



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, February 10, 2016

6:00 PM

Town Hall, 363 N.Main Street

MEETING CALLED TO ORDER

PLEDGE OF ALLEGIANCE

ROLL CALL

1. APPROVAL OF MINUTES

- 1 A. [15-480](#) Approve Minutes of November 12, 2015

Attachments: [PC Minutes of November 12, 2015](#)

2. PUBLIC COMMENTS ON NON-AGENDA ITEMS

3. PUBLIC HEARINGS

- 3 A. [16-023](#) Receive Report, Conduct Public Hearing, and Consider Approval of Use Permit UP 2-16; Use Permit for a Large Family Day Care Home at 211 McKinley Street; Originally MUP 3-15

Attachments: [Large Family Day Care Home \(UP 2-16\) Staff Report](#)

[Attachment 1 - Location Map](#)

[Attachment 2 - Site Plan](#)

[Attachment 3 - Proximity Map](#)

[Attachment 4 - Site Photos](#)

[Attachment 5 - Neighborhood Correspondence](#)

ADA NOTICE AND HEARING IMPAIRED PROVISIONS:

It is the policy of the City of Fort Bragg to offer its public programs, services and meetings in a manner that is readily accessible to everyone, including those with disabilities. Upon request, this agenda will be made available in appropriate alternative formats to persons with disabilities.

If you need assistance to ensure your full participation, please contact the City Clerk at (707) 961-2823. Notification 48 hours in advance of any need for assistance will enable the City to make reasonable arrangements to ensure accessibility.

The Council Chamber is equipped with a Wireless Stereo Headphone unit for use by the hearing impaired. The unit operates in conjunction with the Chamber's sound system. You may request the Wireless Stereo Headphone unit from the City Clerk for personal use during meetings.

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



City of Fort Bragg

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

Meeting Minutes Planning Commission

Thursday, November 12, 2015

6:00 PM

Town Hall, 363 N.Main Street

Special Meeting

MEETING CALLED TO ORDER

Chair Hoyle called the meeting to order at 6:00 PM.

PLEDGE OF ALLEGIANCE

ROLL CALL

Present 4 - Chair Derek Hoyle, Commissioner Mark Hannon, Commissioner Stan Miklose, and Commissioner Heidi Kraut
Absent 1 - Vice Chair Teresa Rodriguez

1. APPROVAL OF MINUTES

1A. Approve Minutes of September 23, 2015

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

Aye: 4 - Chair Hoyle, Commissioner Hannon, Commissioner Miklose and Commissioner Kraut

Absent: 1 - Vice Chair Rodriguez

1B. Approve Minutes of Special Meeting of October 14, 2015

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

Aye: 4 - Chair Hoyle, Commissioner Hannon, Commissioner Miklose and Commissioner Kraut

Absent: 1 - Vice Chair Rodriguez

2. PUBLIC COMMENTS ON NON-AGENDA ITEMS

None

3. PUBLIC HEARINGS

3A. Receive Report and Consider Variance 2-15 for 210 N. Harold St.

Associate Planner Perkins presented the staff report; requesting a modification of the off street parking requirements for

the property located at 210 N. Harold St. in order to change the use of the abounded non-conforming commercial structure to a conforming residential use. This property is zoned low density residential. The commercial use was legally non-conforming. When non-conforming uses are abandoned for a period of twelve months or more the rights to the non-conforming status are terminated and future use must be consistent with the zoning code. The proposed residential use requires the implementation of two off street parking spaces. The applicant has indicated that the parcel cannot adequately accommodate the two additional spaces without altering the existing structures.

Chair Hoyle asked if the tenants in the rear have access off Alder street and whether there is an easement. Perkins responded that the property has the same owner and that access in question, is what once may have been an alley but it is not clear whether or not there is an easement.

Chair Hoyle opened the public hearing at 6:07 PM

Jeanette Colombi said she tries to create off street parking whenever possible to satisfy both her tenants and the City; there is just no way to include it for this residence.

Chair Hoyle closed the public hearing at 6:08 PM

Discussion: Commissioner Miklose asked if there are any assumptions we can make about the number of cars per household and if there are any restrictions that can be made for the size of the vehicles which are parked on the street. Is there any zoning limitation on tenants who bring their large delivery truck(s) home at night, can they park on the street. Planner Perkins said the only time we could limit this is when an occupant operates a home business and the business license explicitly states what can park on the property. Even with the inclusion of a 9' by 18' parking space, a large delivery truck would not fit in the off street parking space. Any parking issues that arise would be better addressed by the Parking Attendant. Director Jones added that this particular residence in question is a small house and this will limit the parking necessary to accommodate the variance.

A motion was made by Commissioner Kraut, seconded by Commissioner Miklose, that Variance 2-15 be approved, subject to the following findings and conditions:

GENERAL FINDINGS

- 1. The proposed project is consistent with the purpose and intent of the zoning district, as well as all other provisions of the General Plan, Inland Land Use and Development Code (ILUDC) and the Fort Bragg Municipal Code in general.**
- 2. The design, location, size, and operating characteristics of the proposed activity are compatible with the existing and future land uses in the vicinity.**
- 3. 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.**
- 4. For the purposes of the environmental determination, this project is exempt from CEQA under Section 15303—conversion of existing small structures from one use to another where only minor modifications are made in the exterior of the structure—in accordance with the California Environmental Quality Act (CEQA).**

VARIANCE FINDINGS FOR APPROVAL

- 1. There are special circumstances applicable to the property, including size, shape, topography, location, or surroundings, so that the strict application of the Inland Land Use and Development Code (ILUDC) deprives the property of privileges enjoyed by other property in the vicinity and within the same zoning**

district.

2. The approval of the Variance includes conditions of approval as necessary to ensure that the adjustment granted does not constitute a grant of special privileges inconsistent with the limitations upon other properties in the vicinity and within the same zoning district.

3. The Variance is consistent with the General Plan and any applicable specific plan.

STANDARD CONDITIONS

1. This action shall become final on the 11th day following the decision unless an appeal to the City Council is filed pursuant to Inland Land Use & Development Code (ILUDC) Chapter 17.92 - Appeals.

2. The use and occupancy of the premises shall be established and maintained in conformance with the requirements of this permit and all applicable provisions of the ILUDC.

3. 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.

4. 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 the required permit applications shall be consistent with this approval. All construction shall be consistent with all Building, Fire, and Health code considerations as well as other applicable agency codes.

5. The applicant shall secure all required building permits for the proposed project as required by the Mendocino County Building Department.

6. If any person excavating or otherwise disturbing the earth discovers any archaeological site during project construction, the following actions shall be taken: 1) cease and desist from all further excavation and disturbances within 100 feet of the discovery; and 2) notify the Director of Public Works within 24 hours of the discovery. Evidence of an archaeological site may include, but is not necessarily limited to shellfish, bones, flaked and ground stone tools, stone flakes produced during tool production, historic artifacts, and historic features such as trash-filled pits and buried foundations. A professional archaeologist on the list maintained by the Northwest Information Center of the California Historical Resources Information System or Listed by the Register of Professional Archaeologists shall be consulted to determine necessary actions.

7. 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.

8. Unless a condition of approval or other provision of the Inland Land Use and Development Code establishes a different time limit, any permit or approval not exercised within 24 months of approval shall expire and become void, except where an extension of time is approved in compliance with ILUDC Subsection 18.76.070 (B).

The motion carried by the following vote:

Aye: 4 - Chair Hoyle, Commissioner Hannon, Commissioner Miklose and Commissioner Kraut

Absent: 1 - Vice Chair Rodriguez

4. CONDUCT OF BUSINESS

5. MATTERS FROM CHAIR/COMMISSIONERS/STAFF

Director Jones announced the Ribbon Cutting Ceremony for the South Coastal Trail is scheduled for December 1, 2015 at 12:30 PM. Gates will open at 11:00 AM. Planner Perkins gave details about the Bainbridge Park Workshop which will be at Veteran’s Hall on November 17, 2015 from 4:00 to 6:00 PM. The workshop will be an opportunity to get input from the public to aid in the creation of a Master Revitalization Plan for the park.

ADJOURNMENT

Chair Hoyle adjourned the meeting at 6:12 PM.

DEREK HOYLE, Chair

Chantell O'Neal, Administrative Assistant

IMAGED (_____)

MEETING DATE: February 10, 2016

PRESENTED BY: S. Perkins

AGENDA ITEM SUMMARY REPORT

APPLICATION NO.: Use Permit 2-16 (formerly Minor Use Permit 3-15)

FILE NUMBER(S): UP 2-16

APPLICANT: Veronica Renteria

OWNER: Raul Yanez

PROJECT: Use Permit for the establishment of a Large Family Day Care Home inside an existing residence, which currently operates a Small Family Day Care business.

LOCATION: 211 McKinley Street, Fort Bragg, CA 95437

APN: 008-262-12

LOT SIZE: 0.24 acres (10,500 square feet)

ZONING: Low-Density Residential (RL)

ENVIRONMENTAL DETERMINATION: This project is exempt from CEQA per Statutory Exemption § 15274(a) Family Day Care Homes, which exempts the establishment or operation of a large family day care home.

SURROUNDING LAND USES:

| | |
|--------|-------------|
| NORTH: | Residential |
| EAST: | Residential |
| SOUTH: | Residential |
| WEST: | Residential |

APPEALABLE PROJECT: **Can be appealed to City Council**

PROJECT DESCRIPTION

The project site is located on the west side of McKinley Street, approximately 80 feet south of its intersection with Alder Street (Attachment 1: Location Map). The applicant is requesting Use Permit approval to establish a Large Family Day Care Facility. The applicant currently operates a Small Family Daycare Facility (six or fewer children) at this location, which is permitted by right (e.g. does not require a Use Permit). The project proposes no physical alteration to the residence or property (Attachment 2: Site Plan).

The application proposes to establish a Large Family Day Care Home on the property, which would allow seven to 14 children. The Inland Land Use and Development Code (ILDUC) defines a Large Family Day Care Home as “a day care facility in a single-family dwelling where an occupant of the residence provides day care for seven to 14 children, inclusive, including children under the age of 10 years who reside in the home.” The proposed use requires a Minor Use Permit in the RL zoning district. Additionally, the Community Care Licensing Division of the California Department of Social Services regulates and licenses child care operations, including Large Family Day Care Homes.

The ILUDC allows the Community Development Director to administratively review and approve or deny Minor Use Permit applications for Large Family Day Care Homes; however, a public hearing can be held at the request of the applicant or interested persons. As a result of a written request for a public hearing, this application type changed to a Use Permit for Planning Commission review.

Site Photo – 211 McKinley Street



NEIGHBORHOOD CONCERNS

City staff sent notice of the pending Minor Use Permit application to property owners within 300 feet and tenants within 100 feet of the proposed project that the Community Development Director would take action on the application unless a written request for a public hearing were received prior to January 19, 2016. On January 8, 2016, Community Development staff received written requests for a public hearing from two residents of one nearby property. Additionally, staff received written concerns and phone calls from three other nearby property owners, though these did not submit a written request for a public hearing. As a result of the two written requests for a public hearing, the Community Development Department placed the application

on the February 10, 2016, Planning Commission agenda. Copies of the written correspondence are included in this report (Attachment 5: Community Correspondence).

To summarize, correspondence from nearby property owners raised the following concerns regarding the project:

1. McKinley Street is a very narrow street, and increased traffic and parking from the Large Family Day Care Home would create a problem for neighborhood residents.
2. The time of the business should be regulated, so that the sounds of vehicles stopping and starting for drop-off and pick-up does not create a nuisance.
3. The increased noise resulting from 14 children playing at the Large Family Day Care Home would negatively impact the neighborhood.
4. If the Large Family Day Care Home is permitted, additional businesses may be allowed in the neighborhood.
5. The residence on the property is too small for seven to 14 children.
6. Children playing up and down the street or sidewalk would be a nuisance to neighbors.

CONSISTENCY WITH PLANNING POLICIES

Land Use. The project site is in the Low-Density Residential (RL) zoning district, which allows Large Family Day Care Homes with Minor Use Permit approval. The ILUDC includes Section 18.42.060(C) Standards for Large Family Day Care Homes. Applications for this use must be found consistent with this code section. The following analysis evaluates the project's consistency with the individual standards outlined for Large Family Day Care Homes.

18.42.060(C)(1) Location Requirements.

In order to avoid the concentration of intensive, non-residential land uses in residential neighborhoods, maintain residential character, and compatibility with adjacent residential uses, no large family day care home shall be located within 200 feet of an existing large family day care home, or child day care center. In no case shall a residential property be directly abutted by a large family day care center on two or more sides.

Community Development staff contacted North Coast Opportunities to determine the location of other Large Family Day Care Homes and Child Day Care Centers in the City of Fort Bragg. There are seven such facilities in the City limits. None of the seven existing Large Family Day Care Homes or Child Day Care Centers are within 200 feet of the proposed project (Attachment 3: Proximity Map).

18.42.060(C)(2) Parking, drop-off area.

a. At least two off-street parking spaces shall be provided exclusively for dropping off and picking up children. The driveway may be used to provide the off-street parking required by Section 18.36.040 (Number of Parking Spaces Required) for a single-family dwelling, if the parking will not obstruct any required drop-off and pick up areas nor block any sidewalks or other public access. Alternative parking and drop-off arrangements may be required by the review authority based on traffic and pedestrian safety considerations.

b. A home located on a street with a speed limit of 30 miles per hour or greater shall provide a drop-off/pick-up area designed to prevent vehicles from backing onto the street (e.g. circular driveway).

18.36.040 Table 3-7 Parking Requirements by Land Use (Large family day care home).

Minimum: 2 spaces; may include spaces provided to fulfill residential parking requirements and on-street parking so long as it abuts the site.

The ILUDC gives guidance for ensuring the safety of children dropped off and picked up from a Large Family Day Care Home, giving various options for on- and off-street parking. Section 18.36.040, which includes the parking requirement tables for all land uses, permits Large Family Day Care Homes to utilize two on-street parking spaces, abutting the parcel, to fulfill the parking requirement. The parcel has approximately 75 linear feet of frontage along McKinley Street, with approximately 50 continuous linear feet of frontage north of the existing driveway. An on-street parking space, as defined by the ILUDC, is 23 feet long. There is adequate space north of the driveway abutting the parcel to provide two on-street parking spaces for the drop-off and pick-up of children (Attachment 4: Site Photos).

The parking and drop-off requirements are intended to ensure the safety of children going to and from the Large Family Day Care Home. The on-street area north of the existing driveway and abutting the property meets the parking and drop-off standards for the proposed use; however, to guarantee the availability of the on-street spaces, staff recommends Public Works stripe the curb north of the existing driveway abutting the parcel as a “loading zone.” This would prevent others from parking in these required spaces by dedicating them for the safety of the children attending the Large Family Day Care Home.

The applicant has stated that many of the children who will be in her care are school aged, and that they arrive in the afternoon on a school bus and stay until their parents finish work. The school bus drops off children at the intersection of McKinley Street and Oak Street, not impacting traffic or parking on McKinley Street. However, her client population may change in the future.

Staff recommends Special Condition 1, requiring the applicant to notify City staff when and if the use ceases or is relocated, so that the striping would be removed.

Special Condition 1: The property owner shall submit a request to the Public Works Department to stripe the space north of the existing driveway as a loading zone only. The property owner shall notify The Community Development Department if the Large Family Day Care Home ceases operation or relocates, so that the “loading zone” striping can be removed. Failure to hold a business license for the use, or failure to secure and maintain any and all State of California certifications and/or licenses for the Large Family Day Care Home shall mean the use has ceased.

Alternatively, the Commission may determine that an off-street parking and drop-off area is more appropriate for the proposed use, due to traffic and parking concerns on McKinley Street. The City’s Public Works Department and the Police Chief reviewed the proposal to stripe a loading zone, and did not express traffic or parking concerns on McKinley Street. Public Works commented that there appears to be more than enough parking generally available during the day adjacent to and near the subject parcel, and striping the loading zone should not have any significant impacts to the neighborhood parking availability. The Police Chief concurred with Public Works’ analysis.

However, the Planning Commission may select Special Condition 1a as an alternative solution for the proposed use's parking and drop-off requirements. This condition would require the applicant to pave an area in the front setback of sufficient width and length to provide two standard parking spaces consistent with the ILUDC parking space dimension requirements.

Special Condition 1a: Prior to issuance of a Use Permit for a Large Family Day Care Home, the applicant shall pave two (2) off-street parking spaces exclusively for dropping off and picking up children. The Applicant shall obtain a grading permit and an encroachment permit from the Department of Public Works to complete the changes to the sidewalk for the driveway apron prior to completion of the work.

18.42.060(C)(3) Outdoor activity areas.

a. Any side or rear setback areas intended for day care use shall be enclosed with a fence or wall to separate the children from neighboring properties.

b. Outdoor recreation equipment over eight feet in height shall not be located within a required side setback, and shall be set back a minimum of five feet from a rear property line.

The backyard of the property is fully enclosed by a fence, separating the children from neighboring properties. The south side of the property contains a propane tank which is fenced and off-limits to children. The applicant proposes no outdoor recreation equipment with this application. Special Condition 2 is recommended to require the applicant to notify City staff if any outdoor recreation equipment over eight feet in height is planned for the property, so that staff can evaluate the equipment's consistency with the ILUDC.

Special Condition 2: The property owner shall notify the Community Development Department prior to installing any outdoor recreation equipment over eight feet in height. At such time, the applicant shall submit for Community Development Department staff review a plot plan illustrating the equipment's distance from property lines to verify its consistency with ILUDC Section 18.42.060(C)(3).

18.42.060(C)(4) Noise.

Noise generated from the large family day care home shall not exceed the standards in the Municipal Code Chapter 9.44.

Chapter 9.44 of the Municipal Code sets standards for appropriate noise levels in the City. For residential areas, Section 9.44.020(A) states that between the hours of 10:00 p.m. and 7:00 a.m. it is unlawful for any person within a residential zone to create, cause to be created or maintain sources of noise which cause annoyance or discomfort to a reasonable person of normal sensitiveness in the neighborhood. The proposed Large Family Day Care Home would be subject to this and all other City noise standards. Standard Condition 7 allows for the revocation of this Use Permit should the proposed use be conducted in such a way as to cause a public nuisance.

In addition to the citywide noise standards, staff recommends Special Condition 3 limiting the hours of the operation from 7:00 a.m. to 7:00 p.m. to reduce noise impacts to the surrounding neighborhood. This condition would prevent additional traffic, drop-off and pick-up noises created by the proposed use from occurring in the early morning and late evening hours.

Special Condition 3: The Large Family Day Care Home shall operate only between the hours of 7:00 a.m. and 7:00 p.m. All pick up and drop off activities of children shall occur between 7:00 a.m. and 7:00 p.m.

18.42.060(C)(5) Additional Standards.

Each large family day care home shall comply with applicable building and fire codes, and standards adopted by the State and Social Services Department licensing requirements (California Code of Regulations, Title 22, Division 2).

Operators of Large Family Day Care Homes must be licensed by the California Department of Social Services. State licensing regulates myriad aspects of the facility, including but not limited to the following:

- Criminal Record Clearance
- Child Abuse Central Index Screening
- Fire Safety Clearance (for Large Family Day Care Homes, fire safety clearance by the local fire authority is required)
- Inspection Authority
- Personnel Requirements
- Reporting Requirements
- Staffing Ratio and Capacity
- Operation and Facility Standards
- Immunization Requirements
- Admission Procedures

Staff recommends Special Condition 3, requiring the applicant to supply the City with verification of compliance with all required State licensing requirements prior to initiating operation of the Large Family Day Care Home.

Special Condition 4: Prior to issuance of a Use Permit for a Large Family Day Care Home, the applicant shall provide the Community Development Department with documentation verifying compliance with all State of California licensing requirements for a Large Family Day Care Home, including fire safety clearance by the local fire authority (Fort Bragg Fire Department).

Although State licensing requirements regulate site and facility standards including capacity and size, an approved Use Permit for a Large Family Day Care Home must also be consistent with the required findings for approval. ILUDC Section 18.71.060(F)(3) requires that “the design, location, size, and operating characteristics of the proposed activity are compatible with the existing and future land uses in the vicinity.” One of the neighborhood concerns relayed to City staff regarding the proposed use is the potential for children to create a nuisance by playing unsupervised in the neighborhood. In order to ensure the use does not create a nuisance in this way, staff recommends Special Condition 5, requiring that all children attending the Large Family Day Care Home be under full supervision by a caregiver when outside the home.

Special Condition 5: At no time shall children attending the Large Family Day Care Home be off the property (211 McKinley Street) without the full supervision of a caregiver.

Staff recommends that the project is consistent, with the recommended conditions of approval, with all specific standards for a Large Family Day Care Home, as outlined in ILUDC Section

18.42.060(C). Additionally, all findings of approval required to grant a Use Permit for the Large Family Day Care Home can be made.

PLANNING COMMISSION ACTION

1. Hold a hearing, close the hearing, deliberate and approve Use Permit 2-16 (UP 2-16) subject to all standard and special conditions.

ALTERNATIVE ACTION

1. Hold a hearing, close the hearing, deliberate without a decision, and revisit the application at the next scheduled meeting for a decision and the addition of any new findings.
2. 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.
3. Deny the Use Permit.

RECOMMENDATION

Staff recommends approval of Use Permit 2-16 (UP 2-16) for the project based on the following findings and subject to the conditions cited below:

GENERAL FINDINGS

1. The proposed project is consistent with the purpose and intent of the zoning district, as well as all other provisions of the General Plan, Inland Land Use and Development Code (ILUDC), and the Fort Bragg Municipal Code;
2. The design, location, size, and operating characteristics of the proposed activity are compatible with the existing and future land uses in the vicinity;
3. 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; and
4. For the purposes of environmental determination, the project is exempt from CEQA, pursuant to the California Environmental Quality Act (CEQA) 15301(l)(3) demolition and removal of existing facilities exemption and 15302(b) replacement of structures.

SPECIAL CONDITIONS

1. The property owner shall submit a request to the Public Works Department to stripe the space north of the existing driveway as a loading zone only. The property owner shall notify The Community Development Department if the Large Family Day Care Home ceases operation or relocates, so that the "loading zone" striping can be removed. Failure to hold a

business license for the use, or failure to secure and maintain any and all State of California certifications and/or licenses for the Large Family Day Care Home shall mean the use has ceased.

- OR -

- 1a. Prior to issuance of a Use Permit for a Large Family Day Care Home, the applicant shall pave two (2) off-street parking spaces exclusively for dropping off and picking up children. The Applicant shall obtain a grading permit and an encroachment permit from the Department of Public Works to complete the changes to the sidewalk for the driveway apron prior to completion of the work.
2. The property owner shall notify the Community Development Department prior to installing any outdoor recreation equipment over eight feet in height. At such time, the applicant shall submit for Community Development Department staff review a plot plan illustrating the equipment's distance from property lines to verify its consistency with ILUDC Section 18.42.060(C)(3). The Large Family Day Care Home shall operate only between the hours of 7:00 a.m. and 7:00 p.m.
3. The Large Family Day Care Home shall operate only between the hours of 7:00 a.m. and 7:00 p.m. All pick up and drop off activities of children shall occur between 7:00 a.m. and 7:00 p.m.
4. Prior to issuance of a Use Permit for a Large Family Day Care Home, the applicant shall provide the Community Development Department with documentation verifying compliance with all State of California licensing requirements for a Large Family Day Care Home, including fire safety clearance by the local fire authority (Fort Bragg Fire Department).
5. At no time shall children attending the Large Family Day Care Home be off the property (211 McKinley Street) without the full supervision of a caregiver.

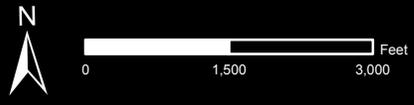
STANDARD CONDITIONS

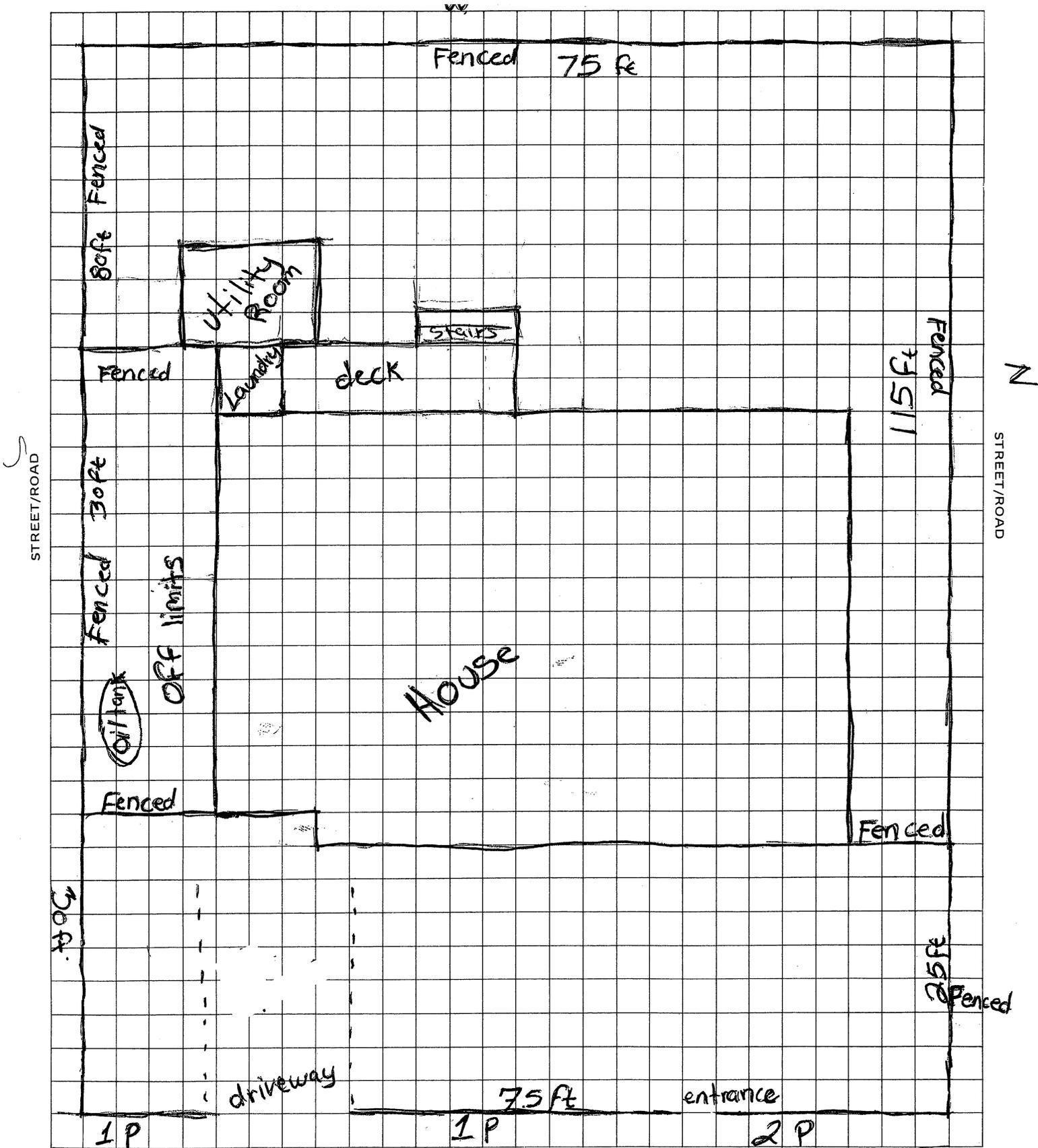
1. This action shall become final on the 11th day following the decision unless an appeal to the City Council is filed pursuant to ILUDC Chapter 18.92 - Appeals.
2. The use and occupancy of the premises shall be established and maintained in conformance with the requirements of this permit and all applicable provisions of the ILUDC.
3. 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.
4. This permit shall be subject to the securing of all necessary permits for the installation, maintenance, operation, and removal of the existing storage tanks and structures as well as the installation, maintenance, and operation of the new storage tank from all agencies having jurisdiction over fuel storage tanks, including without limitation the Fort Bragg Fire District. This permit shall also be subject to full compliance with all city, county, state, and federal regulations regarding the installation, maintenance, operation, and removal of fuel storage tanks. All plans submitted with the required permit applications shall be consistent with this approval. All construction shall be consistent with all Building, Fire, and Health code considerations as well as other applicable agency codes.

