breeding bird surveys, beginning 30 days prior to the disturbance of suitable nesting habitat. If a protected native bird nest is found, clearance/construction will not occur within an appropriate buffer/exclusion zone (determined by a qualified biologist) delineated by highly visible flagging/stakes until August 1, or until any active nests are vacated and there is no evidence of a second attempt at nesting. | Perform weekly bird surveys. | City of Fort Bragg | Review monitoring reports. | Prior to and during construction. |

# Mitigation and Monitoring Plan: OUE RAW Implementation

| Mitigation Measure | Requirements of Measure | Applicant Responsibilities | Party Responsible for Verification | Method of Verification | Verification Timing |
|---|---|---|---|---|---|
| BR/mm-28 | Prior to and during construction, if active northern harrier nests are observed, a minimum 300-ft buffer/exclusion zone delineated by highly visible flagging/stakes shall be established by a qualified biologist around each active nest until all young have fledged. During construction within 300 ft of grassland and freshwater marsh habitats during the northern harrier breeding season, a qualified biologist shall conduct weekly monitoring visits to assess the present status of breeding activity and establish exclusion zones as needed. | Establish buffer zone for harrier nests. | City of Fort Bragg | Review monitoring reports. | Prior to and during construction. |
| BR/mm-29 | Prior to and during construction, if active white-tailed kite nests are observed, a minimum 300-ft buffer/exclusion zone delineated by highly visible flagging/stakes shall be established by a qualified biologist around each active nest until all young have fledged. | Perform surveys for white-tailed kite. | City of Fort Bragg. | Review monitoring reports. | Prior to and during construction. |
| BR/mm-30 | Prior to construction, nest surveys for Bryant's savannah sparrow shall be conducted by a qualified biologist if construction is proposed to occur within 100 ft of potential grassland and freshwater marsh nesting habitat during the breeding season for the species (April to July). | Perform surveys for savannah sparrow. | City of Fort Bragg. | Review monitoring reports. | Prior to and during construction. |
| BR/mm-31 | Prior to and during construction, if active Bryant's savannah sparrow nests are observed, a minimum 100-ft buffer/exclusion zone delineated by highly visible flagging/stakes shall be established by a qualified biologist around each active nest until all young have fledged. During construction within 100 ft of grassland and freshwater marsh habitats during the Bryant's savannah sparrow breeding season, a qualified biologist shall conduct weekly monitoring visits to assess the present status of breeding activity and establish exclusion zones as needed. | Establish buffer zone for savannah sparrow nests. | City of Fort Bragg | Review monitoring reports. | Prior to and during construction. |
| EIR Addendum Mitigation Measure 10.1 | o Temporary staging or stockpile areas will not be located within 100 feet of any sensitive habitats or ESHAs. | Placement of storage stockpiles | City of Fort Bragg | Visual inspection | During construction |
| EIR Addendum Mitigation Measure 26.1 | o Prior to construction, vegetation removal shall be scheduled to avoid the typical nesting bird season (defined as occurring from March 15 to July 31 for most bird species), if feasible.<br>o Prior to construction, nest surveys for Bryant's savannah sparrow shall be conducted by a qualified biologist if construction is proposed to occur within 100 ft. of potential grassland and freshwater marsh nesting habitat during the breeding season for the species (April to July).<br>o Prior to and during construction, if active Bryant's savannah sparrow nests are observed, a minimum 100-ft buffer/exclusion zone delineated by highly visible flagging/stakes shall be established by a qualified biologist around each active nest until all young have fledged. During construction within 100 ft. of grassland and freshwater marsh habitats during the Bryant's savannah sparrow breeding season, a qualified biologist shall conduct weekly monitoring visits to assess the present status of breeding activity and establish exclusion zones as needed. | Construction window limitations or nesting bird surveys with work buffers | Project Biologist | Visual inspection | During construction |
| **Water Quality** | | | | | |
| EIR Addendum Mitigation Measure 12.1 | o During construction, to control erosion during and after project implementation, the applicant and contractors for the remediation activities will implement standard California Department of Transportation (Caltrans) Best Management Practices (BMPs). | Implement BMPs. | City of Fort Bragg | Visual inspection | During construction |