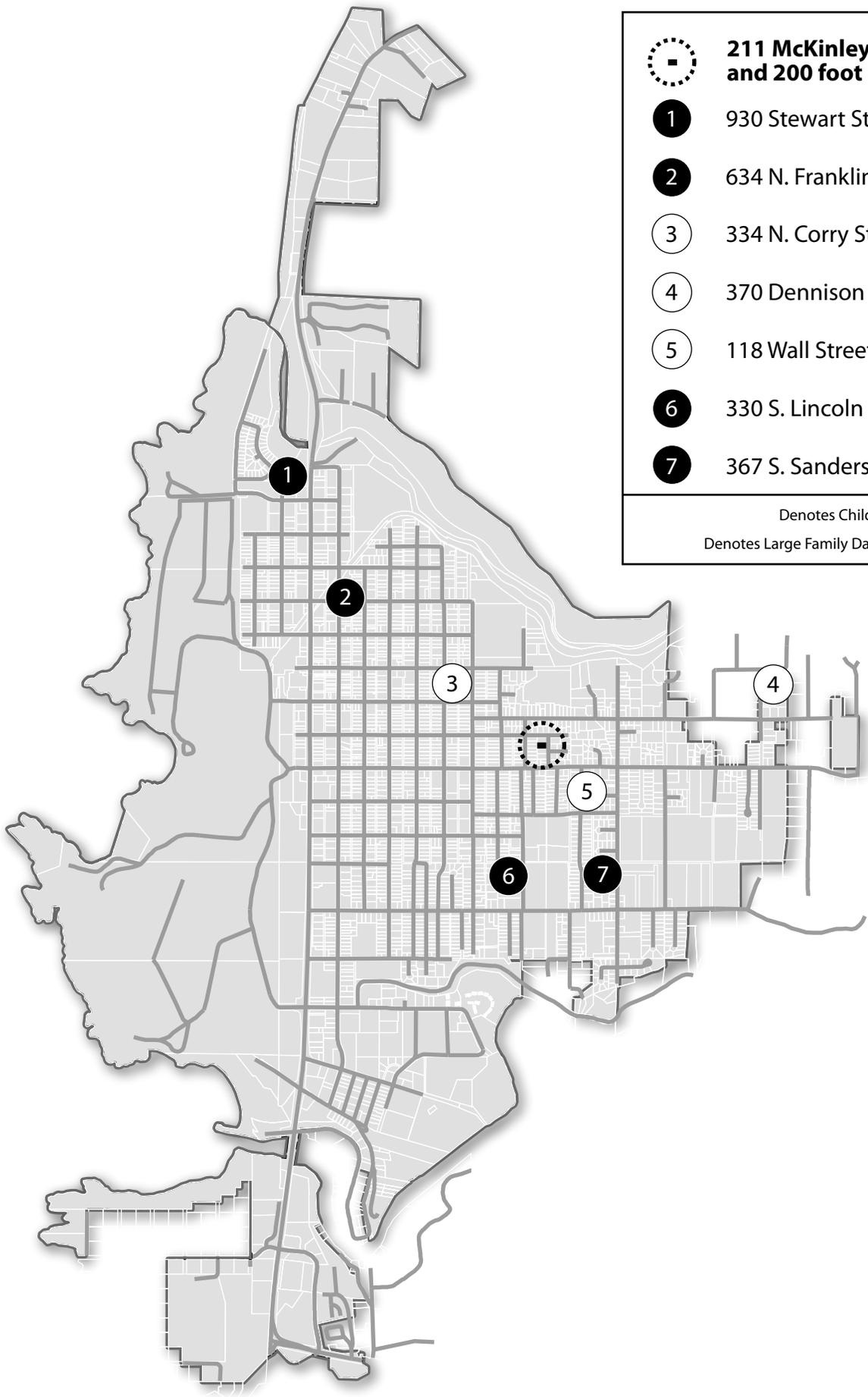
5. The applicant shall secure all required building permits for the proposed project as required by the Mendocino County Building Department.
6. If any person excavating or otherwise disturbing the earth discovers any archaeological site during project construction, the following actions shall be taken: 1) cease and desist from all further excavation and disturbances within 25 feet of the discovery; 2) notify the Fort Bragg Community Development Department within 24 hours of the discovery; and 3) retain a professional archaeologist to determine appropriate action in consultation with stakeholders such as Native American groups that have ties to the area.
7. 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.
8. Unless a condition of approval or other provision of the Inland Land Use and Development Code establishes a different time limit, any permit or approval not exercised within 24 months of approval shall expire and become void, except where an extension of time is approved in compliance with ILUDC Subsection 18.76.070(B).

ATTACHMENTS

1. Location Map
2. Site Plan
3. Proximity Map
4. Site Photos
5. Neighborhood Correspondence







**211 McKinley Street
and 200 foot radius**



930 Stewart Street



634 N. Franklin Street



334 N. Corry Street



370 Dennison Lane



118 Wall Street



330 S. Lincoln Street



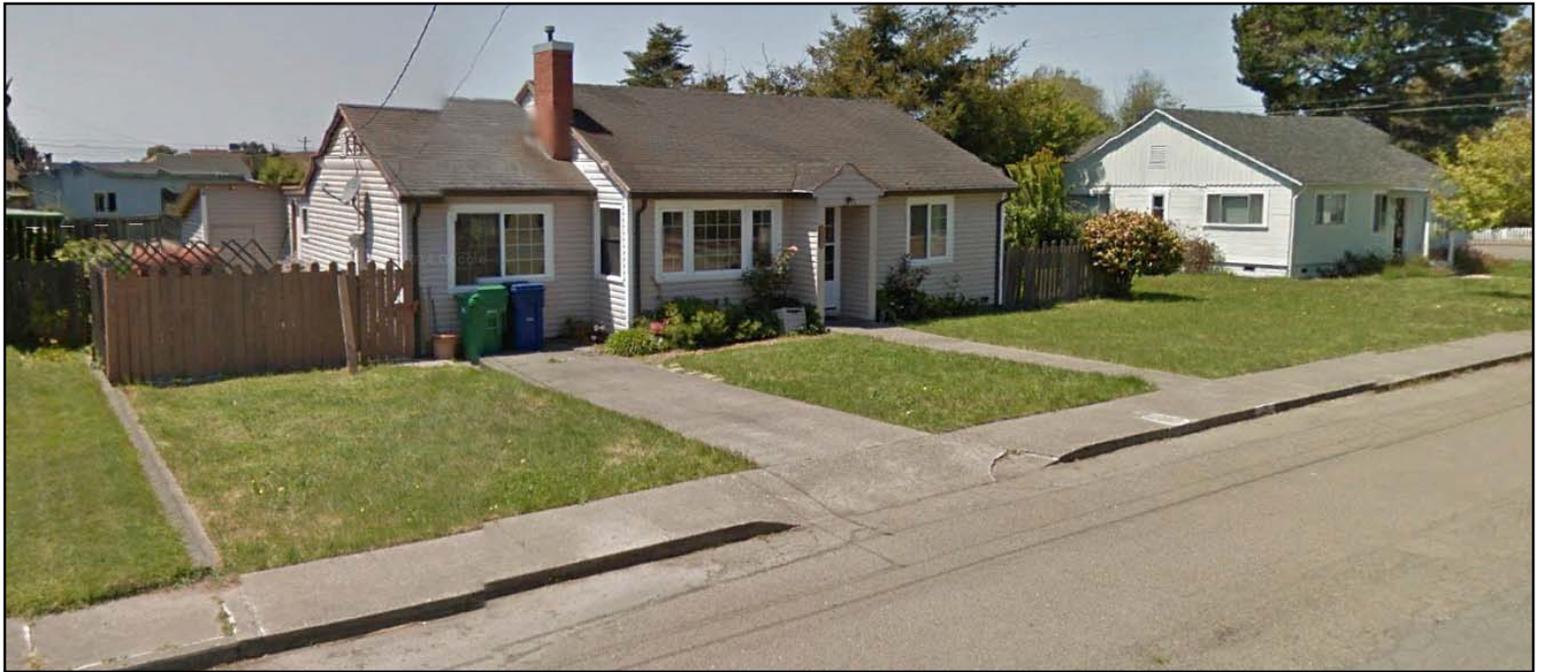
367 S. Sanderson Way

Denotes Child Care Center ●

Denotes Large Family Day Care Home ○



0 1,500 3,000 Feet



Perkins, Scott

From: Nan Artist <nanartist50@hotmail.com>
Sent: Friday, January 08, 2016 3:48 PM
To: Perkins, Scott
Subject: Minor Use Permit 3-15 (MUP 3-15); 11-20-15

Dear Mr. Perkins and Ms. O'Neal,

I am requesting a Public Hearing on the case of the Family Day Care Home at 211 McKinley Street increasing the number of children to the "Large" family day care, which will increase the business to have 14 children or so in our Residential Neighborhood, since we live in the property across from said business.

My reasons is as follows:

1.) McKinley Street is a very narrow street, and increased traffic and parking from the Day Care Business on it will create a problem for those of us who live on the street. Traffic coming to drop-off or pick-up children will add to the noise and congestion that is currently been added by the smaller Day Care Facility, which is currently on the location. The time of the Business should be regulated, so that the sounds of the vehicles stopping and starting for drop-off and pick-up won't be a constant din to those of us who live nearby.

If an Emergency Vehicle should have to come down our street, with the additional traffic caused by the 14 (28 with the drop-off and pick-up) or so added cars or trucks on our street, could be a problem by blocking them, when time is of the essence.

2.) The increased noise of the Business is of concern, since with the smaller Day Care, we currently do hear the screaming and screeching of the children when they are outside of the house. Doubling that noise will be very disturbing. I do like that children are playing outside, but not so many across from our yard, where we have to listen to them!

We moved to McKinley Street because it was a "nice quiet neighborhood," and by adding the traffic noise and congestion, and the children's noise, it will ruin our right to enjoy the quiet and sounds of nature/ the birds in our own yard.

Weather permitting, we spend most of our time outside enjoying our yard. Since I am currently handicapped, it is one of the few pleasures I have, sitting on our porch and deck, (which unfortunately, faces 211 McKinley Street,) feeding and watching the birds and their songs.

Please take these disturbances into consideration to the approval of increasing the size of this current business.

Also, there is concern, if we let in one business into our residential neighborhood; how many more will be allowed?

Yours sincerely,

Nancy R. Jorgensen
204 McKinley Street (across from 211 McKinley Street)
Ft. Bragg

Perkins, Scott

From: Bob Jorgensen <rjjorgensen@hotmail.com>
Sent: Friday, January 08, 2016 2:37 PM
To: Perkins, Scott
Subject: 211 McKinley Street Conditional Use

As a McKinley street resident (204) I do have some concerns about the “large” day care facility. Apparently, large is 7 to 14 children which seems to me to be quite a lot. The residence in which the day care facility would be housed is pretty small to begin with. The real estate listings indicated something like 1000 square feet. I understand that there is a current conditional use for up to 6 children.

Increasing the number to 7 to 14 seems to be an excessive increase. In addition—what are the allowed operating hours? What are noise control limits—please do not take this as not wanting to hear children playing but the difference between 6 and up to 14 is pretty big in terms of noise.

In addition, can you also tell me what other residences have been notified of this potential use change?

I don't know the details on changes of this kind, but maybe 10 children would be OK given the size of the lot and house (catty corner across the street from my house). Operational hours—well I'm retired but I realize folks need to get to work—can we suggest no earlier than 630AM through 730PM?

And finally, do you need this in writing to initiate a hearing or will the email do?

Thanks, have a good weekend.

Perkins, Scott

From: O'Neal, Chantell
Sent: Thursday, January 07, 2016 4:49 PM
To: Perkins, Scott
Cc: Jones, Marie
Subject: FW: MUP 3-15

From: Kathleen Cameron [<mailto:kcameron@mcn.org>]
Sent: Thursday, January 07, 2016 4:26 PM
To: O'Neal, Chantell
Subject: RE: MUP 3-15

Dear Ms. O'Neal,

Thank you for the opportunity to respond to the request for a Minor Use Permit to allow for a large family day care home in my neighborhood.

Unless the site specifications on this property (211 McKenley St.) have been modified recently, I question the appropriateness of a facility for 7 to 14 children in an 800 square foot residence with 2 bedrooms and 1 bathroom. For example, on a cold wet day when children must stay indoors, would all the needs of that many children be adequately met? Wouldn't a "small day care facility" for up to 8 children better fit this property?

If you and the Director of Community Development find the applicants' request appropriate, and if all of the requirements found in the Fort Bragg Municipal Code Section 18.42.060 Child Day Care Facilities are strictly met with ongoing monitoring by your department, I do not have an objection to this Permit.

Sincerely,

Kathleen Cameron
Owner, 219 North Lincoln St.

Perkins, Scott

From: Stacey Jones <staceyjbc@hotmail.com>
Sent: Tuesday, January 19, 2016 9:06 AM
To: Perkins, Scott
Subject: Veronica's Daycare

January 19, 2016

To Whom It May Concern:

My oldest son is almost nine, he has been going to Veronica's Daycare since the age of one. My youngest son whom is six has been going since he was seven months old.

Veronica is such a warming and caring person along with her family. My children and I consider them extended family. I can't even imagine them not being able to go there. My family and I are quite and far from causing any sort of disturbance. I know for myself I cannot envision having to separate my children and have them attend separate daycare facilities. Living here on the coast it is hard to find loving daycare facilities that treat you like family and Veronica's Daycare is proof that is possible..

I am a single mom, working forty hours per week. My work week is from 8- 5 Monday thru Friday, in no way are these early or late into the evening hours.. If you have any further questions please feel free to give me a call @ 357-2027.

Stacey Jones

"Life is not about waiting for the storms to pass... it's about learning how to dance in the rain."

REC'D FEB 05 2016

163 McKinley Street
Fort Bragg, CA 95437

February 2, 2016

Planning Commission
City of Fort Bragg
416 N. Franklin Street
Fort Bragg, CA 95437

Dear Commissioners,

Re: Use Permit Application 2-16 (formerly Minor Use Permit 3-15) of Veronica Renteria at 211 McKinley St

We are writing in support of the application by Veronica Renteria. Our property is next door (immediately north) to the property under consideration. Veronica and her family have been good neighbors and her existing Small Family Day Care business has not been a problem for us. We believe that expansion of her business will result in only minor inconvenience for the neighborhood and that it will occur only during business hours. More importantly, the business provides a needed service to the community, enabling other families to work longer hours while their children are responsibly cared for. We request that you approve the application.

Sincerely,



Roger Adamson
Grete Adamson



Cc: Veronica Renteria

REC'D FEB 08 2016

City of Fort Bragg

Attn. Planning Commission

416 N. Franklin Street

Fort Bragg, CA 95437

RE: Use Permit 2-16

TO WHOM IT MAY CONCERN:

I am the owner of a rental at 125 Halsey Way and I am very concerned about issuing a Use Permit for a large family day care home in the small home at 211 McKinley Street.

This is a quiet residential area and should stay that way . If this permit is allowed, it will generate a lot of traffic especially if 14 families are coming and going to pick up their children.

Please do not allow this use permit so that the neighborhood can remain as it is, a quiet residential area.

Thank you for your consideration in this matter.

Sincerely,



Lena Luzzi-Pardini

Perkins, Scott

From: jennifer salyer <jennifersalyer@hotmail.com>
Sent: Monday, February 08, 2016 9:03 PM
To: Perkins, Scott
Subject: Veronica Renteria's childcare center

Hi Scott,

Veronica let me know there is a hearing coming up this week regarding the expansion of her daycare center. I am all for it. My son began after school care at Veronica's mid January, after my previous babysitter decided to stop doing childcare suddenly. Being a full time working single mom, I was pretty stressed out about finding new childcare quickly! I received several recommendations for Veronica from co-workers (I am a nurse at a local clinic) and was pleased to find that she had a clean, safe, and loving environment for children in her care- after visiting several other providers homes that were less than satisfactory. It is not easy entrusting the care of one's children to a stranger, let alone finding a situation that suits a work/school schedule and budget. My son has been happy taking the school bus to Veronica's where he is dropped off at the corner of her street and Oak Street, and has several friends to play with while there. I hope that her daycare expansion will be approved because in the summer, I will need care for my middle school aged daughter as well, since I don't feel comfortable leaving her home alone while I work, and the after school Kudos program will be closed for summer. The expansion will allow her to take in siblings, and that is quite a relief not to have to search again for yet another childcare setting. When I pick my son up in the evening, there are not any other parents there, they seem to come at staggered times, so the expansion should not be cause for concern about extra traffic on the street. She has a large backyard for outdoor play, which keeps the kids safe and confined behind the house, away from the street as well. If there is any other information that you need that could be helpful for the expansion, please let me know.

Sincerely,
Jennifer Salyer

MEETING DATE: February 10, 2016

PREPARED BY: Marie Jones

PRESENTED BY: Marie Jones

AGENDA ITEM SUMMARY REPORT

APPLICATION NO.: Coastal Development Permit 08-15 (CDP 08-15)

OWNER: Georgia-Pacific LLC

APPLICANT: Michael Hassett, P.E., Manager – Environmental Engineering

PROJECT DESCRIPTION: Coastal Development Permit (CDP 8-15) for remedial activities primarily composed of hot spot excavation in Operable Units C and D 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 contaminated soils (identified parenthetically) in the following locations: Former AST and MES/Pilot Study (contaminant is TPHd); Former Dip Tank (contaminant is Dioxin and PCP); Rail Lines East (contaminant is lead); Kilns (contaminant is TPHd and B(a)P); and Planer #2 (contaminant is TPHd and B(a)P). Additional activities include placing a cover/fill of soil and gypsum at the Former AST and Former MES/Pilot Study to address soil vapor contaminants. Excavation areas will be backfilled with clean foil and seeded with native plants or covered with gravel.

LOCATION: 90 West Redwood Avenue

ZONING: Timber Resources Industrial (TI)

ENVIRONMENTAL DETERMINATION: Mitigated Negative Declaration

SURROUNDING LAND

NORTH: MacKerricher State Park and Old Haul Road
EAST: State Route One and Central Business District
SOUTH: Noyo Harbor
WEST: Fort Bragg Coastal Trail property, Waste Water Treatment Plant, and ocean

BACKGROUND

The Georgia Pacific Mill Site occupies an approximately 323± acre site on the coastline of the City of Fort Bragg (Attachment 1). According to historical records, the timber mill in Fort Bragg began operations in 1885. Georgia-Pacific (G-P) acquired the facility and began operations in 1973. In November 2002, lumber production operations ceased at the facility. Since then, G-P 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 has functioning fire suppression systems on site 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.

From 2013 through 2015 The California State Department of Toxics and Substances Control (DTSC) oversaw the development of the Remedial Action Plan (RAP) and all the supporting studies for the proposed activities within Operable Unit C and D (OU-C and D), which include:

- 1) The Remedial Investigation (RI) report – which summarizes the extensive sample collection and analysis process for constituents of concern. The RI Report includes data collected through several investigations from 1998 to 2009. the RI Report estimated risks within OU-C and OU-D for both potential future human receptors and ecological receptors based on current industrial use and foreseeable land use scenarios, including child and adult residents, commercial/ industrial workers, construction workers and maintenance/ utility workers, and recreational receptors, and plants, soil invertebrates, and representative wildlife receptors (birds and mammals).
- 2) The Feasibility Study OU-C and OU-D recommended remedial alternatives to address chemicals of concern (COCs) within soil, soil gas and/or groundwater in 11 areas of interest (AOIs) within OU-C and OU-D (FS Report; ARCADIS, 2012a). After the completion of the FS Report, a supplementary soil and groundwater investigation was conducted in June 2012 to address data gaps identified in the FS in the Former AST,

Former Parcel 3 Mobile Equipment Shop (MES)/Pilot Study, Kilns, and Rail Lines East AOs.

- 3) The Remedial Action Plan, which is described in detail below, defines the remediation steps required to clean the site to a level that is appropriate, as determined by DTS, for the reasonably foreseeable future use.

In June 2015 DTSC circulated a Mitigated Negative Declaration for the implementation of the RAP for OU-D and C, and DTSC Certified the MND in December after preparing an extensive response to comments on the MND to address the many comment letters submitted by the general public. In December 2015, in separate actions, both DTSC and the City Council reviewed the Remedial Action Plan (RAP) for Operable Units C and D (OUS and D) and approved the remedial approach.

PROJECT DESCRIPTION

In December 2015, GP submitted a request for a Coastal Development Permit to implement a Remedial Action Plan (Attachment 1) that has been approved by the Department of Toxics and Substances Control (DTSC) and the City of Fort Bragg City Council under its Polanco Authority.

The RAP covers the remediation requirements of DTSC for a 282 acre portion of the Former GP Mill Site. The area includes OUC and D, which were used for industrial activities such as sawmill and planning operations. OUC and D includes 32 areas of interest (AOIs) based on historical use and derived from previous investigations.

- Eight AOIs received No Further Action (NFA) determinations in the Remedial Investigation Operable Units C and D Report (RI Report; ARCADIS, 2011a). DTSC designates an area as a “No Further Action” area once it is cleaned up to an adequate level or if the level of contamination is so low that it will not have a deleterious effect on biotic resources or human health related to reasonably foreseeable future uses at the location.
- Three AOIs (West IRM, IRM, and Riparian) were removed from OU-C and placed into OU-E because of similarities in environmental setting with OU-E and the possible day-lighting of Maple Creek.
- DTSC also approved “No Further Action” for 10 AOIs through this RAP process and these AOIs include:
 1. Rail Lines West
 2. Dry Sheds #4, #5
 3. Former Planer #1, #50
 4. Former Log Storage and Sediment Stockpile
 5. Log Deck
 6. Former Sheep Barn
 7. Former Oil House
 8. Miscellaneous
 9. Transformer Pad
 10. Parcel 6

11. Former Machine Shop (MS/IRM AOI) was determined not to require further action based on additional data collected and evaluation after the Feasibility Study was completed.

Please see Attachment 4 to review the areas of the Mill Site that require no further remedial action.

This CDP addresses remedial actions for the remaining 11 AOIs. The 11 AOIs are approximately 70 acres in size and are located on the eastern side of the Mill Site: seven are located in the area bracketed by Pine and Alder streets, three are south of the Mill Pond and east of the Waste Water Treatment Facility, and one is directly north of the Cypress Street gate in the area of the old Cold Forms. Some of the AOI's are handled in the RAP through the use of Land Use Controls, natural attenuation, and the utilization of Operations and Maintenance plans which mostly cover soil management in the affected areas.

The Coastal Development Permit is for those components of the RAP implementation that require soil excavation and disposal of contaminated soils. The areas requiring remediation (excavation and disposal of contaminated soils) are illustrated in Figure 1 and includes 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.

Overall the project, subject to CDP review, would result in:

- 1) Removal of approximately 1,108 and up to 1,858 cubic yards of contaminated soils and materials. The actual amount of material removed will depend on the results of confirmation sampling to ensure that the outer limits of the contaminated soils have been removed.
- 2) Importation of 1,108 to 1,858 cubic yards of fill material from the Noyo Harbor Dredge sands or from another source. The backfill materials will be tested in accordance with DTSC October 2001 imported Advisory on Clean Fill Material.
- 3) Revegetation of backfilled and graded excavation locations with a California Coastal Native Plant seed mix. Or the backfill and graded area will be finished with gravel or stone.
- 4) Installation and replacement of ground water monitoring wells as required by DTSC.

A comprehensive summary of proposed remedial actions for the 11 AOIs is illustrated in Table 1 below:

Table 1: Proposed Remedial Actions for each AOI

Former AST and MES/Pilot Study AOIs – Surface Soil, Soil Vapor, and Groundwater

Soil Proposed Alternative: Former AST AOI and MES/Pilot Study AOI

- *Lan Use Control (LUC) restricting residential or other sensitive land uses*
- *Operations and Maintenance Plan, including soil management requirements*
- *Excavation and disposal of TPHd contaminated soil*

Soil Vapor Proposed Alternative: Former AST and MES/Pilot Study AOIs

- *Source Removal: Excavation and disposal of TPHd contaminated soil*
- *LUC restricting residential or other sensitive land uses*
- *Soil Vapor Mitigation*
- *Operations and Maintenance Plan*

Groundwater Proposed Alternative: Former AST and MES/Pilot Study AOIs

- *Source Removal: Excavation and disposal of TPHd contaminated soil*
- *Natural Attenuation of Groundwater*
- *Operations and Maintenance Plan specifying groundwater monitoring requirements*
- *LUC restricting the use of groundwater above remedial goals*

Former Dip Tank AOI – Soil and Groundwater *Soil and groundwater Proposed Alternative:*

- *Source Removal: Excavation and Disposal of dioxin and PCP contaminated soil*
- *Natural Attenuation of Groundwater*
- *Operations and Maintenance Plan specifying groundwater monitoring requirements*

Rail Lines East AOI – Surface and Shallow Subsurface Soils *Proposed Alternative:*

- *Excavation and disposal of lead contaminated soil*

Kilns AOI – Soil

Proposed Alternative:

- *Excavation and Disposal of TPHd and B(a)P contaminated soil*

Former MS/IRM AOI – Soil and Groundwater

- *No Further Action as TPHd, lead and B(a)P concentrations are below soil unrestricted remedial goals and TPHd and VOCs are below groundwater remedial goals*

Planer #2 AOI – Soil, Soil Vapor and Groundwater *Soil Proposed Remedial Action:*

- *Excavation and disposal of TPHd and B(a)P contaminated soil*
- *Soil Vapor Proposed Remedial Action:*
- *Soil Vapor Mitigation*
- *LUC restricting residential or other sensitive land uses*
- *Operations and Maintenance*
- *Groundwater Proposed Remedial Action:*
- *Natural Attenuation of Groundwater*
- *Operations and Maintenance Plan specifying groundwater monitoring requirements*
- *LUC restricting the use of groundwater*

Former Shipping Office and Truck Shop AOI – Soil *Soil Proposed Alternative:*

- *LUC restricting residential or other sensitive land uses*
- *Operations and Maintenance, including soil management*

Sawmill and Sorter AOI – Groundwater Proposed Alternative:

- *Natural Attenuation of Groundwater*
- *Operations and Maintenance Plan specifying groundwater monitoring requirements*
- *LUC restricting the use of groundwater*

Greenhouse AOI – Groundwater Proposed Alternative:

- *Natural Attenuation of Groundwater*
- *Operations and Maintenance Plan specifying groundwater monitoring requirements*
- *LUC restricting the use of groundwater*

The remediation activities would take approximately six weeks and would be completed during the summer of 2016.

Upon completion of the remediation activities, DTSC would allow for unrestricted use (from the perspective of the clean-up level and not the zoning) over most of Operable Units C and D (OUC & D). As illustrated in Figure 2, only 3.1 acres (or 1%) of OUC and D will require Land Use Controls, and the remaining 279 acres be remediated to an unrestricted use. In other words all uses could occur on these locations with no impact on human health, although future uses would likely be restricted by the zoning ordinance, once a Specific Plan is approved for the site.

Finally, as also shown in Figure 2, there are 4 locations totaling 3.1 acres that will require Land Use Controls. Land Use Controls are a remediation methodology approved by DTSC that allows limited contamination to remain on site, so long as certain sensitive uses are not located on the property (such as hospitals and day care facilities).

CONSISTENCY WITH GENERAL PLAN

Land Use Consistency. The project is consistent with Timber Resources Industrial 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 RAP would result in the remediation of the site in a manner consistent with the potential future land uses envisioned in the draft Specific Plan. However, those uses would not be allowed until a final Specific Plan is completed by the City and Certified by the Coastal Commission. The policy requiring a Specific Plan for rezoning of TRI property is included below for the Commission's information.

Policy LU-7.1 Changes in Industrial Land Use: Require that any Local Coastal Program (LCP) amendments and rezoning of lands which are designated Timber Resources Industrial be subject to a specific plan process. The portions of a Specific Plan that meet the definition of "Land Use Plan" as defined by Coastal Act Section 30108.5 and

"Implementing Actions" as defined by Coastal Act Section 30108.4 shall be submitted to, and effectively certified by, the Coastal Commission as an LCP amendment before those portions of the Specific Plan become effective.

As the proposed remediation is consistent with the draft Mill Site Specific Plan, the proposed project is consistent with Policy LU – 7.1.

CONSISTENCY WITH PLANNING POLICIES

As the proposed remediation project does not include new development or new uses only the conservation policies of the Coastal General Plan apply to this project. Relevant policies from the Coastal General Plan are included below along with a consistency analysis.

The proposed implementation of the RAP will conform with the following policies, as conditioned through this permit and as mitigated through the MND.

Policy OS-3.1 Soil Erosion: Minimize soil erosion to prevent loss of productive soils, prevent landslides, and maintain infiltration capacity and soil structure.

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.

Policy OS-7.2 Air Quality Standards: Seek to comply with State and Federal standards for air quality.

The project also complies with Policy CD-2.6 as the remediation would abate a nuisance condition.

Policy CD-2.6 Property Maintenance and Nuisances: Ensure that properties are well maintained and nuisances are abated.

As conditioned the project will comply with Policy SF-8.1 as the project will result in the remediation of hazardous wastes and the transportation and disposal of the hazardous materials will comply with DTSC's and other State standards.

Policy SF-8.1 Protection from Hazardous Waste and Materials: Provide measures to protect the public health from the hazards associated with the transportation, storage, and disposal of hazardous wastes (TSD Facilities).

The project complies with Policy N-1.6. The Mitigated Negative Declaration prepared for this project provides mitigation for noise related impacts, including limiting the time for demolition activities between the hours of 8:00 am and 5:00pm.

Policy N-1.6 Mitigate Noise Impacts: Mitigate noise impacts to the maximum feasible extent.

CONSISTENCY WITH THE COASTAL LAND USE DEVELOPMENT CODE

Land Use. The subject property is located in the Timber Resources Industrial (TI) Zoning District. Remediation is permitted in the Coastal Zone in the Timber Resources Industrial zoning district upon issuance of a Coastal Development Permit.

Visual Resources. The proposed implementation of the Remedial Action Plan will have no impact on visual resources and is consistent with visual resource protection regulations of the CLUDC.

Biological Resources. The City's CLUDC requires protection of all environmentally sensitive habitat areas, including rare and endangered plant species and wetlands, from any significant disruption of habitat values. The CLUDC requires establishment of a minimum 50-foot wide buffer area to protect environmentally sensitive habitat unless it can be demonstrated that 50 feet is unnecessary to protect the resources of the habitat area. There are two types of environmentally sensitive habitat within the project area: wetlands and rare plants.

An Army Corp of Engineers certified Jurisdictional Determination was prepared in 2009 by WRA to identify the extent of jurisdictional wetlands on the Mill Site. The study identifies 21 jurisdiction wetlands on the site. However all of the proposed excavation areas are located within the industrial area of the former mill site and are covered with asphalt or concrete. Furthermore they are all located further than 50 feet from any ESHA or wetland. Please see Figure 3 which illustrates the Coastal Act and Army Corp wetlands and the location of excavations relative to the wetlands.

Additionally, the locations of the proposed excavation do not include any vegetation within 50 feet that is suitable for nesting birds (grasslands, bushes or trees) therefore pre-construction bird breeding surveys would not be needed.

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 MND prepared for the OUC & D Rap includes 5 mitigation measures to address potential impacts to cultural and historic resources. The identified mitigation measures in the MND will be protective of cultural resources, therefore Special Condition 1 is included to ensure that the Mitigation Measures are implemented.

Special Condition 1: The applicant shall implement all Mitigation Measures identified in the MND for this project as required by CEQA.

Erosion and Water Quality. The project involves the removal of soils which are contaminated with hazardous materials. In order to improve post-construction storm water quality and infiltration on the mill site, it is preferable that the applicant vegetate the sites that have been excavated and backfilled rather than cover these areas with gravel. While the proposed areas of excavation are relatively small in relationship to the entire Mill Site, together they amount to 3.1 acres which is a significant area. Therefore staff recommends Special Condition number 2 to require that the fill dirt have sufficient organic matter to support effective revegetation of the excavated areas, and that these sites be hydro seeded or broadcast seeded with California native seed varieties followed with a 1-2" thick layer of rice straw as mulch. The following Special Conditions will address erosion, sedimentation and water quality impacts associated with the project.

Special Condition 2: The applicant shall backfill the 3.1 acres of excavated areas with soil that has at least 10% organic content. The applicant shall hydro seed or broadcast seed by hand following with a 1-2" layer of rice straw mulch across the 3.1+/- acres summed remediation

areas after October 1st and before November 1st to reduce bird predation of the seed and insure sufficient seed for effective revegetation of these areas with California native plants. The revegetation must be successful yielding germination and vegetative cover across $\geq 80\%$ of the 3.1+/- acres.

Special Condition 2: The following Best Management Practices to control, reduce or prevent discharge of pollutants from remediation and grading activities and material handling activities shall be utilized throughout project implementation:

- (a) Material and products will be stored in manufacturer's original containers.
- (b) Storage areas will be neat and orderly to facilitate inspection.
- (c) Check all equipment for leaks and repair leaking equipment promptly.
- (d) Perform major maintenance, repairs, and washing of equipment away from site.
- (e) Designate a completely contained area away from storm drains for refueling and/or maintenance work that must be performed at the site.
- (f) Clean up all spills and leaks using dry methods (absorbent materials/rags).
- (g) Dry sweep dirt from paved surfaces for general clean-up.
- (h) Train employees in using these BMPs.
- (i) Avoid creating excess dust when breaking concrete. Prevent dust from entering waterways.
- (j) Protect storm drains using earth dikes, straw bales, sand bags, absorbent socks, or other controls to divert or trap and filter runoff.
- (k) Shovel or vacuum saw-cut slurry and remove from the site.
- (l) Remove contaminated broken pavement from the site promptly. Do not allow rainfall or runoff to contact contaminated broken concrete.
- (m) Schedule demolition work for dry weather periods.
- (n) Avoid over-application by water trucks for dust control.
- (o) Cover stockpiles and other construction materials with heavy duty plastic secured and weighted on all sides to maintain cover from wind and rain even in high wind conditions. Protect from rainfall and prevent runoff with temporary roofs or heavy duty plastic and berms.

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 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 3: Prior to issuance of demolition permits, the applicant shall secure a Facility Wide Dust Control Permit from the Mendocino County Air Quality Management District. All excavation activities shall be conducted in accordance with the requirements of the permit. Particles generated in the remediation process will be minimized via dust suppression control. The applicant shall also comply with the air quality mitigation measures required in the MND, which include but are not limited to the following:

- a) Grading activities shall cease if sustained wind speeds exceed 15mph and or gusts reach or exceed 25 mph.
- b) Vehicles will travel at not more than 15 mph.
- c) Water shall be applied roads to minimize dust during grading.

- d) Disturbed areas shall be sprayed with water at the end of each work period to form a thin crust.

Hazards. The proposed project is a hazard reduction project as it will result in the removal of chemicals of concern from the site. 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 cubic yards. Non-hazardous waste soils will be transported to either Keller Canyon Landfill in Pittsburg or Hay Road Landfill in Vacaville. If any soils are determined to be a hazardous waste, these soils will be transported to a permitted hazardous waste disposal facility. Both Keller Canyon and Hay Road have sufficient capacity to accept all or part of this amount. If one facility were to accept all 1, 108 to 1,858yds³.

Soils classified as California Hazardous Waste would be properly containerized and transported under hazardous waste manifests by registered hazardous waste haulers holding a currently valid registration issued by DTSC and meeting federal requirements imposed by the Department of Transportation (DOT) and the U.S. Environmental Protection Agency (USEPA) under Resource Conservation and Recovery Act (RCRA). Haulers are also subject to California hazardous waste law requirements pertaining to hauling of hazardous wastes (Health and Safety Code §25100 et seq. and §25163 et seq. ; 22 OCR §66263.10 et seq.; 13 OCR §1160 et seq.; California Vehicle Code §12804 et seq. and §31300 et seq.), which are implemented and enforced by DTSC as well as the California Highway Patrol, Department of Motor Vehicles, local sheriff, and police agencies who have general responsibilities for the transportation of hazardous waste on state and local roadways. An Excavation Plan, submitted to DTSC for review and approval will detail methods and procedures for the excavation, storage, and loading of soil. The MND includes a number of mitigation measures to ensure that this activity is undertaken in an appropriate manner and Special Condition 1 ensures that those mitigation measures will be implemented.

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 remediation project will not have a negative impact on public access.

Environmental Review

The DTSC served as the Lead Agency under CEQA and prepared a Mitigated Negative Declaration (MND) (see Attachment 2) for the project. The Planning Commission can rely on the MND that has been prepared for this project when considering the permit request for the Coastal Development Permit. Special Condition 1 requires that all of the mitigation measures of the MND are implemented.

PLANNING COMMISSION ACTION

1. Hold a hearing on the CDP 8-15, close the hearing, deliberate, and consider: 1) approving the Mitigated Negative Declaration; and 2) approval of Coastal Development Permit 8-15 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 Mitigated Negative Declaration and approval of CDP 8-15 for the implementation of the Remedial Action Plan for Operable Units C and D of the Georgia Pacific Mill Site, based on the findings and subject to the conditions cited below:**

FINDINGS

1. The remediation of 11 Areas of Interest 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 a Mitigated Negative Declaration 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;
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. The applicant shall implement all Mitigation Measures identified in the MND for this project as required by CEQA.
2. The applicant shall backfill the 3.1 acres of excavated areas with soil that has at least 10% organic content. The applicant shall hydro seed or broadcast seed by hand following with a 1-2" layer of rice straw mulch across the 3.1+/- acres summed remediation areas after October 1st and before November 1st to reduce bird predation of the seed and insure sufficient seed for effective revegetation of these areas with California native plants. The revegetation must be successful yielding germination and vegetative cover across $\geq 80\%$ of the 3.1+/- acres.
3. The following Best Management Practices to control, reduce or prevent discharge of pollutants from remediation and grading activities and material handling activities shall be utilized throughout project implementation:
 - a. Material and products will be stored in manufacturer's original containers.
 - b. Storage areas will be neat and orderly to facilitate inspection.
 - c. Check all equipment for leaks and repair leaking equipment promptly.
 - d. Perform major maintenance, repairs, and washing of equipment away from site.
 - e. Designate a completely contained area away from storm drains for refueling and/or maintenance work that must be performed at the site.
 - f. Clean up all spills and leaks using dry methods (absorbent materials/rags).
 - g. Dry sweep dirt from paved surfaces for general clean-up.
 - h. Train employees in using these BMPs.
 - i. Avoid creating excess dust when breaking concrete. Prevent dust from entering waterways.
 - j. Protect storm drains using earth dikes, straw bales, sand bags, absorbent socks, or other controls to divert or trap and filter runoff.
 - k. Shovel or vacuum saw-cut slurry and remove from the site.
 - l. Remove contaminated broken pavement from the site promptly. Do not allow rainfall or runoff to contact contaminated broken concrete.
 - m. Schedule demolition work for dry weather periods.
 - n. Avoid over-application by water trucks for dust control.
 - o. Cover stockpiles and other construction materials with heavy duty plastic secured and weighted on all sides to maintain cover from wind and rain even in high wind conditions. Protect from rainfall and prevent runoff with temporary roofs or heavy duty plastic and berms.
4. Prior to issuance of demolition permits, the applicant shall secure a Facility Wide Dust Control Permit from the Mendocino County Air Quality Management District. All demolition activities shall be conducted in accordance with the requirements of the permit. 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 MND, which include but are not limited to the following:

- a. Grading activities shall cease if sustained wind speeds exceed 15mph and or gusts reach or exceed 25 mph.
- b. Vehicles will travel at not more than 15 mph.
- c. Water shall be applied roads to minimize dust during grading.
- d. Disturbed areas shall be sprayed with water at the end of each work period to form a thin crust.

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 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.

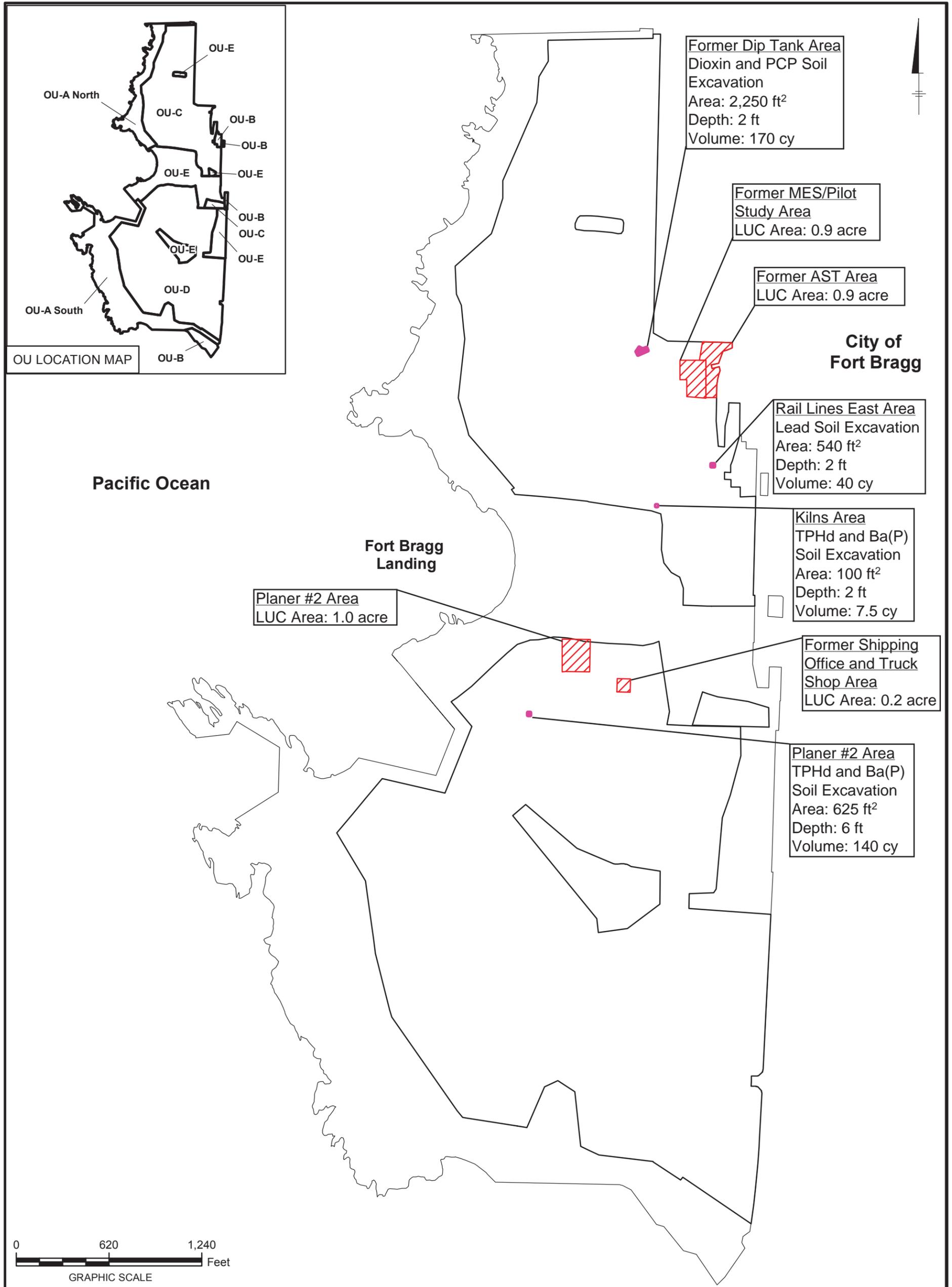
DISTRIBUTION

Tom Lanphar, DTSC

Bob Merrill, Coastal Commission

ATTACHMENTS

1. Attachment 1: Summary of OUC & D RAP Proposed Remedial Actions: Hot Spot removals, Soil and Soil Vapor Land Use Controls.
2. Attachment 2: Summary of OUC & D RAP Proposed Remedial Actions: Hot Spot removals, Soil and Soil Vapor Land Use Controls on an Aerial Photo.
3. Attachment 3. Proposal Remedial Measures and ESHA Locations
4. Attachment 4: Mitigated Negative Declaration for OUC &D RAP
5. Attachment 5: Site Photos



LEGEND:

-  REMEDIAL ALTERNATIVE INCLUDES SOIL LAND USE CONTROLS RESTRICTING RESIDENTIAL OR OTHER SENSITIVE LAND USES, AND AN OPERATIONS AND MAINTENANCE PLAN, INCLUDING A SOIL MANAGEMENT PLAN
-  APPROXIMATE AREAL EXTENT OF HOT SPOT EXCAVATION

NOTE:
 ALL HOT SPOT EXCAVATION AREAS ARE APPROXIMATE PRESUMPTIVE REMEDY AREAS. ACTUAL EXTENT OF EXCAVATION TO BE DETERMINED UPON RECEIPT OF CONFIRMATION SAMPLES ANALYTICAL RESULTS AND FIELD CONDITIONS.

- Ba(P) BENZO(A)PYRENE
- cy CUBIC YARDS
- ft FEET
- ft² FEET SQUARED
- LUC LAND USE CONTROL
- PCP PENTACHLOROPHENOL
- TPHd TOTAL PETROLEUM HYDROCARBONS AS DIESEL

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
**COASTAL DEVELOPMENT PERMIT:
 OU-C AND OU-D RAP IMPLEMENTATION**

**SUMMARY OF OU-C AND OU-D RAP PROPOSED
 REMEDIAL ACTIONS: HOT SPOT EXCAVATION
 AND SOIL/SOIL VAPOR LAND USE CONTROLS**





LEGEND:

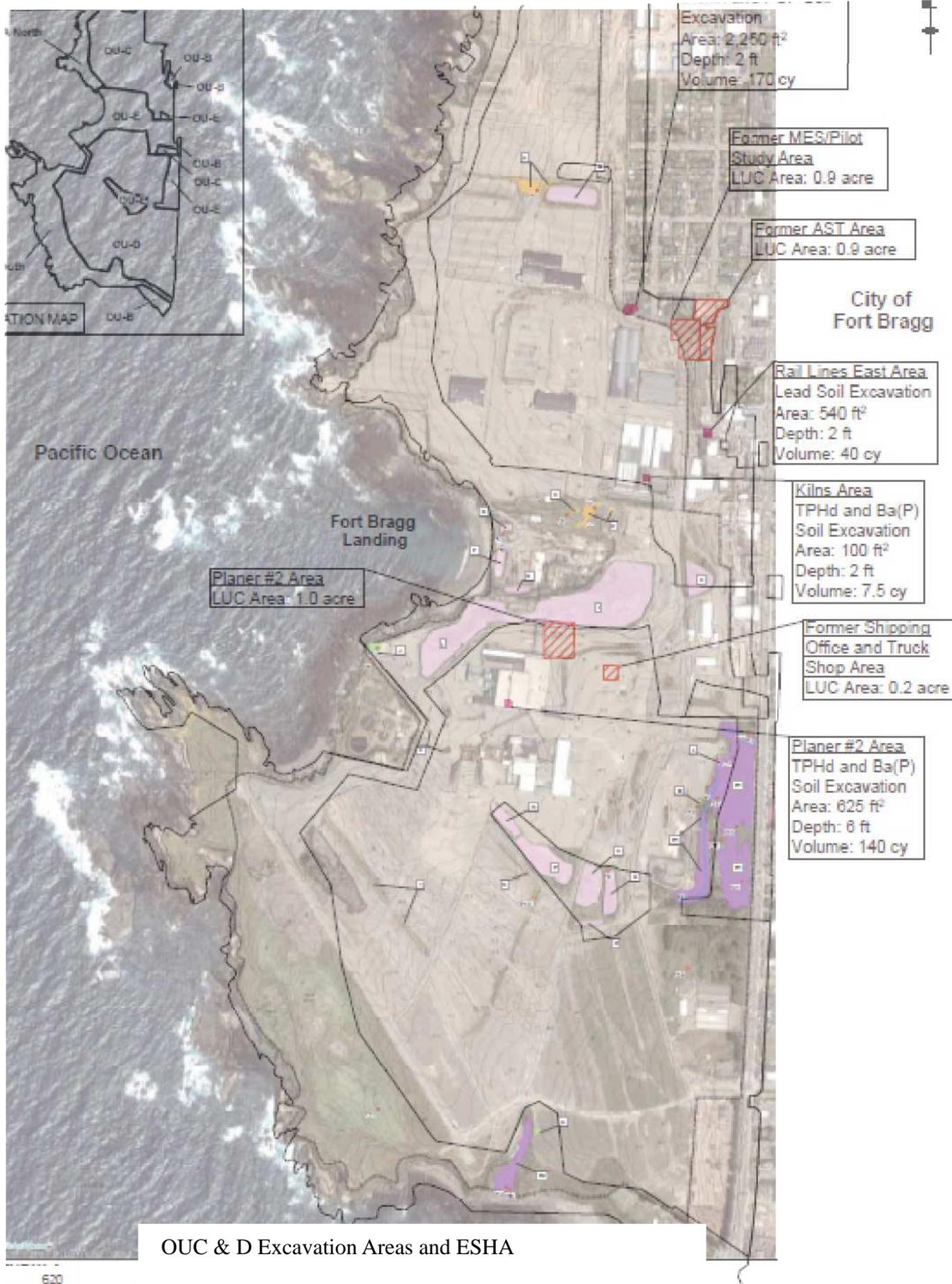
-  REMEDIAL ALTERNATIVE INCLUDES SOIL LAND USE CONTROLS RESTRICTING RESIDENTIAL OR OTHER SENSITIVE LAND USES, AND AN OPERATIONS AND MAINTENANCE PLAN, INCLUDING A SOIL MANAGEMENT PLAN
-  APPROXIMATE AREAL EXTENT OF HOT SPOT EXCAVATION

- Ba(P) BENZO(A)PYRENE
- cy CUBIC YARDS
- ft FEET
- ft² FEET SQUARED
- LUC LAND USE CONTROL
- PCP PENTACHLOROPHENOL
- TPHd TOTAL PETROLEUM HYDROCARBONS AS DIESEL

NOTE:
 ALL HOT SPOT EXCAVATION AREAS ARE APPROXIMATE PRESUMPTIVE REMEDY AREAS. ACTUAL EXTENT OF EXCAVATION TO BE DETERMINED UPON RECEIPT OF CONFIRMATION SAMPLES ANALYTICAL RESULTS AND FIELD CONDITIONS.

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
 COASTAL DEVELOPMENT PERMIT:
 OU-C AND OU-D RAP IMPLEMENTATION

SUMMARY OF OU-C AND OU-D RAP PROPOSED
 REMEDIAL ACTIONS: HOT SPOT EXCAVATION
 AND SOIL/SOIL VAPOR LAND USE CONTROLS



OUC & D Excavation Areas and ESHA

CALIFORNIA ENVIRONMENTAL QUALITY ACT INITIAL STUDY

The Department of Toxic Substances Control (DTSC) has completed the following document for this project in accordance with the California Environmental Quality Act (CEQA) [Pub. Resources Code, div. 13, § 21000 et seq] and accompanying Guidelines [Cal. Code Regs., tit. 14, § 15000 et seq].

| | | |
|---|------------------------------------|-------------------------------------|
| PROJECT TITLE: Georgia-Pacific Corp Fort Bragg Mill Site OU-C & OU-D Project – Remedial Action Plan | | CALSTARS CODING: 20040200 |
| PROJECT ADDRESS: 90 West Redwood Avenue | CITY: Fort Bragg | COUNTY: Mendocino |
| PROJECT SPONSOR: Georgia-Pacific, LLC | CONTACT: Dave Massengill | PHONE: (404) 652-5054 |

| | | | |
|--|--|--|----------------------------------|
| APPROVAL ACTION UNDER CONSIDERATION BY DTSC: | | | |
| <input type="checkbox"/> Initial Permit Issuance Plan | <input type="checkbox"/> Permit Renewal | <input type="checkbox"/> Permit Modification | <input type="checkbox"/> Closure |
| <input type="checkbox"/> Removal Action Workplan Regulations | <input checked="" type="checkbox"/> Remedial Action Plan | <input type="checkbox"/> Interim Removal | <input type="checkbox"/> |
| <input type="checkbox"/> Other (specify): | | | |

| |
|--|
| STATUTORY AUTHORITY: |
| <input type="checkbox"/> California H&SC, Chap. 6.5 <input checked="" type="checkbox"/> California H&SC, Chap. 6.8 <input type="checkbox"/> Other (specify): |

| | | |
|--|-----------------------------------|---------------------------------|
| DTSC PROGRAM/ ADDRESS: Brownfields and Environmental Restoration Program 700 Heinz Avenue, Suite 200 Berkeley, CA 94710-2721 | CONTACT: Thomas Lanphar | PHONE: (510) 540-3776 |
|--|-----------------------------------|---------------------------------|

| |
|---|
| <p>PROJECT DESCRIPTION:</p> <p>The California Department of Toxic Substances Control (DTSC) pursuant to regulatory authority granted under Chapter 6.8, Division 20 of the Health and Safety Code (H&SC) is considering approval of a Remedial Action Plan (RAP) to address soil and groundwater contamination existing at the Operable Unit (OU) C and OU-D sites located at the former Georgia-Pacific Corporation, Inc. Mill Site. The remedial activities will involve excavation of approximately 1,108 to 1,858 cubic yards (yds³) or approximately 60 - 90 truckloads (approximately 120 – 180 round trips) of contaminated soils from 5 excavation sites. Excavated soil will be transported off-site and taken to an authorized hazardous waste disposal facility. In addition, approximately 1,108 to 1,858 yds³ of clean backfill materials will be imported from a nearby off-site location.</p> <p>Remedial action will also include installation of soil covers, implementation of natural attenuation and monitoring to address contaminants present in groundwater beneath the site, site restoration activities, imposition of Land Use Covenants (LUCs), and approval of an Operations and Maintenance Plan.</p> <p><i>Background</i></p> <p>According to historic records, Union Lumber Company (ULC) began sawmilling operations at the 4215</p> |
|---|

acre site in 1885. Georgia-Pacific Corporation acquired the site in 1973 and ceased lumber operations in August 2002. Industrial operations at the site included lumber production and power generations by burning residual bark and wood. Most of the equipment and structures associated with the lumber production have since been removed. OU-C and OU-D are situated within the Upland Zone of the Mill Site, which is the elevated land beginning from the inland edge of the Coastal Trail and Parkland Zone. (Attachment B, Figure 2) OU-C is approximately 105 acres and OU-D is approximately 159 acres.

OU-C and OU-D have been subdivided into 32 Areas of Interest (AOIs). The RAP currently under consideration addresses 21 AOIs- proposing Remedial Actions for 10 AOIs and No Further Action (NFA) for 11 AOIs. Of the remaining 11 AOIs in OU-C and OU-D, eight received No Further Action determinations in the RI Report and three were transferred to OU-E. These three AOIs (West IRM, IRM, and Riparian) were removed from OU-C and placed into OU-E because of similarities in environmental setting with OU-E and the possible day-lighting of Maple Creek. Soil, soil gas and groundwater are contaminated within OU-C and D. Groundwater plumes are stable, isolated, and generally decreasing in size. Groundwater at the former mill site is currently not being used. Below is a summary of the contaminants at the 10 AOIs with remedial actions proposed in the RAP.

1. Parcel 2 AOI:

- Groundwater: dioxin in shallow groundwater. Depth to groundwater is approximately 4-5 feet below ground surface (bgs).

2. Former Aboveground Storage Tank (AST) AOI:

- Soil: lead within the first two feet of soil and total petroleum hydrocarbons (TPH) at approximately 10 – 12 feet bgs.
- Soil vapor: benzene, ethylbenzene, 1,2,4-trimethylbenzene, and naphthalene is associated with TPH in soil and groundwater.
- Groundwater: benzene, naphthalene, TPH, tetrachloroethene (PCE), and cis-1,2-dichloroethene (cis-1,2-DCE) in shallow groundwater. Depth to groundwater is approximately 10 feet bgs.

3. Former Mobile Equipment Shop/Pilot Study AOI:

- Soil: lead within the first two feet of soil and total petroleum hydrocarbons (TPH) at approximately 10 – 12 feet bgs.
- Soil vapor: benzene, ethylbenzene, 1,2,4-trimethylbenzene, and naphthalene is associated with TPH in soil and groundwater.
- Groundwater: benzene, naphthalene, TPH, tetrachloroethene (PCE), and cis-1,2-dichloroethene (cis-1,2-DCE) in shallow groundwater. Depth to groundwater is approximately 10 feet bgs.

4. Former Dip Tank AOI:

- Soil: dioxins/furans and pentachlorophenol (PCP) in shallow soil from 0 to 2 feet bgs.
- Groundwater: dioxins/furans and PCP in shallow groundwater. Depth to groundwater is approximately 8 feet bgs.

5. Rail Lines East AOI:

- Soil: lead and Benzo(a)Pyrene [B(a)P] in shallow soil from 0 to 2 feet.

6. Kilns AOI:

- Soil: TPHd and B(a)P in shallow soil from 0 to 2 feet.

7. Former Planer #2 AOI:

- Soil: TPHd and B(a)P at 4 to 5 feet bgs.
- Soil Vapor: 1,1-dichloroethene, 1,2,4-trimethylbenzene, PCE, vinyl chloride associated with similar contaminants in groundwater
- Groundwater: 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), and naphthalene. Depth to groundwater is approximately 3 to 5 feet bgs.

8. Former Shipping Office and Truck Shop AOI:

- Soil: TPHd in deep soil at approximately 9 to 10 feet bgs.

9. Sawmill/Sorter AOI:

- Groundwater: arsenic at approximately 4 to 5 feet bgs.

10. Greenhouse AOI:

- Groundwater: atrazine at approximately 7 to 9 feet bgs.