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Project # B0066142.0003.00002
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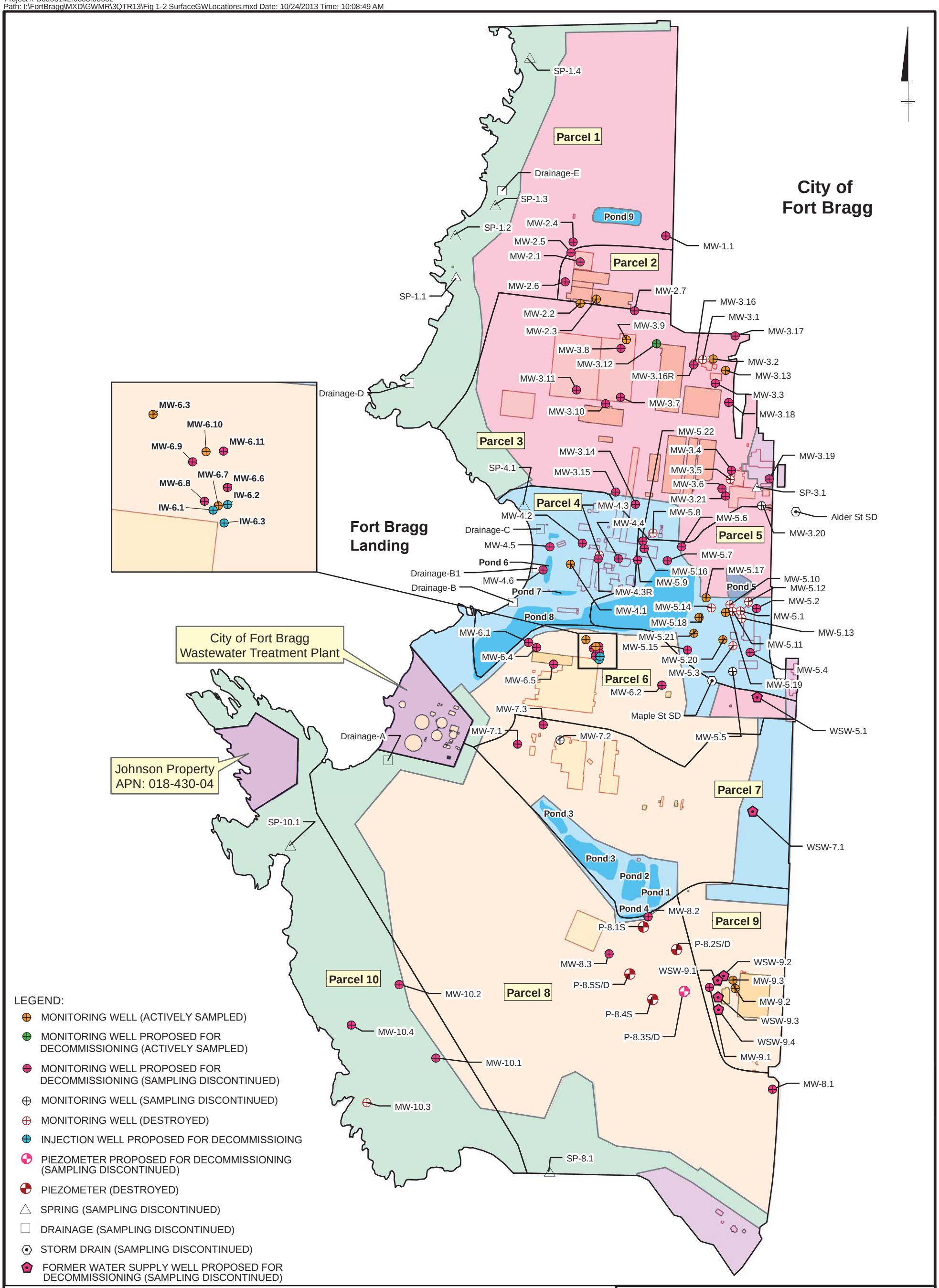


LEGEND:

- POND
- STRUCTURE
- FORMER STRUCTURE
- FACILITY PARCEL

OPERABLE UNITS

- COASTAL TRAIL/PARK ACQUISITION (OU-A)
- "OFFSITE" NON-INDUSTRIAL (OU-B)
- NORTHERN (OU-C)
- SOUTHERN (OU-D)
- PONDS/PARK (OU-E)
- PROPERTY OWNED BY OTHERS

0 620 1,240 Feet
GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

**WELL LOCATIONS**

ARCADIS

FIGURE
4

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0 50 100 150 200 Feet

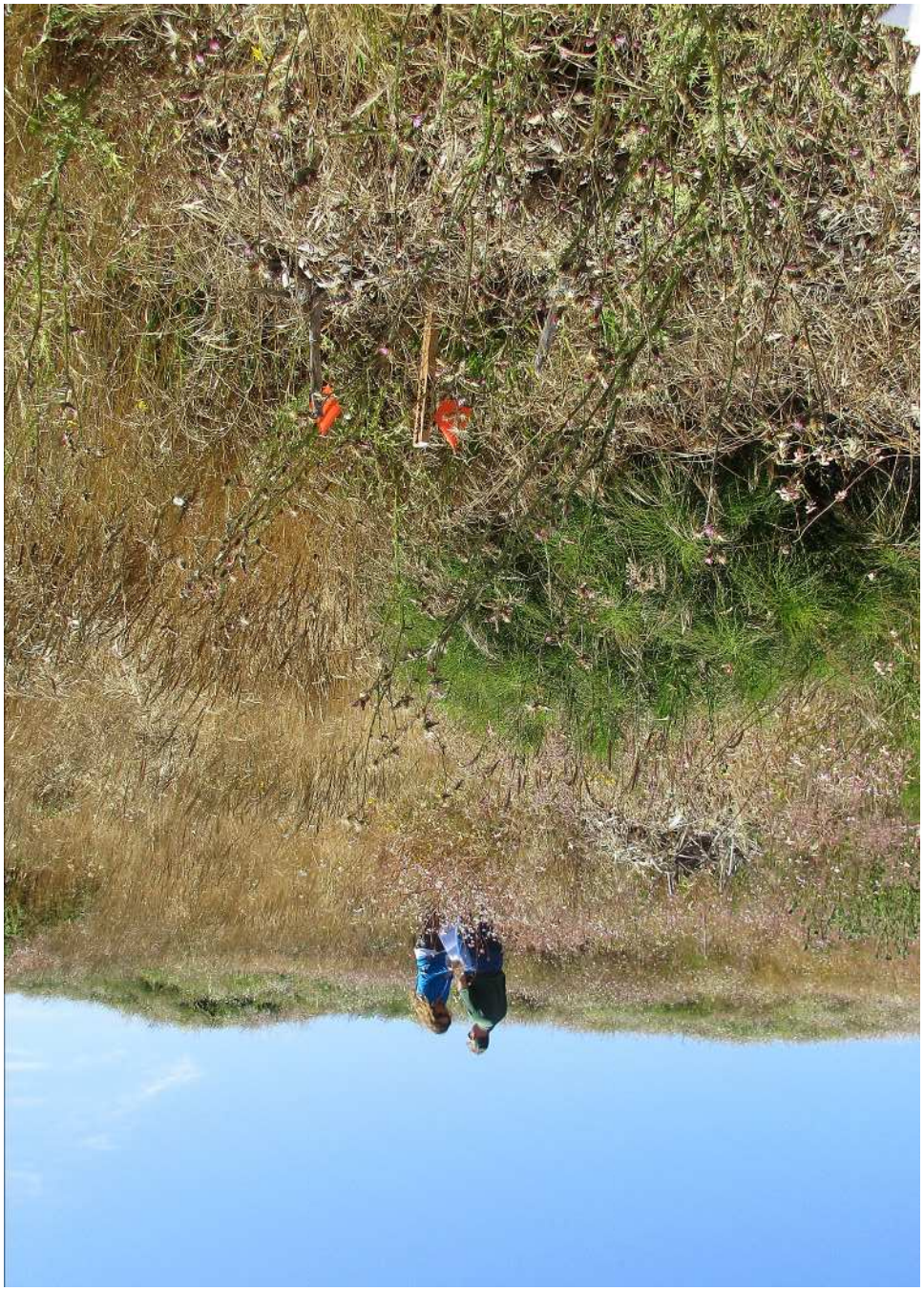
FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