Project Activities:

The remediation activities are proposed to be implemented in two (2) phases starting in the Summer 2015 and ending in Summer 2016. Phase 1 is expected to take one (1) to two (2) weeks where four (4) areas of approximately 358 yds³ of chemicals of concern (COCs) impacted soils will be excavated and Phase 2 is expected to take two (2) to four (4) weeks to excavate COC impacted soils at one location with the projected volume of 750 to 1,500 yds³. The anticipated soil removed from both phases equal approximately 1,108 to 1,858 yds³. All excavated soils will be transported to an off-site permitted facility for disposal. The time frame of project implementation may change based on permitting and coordination with the cleanup at the California Western Railroad.

Soil Contamination

- Excavation of 1,108 to 1,858 yds³ of contaminated soils from five locations and disposal of soil at an off-site permitted facility(ies). Soils will be transported to either Keller Canyon Landfill in Pittsburg or Hay Road Landfill in Vacaville or another facility permitted to accept the contaminated soil. The total combined acreage of area disturbed by the excavations is less than one acre.
- Importation of approximately 1,108 to 1,858 yds³ of backfill material from the Noyo Harbor Dredge Sand, from a location south and adjacent to the site and at the north side of the entrance to Noyo Harbor, or from another as-yet undetermined source for backfill material if material from Noyo Harbor is not available. Some of the excavations are small and may not require backfill material and will be graded to match existing grade. Backfill material will be tested for contaminants in accordance with DTSCs October 2001 *Imported Advisory on Clean Fill Material*.
- Site restoration involves the backfill or excavation areas to match existing grade and based on the current surface, re-vegetation with California coastal native plant seed mix or finished with stone or gravel.
- Recording Land Use Covenant (LUC) to restrict residential and other sensitive uses of property with residual soil or soil gas contamination exceeding unrestricted remedial goals and

restrictions on the use of groundwater containing contaminants that exceed groundwater remedial goals.

Groundwater

Groundwater remediation activities involve the removal of the source of groundwater contamination in the soil, as described above, and the reliance on Natural Attenuation (NA) processes to achieve remedial goals of contaminants in groundwater. NA relies on the processes naturally occurring within the aquifer to gradually reduce the mass, toxicity, mobility, volume, or concentration of contaminants in groundwater. Activities such as groundwater pumping or the injection of chemical or biological additives to the groundwater are not needed for natural attenuation. The NA remedy does include regular groundwater monitoring, as operations and maintenance activities, to document the rate of contaminant reduction and determine if remedial goals are met. Natural Attenuation processes include a variety of physical, chemical, or biological processes, including absorption, reduction and bioremediation. Groundwater will be monitored using existing groundwater monitoring wells and no new wells will be installed. Operations and Maintenance (O&M) will be conducted at locations where residual soil and groundwater contamination remains on-site and a LUC is required.

ENVIRONMENTAL IMPACT ANALYSIS:

1. Aesthetics

Project Activities Likely to Create an Impact:

- Construction activities (e.g. staging, excavating, importing, stockpiling, decontamination, etc) at designated areas.
- Temporary landscape modifications including excavation, regrading, and revegetation.
- Use of heavy equipment and trucks during excavation and transportation of contaminated soils.
- Use of heavy equipment and trucks during importation of clean soils/backfill.
- Site restoration and monitoring activities.

Description of Baseline Environmental Conditions:

The former Georgia-Pacific mill is bounded by the Pacific Ocean to the west, open coastline to the north, Noyo Bay to the south, and the City to the east. OU-C is located in the northern half of the former mill site (north of Oak Street) and between the Coastal Trail northern section (OUA- north) and the City of Fort Bragg. OU-D is located in the southern part of the former mill site (south of Oak Street) and between the Coastal Trail southern section (OUA-south) and the City of Fort Bragg. OU-C and OU-D are essentially vacant and only a few building remain from the former mill operations. The vacant property provides some vistas from the City of Fort Bragg to the ocean. The view from the City to the ocean is obstructed in most places by fences, trees and buildings.

The California Department of Transportation (Caltrans) has classified SR 1 (aka Highway 1) between Marin City and Leggett as an eligible scenic highway (Caltrans 2011). The City's certified Local Coastal Program (LCP) identified land west of SR 1 as a scenic corridor. The City's Municipal Code Section 18.61.02 states that new development must minimize the alteration of landforms, be visually compatible with the surrounding area, designed to protect views to and along the ocean and scenic coastal areas, and restore the visual quality of visually degraded areas when feasible (City of Fort Bragg 2008).

Analysis as to whether or not project activities would:

- a. Have a substantial adverse effect on a scenic vista.

Impact Analysis:

The proposed remedial actions (excavations, groundwater Natural Attenuation and LUCs) of the OU-C & OU-D RAP would not have a substantial adverse effect on a scenic vista because the scenic vistas of the Pacific Ocean and coastline view at Pudding Creek and Noyo River are oriented away from the subject property. Additionally, distance reduces the potential for adverse effects from the proposed project; the closest designated coastal scenic corridors are located approximately one mile north of the Project Site at the public access facility at the mouth of Pudding Creek and one mile south along the base of the Noyo River bluffs at the end of North Harbor Drive. A substantial adverse effect on a scenic vista is not expected because excavation activities will be short-term and limited (3 - 6 weeks) and all excavation areas will be returned to grade level by backfilling and then re-vegetated or covered with rock or gravel to replicate the current grade and type of vegetative cover. Natural Groundwater Attenuation takes place below ground surface and would not be visible. LUCs are legal administrative documents that would not affect the visual environment.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a state scenic highway.

Impact Analysis:

The Project Site has been previously disturbed and developed for industrial operations. Implementation of the proposed project would not damage any scenic resources, such as trees, rock outcroppings, or historic buildings.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- c. Substantially degrade the existing visual character or quality of the site and its surroundings.

Impact Analysis:

The proposed project is temporary and will only last approximately 3 - 6 weeks for both phases. The remedial activities (excavation activities, stockpiling of soils, etc.) are not expected to block views of the coast from public access points around the site (i.e. SR 1, Noyo River, City of Fort Bragg) because existing structures block any view of the work areas from coastal views, the work areas are distant from public access/viewpoints, or the work areas are at topographically lower points. Based on the limited number of coastal views, the limited potential for the activities to block scenic views, and the temporary nature of the proposed project, degradation of the visual quality surrounding the site would not be expected to occur.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Impact Analysis:

The remedial actions (excavations, groundwater Natural Attenuation and LUCs) of the OU-C & OU-D Remedial Action Plan will take place only during the day and will not require new sources of permanent or temporary lighting.

Conclusion:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

References Used:

1. ARCADIS, Remedial Action Plan Operable Units C and D, Former Georgia Pacific Wood Products Facility, 2015
2. CALTRANS, Named Freeways, Highways, Structures and Other Appurtenances In California, 2006
3. CALTRANS, California Scenic Highway System, (updated 9/07/2011) (http://www.dot.ca.gov/hq/LandArch/scenic_highways/). Website accessed March 21, 2015. City of Fort Bragg, Coastal General Plan, Conservation, Open Space, Energy, and Parks, updated 2008.
4. TRC, Phase II Determination of Significant Standing Structures, Georgia-Pacific Lumber Mill, Fort Bragg, California, undated)
5. TRC, Archaeological Survey of the Georgia Pacific Lumber Mill Fort Bragg, California, 2003

2. Agricultural Resources

Project Activities Likely to Create an Impact: NONE. The proposed project is not located in or near any agricultural resources. Although the area is designated as “Timber Resources Industrial” in the City’s Land Use Plan within a Coastal Zone combined zoning designation of IT-CZ (City of Fort Bragg, 2008), the site is vacant and has not been used for processing timber since 2002. Implementation of the proposed project would not affect the viability of the site to be used again at some point in the future for processing timber. Therefore, no impacts to agricultural resources will occur. For these reasons, no further analysis of impacts to this category is deemed necessary.

Description of Baseline Environmental Conditions:

Analysis as to whether or not project activities would:

- a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.

Impact Analysis: The project site does not include any type of farmlands.

Conclusion:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

- b. Conflict with existing zoning or agriculture use, or Williamson Act contract.

Impact Analysis: The project site is not zoned for agricultural use.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- c. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural uses.

Impact Analysis: See above. There would be no changes to existing environment which could result in conversion of farmland to non-agricultural uses.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

References Used:

1. California Department of Conservation, Farmland Mapping and Monitoring Program,: Mapping Important Farmland <http://maps.conservation.ca.gov/ciff/ciff.html>
2. City of Fort Bragg, Land Use Designation Map, July 22, 2008 <http://city.fortbragg.com/pdf/ZoningMapRevisionDate7-22-2008.pdf>.

3. Air Quality

Project Activities Likely to Create an Impact:

- Use of construction equipment (e.g. trucks, bulldozers, excavators, etc), worker vehicles, and other construction activities.
- Transportation of excavated soil by trucks to off-site disposal facility.
- Importation of clean backfill materials.
- Generation of dust during excavation, backfilling, grading, stockpiles, and transportation of contaminated soils and possible clean soils.

Description of Baseline Environmental Conditions:

The site is located in the North Coast Air Basin, within the jurisdiction of Mendocino County Air Quality Management District (MCAQMD). The MCAQMD establishes air pollution control measures for the North Coast Air Basin. Mendocino County is an "attainment area" for most local, state, and federal air quality standards, including Particulate Matter (PM) 2.5. Mendocino County is a non-attainment area for suspended particulate matter less than 10 microns in size (PM10) under the State PM-10 standard. The primary sources of PM-10 pollution in the area are wood combustion (woodstoves, fireplaces, and outdoor burning), fugitive dust, automobile traffic, and industry. In the City, the salt spray from the Pacific Ocean contributes to the non-attainment status for PM10, but dust from unpaved roads is the largest source of PM10 in the area (MCAQMD, 2005).

Excavation, backfilling, grading, transportation activities may result in temporary increases in airborne dust emissions during construction. These activities are subject to the conditions of Regulation 1, Rule 430 (Fugitive Dust Emissions) of the MCAQMD, which prohibits activities that cause unnecessary

amounts of particulate matter to become airborne. MCAQMD Rule 1-430(b) requires that reasonable precautions shall be taken to prevent particulate matter from becoming airborne.

According to MCAQMD regulation Rule 1 -130(L1) Large Grading Activities definition and Rule 1 – 200(a) Authority to Construct, a grading and dust control permit is required for large grading activities, which is defined as grading activities involving more than one (1) acre of exposed soil or more than one mile of road during any single calendar year. Although OU-C and OU-D are over 260 acres, the area of exposed soil for proposed remedial action excavation activities is less than one acre; therefore, the project does not require a Construction and Grading permit from the MCAQMD.

Analysis as to whether or not project activities would:

- a. Conflict with or obstruct implementation of the applicable air quality plan.

Impact Analysis:

The MCAQMD published a Particulate Matter Attainment Plan in 2005 (MCAQMD, 2005a). This plan provides policy and direction for the eventual attainment of the PM10 state and federal air quality standards. As part of the plan, MCAQMD has established rules regulating activities that can generate fugitive and permit requirements for construction projects with over 1 acre of disturbance.

MCAQMD Rule 1-430(b) requires that reasonable precautions shall be taken to prevent particulate matter from becoming airborne. Because the project may generate dust, which could contain hazardous materials, dust control best management practices, including those identified in MCAQMD Rule 1-430(a) will be used as mitigation measures to ensure that no significant dust impacts occur.

Mitigation Measures:

MM1: Excavation activities will be suspended if winds exceed 15 miles per hour (mph) sustained (for 15 minutes) or 25 mph (instantaneous gusts).

MM2: Vehicles entering or exiting construction areas will travel at a speed that minimizes dust, but not to exceed 15 mph. Construction workers will park in designated parking area(s) to reduce dust. All unpaved areas shall have a posted speed limit of 10 mph.

MM3: Water will be applied by means of trucks, hoses, and/or sprinklers prior to removal and excavation activities to minimize dust.

MM4: Water will be applied to disturbed areas as needed to keep working surfaces moist enough to minimize dust.

MM5: The disturbed work area will be sprayed with water at the end of the work shift to form a thin crust.

MM6: Earth or other material tracked onto neighboring (onsite or offsite) paved roads shall be removed promptly. Onsite paved roads will be washed down as needed. Parking areas, staging areas, and traffic pathways on the site shall be cleaned, as necessary, to control dust. Adjacent public streets shall also be cleaned, promptly, if soil materials from the site are visible.

MM7: Water will be applied to visibly dry unpaved roads to keep road surfaces moist enough to minimize dust emissions.

MM8: Soil stockpiles 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.

MM9: When not covered, soil stockpile surfaces will be kept visibly moist by water spray.

MM10: Open bodied trucks shall be covered when used to transport materials with the potential for airborne dust; and

MM11: Trucks and tires will be washed off before leaving the Mill Site to minimize tracking of dioxin/furans-affected dirt onto Cypress Street and/or SR 1. The waste water shall be collected with catch basin(s), managed on-site, and transported off-site for disposal.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Impact Analysis:

The proposed project would not be expected to result in, or substantially contribute to, an air quality violation for PM10 due to size of the project, less than one acre of disturbed area, and the control measures listed above in Section 3a. Mendocino County is a non-attainment area for only PM10. The size of the project, less than one acre of disturbed area, is below the threshold for needing a MCAQMD permit. Daily emissions are presented and compared to MCAQMD standards on the table below.

Excavation of approximately 1,600 yds³ of TPHd contaminated soil, as part of the approximately 1,858 yds³, is planned as Remedial Actions in the OUs C and D RAP. 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 of disturbed area threshold for the MCAQMD.

Emissions from heavy-duty trucks or excavation equipment (gasoline and diesel fueled) are not expected to result in significant short-term air quality impacts or violations as trucks would be limited to a 25 trucks per day maximum. Off-site heavy-duty diesel truck traffic would be limited to 25 truck round trips per day maximum. This includes the trucks used for off-site disposal and for trucks in-hauling Noyo River sand.

Table 1 below list the estimated daily emissions for specific contaminants including Reactive Organic Gases (ROG), Nitrous Oxides (NOx), Carbon monoxide (CO), sulfur dioxide (SO₂), and particulate

matter (PM) 2.5 and 10 and compares the contaminants to the MCAQMD standards (MCAQMD, Rule 1-130(s2) Definitions) . This shows that the annual emissions are insignificant when compared to the standards of the SCAQMD.

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

| Annual Operational Emissions | | | | | | |
|---|--|-----------------|------|-----------------|-------------------|------------------|
| 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 | 6.39 | 5.49 | 5.74 | 0.00933 | 0.06466 | 0.1933 |
| Mendocino County Air Quality Management District Standards ² | NA | 220 | 550 | 220 | 135 | 80 |

1. CalEEMod, Version 2013.2.2. Model Run Date: 4/27/2015
2. MCAQMD, Rule 1-130 (s2): Significant definition.

Conclusion:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

- c. Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

Impact Analysis:

Mendocino County is in non-attainment for only PM10. The table presented in section 3c shows that the estimated daily PM10 emissions, based on the CalEEMod model analysis, is far below the daily PM10 standard of the MCAQMD (Rule 1-130(s2)). Mendocino County is in attainment for all other criteria pollutants.

Conclusion:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

- d. Expose sensitive receptors to substantial pollutant concentrations.

Impact Analysis:

The closest sensitive receptors (i.e., schools, daycare facilities, residences, etc.) to the excavation sites are at least 300 ft. to 1,200 ft. (0.25 miles) of the proposed excavations. The closest receptors are residences, located on West Pine Street are approximately 300 feet north of the planned excavation at the Aboveground Storage Tank Area of Interest (Attachment B, Figure 2). Fort Bragg Middle School and Fort Bragg Elementary School, are the nearest schools, and are approximately 0.8 miles from the excavation sites at the former Georgia-Pacific mill site. The nearest hospital, Coast Hospital, is approximately 1.5 miles from the excavation sites at the former Georgia-Pacific mill site.

BMPs identified in above Section 3a will minimize the generation of visible dust and prevent dust from migrating offsite. As discussed in above Section 3b and shown in the table, emission of PM10 and other pollutants are expected to be well below standards set by MCAQMD. Therefore, impacts associated with excavation, earth moving, and grading activities are considered less than significant. Signs will be posted at the fence line of the Mill Site identifying who to contact in case someone in the public has questions or concerns.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

e. Create objectionable odors affecting a substantial number of people.

Impact Analysis:

The project includes the planned excavation and off-site disposal of approximately 1,000 yds³ of petroleum, primarily diesel, contaminated soil. The MCAQMD does not have specific regulations or rules addressing petroleum contaminated soil. Diesel contaminated soil can have odors, but the excavation areas are small, less than one acre, and mitigation measure MM8 listed in above Section 3a will minimize odors. Therefore, no significant objectionable odors will be affecting a substantial number of people.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

f. Result in human exposure to Naturally Occurring Asbestos (see also Geology and Soils, f.).

Impact Analysis:

The Soil Survey for Mendocino County, Western Part (NRCS, 2002) maps soils onsite as Urban Land. Urban Land is described as being covered by approximately 60 percent paved surface containing landscaped areas and areas that have been graded for urban development. The map prepared by the MCAQMD showing areas that may contain naturally occurring asbestos in Mendocino County does not indicate that naturally occurring asbestos has been found in the Fort Bragg area. Based on the description of Urban Land and the map prepared by the MCAQMD, it is not anticipated that the proposed project would encounter naturally occurring asbestos. Therefore, no human exposure will occur.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

References Used:

1. AME, *Work Plan for Additional Site Assessment, Georgia-Pacific California Wood Products Manufacturing Facility, 90 West Redwood Avenue, Fort Bragg, California, 2005*
2. ARCADIS BBL, *Remedial Action Plan, Operable Unit A, August 2008*
3. ARCADIS, *Remedial Action Plan, Operable Unit C and D Remedial Action Plan, 2015*
4. *Mendocino County Air Quality Management District Air Pollution Control Rules, 2005*
5. *National Resource Conservation Service, Soil Survey for Mendocino County, Western Part, 2002*
6. *Mendocino County Air Quality Management District, Particulate Attainment Plan, 2005*

4. Biological Resources

Project Activities Likely to Create an Impact:

- Excavation and transportation of contaminated soils, storage, backfilling, and other construction activities
- Importing of clean soils/backfill from Noyo Harbor Dredge Sands
- Use of heavy equipment (e.g. trucks, graders, bulldozers, excavators, etc).

Description of Baseline Environmental Conditions:

The excavation areas are within industrial areas of the former mill site and away from sensitive areas (Operable Units C and D Remedial Investigation Report, Figure 2-15 Habitat Map, ARCADIS February 2011). The majority of the closed mill site, and the area where the excavations will occur, has been extensively modified since the late 1800s for use as a sawmill, including a shipping and rail terminus, and for related forest products processing. The excavation site locations are within vacant former industrial areas and are covered with concrete, asphalt, dirt or gravel. The other areas of OU-C and OU-D are also former industrial property used for lumber milling or storage.

Environmentally Sensitive Habitat Areas (ESHAs) are defined in the California Coastal Act and LCP for the City and Mendocino County. A habitat assessment performed in 2005 identified five non-sensitive and seven sensitive plant communities onsite (WRA, 2005; updated 2007). The former sawmill site contains a variety of sensitive habitat areas of varying biological integrity including marine terrace bluff top margins populated in some areas with rare plants, coastal bluff face areas containing potential nesting sites and foraging areas for a variety of shoreline avian species, and wetland areas. Other ESHAs located in the Southern District of the Mill Site include the South Ponds, and the Maple Street Riparian Area located approximately 600 ft. to the east and north east. Offshore of the site is an intertidal rocky habitat providing substrate for intermittently exposed tide pools and persistently submerged littoral flora and fauna. The excavation areas and transportation routes are not adjacent to, or within sensitive areas.

Non-sensitive plant habitats found at the site include developed/industrial, non-native grassland, north coast buff scrub, beach, and planted coniferous woodland. Four of the five non-sensitive communities are found within the area designated as OU-A including developed/industrial, non-native grassland, northern coastal bluff scrub, and coastal strand. The non-sensitive community "developed/industrial" dominates the areas designated for remedial activities in the OU-C and D RAP.

Ruderal areas, including non-native grasslands, are potential nesting sites for ground nesting birds protected under the Migratory Bird Treaty Act (MBTA). Excavation areas are outside of ruderal areas that are potential nesting sites for ground nesting birds and are outside of ESHAs.

No temporary staging or stockpile areas in OU-C and OU-D will be located within or near sensitive habitats or ESHAs as described above.

Analysis as to whether or not project activities would:

- a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

Impact Analysis:

The proposed project's five excavation areas are within the industrial area of the former mill site, which is currently covered with asphalt or concrete and are all further than 50 feet from an ESHAs. Therefore, no substantial adverse effect, directly or through habitat modifications, on any species identified as candidate, sensitive, or special status species in local or regional plans, policies, or regulation by the California Department of Fish and Game or U.S. Fish and Wildlife Services will occur. Refer to above Section 4 Description of Baseline Environmental Conditions for additional detail.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

Impact Analysis:

The proposed project's five excavation areas are beyond 50 feet of any riparian habitat or other environmentally sensitive natural community. The excavation areas are within industrial areas of the former mill site, which are covered with concrete or asphalt. Therefore, no substantial adverse effect on any riparian habitat or other sensitive natural community will occur. Refer to above Section 4 Description of Baseline Environmental Conditions for a discussion on riparian habit and sensitive natural communities, including designated ESHAs.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Impact Analysis:

The proposed project's five excavation areas are not near or within any federally protected wetlands. The excavation areas are within industrial areas of the former mill site, which are covered with concrete or asphalt. Therefore, no substantial adverse effect on federally protected wetlands will occur.

BMPs identified in the Stormwater Pollution Prevention Plan (SWPPP) (ARCADIS 2010) 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.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Impact Analysis:

The proposed project is not located within the ocean or in established waterways (i.e. streams, rivers). The excavation areas are within industrial areas of the former mill site. There are also sufficient surrounding open lands outside the OU-C & OU-D for wildlife to avoid the remediation sites. The temporary construction activities at these locations will not affect migratory wildlife corridors. Therefore, no substantial impacts to native resident or migratory fish or wildlife species will occur. Refer to above Section 4 Description of Baseline Environmental Conditions for a discussion regarding the location of the excavation locations with established waterways and ESHAs.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- e. Conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Impact Analysis:

Remediation activities of OU-C & OU-D would not require the removal of trees. Section 18.62.060 of the City's Municipal Code states that "Grading shall be designed and grading operations shall be conducted to minimize the removal or disturbance of native vegetation to the maximum extent feasible." The City's Municipal Code also requires that trees not approved for removal in a grading permit to be protected from damage by proper grading techniques, fencing, and conducting no grading or heavy equipment operations within the protected zone of the trees. Therefore, the proposed project would not conflict with local policies or ordinances protecting biological resources.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Impact Analysis:

No habitat conservation plan or natural community conservation plan has been adopted or prepared that encompasses the site or the vicinity of the project site. Consequently, the proposed project would not conflict with such plans.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

References Used:

1. Biosearch, *Red-legged frog Identification, Georgia-Pacific Fort Bragg Facility, Mendocino County California, 2010*
2. ARCADIS, *draft Remedial Action Plan, Operable Unit C and D, 2015*
3. ARCADIS, *Remedial Investigation Report, Operable Unit C and D, Figure 2-5 Habitat Map OU C and OU D, February 2011*
4. *City of Fort Bragg, Municipal Code Section 18.62.060*

5. *WRA Environmental Consultants, Delineation of Potential Section 404 Jurisdictional Waters and Waters, 2005*
6. *WRA Environmental Consultants, Biological Assessment, 2005; updated 2007*
7. *WRA Environmental Consultants, Avian Habitat Utilization and Impact Assessment, 2006*
8. *Teresa Sholars, Botanical Survey for the Georgia-Pacific Mill Site Bluffs, 2005*

5. Cultural Resources

Project Activities Likely to Create an Impact:

- Excavation and transportation of contaminated soils, backfilling, and other ground disturbing activities.
- Importing of clean soils/backfill from an adjacent site.
- Use of heavy equipment (e.g. trucks, graders, bulldozers, excavators, etc).

Description of Baseline Environmental Conditions:

This cultural resources investigation indicated a high potential for cultural resource sites in large portions of the property (TRC undated; TRC, 2003). The known pre-historic sites are located all along the bluff areas within OU-A. The earlier surveys of the mill site did not identify any prehistoric sites located within the OU-C and D excavation areas, but potential historic resources (i.e., older building foundations, etc.) could be present in these areas (considered to have a moderate-to-high potential for historic resources).

The project area is within the boundaries of the Historic Mendocino Indian Reservation and the Fort Bragg Native American Archaeological District Boundary (City of Fort Bragg, Fort Bragg Coastal Restoration and Trail Project Subsequent Environmental Impact Report (EIR), 2013).

Analysis as to whether or not project activities would:

- a. Cause a substantial adverse change in the significance of a historical resource as defined in 15064.5.

Impact Analysis:

A cultural resources site reconnaissance prepared for the mill site (Archaeological Survey of the Georgia-Pacific Lumber Mill Fort Bragg, California, TRC Companies, Inc., March 2003) as well as subsequent work by Garcia and Associates (March 2010) indicates that there is a high potential for cultural resource sites in large portions of the property. The remedial activities of OU-C and OU-D are within the boundaries of the Historic Mendocino Indian Reservation and the Fort Bragg Native American Archaeological District Boundary (City of Fort Bragg, Fort Bragg Coastal Restoration and Trail Project Subsequent Environmental Impact Report (EIR), November 2014). Therefore, the project could potentially impact historical resources as defined in 15064.5.

The following is a brief summary of mitigation measures that will be implemented prior to and during construction activities by a professional archaeologist who meets the minimum requirements in accordance with the Secretary of Interior's Professional Qualifications, 36CFR Part 61 to ensure that the historical resources are protected. Details can be obtained in the Fort Bragg Coastal Restoration and Trail Project Subsequent EIR (November 2014).

Mitigation Measures:

MM12: A professional archaeologist and/or architectural historian will review previous archaeological reports prior to ground disturbing activities to identify the location and perimeter of historical resources within the Area of Potential Effect (APE); OU-C, and OU-D. These sensitive areas will be protected by appropriate fencing.

MM13: The professional archaeologist and a Native American Monitor will be on site during all ground disturbing activities.

MM14: Upon discovery of historical resources during construction activities, the professional archaeologist will halt all work within 50 ft. radius of the find until an assessment has been completed, and simultaneously report findings to the DTSC and City.

MM15: The professional archaeologist will submit a draft and final Phase II Investigation Report to the DTSC and City for review and approval.

MM16: The professional archaeologist must record and submit all necessary DPR 523 Forms to the California State Parks, Office of Historic Preservation upon completion of the Phase II Investigation Report.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Cause a substantial adverse change in the significance of an archeological resource pursuant to 15064.5.

Impact Analysis:

A cultural resources site reconnaissance prepared for the mill site (Archaeological Survey of the Georgia-Pacific Lumber Mill Fort Bragg, California, TRC Companies, Inc., March 2003) as well as subsequent work by Garcia and Associates (March 2010) indicates that there is a high potential for cultural resource sites in large portions of the property. OU-C and OU-D locations are not within any areas where archeological resources were identified during these surveys, but there is a potential for impacts on archeological resources because the remedial activities of OU-C and OU-D are within the boundaries of the Historic Mendocino Indian Reservation and the Fort Bragg Native American Archaeological District Boundary (City of Fort Bragg, Fort Bragg Coastal Restoration and Trail Project Subsequent EIR, November 2014).

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 (3) response letters were received from 1) the Sherwood Valley Rancheria Band of Pomo Indians (Sherwood Valley Pomo), 2) the Potter Valley Tribe of Pomo Indians, and 3) the Kashia Band of Pomo Indians. Only the Sherwood Valley Pomo responded with an interest to participate in further consultation and requested the presence of Tribal Monitors at the five excavations planned for OU C and D (Sherwood Valley Rancheria Band of Pomo Indians letters dated April 9, 2014).

On June 2, 2014 the Sherwood Valley Pomo and the City of Fort Bragg entered into a Memorandum of Understanding (MOU) (Attachment C) that defines Communication and Consultation Protocols, Native American Cultural Resource Treatment Protocols, Mitigation, and Monitoring. The MOU between the Sherwood Valley Pomo and the City of Fort Bragg is applicable to any project, at the former mill site, where the City of Fort Bragg performs a discretionary activity, which requires environmental review

under CEQA. Because the City of Fort Bragg is also the issuing agency for the Coastal Development Permit and the Grading Permit, which are necessary for implementation of excavation activities of this project, the mitigation measures included in the MOU are applicable requirements for this project. Further, the Sherwood Valley Pomo identified the measures included in the MOU as appropriate for mitigating potentially significant impacts of the currently proposed project.

Mitigation Measures:

MM12 through MM16 will also be implemented for the preservation and protection of archaeological resources during construction activities. Refer to section 5a above.

MM17: Native American or Tribal Monitor(s) will be Hazardous Waste Operations and Emergency Response (HazWOPER) trained and certified. Copies of current HazWOPER certification will be provided to DTSC and the City prior to implementation of construction activities.