MITIGATION AND MONITORING PLAN

**ADDITIONAL FILL AREAS**

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1



# MEMO

Arcadis U.S., Inc.
2999 Oak Road
Suite 300
Walnut Creek
California 94597
Tel 925 274 1100
Fax 925 274 1103

To:

Dave Massengill, Georgia-Pacific

Michael Davis, Georgia-Pacific

Copies:

Alex Francisco, Arcadis

Jeremie Maehr, Arcadis

From:

Joshua Tallis

Date:

April 29, 2016

Arcadis Project No.:

B0066142.2016

Subject:

Rare Plant Survey in OU-E Soil and Sediment Removal Work Areas

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Joshua Tallis, an Arcadis botanist (resume attached as Appendix A), conducted desktop, field and reference surveys for special status plant species (rare plants) at the Former Georgia-Pacific Wood Products Facility located at 90 West Redwood Avenue, Fort Bragg, Mendocino County, California (site). The rare plant survey was focused on areas of Operational Unit E (OU-E) on the site where soil and sediment removal activities are currently being proposed for implementation in 2016. The rare plant survey area (survey area) is depicted on Figure 1.

## Survey Methods

On April 14, 2016, Arcadis performed a desktop review that included a search of special status plant species in the California Natural Diversity Database (CNDDB) and a review of past botanical surveys at the site (Sholars 2005a and 2005b, WRA 2014). Table 1 lists the special status species that were included in this rare plant survey, as derived from the CNDDB search and other botanical surveys.

On April 19, 2016, Arcadis conducted reference surveys at Pomo Bluffs Park and Noyo Headlands Park, which are immediately south and north of the site, respectively. Special status species observed flowering in the reference locations included Whitney's farewell-to-spring (*Clarkia amoena* ssp. *whitneyi*), Menzies' wallflower (*Erysimum menziesii*), Mendocino coast paintbrush (*Castilleja mendocinensis*), and purple-stemmed checkerbloom (*Sidalcea malviflora* ssp. *purpurea*). Other special status species were not blooming but could be easily recognized, such as short-leaved evax (*Hesperevax sparsiflora* var.

*brevifolia*), Blasdale's bent grass (*Agrostis blasdalei*), and perennial goldfields (*Lasthenia californica* ssp. *macrantha*).

On April 20, 2016, Arcadis performed a site survey which involved visual observation of areas that could be safely accessed within the plant survey area (Figure 1). Within the survey area, transects were walked every 20 feet so that locations could be observed from no further than 10 feet away. In addition, closer inspection was conducted in areas with high likelihood of containing special status species such as barren soil or rock areas that could contain species such as short-leaved evax (*Hesperevax sparsiflora* var. *brevifolia*) or Howell's spineflower (*Chorizanthe howellii*) and emergent wetlands that could contain native *Carex* sp., *Juncus* sp., or similar hydrophytic species. Binoculars were used to observed unsafe steep slopes or aquatic areas of the ponds that could not be safely accessed.

Species identification was confirmed using The Jepson Manual, Vascular Plants of California, Second edition (Baldwin 2012) and visual confirmation where needed using Calflora (www.calflora.org).

Survey Results

No special status plant species were identified in the survey area.

Vegetative communities that would likely qualify as environmentally sensitive habitat areas (ESHAs) under the California Coastal Act (CCA) were not identified in the survey area. Small stands of Vancouver wild rye (*Elymus x vancouverensis*) have been previously identified in and adjacent to portions of the survey area (WRA 2014). During the April 20, 2016 survey no stands of Vancouver wild rye were observed. Instances of a native grass with similar morphological characteristics (i.e., meadow barley [*Hordeum brachyantherum*]) were observed in wet meadow portions of the survey area. However, these were not stands of meadow barley with community level integrity, rather they were fragmented instances of occurrence in highly weedy and disturbed areas.

Furthermore, in accordance with guidance from the California Coastal Commission (CCC; Dixon 2003 and CCC 2013), Arcadis evaluated the areas of Vancouver wild rye previously identified as unlikely to be ESHAs for the following reasons:

- Sensitive species were not identified in the Vancouver wild rye stands.
    - No species listed as rare, threatened, or endangered by the California Endangered Species Act, or candidates for such listing, were identified in the Vancouver wild rye stands. Additionally, no species identified by the California Native Plant Society with ranking of 1A, 1B, 2A, or 2B were identified in the Vancouver wild rye stands.
    - Vancouver wild rye stands are not recognized in the California Department of Fish and Wildlife (CDFW) List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database (CDFW 2010).
- The stands of Vancouver wild rye previously identified in or adjacent to the survey area are unlikely to qualify as "especially valuable" under the CCA because they do not represent areas of community level integrity. This lack of community level integrity results from the areas being highly fragmented, of very small size (i.e., less than 0.1 acres in size), present in areas with substantial historical anthropogenic disturbance, and would be intermixed with a high percentage of weedy, nonnative, and/or invasive species.

- The stands of Vancouver wild rye previously identified in or adjacent to the survey area are unlikely to be easily disturbed or degraded by human activity and development. This is evidenced by the fact that these stands have developed despite intensive anthropogenic historical disturbance in these areas of the site. The areas where stands of Vancouver wild rye were identified in or adjacent to the survey area are located in the primary area of logging operations when the site was active.

Survey Conclusions

During the rare plant survey activities no special status species or areas that would likely qualify as ESHAs under the CCA were observed in the survey area. The undeveloped portions of the survey area are estimated to be covered by 70-90% non-native invasive species. Native cattail (*Typha* sp.) is one of the most abundant natives and is found in the ponded habitats within the survey area.

References

Baldwin B. et al. (ed.). 2012. The Jepson Manual, vascular Plants of California. Second Edition. University of California Press.

California Coastal Commission 2013. Local Coastal Plan Update Guide. July.

California Department of Fish and Wildlife 2010. List of California terrestrial Natural Communities Recognized by the California Natural Diversity Database. September 20120. Available online http://www.dfg.ca.gov/biogeodata/vegcamp/natural_communities.asp

Dixon J. 2003. Designation of ESHA in the Santa Monica Mountains. Memorandum to California Coastal Commission Ventura staff. March 25, 2003.

Sholars T. 2005a. Botanical Field Survey of Some of the Areas of the Bluff Areas at the GP Mills Site. June.

_____. 2005b. Late Season Botanical Survey for the GP Mill Site Bluff 8-16-5. August.

WRA 2014. Botanical and Natural Communities ESHA Survey, Fort Bragg Coastal Trail, Georgia-Pacific Mill Site. October.

Attachments:

Table 1. Rare Plant Species Targeted for Field Survey

Figure 1. Rare Plant Survey Area

Appendix A. Joshua Tallis Resume

Table 1
Rare Plant Species Targeted for Field Survey
Former Georgia-Pacific Wood Products Facility
Fort Bragg, CA