MM18: Tribal monitoring services will be required whenever construction activities include ground disturbance of native soils in, or adjacent to, known and suspected archaeological sites. If during construction activities any archaeological artifacts or features are encountered, both the Project Archaeologist and the Tribal Monitor(s) 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 part of a site area that has been mitigated through data recovery, (4) whether the find is an isolated item, (5) whether the find is part of a larger previously unknown archaeological site. and (6) the best course of action to avoid or minimize impacts to the resources as applicable.

MM19: 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 the provisions of the Coastal Land Use and Development Code (CLUDC 17.50.030E), and the Memorandum of Understanding (MOU) and attachments between the City of Fort Bragg and Sherwood Valley Band of Pomo Indians shall be followed.

MM20: If the find is determined to be within an area mitigated through data recovery, it shall be expeditiously documented pursuant to the terms of the Data Collection Plan (DCP) and the ESA Monitoring Plan. Materials that are not collected by the archaeologist will be reburied onsite in the designated cultural resource reburial area or other area as agreed upon in writing by the parties.

MM21: If the find is determined to be either from a clearly disturbed context (i.e. disturbed fill soils, back dirt piles) or the find is determined to be an isolated find that is clearly not associated with an archaeological site, the item shall be recorded as such and then reburied onsite in the designated cultural resource reburial area or other area as agreed upon in writing by the parties.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Impact Analysis:

The proposed project is not expected to directly or indirectly destroy a unique paleontological resource or unique geological features in or in close vicinity to the sites. No paleontological resources are known to be present at these locations. Therefore, this project would not result in

impacts on a unique paleontological or geological feature. Refer to Fort Bragg Coastal Restoration and Trail Project Subsequent Environmental Impact Report (EIR), 2014)

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- d. Disturb any human remains, including those interred outside of formal cemeteries.

Impact Analysis:

A cultural resources site reconnaissance prepared for the mill site (Archaeological Survey of the Georgia-Pacific Lumber Mill Fort Bragg, California, TRC Companies, Inc., March 2003) as well as subsequent work by Garcia and Associates (March 2010) indicates that there is a high potential for cultural resource sites in large portions of the property. The remedial activities of OU-C and OU-D are within the boundaries of the Historic Mendocino Indian Reservation and the Fort Bragg Native American Archaeological District Boundary (Fort Bragg Coastal Restoration and Trail Project, Phase II, Subsequent Environmental Impact Report (EIR), November, 2014).

Although there is a historic cemetery at the former mill site, the five OU-C and D excavation locations are outside of areas identified as the historic cemetery. Therefore, no disturbance of human remains or formal cemeteries is anticipated to occur. However, if human remains and associated items are encountered at any time during this undertaking all applicable state and federal laws including but not limited to, Health and Safety Code §7050.5, PRC 5097.94, and/or PRC 5097.98 will be enforced.

Mitigation Measures:

MM12 through MM21 will also be implemented for the preservation and protection of any accidental discoveries of human remains and their associated funerary objects during construction activities. Refer to 5a and 5b.

Additionally, the following mitigation measures must also be implemented with this RAP:

MM22: Human remains will not be disturbed or removed from their original resting place unless removal is unavoidable and necessary.

MM23: Procedures for the discovery of human remains and associated items are as follows.

- a. Georgia-Pacific or designee shall first contact the appropriate law enforcement agency (County Coroner) and immediately notify the Tribal Chairman and Tribal Historic Preservation Officer (THPO) or assigned designee. If the remains constitute a crime scene, all applicable laws and procedures apply.
- b. If the discovery is not a crime scene, all ground disturbing activities shall cease at the discovery location including a buffer as determined by the Project Archaeologist, in consultation with the Tribal monitor and the THPO, but not less than 50 feet. No construction activities will take place within the buffer until an archaeological investigation has been completed.
- c. Out of respect for the remains, all work related to the remains shall be conducted out of the public eye, unless otherwise required by law.
- d. If the Coroner determines that the remains are of, or thought to be of Native American origin, they are required to contact the Native American Heritage Commission pursuant to PRC 5097.98.
- e. The Native American Heritage Commission (NAHC) will then immediately designate a person or persons it believes is the Most Likely Descendent (MLD). The MLD shall within 48 hours of being notified recommend means for treating and disposing with appropriate dignity, the human remains and associated items.

- f. The preferred protocol upon the discovery of Native American human remains is to secure the area, cover any exposed human remains or other cultural items, and to avoid further disturbance. No laboratory studies are permitted. The preferred treatment for exhumed Native American human remains is reburial in an area not subject to further disturbance. Should reburial of the human remains be required, Georgia-Pacific shall rebury them in the designated reburial area on site.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

References Used:

1. ARCADIS, draft Remedial Action Plan for Operable Units C and D, 2015
2. City of Fort Bragg, Fort Bragg Coastal Restoration and Trail Project, Phase II, Subsequent EIR, November 2014
3. The City of Fort Bragg City Government; ci.fort-bragg.ca.us
4. Van Bueren, Historic Property Survey Report and Findings of Effect for the Fort Bragg Coastal Trail Project in the City of Fort Bragg, California, July 30, 2010
5. TRC, Phase II Determination of Significant Standing Structures Georgia Pacific Lumber Mill Fort Bragg, California, undated
6. TRC, Archaeological Survey of the Georgia Pacific Lumber Mill Fort Bragg, California, 2003
7. TRC, Site Specific Treatment Plan for Cultural Resources, Georgia Pacific Lumber Mill, Fort Bragg, California – Draft, 2006
8. Sherwood Valley Band of Pomo Indians, letters to Thomas Lanphar, dated April 9, 2014.
9. City of Fort Bragg and Sherwood Valley Band of Pomo Indians, Monitor Agreement for the Fort Bragg Coastal Trail Project, April 9, 2014
10. Garcia and Associates, Archeological Extended Phase I Studies Within the Northern Portion of the Georgia-Pacific Corporation Property, Fort Bragg, Mendocino, March 2010

6. Geology and Soils

Project Activities Likely to Create an Impact:

- Transportation of contaminated soils, storage, backfilling, and other construction activities
- Importation of clean soils/backfill from Noyo Harbor Dredge Sands
- Use of heavy equipment (e.g. trucks, graders, bulldozers, excavators, etc).

Description of Baseline Environmental Conditions:

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 (Complex) and consists of a variety of rock types. In the north coast region the 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 Complex, ranging in age from the Upper Jurassic to the late Cretaceous. The Coastal Belt consists predominantly of greywacke sandstone and shale.

Relative to the project site, the San Andreas Fault is offshore about nine miles. The Coastal Belt has undergone weak to intensive deformation, which has included folding, uplifting, tilting, and overturning. Also, of importance to the seismicity of the region is the Mendocino Triple Junction, the terminus of the

San Andreas Fault, which is located in the Cape Mendocino area approximately 80 miles to the north-northwest of Fort Bragg. This boundary represents the point at which the San Andreas Fault, the Mendocino Fracture Zone, and the Cascadia Subduction Zone meet. It is an extremely active tectonic and seismic zone and earthquakes have occurred frequently in the area.

Other geologic units present in the City and the vicinity include surface geologic units, including deposits of beach and dune sands, alluvium, and marine terrace deposits. The most important of these at the site are the marine terrace deposits of Pleistocene age, which cut bedrock surfaces along the coast and form much of the coastal bluff material overlying bedrock. The marine terrace deposits are massive, semi consolidated clay, silt, sand and gravel, ranging from 1 to 140 feet in thickness.

The site is underlain by Quaternary (less than 1.5 million years old) terrace sediments (BCI, 2006). The terrace deposits consist of poorly to moderately consolidated marine silts, sands, and gravels and are overlain by a 3- to 4-foot-thick mantle of topsoil. The terrace soils are underlain by Tertiary-Cretaceous marine sediments (approximately 65 million years old) of the Coastal Belt Franciscan Formation, composed of well consolidated sandstone, shale, and conglomerate. Currently, the bluffs at the site range from 0 to 80 feet in height (BACE Geotechnical, 2004).

The topsoil, terrace deposits, and Franciscan Formation are each exposed within the bluff face throughout the site. The topsoil is dark brown to black silty and clayey sand. The terrace soils consist of partly cemented, tan and orange-brown, sandy silt, with occasional lenses of cemented pebbly sand. The total thickness of the topsoil and terrace units typically varies from about 5 to 30 feet; in places, up to 20 feet of this can consist of emplaced fill (BACE Geotechnical, 2004).

The marine terraces contain strong, northwesterly trending structural features, including an unnamed, concealed fault south of the site. These features are parallel to the more regional fault traces, such as the San Andreas Fault west of the site (BACE Geotechnical, 2004; BCI, 2006). Several inactive faults and one potentially active fault have been observed in the bluffs at the site. The potentially active fault crosses a small, narrow peninsula within the northern bluffs; however, there is no evidence of movement along the fault within the last 11,000 years.

The regional hydrogeologic setting of the Mendocino County coast has been described in the *Mendocino County Coastal Ground Water Study* (California Department of Water Resources, 1982). The site is in the western coastal area of the county, which was divided into five subunits in the study: Westport, Fort Bragg, Albion, Elk, and Point Arena; these areas are separated by the major rivers that discharge to the Pacific Ocean. The site is located within the City's subunit, which extends from Big River on the south to Ten Mile River on the north.

Due to the undulating surface of relatively shallow Franciscan bedrock in the area of OU-C and D, the presence of groundwater in the overlying marine sediments is not continuous. Groundwater flow in this area is controlled by the seasonal fluctuation in the water table and its relationship to the contact between the fairly conductive marine sediments and relatively impermeable Franciscan bedrock. Recent monitoring of the shallow and deep piezometers installed in the vicinity of the Cell has confirmed that where flow occurs in the marine sediments, it is toward the northwest under an average horizontal hydraulic gradient of approximately 0.02 ft./ft. Typically, the average groundwater elevation beneath OU-C and D has been on the order of 74 ft. above mean sea level, and the drop in hydraulic head across the feature has commonly been about seven feet (ARCADIS 2011). Average depth to groundwater relative to ground surface is nine to ten feet.

Generally, monitoring data and topographic gradients demonstrate that onsite groundwater flow is primarily to the west-southwest toward the Pacific Ocean. The principal natural hydrological sources for the site are precipitation, surface runoff from adjacent lands, and stormwater discharge from the City. Most of the hydrological features at the site are manmade; over a century of sawmill operations have modified the natural hydrology significantly.

Analysis as to whether or not project activities would:

- a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
- Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. (Refer to Division of Mines and Geology Special Publication 42).
 - Strong seismic ground shaking.
 - Seismic-related ground failure, including liquefaction.
 - Landslides.

Impact Analysis:

There are no active earthquake faults in the City and all excavation areas would be graded to achieve stable slopes, positive drainage and match surrounding grade. The San Andreas Fault is located approximately nine miles to the west and the Maacama fault is approximately 22 miles to the east. Remedial activities of OU-C and OU-D would not have any adverse effect on the existing faults and would not create any hazard that could result in the exposure of any persons to increased risk due to fault activity, liquefaction, or ground-borne vibration because no known faults occur within the project area. Therefore, no impacts are expected.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Result in substantial soil erosion or the loss of topsoil.

Impact Analysis:

Removal of soil from the proposed project's five excavation areas will not result in loss of topsoil. The excavation areas are currently covered in concrete, asphalt, dirt or rock. Backfilled soils would be graded and compacted to ensure erosion associated with surface/ground water flow does not occur and all areas will be revegetated or covered with gravel following backfilling activities. Erosion control measures outlined in the construction SWPPP (ARCADIS 2010) would also be employed. All soil erosion control BMPs would remain in place until vegetation is established.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.

Impact Analysis:

The proposed project activities are located in relatively flat areas more than 1,000 feet from the coastal bluffs.

The OU-C and OU-D are not located on unstable soil, coastal bluffs, or areas that would be subject to landslide, lateral spreading, subsidence, liquefaction or collapse. The proposed project will not generate unstable geologic or soil conditions. Therefore, no impacts will occur.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

Impact Analysis:

The proposed project involves removing contaminated soil from five excavation areas. Based on the analysis contained in the Engineering Geologic Reconnaissance report (Brunsing Associates, Inc., 2004), the excavation areas are not located on expansive soils as defined in Table 18-1-B of the Uniform Building Code (1994).

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of water.

Impact Analysis:

The proposed project does not entail the construction or installation of septic tanks or alternative wastewater disposal systems. Therefore, it would not result in impacts due to alternative wastewater disposal systems.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- f. Be located in an area containing naturally occurring asbestos (see also Air Quality, f.).

Impact Analysis:

The Soil Survey for Mendocino County, Western Part (NRCS, 2002) maps soils at the former mill site as Urban Land. Urban Land is described as being covered by approximately 60 percent paved surface containing landscaped areas and areas that have been graded for urban development. The map prepared by the MCQAMD showing areas that may contain naturally occurring asbestos in

Mendocino County does not indicate that naturally occurring asbestos has been found in the Fort Bragg area. Based as the description of Urban Land and the map prepared by the MCQAMD, the proposed project does not anticipate encountering naturally occurring asbestos. Therefore, no impacts associated with disturbance of asbestos materials would occur.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

References Used:

1. ARCADIS. 2014. *Second 2014 Semi-Annual Groundwater Monitoring Report, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. Prepared for Georgia-Pacific LLC. ARCADIS U.S., Inc. December.*
2. *National Resource Conservation Service, Soil Survey for Mendocino County, Western Part, 2002*
3. Brunsing Associates, Inc., Engineering Geologic Reconnaissance report, 2004

7. Greenhouse Gas Emissions

Project Activities Likely to Create an Impact:

- Emissions created by construction equipment (e.g. trucks, graders, bulldozers, excavators, etc) and use of construction personnel vehicles
- Transportation of contaminated soils and waste materials, storage, backfilling, and other construction activities.
- Importation of clean soils/backfill.

Description of Baseline Environmental Conditions:

Unlike emissions of criteria and toxic air pollutants, which have local or regional impacts, emissions of greenhouse gases (GHGs) that contribute to global warming or global climate change have a broader, global impact. Global warming is a process whereby GHGs accumulating in the atmosphere contribute to an increase in the temperature of the earth's atmosphere. The principal GHGs contributing to global warming are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated compounds. These gases allow visible and ultraviolet light from the sun to pass through the atmosphere, but they prevent heat from escaping back out into space. Global climate change has the potential to impact sea level, water supply, agricultural resources, and natural wildlife habitats.

Anthropogenic (human generated) greenhouse gases are primarily produced through the use of stationary and mobile engines running on fossil fuels (for example: coal, gasoline, diesel, natural gas, etc.). GHG emissions can be reduced through the use of alternative fuels and reduced reliance on fossil fuel energy and transportation.

In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation. California produced 474 million gross metric tons (MMT) of CO₂ equivalent (CO₂e)¹ averaged over the

¹ CO₂e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Expressing emissions in CO₂e takes the contributions of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO₂ were being emitted.

period from 2002 to 2004. Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2002 to 2004, accounting for 38 percent of total GHG emissions in the state. This sector was followed by the electric power sector (including both in-state and out-of-state sources; 18 percent) and the industrial sector (21 percent; BAAQMD, 2011).

The Mendocino County Air Quality Management District (MCAQWMD) has not adopted a 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 (June 2010). The Bay Area Air Management District (BAAQMD) recommends using their 2009 CEQA Proposed Thresholds of Significance guidance for comparison. 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. The BAAQMD Guidelines recommend that the Lead Agency quantify and disclose GHG emissions that would occur during construction, and make a determination on the significance of these construction-related GHG emission impacts. Therefore, for this project, the construction emissions would be compared to the operational threshold for projects other than stationary sources.

Analysis as to whether or not project activities would:

- a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Impact Analysis:

The remedial activities of OU-C and OU-D will use construction equipment and include approximately 60 to 90 roundtrips, to and from the disposal facility(ies), during the four to six weeks of construction activities. Excavators will excavate and load soil onto haul trucks. Backfill soil will be marine sediment from a Noyo Harbor, located adjacent to the Mill Site. To determine the potential impacts from GHG emissions from the construction of the proposed project, the CalEEMOD Model (version 2013.2) was used to estimate construction emissions. Table 2 presents construction GHG emissions.

As shown in Table 2, estimated CO₂ equivalents (CO₂e) emission from the construction of the proposed project is 384.5321 metric tons. While the construction of the proposed project would constitute an increase in GHG emissions, the quantity of emissions would be expected to be below the operational GHG emission thresholds (used as a surrogate for construction activity threshold) of 1,100 metric tons per year. The project would not include maintenance operations that would include any stationary or mobile sources of greenhouse gases. Therefore, removal of soil from the five excavation areas in OU C and D would not result in any direct or indirect greenhouse gas generation that would result in a significant impact on the environment.

Table 2. GHG Emissions for Construction Activities - CO₂e

| Activity | CO ₂ e pounds per day | Number of Days for Activity | Total CO ₂ Emissions |
|--|----------------------------------|-----------------------------|---|
| Site Preparation | 1,030.8469 | 5 | 5,154.2345 pounds (lbs.) |
| Excavation (grading) | 1,205.7861 | 25 | 30,144.6530 lbs. or 13.6734 metric tons |
| Hauling (round trip transport to off-site) | 32,455.3046 | 25 | 811,382.60 lbs. or 368.0369 metric tons |

| | | | |
|--|-------------------|---|--|
| disposal facility) | | | |
| Paving (site restoration including local backfill) | 1,244.2120 | 5 | 6,221.06 lbs. or 2.8218 metric tons |
| Totals | 34,742.942 | | 847,748.31 lbs. or 384.5321 metric tons |

Source: CalEEMOD analysis completed by DTSC

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Impact Analysis:

The City of Fort Bragg has an adopted Climate Action Plan (City of Fort Bragg, 2012). The Climate Action Plan addresses goals and strategies to reduce ongoing emissions of GHG from government and private sector commercial operations. As the proposed activity, is a one-time activity that will not result in on-going operational GHG emissions, the proposed project does not conflict with the City's Climate Action Plan. Additionally, two types of analyses were used to determine whether the proposed action would conflict with the state goals for reducing GHG emissions. The analyses are as follows:

- A. Any potential conflicts with CARB's 39 recommended actions in California's AB 32 Climate Change Scoping Plan were identified; and
- B. Whether the proposed project would result in GHG emissions exceeding significance thresholds established in the 2011 BAAQMD CEQA Guidelines.

With regard to Item A, the proposed project, which entails the removal of an existing feature would not fall into any sub-categories of the CARB recommended actions nor would the project pose any apparent conflict by inhibiting any of the CARB recommended actions.

For Item B, as discussed in the previous section, construction and operational emissions would result in less than significant impacts. Refer to Section 7 Description of Baseline Environmental Conditions for additional information.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

References Used:

1. Bay Area Air Quality Management District (BAAQMD), CEQA Air Quality Guidelines, May 2011.
2. BAAQMD, Proposed Air Quality CEQA Thresholds of Significance, December 7, 2009
3. Mendocino County Air Quality Management District, Memorandum CEQA Criteria and GHG Pollutant Thresholds. June 3, 2010.

4. City of Fort Bragg, Climate Action Plan, 2012.

8. Hazards and Hazardous Materials

Project Activities Likely to Create an Impact:

- Excavation and transportation of contaminated soils to permitted off-site disposal facility (ies).
- Leakage of hazardous substances (e.g. petroleum products, etc.) from construction equipment (bulldozers, graders, excavators, etc) and heavy-duty trucks.

Description of Baseline Environmental Conditions:

OU-C and OU-D have been subdivided into 32 AOIs based on historical use and data derived from previous investigations (Attachment B, Figure 2). In the OU C and D Remedial Investigation (RI) Report (ARCADIS, 2011), an analysis of the nature and extent of COCs in AOIs identified approximately 190 acres within 14 AOIs required no further remedial action (NFA). The following 8 AOIs received NFA determinations for the entire area within the AOI.

In the OU-C and OU-D RI Report, DTSC determined that No Further Action (NFA) is needed for the following AOIs:

1. Parcel 1
2. Truck Loading Shed
3. Former Green Chain
4. Construction Engineering
5. Scales
6. Clinker/Fill
7. Former Airstrip
8. Cypress Gate

All or portions of ten additional AOIs are recommended for NFA in the OU-C and OU-D RAP. These 10 AOIs were not included in the RI Report NFA determination because of the need to establish buffers from AOIs with known contamination. However, the RI Report concluded that these AOIs were otherwise suitable for NFA. The Parcel 6 AOI is also proposed for NFA in the OU-C and OU-D RAP. The Parcel 6 AOI was not investigated in the Remedial Investigation, because there is no history of the use or release of hazardous substances in the AOI. The following 10 AOIs are proposed for NFA in the OU-C and OU-D RAP.

1. Rail Lines West
2. Dry Sheds #4, #5
3. Former Planer #1, #50
4. Former Log Storage and Sediment Stockpile
5. Log Dec
6. Former Sheep Barn
7. Former Oil House
8. Miscellaneous
9. TransformerPad
10. Parcel 6

The OU-C and OU-D RAP will address soil and groundwater contamination at 11 Areas of Interest (AOIs) within OU-C and D through the use of a combination of remedial activities including soil excavation and off-site disposal, soil vapor mitigation, Natural Attenuation of contaminants in groundwater, restrictions on

land use and groundwater through a Covenant to Restrict the Use of Property (Land Use Covenant), and Operation and Maintenance. The area of the 11 AOIs is approximately 70 acres. The seven AOIs within in OU-C are located on the eastern side of the former mill site and west of the City of Fort Bragg between Alder Street and Pine Street. Three of the four OU-D AOIs are located south of the mill pond and east of the City of Fort Bragg Sewage Treatment Plan. The fourth OU-D AOI is located on the eastern side of the former mill site and north of the Cedar Street entrance to the mill site (Attachment B, Figure 2).

The proposed project includes excavation and off-site disposal of contaminated soil from 5 AOIs where soil is contaminated with lead, dioxins/furans (dioxins), benzo(a)pyrene [B(a)P], petroleum hydrocarbons and pentachlorophenol (PCP) from ULC and Georgia-Pacific lumber and milling operations that occurred between 1885 and 1973. Approximately 1,108 to 1,858 yds³ or approximately 60 - 90 truckloads of COCs impacted soils from five excavation sites have been identified for removal from these AOIs. Additionally, the groundwater is contaminated with petroleum hydrocarbons, PCP, dioxins, atrazine, arsenic, and volatile organic compounds (VOCs) from the same sources.

Soil Vapor Mitigation is the proposed remedial action for AOIs, including the Former AST, the Former MES/Pilot Study AOIs, and the Planer #2 AOI, where previous investigations have identified the presence of COCs (including benzene, ethyl benzene, 1,2,4-trimethylbenzene, naphthalene, vinyl chloride, 1,1-dichloroethane, 1,1-dichloroethene) in soil vapor that presents an unacceptable risk to public health. The existing conditions (open space) at the former Mill Site do not present an immediate need for the implementation of Soil Vapor Mitigation; however future construction and use in these areas may require Soil Vapor Mitigation. At the Former AST and Former MES/Pilot Study AOIs, removal of contaminants in soil that are the source of soil vapor contamination is also included in the proposed remedial action for soil vapor. The actual Soil Vapor Mitigation measures shall be submitted to and approved by DTSC prior to any future use of the AOIs. The Operations and Maintenance Plan will specify procedures that will ensure the long-term effectiveness of the covers and/or barriers.

Remedial action for AOIs with residual contaminants, above levels considered safe for residential use, will also have use restriction placed upon them through a Land Use Covenant (LUC). The LUC will restrict residential and other sensitive land uses unless special conditions, identified in the LUC, are met. Commercial and Industrial uses are acceptable at AOIs with LUCs. Land use covenants entered into or required by DTSC "run with the land" i.e., are binding on current and subsequent property owners, and remain in effect until they are formally removed or modified.

Groundwater Natural Attenuation, with monitoring, will be used to remediate the groundwater contaminants of petroleum hydrocarbons, PCP, dioxins, atrazine, arsenic, and volatile organic compounds (VOCs). Monitoring of groundwater will verify whether contaminants in groundwater are declining and if groundwater Remedial Goals are achieved. At the Former AST and Former MES/Pilot Study AOIs, gypsum will be added to the clean backfill material to aid in the attenuation petroleum contaminates in groundwater. A LUC will prohibit groundwater usage.

Operation and Management is included in the remedial action for all AOIs with residual soil contamination, contaminants in soil vapor or contaminants in groundwater above unrestricted Remedial Goals set forth in the OUs C and D RAP. Operation and Management Plans (OMP) will ensure the long-term effectiveness of the proposed remedial action and address soil management, inspections and maintenance of covers and soil vapor mitigation systems. Groundwater monitoring and Natural Attenuation verification are included in the OMP for the groundwater remedial action.

One AOI, the Former Machine Shop/Interim Remedial Measure AOI is proposed for No Further Action because previous excavations at the AOI have reduced soil contaminants to below unrestricted remedial goals and groundwater contaminants are also now below groundwater remedial goals included in the RAP.

The information below summarizes the recommended remedial alternatives for each AOI.

Proposed Remedial Actions

Parcel 2 AOI – Groundwater

Proposed Alternative:

- *Natural Attenuation to address dioxins/furans and pentachlorophenol*
- *LUC restricting domestic use of groundwater above Remedial Goals*
- *Operations and Maintenance Plan specifying groundwater monitoring requirements*

Former AST AOI and MES/Pilot Study AOI - Surface Soil, Soil Vapor, and Groundwater

Soil Proposed Alternative: Former AST AOI and MES/Pilot Study AOI

- *LUC restricting residential or other sensitive land uses*
- *Operations and Maintenance Plan, including soil management requirements*

Soil Vapor Proposed Alternative: Former AST and MES/Pilot Study AOIs

- *Source Removal: Excavation and disposal of TPHd contaminated soil*
- *LUC restricting residential or other sensitive land uses*
- *Soil Vapor Mitigation*
- *Operations and Maintenance Plan*

Groundwater Proposed Alternative: Former AST and MES/Pilot Study AOIs

- *Source Removal: Excavation and disposal of TPHd contaminated soil*
- *Natural Attenuation of Groundwater*
- *Operations and Maintenance Plan specifying groundwater monitoring requirements*
- *LUC restricting the use of groundwater above Remedial Goals*

Former Dip Tank AOI – Soil and Groundwater

Soil and groundwater Proposed Alternative:

- *Source Removal: Excavation and Disposal of dioxin and PCP contaminated soil*
- *Natural Attenuation of Groundwater*
- *Operations and Maintenance Plan specifying groundwater monitoring requirements*
- *LUC restricting the use of groundwater above Remedial Goals*

Rail Lines East AOI - Surface and Shallow Subsurface Soils

Proposed Alternative:

- *Excavation and disposal of lead contaminated soil*

Kilns AOI – Soil

Proposed Alternative:

- *Excavation and Disposal of TPHd and B(a)P contaminated soil*

Former MS/IRM AOI – Soil and Groundwater

- *No Further Action as TPHd, lead and B(a)P concentrations are below soil unrestricted remedial goals and TPHd and VOCs are below groundwater remedial goals*

| |
|--|
| <p>Proposed Remedial Actions</p> |
| <p>Planer #2 AOI – Soil, Soil Vapor and Groundwater <i>Soil Proposed Remedial Action:</i></p> <ul style="list-style-type: none"> • <i>Excavation and disposal of TPHd and B(a)P contaminated soil</i> <p><i>Soil Vapor Proposed Remedial Action:</i></p> <ul style="list-style-type: none"> • <i>Soil Vapor Mitigation</i> • <i>LUC restricting residential or other sensitive land uses</i> • <i>Operations and Maintenance</i> <p><i>Groundwater Proposed Remedial Action:</i></p> <ul style="list-style-type: none"> • <i>Natural Attenuation of Groundwater</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> • <i>LUC restricting the use of groundwater</i> |
| <p>Former Shipping Office and Truck Shop AOI – Soil <i>Soil Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>LUC restricting residential or other sensitive land uses</i> • <i>Operations and Maintenance, including soil management</i> • <i>Cover</i> |
| <p>Sawmill and Sorter AOI – Groundwater <i>Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>Natural Attenuation of Groundwater</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> • <i>LUC restricting the use of groundwater</i> |
| <p>Greenhouse AOI – Groundwater <i>Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>Natural Attenuation of Groundwater</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> • <i>LUC restricting the use of groundwater</i> |

Analysis as to whether or not project activities would:

- a. Create a significant hazard to the public or the environment throughout the routine transport, use or disposal of hazardous materials.

Impact Analysis:

The proposed RAP activities will include excavation of COCs impacted soil and off-site disposal and land use restrictions recorded in a LUC. Approximately 1,108 to 1,858 yds³ of soil is planned for removal from six (6) AOIs.