| Scientific Name | Common Name | Federal Status | California Status | Global Rank | State Rank | CNPS Rank |
|---|---|---|---|---|---|---|
| *Abronia umbellata var. breviflora* | pink sand-verbena | None | None | G4G5T2 | S1 | 1B.1 |
| *Agrostis blasdalei* | Blasdale's bent grass | None | None | G2 | S2 | 1B.2 |
| *Astragalus pycnostachyus var. pycnostachyus* | coastal marsh milk-vetch | None | Endangered | G2 | S2.2 | 1B.2 |
| *Blennosperma nanum var. robustum* | Point Reyes blennosperma | None | Rare | G4T2 | S2 | 1B.2 |
| *Campanula californica* | swamp harebell | None | None | G3 | S3 | 1B.2 |
| *Carex californica* | California sedge | None | None | G5 | S2 | 2B.3 |
| *Carex saliniformis* | deceiving sedge | None | None | G2 | S2 | 1B.2 |
| *Castilleja litoralis* | Oregon coast paintbrush | None | None | G4G5T4 | S3 | 2B.2 |
| *Castilleja mendocinensis* | Mendocino Coast paintbrush | None | None | G2 | S2 | 1B.2 |
| *Chorizanthe howellii* | Howell's spineflower | Endangered | Threatened | G1 | S1 | 1B.2 |
| *Clarkia amoena ssp. whitneyi* | Whitney's farewell-to-spring | None | None | G5T1 | S1 | 1B.1 |
| *Collinsia corymbosa* | round-headed Chinese-houses | None | None | G1 | S1 | 1B.2 |
| *Cornus canadensis* | bunchberry | None | None | G5 | S2 | 2B.2 |
| *Cuscuta pacifica var. papillata* | Mendocino dodder | None | None | G5T1 | S1 | 1B.2 |
| *Erigeron supplex* | Supple daisy | None | None | G2 | S2 | 1B.2 |
| *Erysimum concinnum* | bluff wallflower | None | None | G3 | S3 | 1B.2 |
| *Erysimum menziesii* | Menzies' wallflower | Endangered | Endangered | G1 | S1 | 1B.1 |
| *Gilia capitata ssp. pacifica* | Pacific gilia | None | None | G5T3 | S2 | 1B.2 |

Table 1
Rare Plant Species Targeted for Field Survey
Former Georgia-Pacific Wood Products Facility
Fort Bragg, CA

| Scientific Name | Common Name | Federal Status | California Status | Global Rank | State Rank | CNPS Rank |
|---|---|---|---|---|---|---|
| *Gilia millefoliata* | dark-eyed gilia | None | None | G2 | S2 | 1B.2 |
| *Hesperevax sparsiflora var. brevifolia* | short-leaved evax | None | None | G4T3 | S2 | 1B.2 |
| *Hesperocyparis pygmaea* | pygmy cypress | None | None | G1 | S1 | 1B.2 |
| *Horkelia marinensis* | Point Reyes horkelia | None | None | G2 | S2 | 1B.2 |
| *Juncus supiniformis* | hair-leaved rush | None | None | G5 | S1 | 2B.2 |
| *Lasthenia californica ssp. bakeri* | Baker's goldfields | None | None | G3TH | SH | 1B.2 |
| *Lasthenia californica ssp. macrantha* | perennial goldfields | None | None | G3T2 | S2 | 1B.2 |
| *Lilium maritimum* | coast lily | None | None | G2 | S2 | 1B.1 |
| *Packera bolanderi var. bolanderi* | seacoast ragwort | None | None | G4T4 | S2S3 | 2B.2 |
| *Phacelia insularis var. continentis* | North Coast phacelia | None | None | G2T2 | S2 | 1B.2 |
| *Pinus contorta ssp. bolanderi* | Bolander's beach pine | None | None | G5T2 | S2 | 1B.2 |
| *Puccinellia pumila* | dwarf alkali grass | None | None | G4? | SH | 2B.2 |
| *Ramalina thrausta* | angel's hair lichen | None | None | G5 | S2? | 2B.1 |
| *Rhynchospora alba* | white beaked-rush | None | None | G5 | S2 | 2B.2 |
| *Sanguisorba officinalis* | great burnet | None | None | G5? | S2 | 2B.2 |
| *Sidalcea malviflora ssp. purpurea* | purple-stemmed checkerbloom | None | None | G5T1 | S1 | 1B.2 |
| *Triquetrella californica* | coastal triquetrella | None | None | G2 | S2 | 1B.2 |
| *Viola palustris* | alpine marsh violet | None | None | G5 | S1S2 | 2B.2 |

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FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA
**RARE PLANT SURVEY IN OU-E SOIL AND SEDIMENT REMOVAL WORK AREAS**

## RARE PLANT SURVEY AREA

ARCADIS

FIGURE
1

# Joshua T. Tallis, M.S., PWS

## Project Ecologist-Botanist

Mobile 831.747.0509
joshua.tallis@arcadis.com

**Education**

MS/Plant Ecology
University of Washington, Seattle, 2005
BA/Political Science,
University of California, San Diego, 1993

**Years of Experience**

Total - 14
With ARCADIS – 11

**Professional Qualifications/Affiliations/ Training**

-USFWS Approval to Conduct California Tiger Salamander Capture and Relocation on Former Fort Ord (1-8-04-F-25R)
-Department of Pesticide Regulation Qualified Applicator Certificate (#132435).

-Society for Ecological Restoration International
-California Native Plant Society

-Wetland Delineation Training; San Francisco State University (2010)
-Advanced Wetland Delineation Training; San Francisco State University 2011.
-MSHA Part 48 New Miner Training
-HAZWOPER 40-Hr
-OSHA Supervisor

**Languages**

Spanish – Fluent
French – Proficient
Bimoba – Proficient (West African dialect)

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Mr. Tallis specializes in botany, plant ecology, habitat restoration and monitoring, and special status species protection. He has over 14 years of experience working in coastal, riparian, chaparral, forest, grassland, desert, freshwater and tidal habitats. Mr. Tallis has assisted large and small clients, both public and private sector, with Endangered Species Act, Clean Water Act, NEPA/CEQA, Migratory Bird Treaty Act, and Natural Resource Damage compliance.

## Representative Project Experience

**Botanical Survey in San Francisco Bay Tidal Marsh**

Romic, East Palo Alto, California; *2008*

Authored work plan for natural resource damage assessment. Conducted field surveys for tidal marsh vegetation impacts in Laumeister and Faber Marshes with USFWS and CDFG biologists. Analyzed results and authored final report.

**Ecological Restoration and Biological Support for Base Closure**

U.S. Army, Fort Ord, Monterey, California; *2010 – Present*

- **Maritime Chaparral Botanical Surveys and Vegetation Monitoring:** Conduct annual floristic surveys and vegetation growth after remediation activities.
- **Maritime Chaparral Habitat Restoration**: Co-coordinated the costing, design, permitting, implementation, monitoring and maintenance of a 14-acre maritime chaparral habitat restoration project after Munitions and Explosives of Concern remediation. Coordinated contracting and nursery monitoring to produce 65,000 native container plants of 16 species at four native plant nurseries.
- **Vernal Pool Monitoring and Restoration**: Coordinated and conducted seasonal wetland protocol surveys for California tiger salamander larvae. Conducted vernal pool restoration including seed collection, plant salvage, construction oversight, and vegetation monitoring.

**Vegetation Monitoring in Coastal Wetland Mitigation Restoration**

Discovery Builders, Berkeley, California; *2010 – Ongoing*

Coordinated and conducted annual surveys of seasonal wetland vegetation, data analysis, and annual reporting. Advised client on project maintenance requirements. Conducted wetland delineation of seasonal wetland complex.

**Oak Woodland Habitat Restoration and Ecological Services for Site Closure Requirements**

Confidential Client, San Jose, California; *2005 - 2010*

- **Rare Plant Botanical Survey:** Design, implemented, and reported a 2-year rare plant (threatened and endangered) monitoring program on serpentine soils using CNPS Rapid Assessment Protocol. Established long-term monitoring plots and completed baseline monitoring report.
- **Invasive Plant Management:** Coordinate invasive control and monitoring program in serpentine grasslands for artichoke thistle (*Cynara cardunculus*) and barb goatgrass (*Aegilops triuncialis* L.). Advised client on management of grazing in conjunction with threatened and endangered species protection.
- **Native Plant Restoration:** Oversee plant restoration design on 11 projects, including sampling reference communities, designing planting plans, collecting seeds, experimentally testing seedling protection methods and contracting the production of 10,000 seedlings.
- **Stream Restoration:** Coordinated the design and permitting of three stream restoration projects and 1 seasonal pond restoration/creation project; including 1) replace a 200 ft. culvert with a meandering step pool system, 2) replace a bridge with rock and log weirs, 3) replacing a culvert and erosion feature with a bioengineered log step system, and 4) replacing a concrete slab with a seasonal breeding pond for federally endangered California tiger salamander.