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 cubic yards. Non-hazardous waste soils will be transported to either Keller Canyon Landfill in Pittsburg or Hay Road Landfill in Vacaville. If any soils are determined to be a hazardous waste, these soils will be transported to a permitted hazardous waste disposal facility. Both Keller Canyon and Hay Road have sufficient capacity to accept all or part of this amount. If one facility were to accept all 1,108 to 1,858 yds³ it would not significantly reduce overall capacity of the facility and therefore impacts related to capacity of landfill facilities would be less than significant.

Soils classified as California Hazardous Waste would be properly containerized and transported under hazardous waste manifests by registered hazardous waste haulers holding a currently valid registration issued by DTSC and meeting federal requirements imposed by the Department of Transportation (DOT) and the U.S. Environmental Protection Agency (USEPA) under Resource Conservation and Recovery Act (RCRA). Haulers are also subject to California hazardous waste law requirements pertaining to hauling of hazardous wastes (Health and Safety Code §25100 et seq. and §25163 et seq.; 22 OCR §66263.10 et seq.; 13 OCR §1160 et seq.; California Vehicle Code §12804 et seq. and §31300 et seq.), which are implemented and enforced by DTSC as well as the California Highway Patrol, Department of Motor Vehicles, local sheriff, and police agencies who have general responsibilities for the transportation of hazardous waste on state and local roadways. An Excavation Plan, submitted to DTSC for review and approval will detail methods and procedures for the excavation, storage, and loading of soil and include the following mitigation measures.

Mitigation Measures:

MM24: All stockpiles of excavated soils will be within fenced areas and covered with heavy duty polyethylene liners to prevent migration of contaminants, shield the material from elements, and mitigate fugitive dust and storm water run-on and runoff.

MM25: Temporary staging areas will be set up adjacent to 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.

MM26: Open bodied trucks shall be covered when used to transport soil. Trucks shall be brushed or washed down with water to removed soil on the truck and tires, after loading and prior to leaving the Site.

MM27: Visible soils carried onto Cypress Street and/or SR 1 via trucks, earth moving equipment, water, or other means shall be promptly removed.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Impact Analysis:

The proposed RAP includes BMPs designed to ensure that the potential for accidents and releases of pollutants are minimized to the greatest extent possible. All contractors will be responsible for operating in accordance with the most current Federal and California OSHA regulations, including Hazardous Waste Operations and Emergency Response, General Industry and Construction Safety Orders, and the Federal and Construction Industry Standards as described in California Code Regulations, Title 8, Sections 1539, 1541, and 5192 and 29 Code of Federal Regulations 1910.120, and 1926.

The Health and Safety Plan (HASP) will be prepared in accordance with current health and safety standards as specified by the Federal Occupational and Safety Health Administration (OSHA) and California OSHA and submitted to DTSC for approval prior to initiation of fieldwork. The provisions of the HASP are mandatory and must be reviewed by all personnel before working at the site. 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.

Mitigation Measures:

MM28: Temporary staging areas will be set up adjacent to excavation areas for soil stockpiling. Excavated material be placed on plastic sheeting to stop migration of soil, shield the soil from the elements, and eliminate fugitive dust and storm water run-on and runoff.

MM29: Truck routes will be established in the Transportation plan to be submitted and approved by DTSC. Trucks will enter and exit the site at the Cypress Gate, travel on SR1 to SR20, then travel on SR20 to US101. Trucks will then travel south on US1010 and then continue to the disposal facility.

MM30: Coordinate with the local and state enforcement agencies, first responders, and Caltrans if emergency response is needed.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school.

Impact Analysis:

There is no school site located within one-quarter mile of the proposed project. The closest school to the excavation sites is Fort Bragg Middle school, located at 500 North Harold Street and approximately 0.8 mile from the project location. Activities and materials that may emit hazardous emissions or involve handling of hazardous substances include the proposed excavation activities and associated loading and transportation of excavated waste materials to an off-site permitted facility(ies) for disposal. Therefore, no hazardous substances or emissions associated with the proposed project are expected to result in exposure at a school site.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to public or the environment.

Impact Analysis:

The proposed 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 mill site, pursuant to regulatory authority granted under Chapter 6.8, Division 20 of the Health and Safety Code (H&SC). DTSC issued a Site Investigation and Remediation Order (Docket Number HAS-RAO 06-07-150) to Georgia-Pacific in 2007. The remediation of the Operable Unit C and D is a requirement of the Order.

There will be ongoing coordination and collaboration with the local and state enforcement agencies and Caltrans plus implementation of all BMPs contained within the proposed RAP, HASP, and the

Excavation Plan and Transportation Plans, which are to be submitted to DTSC for review and approval prior to the start of project implementation. Therefore, no impacts are expected to occur.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- e. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.

Impact Analysis:

The proposed RAP will not impair or interfere with the City's adopted Emergency Operation Plan (March 2010). There will also be ongoing coordination and collaboration with the local and state enforcement agencies and Caltrans. The proposed OU-C and OU-D RAP includes a HASP that will be implemented throughout the proposed remediation project. Both these plans identify measures to be followed during construction activities to ensure the health and safety of workers, public, and environment.

The proposed project site is localized and construction would occur over a short period of time, so cleanup of OU-C and OU-D will not impede or physically interfere with an adopted emergency plan or emergency evacuation plan. Therefore, no impacts are expected.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

References Used:

1. DTSC, *Site Investigation and Remediation Order (Docket Number HAS-RAO 06-07-150)*, DTSC, February 16, 2007
2. ARCADIS, *Remedial Investigation, Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California, February 2011*
3. ARCADIS, *Feasibility Study, Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California, January 2012*
4. ARCADIS, *Second 2014 Semi-Annual Groundwater Monitoring Report, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. Prepared for Georgia-Pacific LLC. ARCADIS U.S., Inc. December 2014*
5. ARCADIS, *Draft Remedial Action Plan Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California, April 2015*

9. Hydrology and Water Quality

Project Activities Likely to Create an Impact:

- Excavation of contaminated soils, stockpiles, backfilling, grading, and other construction activities.
- Stormwater runoff from excavated areas and stockpiles
- Remediation of contaminated groundwater through natural attenuation
- Restrictions on the domestic use of groundwater

Description of Baseline Environmental Conditions:

The City of Fort Bragg is located in the North Coastal Basin of the North Coast Water Quality Control Board (NCRWQCB) region. The NCRWQCB covers all of Del Norte, Humboldt, Trinity, and Mendocino Counties, major portions of Siskiyou and Sonoma Counties, and small portions of Glenn, Lake, and Marin Counties.

The site is situated on a near-level, elevated, marine terrace, bordered to the west by steep ocean bluffs. The principal natural hydrological sources for the site are precipitation, surface runoff from adjacent lands, and stormwater discharge from the City. Most of the hydrological features at the site are manmade; the natural hydrology has been significantly changed by over a century of mill operation. Generally, monitoring data and topographic gradients demonstrate that onsite groundwater flow is primarily to the west-southwest toward the Pacific Ocean.

The Mill Site is located on a gently sloping terrace between 30 and 100 feet above mean sea level. The Fort Bragg area receives on average 40 inches of rainfall annually. The majority of the rainfall occurs during the wet season from the end of October to the end of April. The OU-C and OU-D areas are largely unpaved and drains to the northwest where surface runoff enters the former industrial Ponds 1 through 4, and into the former log pond (pond 8)..

No active water supply wells are located onsite. Georgia-Pacific obtains water for the Mill Site from a reservoir at Pudding Creek through an underground pipe system. Georgia-Pacific signed an agreement with the California Department of Fish and Game (DF&G), now known as the California Department of Fish and Wildlife, to protect migrating fish when using state waterways.

Groundwater contaminants including petroleum hydrocarbons, PCP, dioxins, atrazine, arsenic, and volatile organic compounds (VOCs) shall be remediated through Natural Attenuation with groundwater monitoring and Institutional Controls that restrict groundwater use. Removal of the source of groundwater contaminants, within the soil, is an element of groundwater remediation at three AOIs. The following AOIs require a groundwater remedial action.

- Parcel 2 AOI – Natural attenuation (NA) with monitoring and restrictions on the use of groundwater through a land use covenant (LUCs).
- Former AST AOI – Natural attenuation (NA) with monitoring and restrictions on the use of groundwater through a land use covenant (LUCs). Groundwater remediation also involves the removal of the source of groundwater contamination from the soil.
- Former MES/Pilot Study AOI – Natural attenuation (NA) with monitoring and restrictions on the use of groundwater through a land use covenant (LUCs). Groundwater remediation also involves the removal of the source of groundwater contamination from the soil.
- Former Dip Tank AOI) – Natural attenuation (NA) with monitoring and restrictions on the use of groundwater through a land use covenant (LUCs). Groundwater remediation also involves the removal of the source of groundwater contamination from the soil
- Former Planer #2 AOI (soil and groundwater) – Natural attenuation (NA) with monitoring and restrictions on the use of groundwater through a land use covenant (LUCs). Groundwater remediation also involves the removal of the source of groundwater contamination from the soil.
- Sawmill and Sorter AOI (groundwater) – Natural attenuation (NA) with monitoring and restrictions on the use of groundwater through a land use covenant (LUCs).
- Greenhouse AOI (groundwater) – Natural attenuation (NA) with monitoring and restrictions on the use of groundwater through a land use covenant (LUCs).

Analysis as to whether or not project activities would:

- a. Violate any water quality standards or waste discharge requirements.

Impact Analysis:

Wastewater generated by the remedial activities at OU-C and OU-D are 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 such as Pond 5 or Pond 9 and Georgia-Pacific's water rights with DWR at Pudding Creek during flow times at the rate of 2.3 cubic feet per second (cfs). City water, taken from a hydrant is another possible source of water for dust suppression. Pudding Creek reservoir has an existing pump system that can fill the onsite Pond 5 if water is needed during low-flow times. Pudding Creek reservoir is filled by water pulled from the Noyo River at 1.3 cfs through an agreement with DF&G.

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 SWPPP for the closed GP Mill Site. The proposed project is not expected to generate any wastewater discharge. Therefore, the proposed project would not violate any water quality standards; no waste discharge requirements (WDRs) are required for the application of clean water for dust control.

The site is located in the jurisdiction of the North Coast Regional Water Quality Control Board, which implements and enforces applicable water quality standards and discharge requirements. The proposed project would not result in the discharge of wastewater that would require issuance of a National Pollutant Discharge Elimination System (NPDES) permit.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

Impact Analysis:

The remedial activities at OU-C and OU-D would not extract or use groundwater or require excavation to the ground water table such that groundwater recharge or aquifer volume would be reduced. Therefore, this project would not be expected to result in a net deficit in aquifer volume or a lowering of the local groundwater table.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off-site.

Impact Analysis:

Excavation of soil would not alter existing drainage patterns and all areas of excavation would be restored to preconstruction and surrounding grade and drainage patterns of the site or affect any streams. In addition, because stockpiled soils are temporary and would be removed prior to the start of the rainy season, they would not alter existing drainage patterns at the Georgia-Pacific Facility. If the proposed project stockpiles (clean and contaminated soils and waste) are still in place at the Project Site after the start of the rainy season Georgia-Pacific will follow the requirements established for stockpile management and stormwater control measures specified in the Storm Water Management Plan.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off-site.

Impact Analysis:

Remedial activities at OU-C and OU-D would not result in impacts on existing drainage patterns. No rivers or streams would be affected by this project and would not generate surface runoff or result in conditions where runoff rates would be accelerated. After remedial activities at these sites they will be restored to match the surrounding environment.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- e. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.

Impact Analysis:

The Mill Site SWPPP would be amended to address the remediation project at OU-C and OU-D. The SWPPP would ensure appropriate management of stormwater runoff during excavation and removal of COCs at the sites. The SWPPP would include BMPs and monitoring provisions to ensure that stormwater does not result in the discharge of any hazardous substances remaining at the site, and the SWPPP would be implemented as part of the proposed project.

The State Water Resources Control Board (SWRCB) Construction General Permit for Storm Water Discharges Associated with Construction Activity (Order No. 2010-0014-DWQ) authorizes discharge of stormwater associated with construction activities, including clearing, grading, ground disturbances such as stockpiling, or excavation that results in soil disturbances of at least one acre of total land area. The area of soil disturbance for this project is less than one acre; however, stormwater BMPs shall be followed during the implementation of the project.

The SWPPP includes the following BMPs to control sediment in runoff:

- Occurrence of excavation activities shall be restricted to the non-rainy season.
- Use berms to divert runoff around exposed areas;

- Use other sediment control measures including filtration devices, barriers (e.g. fiber rolls, silt fences, straw bale barriers, gravel inlet filters, storm drain inlet protection, and gravel bag dikes) and settling devices (i.e., sediment traps) or other controls, as appropriate;
- Implement sediment control BMPs, including storm drain inlet protection, and be prepared with on-hand materials to implement sediment control measures in the event of predicted rain during the remainder of the year; and
- Inspect any stormwater drain in close proximity to any ongoing excavation activities on a daily basis for evidence of erosion causing settlement, blockage, or damage resulting in standing water.

Because the project would be implemented in accordance with the above requirements and authorizations, no aspect of the proposed activities would be expected to result in runoff that would exceed the capacity of storm water drainage systems or that would result in substantial addition of pollution to storm water.

Conclusion:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

f. Otherwise substantially degrade water quality.

Impact Analysis:

The remediation project of OU-C and OU-D will not result in impacts on water quality. BMPs as described under 9e would be implemented for areas with excavated soil. The objective of the groundwater remedy is to improve groundwater quality (ARCADIS 2015). Therefore, this project will not be expected to have any adverse impacts on water quality. The proposed project would remove potential soil source(s) of groundwater contamination. There will be no impacts on surface waters of the State. Therefore, it would not result in degradation in water quality.

Conclusion:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

g. Place within a 100-flood hazard area structures which would impede or redirect flood flows.

Impact Analysis:

According to the City of Fort Bragg, Flood Hazard Map (City of Fort Bragg, 1992), the OU-C and OU-D sites are not located within a 100-year flood plain and the cleanup does not include construction of any new structures.

Conclusion:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

h. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

Impact Analysis:

The remediation project at OU-C and OU-D does not involve a dam, levee or other water impoundment that would potentially expose people or structures to a flooding risk. The proposed

action would not expose any people or structures to injury, death, or destruction due to flooding, including flooding as result of failure of a levee or dam.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- i. Inundation by sieche, tsunami or mudflow.

Impact Analysis:

The remediation project at OU-C and OU-D are located on an uplifted marine layer and is not subject to inundation by seiche, tsunami, or mudflow.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

References Used:

1. *ARCADIS, Remedial Investigation, Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California, February 2011*
2. *California Emergency Management Agency, Tsunami Inundation Map for Emergency Planning, Fort Bragg Quadrangle*
3. *BBL Sciences, Stormwater Pollution Prevention Plan Georgia-Pacific Wood Products Manufacturing Facility, Fort Bragg, California, 2006*
4. *ARCADIS, draft Remedial Action Plan, Operable Unit C and D, 2015.*
5. *City of Fort Bragg, Flood Insurance Rate Map, Flood Hazard Map SF-2, Revised June 16, 1992*
6. *State Water Resources Control Board (SWRCB) Construction General Permit for Storm Water Discharges Associated with Construction Activity (Order No. 2010-0014-DWQ)*

10. Land Use and Planning

Project Activities Likely to Create an Impact: The proposed project is a cleanup project and does not propose a change in land use. Georgia-Pacific is proposing to implement the activities covered by the proposed RAP pursuant to the 2006 DTSC Order requiring remediation of the site (DTSC, 2006). A Land Use Covenant (LUC), restricting future sensitive land uses at approximately 24 acres within OU-C and OU-D is included as a remedy in the RAP. The LUC will restrict sensitive uses, such as residences, schools, and hospitals, unless special conditions identified in the LUC are met (ARCADIS, 2015). Additional detail regarding the soil and groundwater remedial actions, including the use of LUC is provided in Section 8, Hazardous Materials of this Initial Study.

Description of Baseline Environmental Conditions:

Analysis as to whether or not project activities would:

- a. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

Impact Analysis:

The former Georgia-Pacific Mill Site is currently zoned Timber Resource/Industrial in the City of Fort Bragg's Coast General Plan. Timber Resource/Industrial would be acceptable at locations of the former Mill Site that are subject to the LUCs in the RAP. Although the proposed project includes implementation of an LUC to prohibit residential development, the proposed project would not change the zoning or conflict with any applicable land use plan or regulation.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Conflict with any applicable habitat conservation plan or natural community conservation plan.

Impact Analysis:

The project site is not within a habitat conservation plan or a natural community conservation plan. Implementation of the proposed project would have no effect on an applicable habitat conservation plan or natural community conservation plan.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

References Used:

1. ARCADIS, *Draft Remedial Action Plan Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California, April 2015*
2. Department of Toxic Substances Control, *Site Investigation and Remediation Order (Docket Number HAS-RAO 06-07-150), February 16, 2007*
3. City of Fort Bragg, *Coastal General Plan, Map LU-1 Land Use Designations, Updated 2014*

11. Mineral Resources

Project Activities Likely to Create an Impact: NONE. The proposed project is not located in or near any known mineral resources. Therefore, no impacts to mineral resources would occur. For these reasons, no further analysis of impacts to this resource category is deemed necessary.

Description of Baseline Environmental Conditions:

Analysis as to whether or not project activities would:

- a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

Impact Analysis:

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Impact Analysis:

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

References Used:

1. *Mendocino County, General Plan, Mineral Resource Management Element, 2009*

12. Noise

Project Activities Likely to Create an Impact:

- Operation of heavy construction equipment (e.g. trucks, bulldozers, graders, excavators, etc) would increase noise levels during the 3 – 6 week construction period.
- Truck traffic during remedial activities at OU-C and OU-D and off-site hauling of excavated contaminated materials.
- Truck traffic during importation of clean soils.

Description of Baseline Environmental Conditions:

The site is designated as "Forest Products/Industrial". The heavy traffic conduit, SR 1, borders the eastern boundary of the site. An operational railroad locomotive line is located northeast of the site and can produce noise up to 80 decibels (dB) at 35 feet. The Pacific Ocean borders the site to the west and the Noyo River and Harbor areas border the south side of the site.

A commercial district borders SR 1 east of the site. During the excavation activities, additional traffic-related noise is anticipated, particularly in association with heavy-duty trucks transporting wastes for offsite disposal and excavating equipment. Noise-generating equipment would be used at the site that would affect noise levels in areas immediately near the work site. The equipment may include various pieces of earth moving equipment (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. The proposed excavations are located between 300 and 1,200 feet away from the nearest residential area.

The Fort Bragg General Plan identifies construction noise to reach unacceptable levels above 75dB. In addition, the General Plan also identifies ambient noise conditions in the vicinity of the project site at approximately 70dB at 50 feet indicating that ambient noise within the vicinity of the project area is already high.

Analysis as to whether or not project activities would result in:

- a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Impact Analysis:

A commercial district borders SR 1 east of the site. Noise-generating equipment that would be used at the site, which would affect noise levels in areas near the work site, include 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. Noise from construction activities will be comply with the Noise Element of the City's General

Plan, Table N-5, (City of Fort Bragg, California, Noise Element, November 2012); 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.

Mitigation Measures:

MM31: Hours of operation shall be limited from 7:30 am to 5:00pm.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Exposure of persons to or generation of excessive groundbourne vibration or groundbourne noise levels.

Impact Analysis:

Earth moving equipment (i.e. front loaders, backhoes, tractors, compactors, and rollers) would be used for the proposed remediation activities at OU-C and OU-D. Because vibrations associated with earth moving equipment would be localized the proposed project would not generate excessive ground borne vibrations or ground borne noise that would be noticeable to the nearest sensitive receptor located approximately 300 feet offsite. All construction activities will be in compliance with the City Noise Element Policy N-1.5, Table N-5.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- c. A substantial permanent increase in ambient noise levels in the vicinity above levels existing without the project.

Impact Analysis:

The proposed project is a short-term construction activity that will not last more than ten weeks; therefore, there will not be any permanent increase in ambient noise levels. As stated above, construction noise will comply with the Noise Element of the City's General Plan, Table N-5, (City of Fort Bragg, California, Noise Element, November 2012), including noise levels at the site property boundary. Additional noise attenuation will occur over the 300 feet between the edge of the property and the nearest sensitive receptor. Permanent impacts to ambient noise levels are not expected to result from implementation of the project.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Impact Analysis:

Remedial activities at OU-C and OU-D will generate noise occur over an estimated four to six weeks. As stated above, construction noise will comply with the Noise Element of the City's General Plan,

Table N-5, (City of Fort Bragg, California, Noise Element, November 2012), including noise levels at the site property boundary. Additional noise attenuation will occur over the 300 feet between the edge of the property and the nearest sensitive receptor. While there will be temporary impacts to ambient noise levels, these impacts are not expected to be significant. There will no periodic increase in noise levels associated with the proposed project.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

References Used:

1. *City of Fort Bragg, Coastal General Plan, Noise Element, 2012*
2. *ARCADIS, draft Remedial Action Plan, Operable Unit C and D, 2015*

13. Population and Housing

Project Activities Likely to Create an Impact: NONE. The proposed project activities (e.g. staging, excavating, importing, stockpiling, decontamination, etc.) are all short term and would not induce workers to move into the area; therefore, there be need for additional housing. For this reason, no further analysis of impacts to this category is deemed necessary (City of Fort Bragg, 2014). Refer to Project Description section above for additional information.

Description of Baseline Environmental Conditions:

Analysis as to whether or not project activities would:

- a. Induce substantial population growth in area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).

Impact Analysis: The project will not result in any population growth.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

Impact Analysis: The project will not displace any housing.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Impact Analysis: The project will not displace any people residing in the area.

Conclusion:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

References Used:

1. City of Fort Bragg, Coastal General Plan Housing Element, 2014
2. ARCADIS, draft Remedial Action Plan, Operable Unit C and D Remedial Action Plan, 2015

14. Public Services

Project Activities Likely to Create an Impact:

- Transportation of contaminated soils and waste materials, storage, backfilling, and other construction activities.
- Importation of clean soils/backfill.

Description of Baseline Environmental Conditions:

The City, including the Georgia-Pacific Facility is served by the City Police Department (City of Fort Bragg 2008), the Fort Bragg Volunteer Fire Department (FBFD 2008), and the Mendocino County Sheriff (2008). The Mendocino Coastal District Hospital serves local residents, and there are five public schools in the City, covering kindergarten through 12th grade (City-Data.com 2008).

Analysis as to whether or not project activities would:

- a. Result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:
 - Fire protection
 - Police protection
 - Schools
 - Parks
 - Other public facilities

Impact Analysis:

No demands for public services (i.e. police stations, fire stations, schools or parks) are anticipated to be required in order to implement the proposed project at the sites because the proposed project will consist of a continuation of the remediation of the site pursuant to the DTSC Order. Should activities result in an emergency at the site, there may be a need to dispatch emergency services (fire department, emergency medical services, and sheriff's department) to the site; however, given the small number of site workers expected to be present during the proposed project (estimated to be approximately eight workers) and the inclusion of an emergency response plan in the site-specific HASP. Excavation and removal of soil would not be expected to have an impact to the public services and other facilities serving the City and the surrounding communities.

The proposed remediation project will not require the need for additional governmental facilities (i.e., police stations, fire stations, schools, parks) to be built as a result of this project.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

References Used:

1. ARCADIS, *draft Remedial Action Plan, Operable Unit C and D Remedial Action Plan, 2015*
2. City of Fort Bragg, *Coastal General Plan, Housing Element, 2014.*

15. Recreation

Project Activities Likely to Create an Impact: NONE.

Description of Baseline Environmental Conditions: The closest recreational sites are the Fort Bragg Coastal Trail located west of the former mill, MacKerricher State Park (Glass Beach) located north of the former mill, and Ocean Front Park located south of the former mill and at the mouth of Noyo Harbor. The northern portion of the Fort Bragg Coastal Trail opened in January 2015.

Analysis as to whether or not project activities would:

- a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Impact Analysis:

Project activity sites OU-C and OU-D are not located on or in the vicinity of recreational facilities in the Fort Bragg area and proposed excavation activities are not expected to have any direct or indirect impact on recreational facilities.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Include recreational facilities or require construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Impact Analysis:

Project sites OU-C and OU-D are not located on or in the vicinity of recreational facilities in the Fort Bragg area and the proposed excavation activities are not expected to have any direct or indirect impact on recreational facilities.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

References Used:

1. ARCADIS, *draft Remedial Action Plan, Operable Unit C and D, 2015*
2. City of Fort Bragg, *Coastal General Plan, Conservation, Open Space, Energy, & Parks, 2008*

16. Transportation and Traffic

Project Activities Likely to Create an Impact:

- Transportation of contaminated soils, storage, backfilling, and other construction activities
- Importation of clean soils/backfill
- Construction worker vehicles

Description of Baseline Environmental Conditions:

The City of Fort Bragg (City) is situated along State Route (SR) 1, which is called Main Street within the City. SR 1 is the only continuous north-south road serving the north coast of Mendocino County, California. It provides a local transportation corridor for many communities and is the primary access route for visitors. Traffic volumes on SR 1 have increased steadily over time.

Traffic into and out of the City is constrained by the capacity of two (2) bridges; Hare Creek and Pudding Creek, and by the two-lane roadway section along SR 1. Both Hare and Pudding Creek bridges are limited to one lane of traffic in each direction.

The most congested street in the City is Main Street (SR1) between the northbound merge area located just south of Laurel Street through Elm Street. The northbound section of this road currently operates at a level of service (LOS) D to LOS E during peak hours. The transportation routes for the proposed project will not travel on SR1 or in the most congested section of the City of Fort Bragg.

In 2010, the Average Daily Trip (ADT) for SR 1 between Maple Street and Oak Street was 10,720 and 25,600 south of South Street (Hexagon Transportation Planners, 2010). The proposed project would add approximately 25 daily trips round trips per day during construction.

Caltrans replaced the Noyo River Bridge in 2008 with a four (4) lane bridge, a center lane for emergency vehicles, and a sidewalk on both sides. The new bridge provides improved access at the south end of the City and to SR 20. Traffic is currently free flowing (LOS A) on SR 20.

Even though traffic volumes on Main Street has increased over the past few years, intersections with traffic signals at SR 20, Ocean View Drive, Cypress Street, Chestnut Street, Oak Street, Elm Street, and Redwood Avenue currently operate at LOS B or better. The side street stop sign controlled intersections with Main Street also operate at LOS B or better for traffic on Main Street; however, traffic turning onto Main Street from some side streets can experience LOS D, E, or F during peak hours.

The Fort Bragg General Plan indicates that the level of service (LOS) for SR 1 within the proposed project area generally operates at a level C (acceptable delays) at most intersections, with peak morning and afternoon traffic operating at a Level D (tolerable delays); although SR 1 at Elm Street currently operates at a LOS Level D. Currently, total traffic volume within the City operates a volume-to-capacity (V/C) ratio under 50 percent (Hexagon Transportation Consultants, 2010) indicating sufficient capacity on the streets within the project area.

State Route 20 (SR 20), beginning at State Highway 1 in Fort Bragg and continuing to Willets, is the main truck route from Fort Bragg to US Highway 101. SR 20 is classified as a Minor Arterial and US Highway 101 is the only Major Arterial in Mendocino County. Trucks leaving the Mill Site would travel on SR 20 to Willets and US Highway 101 (Mendocino County, Circulation Element, 2009).

Analysis as to whether or not project activities would:

- a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).

Impact Analysis:

The proposed project would require between 60 and 90 trucks to haul excavated soil from the site for transport to an approved off-site disposal area. An additional 60 to 90 trucks would be required to bring in clean, fill material. This would increase traffic on local streets by approximately 25 trucks per day over the two to six week phased construction period. This is based on excavation of between 1,108 and 1,858 yds³ of contaminated soil from five excavation sites and use of heavy-duty diesel trucks with a capacity to hold approximately 18 yds³ 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. Truck drivers would be provided a map of the site and haul routes to ensure that the designated route is followed.

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. 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. Soil and waste would be transported to either Keller Canyon Landfill in Pittsburg, CA or Hay Road Landfill in Vacaville, CA, or another facility permitted to accept the soil.

Construction will be conducted by approximately eight workers; all of whom are expected to drive themselves to and from the site independently every day.

Project related traffic would be short-term in nature and limited in scope. Current Level of Service for the transportation route is LOS B and the V/C ratio for this area is identified at approximately 0.61 – 0.70 indicating that it is at an acceptable volume-to-ratio capacity. Additionally, truck traffic is expected to avoid both morning and afternoon traffic peaks. Project related traffic 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.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Exceed, either individually or cumulatively, a level of service standard established by the country congestion management agency for designated roads or highway.