**Plant Monitoring During Soil Remediation in a Golden Gate National Recreation Area**

Pacific, Gas & Electric, Sausalito, California; *2009*

Compose biological components of work plan, permits and Health and Safety Plan for remediation of lead impacted soil associated with tower removal. Provide biological monitoring for mission blue butterfly (*Icaricia icarioides missionensis*) larval host plants. Design and oversee erosion control Best Management Practice installation.

**Botanical Surveys and Plant Tissue Sampling during Mine Remediation**

Agrium-Georgetown Canyon Mine, Georgetown, Idaho; *2015-Ongoing*

Lead field team conducting botanical surveys and tissue sampling on a former mine site.

**Mariposa Lily Restoration during Utility Installation**

Southern California Edison-Sylmar, California; *2016-Ongoing*

Coordinated rare Mariposa Lily planting, protection, monitoring, and data management as mitigation for tubular steel pole installation.

**Wetland Delineation**

Agrium-Georgetown Canyon Mine, Georgetown, Idaho; *2015-Ongoing*

Conducted 610 acre field delineation of a sub-watershed to support mine remediation. Co-authored delineation report.

**Utility Corridor Botanical Surveys**

Sunrise Powerlink/SDG&E-San Diego & Imperial Counties, CA; *2008*

Conducted special status plant surveys in undeveloped mountainous arid terrain (chaparral) for placement of high-voltage power transmission line towers.

**Wetland Restoration and Vegetation Monitoring**

University of Washington, Bothell Campus, Washington; *2005-2006*

Conducted compliance monitoring and adaptive management for 58-acre wetland mitigation restoration project. Conducted wetland functional assessment. Coordinated invasive plant monitoring and control program. Provided nursery and field planting oversight.

**Non-Native Plant Abundance and Distribution Survey at National Park**

National Park Service, Mt. Rainier, Washington; *2001*

Directed field research teams conducting non-native plant abundance and distribution study along rivers, trails, and roads of Mt. Rainier and North Cascades National Parks. Trained team members in plant identification, sampling techniques, use of instruments and data collection. Developed GIS maps using ArcView and orthographic photos.

## Scientific Presentations & Publications

**Tallis, J**., Carroll, M., Reimer K., Fenter, C., Fischer, D., Muir, M., Siemens, M. 2013. Comparative approaches to establishing a difficult-to-grow shrub for restoration: A case study using shaggy-barked manzanita (*Arctostaphylos tomentosa* ssp. *tomentosa*) in California. Society for Ecological Restoration conference. Madison, WI. October.

**Tallis, J.**, Tull, J., Kautzman, N. 2011. Avoiding compensatory mitigation by maintaining, enhancing and creating habitat during industrial site demolition and remediation: A case study from San Jose, California. Society for Ecological Restoration conference. Merida, Mexico. August.

**Tallis, J.** 2011 Salvaging manzanita burls and chamise lignotubers for maritime chaparral restoration during munitions and explosives of concern (MEC) remediation. Society for Ecological Restoration World Conference. Merida, Mexico. August.

**Tallis, J.** 2007**.** Using Roundup® and Transline® herbicides to control invasive artichoke thistle (*Cynara Cardunculus*) growing in rare plant habitat. Joint meeting of Society for Ecological Restoration and Ecological Society of America. San Jose, CA. August.

**Tallis, J.** 2005**.** Restoring Mycorrhizal Fungi in degraded tropical soils. M.S. Thesis, University of Washington, College of Forest Resources. (Thesis No. 54666).