Impact Analysis:

According to the 2014 Inland General Plan, Circulation Element, Table C-4, the Cypress/State Route 1 (Main Street) intersection operates at a LOS B. The average delay is 13.1 seconds at PM Peak Hour. The Main Street and SR 20 intersection has an LOS of B and a delay of 22.5 seconds. The project would involve approximately 25 round trips per day using SR 1 to off-haul excavated contaminated materials from the Site. Truck trips would occur between 7am and 1pm. The haul routes for the project are signal controlled and would not result in a reduction of the level of service within the project area. Refer to section 16a for details on LOS and ADT for SR1.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- c. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

Impact Analysis:

Currently, no hazardous design features exist on SR 1 between the Site and SR 20. Major intersections along this section of the transportation route are controlled by traffic signals. While an approximately 30 mile section of SR 20 is curvy and may require some slowing, heavy trucks can negotiate these curves at the posted traffic speed. This route is frequently traveled by trucks and no increase in hazards is expected.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- d. Result in inadequate emergency access.

Impact Analysis:

The Site has three entrances (Cypress Street as the main entrance and West Redwood Ave and Elm Street as alternate entrances) and has more than one existing road onsite; therefore, the project site has more than adequate access in the event of an emergency. The existing road network at the site allows multiple emergency vehicle access to the entire site in the event of an emergency.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- e. Result in inadequate parking capacity.

Impact Analysis:

Sufficient parking for heavy-duty trucks and construction equipment would be made available onsite. Construction worker vehicles would likely be parked in the former employee lot(s) or in vacant areas of the Site in the vicinity of the work areas and is, therefore, not expected to impact parking at or near the site.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- f. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

Impact Analysis:

The majority of traffic would be heavy-duty trucks and personal vehicles. Other forms of transportation (rail or air traffic) and facilities such as bus turnouts would not be affected by the proposed project. There will be ongoing coordination and collaboration with the City.

Conclusion:

- Potentially Significant Impact

- Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

References Used:

1. *ARCADIS, draft Remedial Action Plan, Operable Unit C and D, 2015*
2. *City of Fort Bragg, Coastal General Plan, Circulation Element, updated 2014*
3. *City of Fort Bragg, Inland General Plan, Circulation Element, updated 2014*
4. *Hexagon Traffic Consultants, Fort Bragg Specific Plan, Revised Transportation Analysis, 2010*
5. *Mendocino County, General Plan, Circulation Element, 2009*
6. *Whitlock & Weinberger Transportation, Inc., Boatyard Center Phase II Development Traffic Impact Study, 2002*

17. Utilities and Service Systems

Project Activities Likely to Create an Impact:

- Possible rerouting or in-place protection of utility lines will be conducted during excavation activities at OU-C and OU-D.

Description of Baseline Environmental Conditions:

The locations and distribution of major underground utilities including stormwater, electrical lines, drainage, sanitary sewer, potable water, and fire protection lines in the vicinity of OU-C and OU-D were documented in 2010. However, an updated utility clearance would be conducted in advance of excavation activities.

Analysis as to whether or not project activities would:

- a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.

Impact Analysis:

Little or no wastewater is expected to be generated by the project. Therefore, no wastewater treatment requirements would be exceeded.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Impact Analysis:

The proposed project includes excavation and removal of contaminated fill material and/or soil followed by backfill, compaction, and grading of the excavations. Only a limited amount of water would be used for dust suppression and equipment decontamination during construction activities with a sufficient amount coming from Pond 5 (some of which are connected to the Pudding Creek Reservoir which is controlled by Georgia-Pacific). Therefore, no new construction or expansion of the City's existing wastewater treatment facility will be required.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated

- Less Than Significant Impact
 No Impact

- c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Impact Analysis:

The proposed project is the excavation and off-site disposal of contaminated soil for a short period of time. Therefore, no new stormwater drainage facilities or expansion of existing facilities is required. Refer to response 17b above for additional information.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed.

Impact Analysis:

The proposed project would require minor water supply for dust control during construction activities. A sufficient quantity of water is available from on-site Pond 5 for dust suppression. Therefore, the project would not require new or expanded water entitlements.

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- e. Result in determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the projects projected demand in addition to the providers existing commitments.

Impact Analysis:

The proposed project includes excavation and removal of contaminated fill material and/or soil followed by backfill, compaction, and grading of the excavations. Waste wastewater might be generated through dewatering of excavated soil. However, the wastewater will not be sent to the treatment facility; therefore, the project will have no effect on existing systems (ARCADIS, 2015).

Conclusion:

- Potentially Significant Impact
 Potentially Significant Unless Mitigated
 Less Than Significant Impact
 No Impact

- f. Be served by a landfill with sufficient permitted capacity to accommodate the projects solid waste disposal needs.

Impact Analysis:

The proposed project COULD HAVE a significant effect on the environment. However, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **Mitigated Negative Declaration** will be prepared.

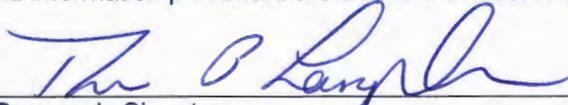
The proposed project MAY HAVE a significant effect on the environment. An **Environmental Impact Report** is required.

The proposed project MAY HAVE a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **Environmental Impact Report** is required, but it must analyze only the effects that remain to be addressed.

The proposed project COULD HAVE a significant effect on the environment. However, all potentially significant effects (a) have been analyzed adequately in an earlier Environmental Impact Report or Negative Declaration pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier Environmental Impact Report or Negative Declaration, including revisions or mitigation measures that are imposed upon the proposed project. Therefore, nothing further is required.

Certification:

I hereby certify that the statements furnished above and in the attached exhibits, present the data and information required for this initial study 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.

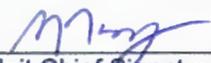

Preparer's Signature

June 2, 2015
Date

Thomas P. Lanphar
Preparer's Name

Sr. Environmental Scientist
Preparer's Title

(510) 540-3776
Phone #


Unit Chief Signature

June 2, 2015
Date

Denise Tsuji
Unit Chief Name

Supervising Environmental Scientist
Unit Chief Title

(510) 540-3824
Phone #

ATTACHMENT A

REFERENCES

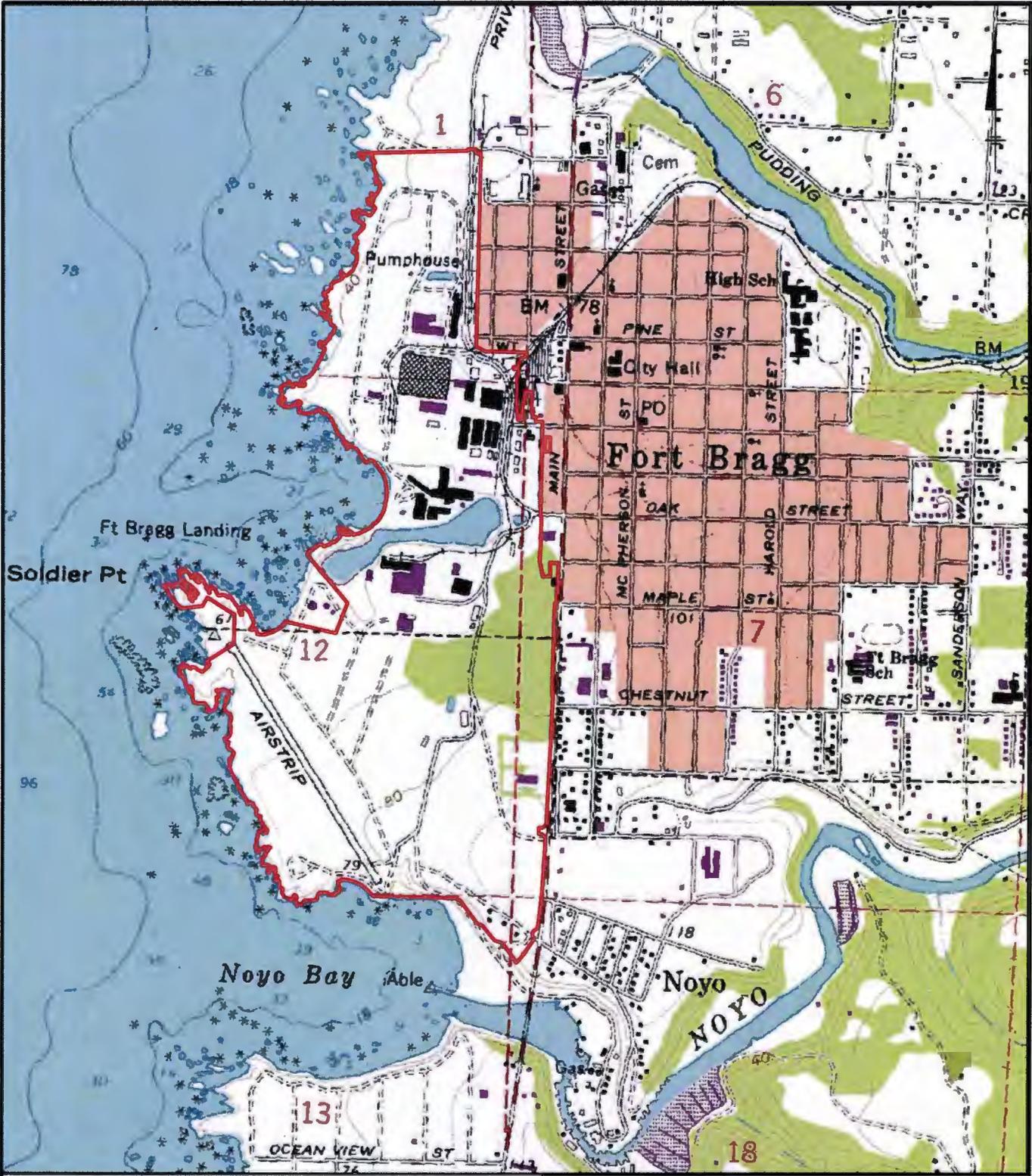
1. AME, *Work Plan for Additional Site Assessment, Georgia-Pacific California Wood Products Manufacturing Facility, 90 West Redwood Avenue, Fort Bragg, California, 2005*
2. ARCADIS, *Remedial Investigation, Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California, February 2011*
3. ARCADIS, *Feasibility Study, Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California, January 2012*
4. ARCADIS, *Second 2014 Semi-Annual Groundwater Monitoring Report, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. Prepared for Georgia-Pacific LLC. ARCADIS U.S., Inc. December 2014*
5. ARCADIS, *Draft Remedial Action Plan Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California, April 2015*
6. ARCADIS BBL, *Remedial Action Plan Operable Unit A, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California, August 2008*
7. Bay Area Air Quality Management District (BAAQMD), *CEQA Air Quality Guidelines, May 2011*
8. BAAQMD, *Proposed Air Quality CEQA Thresholds of Significance, December 7, 2009*
9. BBL Sciences, *Stormwater Pollution Prevention Plan Georgia-Pacific Wood Products Manufacturing Facility, Fort Bragg, California, 2006*
10. Biosearch, *Red-legged frog Identification, Georgia-Pacific Fort Bragg Facility, Mendocino County California, 2010*
11. Brunsing Associates, Inc., *Engineering Geologic Reconnaissance Report, 2004*
12. California Emergency Management Agency, *Tsunami Inundation Map for Emergency Planning, Fort Bragg Quadrangle, no date*
13. City of Fort Bragg, *Flood Insurance Rate Map, Revised June 16, 1992*
14. City of Fort Bragg, *Coastal General Plan, Conservation, Open Space, Energy, & Parks Element, 2008*
15. City of Fort Bragg, *Coastal General Plan, Public Facilities Element, 2008*
16. City of Fort Bragg, *Emergency Operation Plan, March 2010*
17. City of Fort Bragg *Coastal General Plan, Circulation Element, 2014*
18. City of Fort Bragg, *Coastal General Plan, Housing Element, 2014.*
19. City of Fort Bragg *Coastal General Plan, Noise Element, 2012*
20. City of Fort Bragg *Coastal General Plan, Circulation Element, 2014*
21. City of Fort Bragg, *Coastal General Plan, Map LU-1 Land Use Designations, 2014*
22. City of Fort Bragg *Inland General Plan, Circulation Element, 2014*
23. City of Fort Bragg, *Municipal Code Section 18.62.060*
24. City of Fort Bragg and Sherwood Valley Band of Pomo Indians, *Monitor Agreement for the Fort Bragg Coastal Trail Project, April 9, 2014*
25. Department of Toxic Substances Control, *Site Investigation and Remediation Order (Docket Number HAS-RAO 06-07-150), February 16, 2007*
26. Garcia and Associates, *Archeological Extended Phase I Studies Within the Northern Portion of the Georgia-Pacific Corporation Property, Fort Bragg, Mendocino, March 2010*
27. Mendocino County, *General Plan, Circulation Element, 2009*
28. Mendocino County, *General Plan, Mineral Resource Management Element, 2009*
29. Mendocino County Air Quality Control District (MCAQMD), *Air Pollution Control Rules, 2005*
30. MCAQMD, *Particulate Attainment Plan, 2005*
31. MCAQMD, *Memorandum CEQA Criteria and GHG Pollutant Thresholds. June 3, 2010.*

32. *National Resource Conservation Service, Soil Survey for Mendocino County, Western Part, 2002.*
33. *Sherwood Valley Band of Pomo Indians, letters to Thomas Lanphar, dated April 9, 2014.*
34. *State Water Resources Control Board (SWRCB) Construction General Permit for Storm Water Discharges Associated with Construction Activity (Order No. 2010-0014-DWQ)*

35. *Teresa Sholars, Botanical Survey for the Georgia-Pacific Mill Site Bluffs, 2005*
36. *TRC, Phase II Determination of Significant Standing Structures Georgia Pacific Lumber Mill Fort Bragg, California, undated*
37. *TRC, Archaeological Survey of the Georgia Pacific Lumber Mill Fort Bragg, California, 2003*
38. *TRC, Site Specific Treatment Plan for Cultural Resources, Georgia Pacific Lumber Mill, Fort Bragg, California – Draft, 2006*
39. *Van Bueren, Historic Property Survey Report and Findings of Effect for the Fort Bragg Coastal Trail Project in the City of Fort Bragg, California, July 30, 2010*
40. *Whitlock & Weinberger Transportation, Inc., Boatyard Center Phase II Development Traffic Impact Study, 2002*
41. *WRA Environmental Consultants, Delineation of Potential Section 404 Jurisdictional Waters and Waters, 2005*
42. *WRA Environmental Consultants, Avian Habitat Utilization and Impact Assessment, 2006*
43. *WRA Environmental Consultants, Biological Assessment, 2005; updated 2007*

ATTACHMENT B
FIGURES

CITY: Highlands Ranch DIV/GROUP: AIT GIS DB: Bianna Griffith
 Project # B0066142.0003.00002
 Path: I:\FortBragg\MXD\GWMR\3\OTR12\Fig 1-1_SiteLocation.mxd Date: 11/20/2012 Time: 8:47:18 AM



LEGEND:
 SITE BOUNDARY

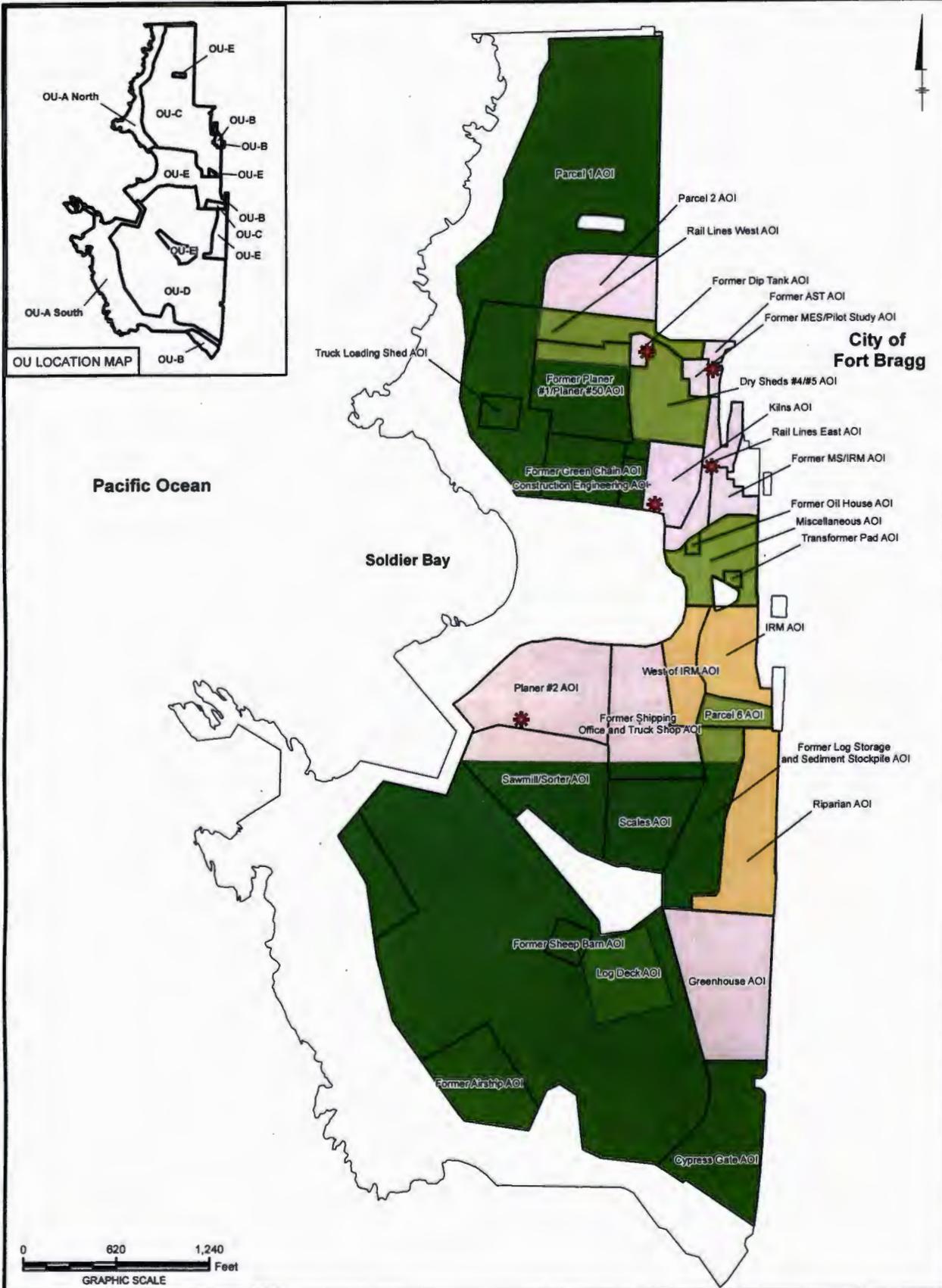
0 1,400 2,800
 Feet
 GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA

SITE LOCATION MAP



FIGURE 1



| LEGEND: | |
|---------|---|
| | AOI BOUNDARY |
| | CONSIDERED FOR REMEDIAL ACTION IN RAP |
| | DETERMINED NO FURTHER ACTION IN RI REPORT |
| | AOI'S NOT INCLUDED IN FEASIBILITY STUDY, RECOMMENDED FOR NFA IN RAP |
| | AOIS MOVED TO OUE |
| | EXCAVATION LOCATIONS |

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
 REMEDIAL INVESTIGATION OPERABLE UNITS C AND D

OU-C AND OU-D AREA OF INTEREST STATUS

ATTACHMENT C
MEMORANDUM OF UNDERSTANDING

**MEMORANDUM OF UNDERSTANDING
BETWEEN THE CITY OF FORT BRAGG, CALIFORNIA
AND THE SHERWOOD VALLEY BAND OF POMO INDIANS**

This Memorandum of Understanding ("Agreement") is entered into this 28th day of May 2014, between the City of Fort Bragg, a municipal corporation located in the County of Mendocino, California ("City"); and the Sherwood Valley Band of Pomo Indians, a federally recognized Indian tribe ("Tribe") (each, a "Party", and collectively referred to as the "Parties").

WHEREAS, the Sherwood Valley Band of Pomo Indians has knowledge of village sites, burials, ancestral and ceremonial grounds throughout its aboriginal territory;

WHEREAS, the City of Fort Bragg has regulatory authority over discretionary development within its jurisdiction;

WHEREAS, Senate Bill 18 (SB 18) adopted in 2004 requires local governments to contact and consult with Native American tribes regarding General Plan, Specific Plans and the designation of open space;

WHEREAS, the City recognizes the importance of protecting cultural resources and will incorporate feasible mitigation, including avoidance, as required under CEQA, while conducting City construction projects and other ground disturbing activities that have the potential to impact Native American cultural resources;

WHEREAS, the City recognizes the importance of protecting cultural resources and will incorporate feasible mitigation, including avoidance, as required under CEQA, while considering permit applications that allow individuals to undertake private or public construction projects and other ground disturbing activities that have the potential to impact Native American cultural resources;

WHEREAS, the Tribe wants to receive and review project information, engage in consultation on projects, and ensure that construction projects and other ground disturbing activities that have the potential to impact Native American cultural resources are monitored by Native American monitors;

WHEREAS, the City and the Tribe recognize that each is a governmental entity with responsibility for the health and general welfare of its people;

WHEREAS, the City and the Tribe seek to work with each other to develop a cooperative, streamlined process for consultation;

WHEREAS, the City supports the Tribe's desire to consult and work cooperatively to protect, mitigate, and manage archaeological sites, traditional cultural properties, and cultural resources, identified on City property and located within the jurisdiction of the City;

WHEREAS, Tribal members engage in ongoing collection and use of cultural biological resources (both flora and fauna and their habitats) and have with certain cultural landscapes within the City limits; and

WHEREAS, the City is supportive of the Tribe's desire to access and steward their cultural resources and places;

NOW, THEREFORE, BE IT AGREED BY THE CITY AND THE TRIBE AS FOLLOWS:

1. **Purpose and Objectives.** The purpose of this Agreement is to establish protocols to: guide consultation between the City and the Tribe; guide the cultural resource review process between the City and the Tribe including but not limited to the California Environmental Quality Act (CEQA) planning and project implementation phases, especially with regard to mitigation measures and monitoring requirements under CEQA; and identify procedures for the treatment of Native American cultural resources.

2. **Definitions.** The following terms have the respective meanings set forth below. Terms listed in singular form may be considered to include the plural form of each word and vice versa except where the context clearly indicates otherwise.

- a. "Consultation" means the meaningful and timely process of seeking, discussing, and considering carefully the views of other participants, and, where feasible, reaching agreements as early in the process as possible. Consultation is undertaken to 1) understand and consider the effects of certain planning or discretionary projects, on cultural resources; 2) revise plans or discretionary projects as feasible to avoid or minimize impacts; and 3) mitigate impacts where avoidance is infeasible. Consultation is a process of communication that may include written correspondence, meetings, telephone conferences, site visits, and e-mails.
- b. "Cultural Resource" means any artifacts, features, human remains (including articulated or unarticulated bones and/or bone fragments, and the surrounding soil matrix at any stage of decomposition of any deceased human) or traditional cultural properties with archaeological ceremonial, cultural, sacred or traditional value to the Tribe.
- c. "Project" means a discretionary activity which requires environmental review under CEQA or NEPA; and/or the adoption of any amendment to the general plan, adoption of any specific plan or designation of land as open space pursuant to SB 18.
- d. "Formal Communication" means authorized written communication intended to represent the official position of one Party to the other. Only written communications from the Tribal Chairman, Vice-Chairman or Tribal Administrator of the Sherwood Valley Band of Pomo Indians and the Mayor, City Manager or Community Development Director of the City of Fort Bragg shall be deemed authorized communication of each respectively.

3. **Cultural Affiliation.** The Parties agree that the Tribe has traditionally occupied, and is historically traced to, the City of Fort Bragg, in Mendocino County, California, its sphere of influence, and beyond. Furthermore, the City of Fort Bragg lies within the historic boundaries of SVBP's ancestral lands, and the historic boundaries of the Mendocino Indian Reservation which included tribal members from many different tribes. Thus, cultural resources from pre-contact and post-contact, found within the City of Fort Bragg, from historic times may be related to SVBP or other tribal communities currently located within Mendocino County.

4. **Most Likely Descendant.** In the event that Native American human remains, associated funerary objects, sacred objects, and/or objects of cultural patrimony are found during a project, the Parties understand that a determination of the Most Likely Descendant (MLD), as described in California Public Resources Code section 5097.98, will be made by the NAHC upon notification to the NAHC of discovery of any such remains at a project site.

5. **Points of Contact.** The points of contact (POC) of the Parties with respect to this Agreement shall be as follows:

Sherwood Valley Band of Pomo Indians

190 Sherwood Hill Drive
Willits, California 95490

Official Governmental POC:

Tribal Chairman
Michael Fitzgerald
Phone: (707) 459-9690
Email: svrchairman@yahoo.com

Technical POC:

Tribal Historic Preservation Officer (THPO)
Hillary Renick
Phone: (707) 459-9690
Email: chishkinmen@gmail.com

Alternate POC:

Tribal Administrator
Scarlett Carmona
Phone: (707) 459-9690
Email: svradministrator@sbcglobal.net

City of Fort Bragg

416 N Franklin Street
Fort Bragg, CA 95437

Official Governmental POC:

Mayor
Dave Turner
Phone: (707) 964-3356
Email: dturner@fortbragg.com

Technical POC:

City Manager
Linda Ruffing
Phone: 707-961-2823
Email: lruffing@fortbragg.com

Alternate POC:

Community Development Director
Marie Jones
Phone: 707-961-1807
Email: mjones@fortbragg.com

- a. All formal communications from the City to the Tribe should be directed to the Chairman by U.S. mail, with an electronic copy of the communication provided to the Chairman, Technical POC, and Alternate POC by email. Only the Chairman shall have authority to enter into, administer, and/or terminate any binding agreements and make related determinations and findings, unless otherwise delegated by a duly executed resolution of the Sherwood Valley Band of Pomo Indians Tribal Council.
- b. All formal communications from the Tribe to the City should be directed to the City Manager by US mail, with an electronic copy of the communication provided to the Technical POC by

email. Only the City Manager shall have authority to enter into, administer, and/or terminate any binding agreements and make related determinations and findings as authorized by City Council through resolution.

- c. The Parties may change their respective POC at any time by providing the other Party with the name of the new POC in writing and email. The Parties shall notify the other of any change in contact information within seventy-two (72) hours of the change in writing and email.
- d. Nothing in this Agreement precludes the Parties from designating other authorized POC to work on varying projects provided the Party notifies the other of such election in a formal written communication, with a courtesy email sent to all above POC for the other Party.

6. **Communication and Consultation Protocols.** In order to successfully avoid, minimize or mitigate against impacts to Native American cultural resources, the Parties agree that consultation shall occur as early in the planning process as possible within reasonable timeframes and in good faith. Consultation shall proceed as follow:

- a. Consultation must proceed in a timely manner so that the City can meet its legal obligations with regard to permit and CEQA review timelines.
- b. Issues that require consultation should be identified as soon as possible in order to involve both Parties early on in the process.
- c. The City shall provide a "Request for Comments" and/or notification to the Tribe's technical POC and the Tribal Chairman, for all projects subject to environmental review under CEQA or NEPA as early as possible to: 1) provide information about the project ; 2) provide an opportunity for the Tribe to identify cultural resources and specific locations of concern; and 3) identify the potential for impacts to cultural resources.
- d. For projects requiring consultation under SB 18 or CEQA, in addition to the information provided pursuant to Paragraph 7(c) above, the City shall provide the Tribe with a Notice of Preparation indicating the type of project and the type of environmental document to be prepared and soliciting initial comments from the Tribe regarding but not limited to the following:
 - i. The choice and content of the environmental documents to be prepared (scoping phase);
 - ii. The proposed area of potential effects within which the project may directly or indirectly cause alteration in the character or use of cultural resources;
 - iii. The data and/or research needs; and
 - iv. Identification of known cultural resources.
- e. Consultation can be initiated by either Party. As a general rule for this Agreement, any City decision or action which would cause significant impacts to an archaeological site, burials, human remains or traditional cultural property should include consultation with the Tribe, as required by CEQA. Early involvement of all Parties will ensure sufficient time for input as decisions are made.

- f. The Tribe should generally be provided a minimum of thirty (30) days within which to respond to a request for comments and complete consultation, unless a longer timeframe is required by law or has been requested by the Tribe and agreed to by the Parties.
- g. The Tribe shall respond to notifications in a timely manner. If the Tribe fails to respond to a Request for Comments within the required timeframe (sec 6.f.), the City may proceed with the project without consultation unless otherwise required by law. The Tribe may provide input into the planning process up to the time of the public hearing and that information will be transmitted to the hearing body.
- h. Both Parties shall adhere to the timelines for the dissemination and review of the various notices and reports provided for by law and delineated within CEQA, CEQA Guidelines, and SB 18.
- i. The Parties agree that oral agreements do not produce a contract and is not legally binding on the Parties unless and until such representation is ratified in writing by an authorized government official of each Party pursuant to Paragraph 5.a and 5.b above.

7. **Native American Cultural Resources Treatment Protocols.** In order to successfully avoid, minimize or mitigate against impacts to Native American cultural resources, the Parties agree as follow with regard to private and public sector projects that are seeking Planning Commission or City Council approvals:

- a. The City and the Tribe shall promote avoidance and non-disturbance measures as the preferred treatment of cultural resources where feasible. If avoidance is not feasible, the City shall consult with the Tribe to minimize and mitigate impacts of a potential undertaking to cultural resources. In cases where agreement cannot be reached within the statutorily required timeframe for the preparation of the CEQA document, as Lead Agency, the City shall define the avoidance/mitigation strategy.
- b. Where cultural resources may be reasonably expected to be located within or adjacent to a project area, the City shall require an archaeological assessment, by a qualified archeologist to determine the presence, extent, and significance of cultural resources within the project area. Archeologists hired to conduct archaeological investigations must meet the Secretary of the Interior's Professional Qualifications Standards.
 - i. The assessment shall include a NAIIC, California Historical Resources Information System (CHRIS) and local historical records search, a Phase I archaeological survey, and preparation of an archeological report containing the results of this assessment. A copy of the archaeological report shall be mailed to the Tribal Chairman. The Tribe shall have thirty (30) days to comment on the all resultant Phase I archaeological reports and request further consultation. During Phase I archacological assessments, the Parties agree that features shall not be excavated and artifacts shall not be collected. If resources are identified in the assessment, a copy of the archaeological report shall also be mailed to the State Historical Preservation Officer (SHPO) and CHRIS at Sonoma State University.
 - ii. Phase II archeological evaluations will be required by the City if recommended in the Phase I assessment. If a Phase II or further archaeological evaluation is recommended, a qualified professional archeologist will prepare a field collection

strategy, artifact processing and analysis guidelines, and a detailed treatment/disposition plan, in consultation with the THPO, prior to the commencement of any fieldwork that will result in the collection of artifacts. The archaeologist shall provide the Tribal Chairman with a proposed testing plan and the Tribal Chairman shall provide comments on the plan within fifteen (15) days of receipt of the proposed testing plan. The THPO and Tribal Chairman shall have thirty (30) days to comment on all resultant Phase II archaeological report and request further consultation. During Phase II archaeological assessments, native soils may be excavated, but artifacts shall not be collected. If excavations are to occur, the City shall uphold the Tribe's right to require the presence of a Tribal monitor during such activity pursuant to a tribal monitor agreement agreed upon by the parties.

- iii. Should at any time, archaeological material be collected with the prior written consent of the Tribe, the City acknowledges the Tribe's preference that all collected archaeological material be studied for the shortest feasible amount of time, with a maximum of one year.
 - iv. The City acknowledges and agrees to uphold to the extent permitted by law, that it is the Tribe's preference to have temporarily collected materials, subsequently reburied in proximity to the materials' original interment location, as feasible, in an area where the materials shall not be subject to future ground disturbance.
- c. Project applicants that conduct ground disturbing activities within a project area prior to obtaining the proper permits and clearances will be ordered to stop work and appropriate action, including but not limited to criminal prosecution, will be taken in accordance with applicable law.

8. Native American Cultural Resources Treatment Protocols. In order to successfully avoid, minimize or mitigate against impacts to Native American cultural resources, the Parties agree as follow with regard to City projects, where a CEQA document requires Tribal Monitoring:

- a. The City will allow the Tribe to monitor native ground disturbing activities on projects where cultural resources may be reasonably expected to be located. If a tribal monitor agreement has been agreed upon by the parties, it shall be followed.
- b. The City agrees to transfer ownership of Native American cultural resources that are found on City property through implementation of a Data Collection Plan or through monitoring of a construction project to the appropriate Native American Tribe for proper treatment and disposition, if requested by the Tribe, unless otherwise required by law.

9. The City shall send to the Tribal Chairman all public draft, amended, supplemental and final environmental documents prepared for a project that will have impacts to cultural resources, including but not limited to Initial Studies, Negative Declarations, Mitigated Negative Declarations, and Environmental Impact Reports. These should at minimum include the following:

- i. Cultural resource data collection/analysis methodologies and significance;
- ii. Potential effects/impacts upon identified cultural/natural resources; and

- iii. Potential mitigation measures including avoidance.

All environmental documents shall be transmitted directly to the Tribe by Certified U.S. mail. The City shall not rely upon the California State Clearinghouse to provide distribution, but shall provide the information directly to the Tribe in compliance with the statutory review period.

10. Projects that may be considered to have potential impact to archaeological sites and resources related to the Tribe include the following:

- i. Construction or ground disturbing activities in areas where ground disturbance has the potential to adversely affect cultural resources sites related to the Tribe that are eligible for listing in the National Register of Historic Places (NRIIP).
- ii. Construction or ground disturbing activities determined by a qualified professional archaeologist to potentially disturb cultural resources related to the Tribe.
- iii. Construction or ground disturbing activities in areas where Tribal villages, gravesites or activity sites are documented and known to have existed or occurred, or where the Tribe can reasonably demonstrate that villages, gravesites or activity sites are likely to occur.

11. **Mitigation.** The Parties agree to consult with one another to identify feasible and appropriate mitigation measures for impacts to cultural resources. For the Tribe avoidance is the preferred mitigation measure to potential impacts to cultural resources. The Parties acknowledge that there are several ways in which impacts to cultural resources can be mitigated and data recovery is but one mitigation measure that may be used. If data recovery is the only prudent and feasible mitigation measure, the City in consultation with the Tribe shall develop and implement a Data Recovery Plan prior to the commencement of ground disturbing activities in areas with cultural resources.

12. **Monitoring.** In the event that monitoring is required, as a mitigation measure, through a CEQA document the following applies to the monitoring requirement:

- i. The Project Contractor shall provide notification of the date/time and location of intended construction activities to the Tribal Historic Preservation Officer (THPO) and Tribal Chairman 14 days (or a shorter period as agreed to by both parties) prior to the start of any construction activities in areas that may impact archaeological sites/resources through disturbance of native soils in known or suspected archaeological areas.
- ii. In the event that the Tribe cannot supply an adequate number of tribal monitors in a timely manner for the project, the Project Contractor may hire other qualified Native American tribal monitors from other Mendocino, Lake or Sonoma County tribes to undertake monitoring activities for the project until such time as the Tribe provides its preferred tribal monitor.
- iii. If a scheduled tribal monitor is not on site when the work day starts, the Project Contractor will promptly contact the THPO and Tribal Chairman. The work shall then proceed without monitoring unless there is a Project Archaeologist present.
- iv. Where monitoring is required as a mitigation measure under CEQA, Native American monitoring shall be paid for by the property owner. When monitoring is requested by the

tribe, but it is not required as a mitigation measure in a CEQA document, the Tribe shall pay for the Native American monitoring.

- v. **Compensation.** The project applicant shall compensate the Sherwood Valley Band of Pomo Indians for tribal monitoring services provided by its tribal monitors. Invoices will be submitted by the Tribe on a bi-weekly basis and shall be paid to the Tribe within fourteen (14) days of submittal. Tribal Monitoring Services- \$ 50.00/hour (per monitor). Overtime (9 or more hours in a day excluding drive time to and from the site), Weekend, and Holiday - \$ 75.00/hour (per monitor). The Sherwood Valley Band of Pomo Indians shall be reimbursed for mileage costs of tribal monitors to and from the project site pursuant to the federal GSA rates. If the tribal monitor arrives after being notified there will be work, and if there is less than 3 hours of work the tribal monitor will receive 3 hours of pay, otherwise the tribal monitor will be paid for the actual number of hours worked. Tribal monitors will not be reimbursed for drive time to and from the site.

13. **Ethnographic Study.** Ethnographic studies may be warranted for some projects, as determined through the CEQA process. Where warranted as mitigation for project impacts to cultural resources, the study should at minimum:

- a. Be developed in consultation with the Tribe with regard to the study's scope of work and contractor selection;
- b. Determine if other cultural attributes associated with known sites, resources, or landscapes within the project area could contribute to the significance of previously identified cultural resources;
- c. Be viewed as complementing, rather than replacing, the larger Native American consultation effort for a project;
- d. Consist of ethnographic and historic research and interviews with Native American informants; and
- e. Be conducted concurrently with any archaeological investigations and integrated or attached to the body of any resulting reports, as they enhance understanding of the significance of the sites and the interpretation of the archaeological data.

14. **Discovery.** If cultural resources are encountered, ground disturbing activities shall cease immediately in the discovery location and a buffer zone of fifty (50) feet radius. If the find is known or suspected human remains and/or associated cultural resources, ground disturbing activities shall cease in the discovery location and a one hundred (100) feet radius buffer area. The size of the buffer may be adjusted once the project archaeologist, in consultation with the tribal monitor, has had the opportunity to examine the site. No construction activities will take place within the buffer until an archaeological investigation has been completed in accordance with the applicable provisions of this Agreement and any tribal monitor agreement agreed upon by the parties.

15. **Post-Review Inadvertent Discoveries.** Post-review discoveries most commonly occur when previously unidentified archaeological sites are uncovered during construction. However, other previously unknown cultural resources could also be discovered, or a project could be found to have unexpected effects on cultural resources.

- a. If during the identification phase, no significant resources are identified through an archaeological assessment, and the area has a moderate-to-high potential for previously unknown archaeological resources (as shown in Attachment 1), the City will require a project-specific, Post Review Discovery Plan (PRDP) to efficiently and effectively address such potential discoveries. A PRDP template is provided in Addendum.
- b. If a PRDP is required on a project in which the Tribe has identified concerns, the draft PRDP shall be provided to the Tribe for comments and input prior to finalization.
- c. When there is no PRDP in place and a project affects a previously unidentified resource, the City shall notify the Tribe within forty-eight (48) hours of the discovery and consult with the Tribe in accordance with the provisions of 17.50.030E of the Land Use and Development Code.

16. Treatment and Disposition of Native American Human Remains and Associated Cultural Resources. Whenever Native American human remains and associated cultural resources are discovered during implementation of a project and the Tribe has been designated the MLD, the following provisions shall be implemented:

- a. The City will comply with 17.050.030E of the Fort Bragg Municipal Code if human remains are discovered. In addition to immediately stopping work on the project and notifying an archaeologist and the County coroner (as required by 17.050.030E) the City shall also immediately notify NAHC and SVBP.
- b. The Tribe shall be allowed, under California Public Resources Code sections 5097.98 (a) and 21083.2 and CEQA Guidelines section 15064.5 (e), to: (1) inspect the site of the discovery; and (2) make recommendations as to how the human remains and associated cultural resources shall be treated and disposed of with appropriate dignity. The City will ensure that the recommendations are followed, unless otherwise required by law.
- c. The Tribe shall complete its inspection within forty-eight (48) hours of receiving notification from either the City or the NAHC, as required by California Public Resources Code section 5097.98 (a). The Parties agree to discuss, in good faith, what constitutes "appropriate dignity" as that term is used in the applicable statutes.
- d. Reburial of human remains and associated cultural resources shall be accomplished in compliance with the California Public Resources Code sections 5097.98 (a) and (b) and 21083.2 and CEQA Guidelines section 15064.5 (e).
- e. For projects that occur on City owned land, the City will make good faith efforts to accommodate the Tribe's wish to rebury human remains and associated cultural resources on or near the site of their discovery, in an area that shall not be subject to future subsurface disturbances.
- f. It is understood by the Parties that, unless otherwise required by law, the site of any location of or reburial of Native American human remains or other cultural resources, on City property, shall remain confidential and shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. Upon discovery of such remains or artifacts, the City shall withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code section 6254 (r).

- g. The term "human remains" encompasses more than human bones because the Tribe's traditions periodically necessitated the ceremonial burning of human remains, tribal monitors shall make recommendations for removal of cremations, if such removal is necessary. Associated cultural resources include those artifacts associated with any human remains. These resources and the soil, in an area encompassing up to two (2) feet in diameter around the burial, and other funerary remnants and their ashes, are to be treated in the same manner as human bone fragments or bones that remain intact.
- h. Any human remains and associated cultural resources found during a project and not reburied shall be returned to the Tribe and not curated in any facility without prior written consent of the Tribe. This treatment shall also be extended to any cultural resources identified by the Tribe as sacred objects, unassociated funerary objects, and objects of cultural patrimony.
- i. After the recommendations are followed, the City may allow the project work to resume.
- j. The City shall record all burials, reburials, and sacred, religious, or ceremonial sites on the Sacred Lands Inventory Form, which shall be submitted to the NAHC.
- k. The City shall not display Native American skeletal remains and associated cultural resources that the Tribe regards as traditionally sacred that have been disinterred from within City boundaries without the prior written consent of the Tribe. This treatment shall also be extended to any cultural resources identified by the Tribe as sacred objects, unassociated funerary objects, and objects of cultural patrimony.
- l. The City shall receive prior written consent of the Tribe before permitting any photography or drawings of human remains and associated objects of cultural resources that are disinterred from City property.

17. **Treatment of Traditional Cultural Properties on City Land.** Where feasible, City projects should avoid impacts to burial areas, and other sacred, religious or ceremonial sites, including traditional cultural properties known or identified by the Tribe. Where avoidance of impacts due to development of City projects is infeasible, as determined by the City, the City shall consult with the Tribe to minimize and mitigate impacts and seek agreement on the appropriate treatment.

18. **Access to Sacred Sites.** Pursuant to California Public Resources Code sections 5097.9, where feasible and appropriate, the City shall consult with the Tribe to include mitigation measures that provide for Tribal access to places of traditional, spiritual or social importance (such as prayer sites, ceremonial sites and shrines), areas important in folklore and legend, and areas attributed with special or unique powers of sacredness identified and located on City-owned lands.

19. **Access to Biological Collecting Sites.** Within one (1) year of the execution of this Agreement, the City shall establish a program, in consultation with the Tribe, to:

- a. Identify locations within City-owned lands, that are currently utilized by the tribe to gather or collect botanical or other natural cultural resources and develop and implement a policy to manage herbicide use in these areas; and
- b. Allow for the gathering of biological resources for cultural purposes including but not limited to religious or ceremonial practice, traditional arts and crafts, and/or the preservation and maintenance of traditional life and food ways on City-owned or City-maintained lands, as permitted by local, State and Federal law, including City rights-of-way.

20. **Confidentiality.** The City recognizes and agrees to accommodate the Tribe's need to maintain confidentiality to protect archaeological sites, traditional cultural properties, and cultural resources, to the extent allowed for by law, including, but not limited to, exemption from public disclosure as set forth California Government Code section 6254(r). The Non-Disclosure and Confidentiality Agreement is incorporated herein by reference in Addendum 2 to this Agreement.

21. **Compliance.** Each Party to this Agreement shall comply with any and all tribal, federal, state and local laws. Nothing in this Agreement shall excuse the Parties from its obligation under any applicable state or federal environmental statute, including, but not limited to: CEQA and applicable regulations of the CEQA Guidelines; California Public Resources Code, sections 5097.98, 5097.99, and 5097.991; California Health and Safety Code, section 7050.5 (c); California Government Code, section 6254; and the First Amendment to the United States Constitution. Nothing in this Agreement is intended to make any of the above-referenced laws applicable where such laws would otherwise be inapplicable. Nothing in this MOU can alter the Parties' independent governing or regulatory obligations.

22. **Counterparts.** This Agreement may be signed in two or more counterparts and shall be effective when all the Parties and signatories have affixed their signatures to two or more of the counterparts and the counterparts have been delivered to the Parties, at which time the counterparts together will be deemed one original document.

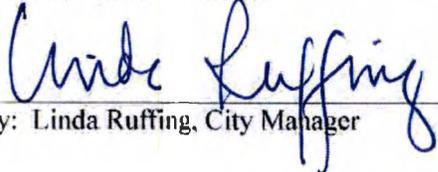
23. **Dispute Resolution.** If either party determines that a section or clause of this MOU is no longer suitable for its operations, then the party can request a 90-day consultation period to discuss and identify an alternative approach to the section or clause. If an alternative approach is agreed to by both parties the MOU may be amended as described below. If the parties cannot come to agreed upon alternative language to the section or clause, that is under dispute, that section or clause shall be struck from the MOU.

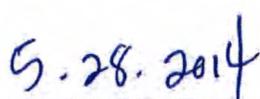
24. **Amendments.** This Agreement may be amended if both Parties agree to the amendment in writing.

23 **Term.** The duration of this Agreement is three (3) years from the date of last signature below. This Agreement may be renewed at the discretion of each party by the adoption of a resolution by City Council and the Tribal Council at the conclusion of the three (3) year term..

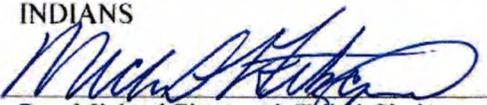
THEREFORE BE IT RESOLVED, by the signatures of the representatives on the date indicated below that the City and the Tribe formally endorses and accepts this Memorandum of Understanding.

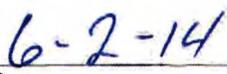
CITY OF FORT BRAGG


By: Linda Ruffing, City Manager


Date

SHERWOOD VALLEY BAND OF POMO INDIANS


By: Michael Fitzgerral, Tribal Chairman


Date

APPROVED AS TO FORM:

CITY OF FORT BRAGG

See attached

David Warner, City Attorney

Date 

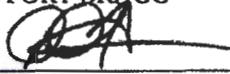
SHERWOOD VALLEY BAND OF POMO INDIANS

Kazhe Law Group PC
By: Christina V. Kazhe

Date

APPROVED AS TO FORM:

CITY OF FORT BRAGG



David Warner, City Attorney

May 30, 2014

Date

SHERWOOD VALLEY BAND OF POMO INDIANS

Kazhe Law Group PC
By: Christina V. Kazhe

Date

CALIFORNIA ENVIRONMENTAL QUALITY ACT NEGATIVE DECLARATION

Department of Toxic Substances Control
Brownfield and Environmental Restoration
Program, Berkeley
700 Heinz Ave, Suite 200
Berkeley, CA 94710

Subject: DRAFT FINAL MITIGATED

Project Title: Remedial Action Plan, Operable Units C and D, Former Georgia-Pacific Mill Site

State Clearinghouse No.:

Project Location: Fort Bragg

County: Mendocino

Project Description: The California Department of Toxic Substances Control (DTSC) pursuant to regulatory authority granted under Chapter 6.8, Division 20 of the Health and Safety Code (H&SC) is considering approval of a Remedial Action Plan (RAP) to address soil and groundwater contamination existing at the Operable Unit (OU) C and OU-D sites located at the former Georgia-Pacific Corporation, Inc. Mill Site. The remedial activities will involve excavation of approximately 1,108 to 1,858 cubic yards (yds³) or approximately 60 - 90 truckloads (approximately 120 – 180 round trips) of contaminated soils from 5 excavation sites. Excavated soil will be transported off-site and taken to an authorized hazardous waste disposal facility. In addition, approximately 1,108 to 1,858 yds³ of clean backfill materials will be imported from a nearby off-site location.

Remedial action will also include installation of soil covers, implementation of natural attenuation and monitoring to address contaminants present in groundwater beneath the site, site restoration activities, imposition of Land Use Covenants (LUCs), and approval of an Operations and Maintenance Plan.

Operable Unit C and Operable Unit D are within the following Assessor's Parcel Numbers (APN): 008-020-13, 008-053-34, 008-151-22, 008-161-08, 018-010-67, 018-020-01, 018-030-42, 018-040-52, 018-120-43, 018-430-13, 018-430-15, and 018-430-16.

Finding Of Significant Effect On Environment: *(An Initial Study supporting this finding is attached.)*

Mitigation Measures:

MM1: Excavation activities will be suspended if winds exceed 15 miles per hour (mph) sustained (for 15 minutes) or 25 mph (instantaneous gusts).

MM2: Vehicles entering or exiting construction areas will travel at a speed that minimizes dust, but not to exceed 15 mph. Construction workers will park in designated parking area(s) to reduce dust. All unpaved areas shall have a posted speed limit of 10 mph.

MM3: Water will be applied by means of trucks, hoses, and/or sprinklers prior to removal and excavation activities to minimize dust.

MM4: Water will be applied to disturbed areas as needed to keep working surfaces moist enough to minimize dust.

MM5: The disturbed work area will be sprayed with water at the end of the work shift to form a thin crust.

MM6: Earth or other material tracked onto neighboring (onsite or offsite) paved roads shall be removed promptly. Onsite paved roads will be washed down as needed. Parking areas, staging areas, and traffic pathways on the site shall be cleaned, as necessary, to control dust. Adjacent public streets shall also be cleaned, promptly, if soil materials from the site are visible.

MM7: Water will be applied to visibly dry unpaved roads to keep road surfaces moist enough to minimize dust emissions.

MM8: Soil stockpiles 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.

MM9: When not covered, soil stockpile surfaces will be kept visibly moist by water spray.

MM10: Open bodied trucks shall be covered when used to transport materials with the potential for airborne dust; and

MM11: Trucks and tires will be washed off before leaving the Mill Site to minimize tracking of dioxin/furans-affected dirt onto Cypress Street and/or SR 1. The waste water shall be collected with catch basin(s), managed on-site, and transported off-site for disposal,

MM12: A professional archaeologist and/or architectural historian will review previous archaeological reports prior to ground disturbing activities to identify the location and perimeter of historical resources within the Area of Potential Effect (APE); OU-C, and OU-D. These sensitive areas will be protected by appropriate fencing.

MM13: The professional archaeologist and a Native American Monitor will be on site during all ground disturbing activities.

MM14: Upon discovery of historical resources during construction activities, the professional archaeologist will halt all work within 50 ft. radius of the find until an assessment has been completed, and simultaneously report findings to the DTSC and City.

MM15: The professional archaeologist will submit a draft and final Phase II Investigation Report to the DTSC and City for review and approval.

MM16: The professional archaeologist must record and submit all necessary DPR 523 Forms to the California State Parks, Office of Historic Preservation upon completion of the Phase II Investigation Report.

MM17: Native American or Tribal Monitor(s) will be Hazardous Waste Operations and Emergency Response (HazWOPER) trained and certified. Copies of current HazWOPER certification will be provided to DTSC and the City prior to implementation of construction activities.

MM18: Tribal monitoring services will be required whenever construction activities include ground disturbance of native soils in, or adjacent to, known and suspected archaeological sites. If during construction activities any archaeological artifacts or features are encountered, both the Project Archaeologist and the Tribal Monitor(s) 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 part of a site area that has been mitigated through data recovery, (4) whether the find is an isolated item, (5) whether the find is part of a larger previously unknown archaeological site. and (6) the best course of action to avoid or minimize impacts to the resources as applicable.

MM19: 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 the provisions of the Coastal Land Use and Development Code (CLUDC 17.50.030E), and the Memorandum of Understanding (MOU) and attachments between the City of Fort Bragg and Sherwood Valley Band of Pomo Indians shall be followed.

MM20: If the find is determined to be within an area mitigated through data recovery, it shall be expeditiously documented pursuant to the terms of the Data Collection Plan (DCP) and the ESA Monitoring Plan. Materials that are not collected by the archaeologist will be reburied onsite in the designated cultural resource reburial area or other area as agreed upon in writing by the parties.

MM21: If the find is determined to be either from a clearly disturbed context (i.e. disturbed fill soils, back dirt piles) or the find is determined to be an isolated find that is clearly not associated with an archaeological site, the item shall be

recorded as such and then reburied onsite in the designated cultural resource reburial area or other area as agreed upon in writing by the parties.

MM22: Human remains will not be disturbed or removed from their original resting place unless removal is unavoidable and necessary.

MM23: Procedures for the discovery of human remains and associated items are as follows.

- a. Georgia-Pacific or designee shall first contact the appropriate law enforcement agency (County Coroner) and immediately notify the Tribal Chairman and Tribal Historic Preservation Officer (THPO) or assigned designee. If the remains constitute a crime scene, all applicable laws and procedures apply.
- b. If the discovery is not a crime scene, all ground disturbing activities shall cease at the discovery location including a buffer as determined by the Project Archaeologist, in consultation with the Tribal monitor and the THPO, but not less than 50 feet. No construction activities will take place within the buffer until an archaeological investigation has been completed.
- c. Out of respect for the remains, all work related to the remains shall be conducted out of the public eye, unless otherwise required by law.
- d. If the Coroner determines that the remains are of, or thought to be of Native American origin, they are required to contact the Native American Heritage Commission pursuant to PRC 5097.98.
- e. The Native American Heritage Commission (NAHC) will then immediately designate a person or persons it believes is the Most Likely Descendent (MLD). The MLD shall within 48 hours of being notified recommend means for treating and disposing with appropriate dignity, the human remains and associated items.
- f. The preferred protocol upon the discovery of Native American human remains is to secure the area, cover any exposed human remains or other cultural items, and to avoid further disturbance. No laboratory studies are permitted. The preferred treatment for exhumed Native American human remains is reburial in an area not subject to further disturbance. Should reburial of the human remains be required, Georgia-Pacific shall rebury them in the designated reburial area on site.

MM24: All stockpiles of excavated soils will be within fenced areas and covered with heavy duty polyethylene liners to prevent migration of contaminants, shield the material from elements, and mitigate fugitive dust and storm water run-on and runoff.

MM25: Temporary staging areas will be set up adjacent to 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.

MM26: Open bodied trucks shall be covered when used to transport soil. Trucks shall be brushed or washed down with water to removed soil on the truck and tires, after loading and prior to leaving the Site.

MM27: Visible soils carried onto Cypress Street and/or SR 1 via trucks, earth moving equipment, water, or other means shall be promptly removed.

MM28: Temporary staging areas will be set up adjacent to excavation areas for soil stockpiling. Excavated material be placed on plastic sheeting to stop migration of soil, shield the soil from the elements, and eliminate fugitive dust and storm water run-on and runoff.

MM29: Truck routes will be established in the Transportation plan to be submitted and approved by DTSC. Trucks will enter and exit the site at the Cypress Gate, travel on SR1 to SR20, then travel on SR20 to US101. Trucks will then travel south on US1010 and then continue to the disposal facility.

MM30: Coordinate with the local and state enforcement agencies, first responders, and Caltrans if emergency response is needed.



Unit Chief Signature

2015

~~June 3, 2014~~

Date

Denise Tsuji
Unit Chief Name

Unit Chief
Title

510-540-3824
Phone #



Appendix E

Responses Summary



Appendix F

Statement of Reasons and
Nonbinding Allocation of
Responsibility

STATEMENT OF REASONS

Former Georgia-Pacific Wood Product Facility Operable Units C and D Remedial Action Plan Fort Bragg, California

Pursuant to California Health and Safety Code (HSC) Section 25356.1(d), the California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) has prepared this Statement of Reasons and Nonbinding Preliminary Allocation of Responsibility as part of the Remedial Action Plan (RAP) for the Former Georgia-Pacific Wood Products Facility, Operable Unit (OU) C and OU-D, Fort Bragg, California (Site). OU-C and OU-D have been divided into 32 Areas of Interest (AOIs).

The RAP presents a summary of the Remedial Investigation (RI) and Feasibility Study (FS) that address the constituents of concern (COCs) identified at the Site. The primary COCs are lead, dioxin, Benzo(a)Pyrene (B(a)P), pentachlorophenol, and total petroleum hydrocarbon (TPH)-diesel in soil; volatile organic compounds (VOCs), like benzene and naphthalene in soil gas; and VOCs, pentachlorophenol, dioxin, arsenic, atrazine and TPH-diesel in groundwater.

The RAP summarizes the results of risk assessment performed to determine the potential risks to public health and the environment associated with the contaminants and provides an evaluation of remedial alternatives. The RAP recommends remedial alternatives that will meet the objectives of protecting public health and the environment. The RAP proposes remediation of soil by excavation and off-site disposal of soil at five AOIs. Remediation of soil and soil gas at three AOIs include restriction on use, through a Land Use Covenant (LUC), and long term protections through Operations and Maintenance. Contaminants in soil vapor at two AOIs are further addressed through Vapor Mitigation Systems. Groundwater is remediated through a combination of source removal, natural attenuation and Operation and Maintenance at three AOIs and natural attenuation and Operation and Maintenance at four AOIs. A Land Use Covenant will restrict the domestic use of groundwater and Operation and Maintenance will provide monitoring of groundwater at all six AOIs with groundwater remedies.

DTSC believes that the RAP complies with the law as specified in HSC Section 25356.1. Section 25356.1(e) requires that RAPs “shall include the basis for the remedial actions selected and an evaluation of each alternative considered and rejected.” The RAP “shall also include an evaluation of the consistency of the selected remedial actions with requirements of the Federal regulations and factors specified in subdivision (d)...” Subdivision (d) specifies six factors against which the remedial alternatives in the RAP must be evaluated. The proposed remedial action is consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (the National Contingency Plan, “NCP”), the Federal Superfund regulations. The RAP for the Site has addressed these factors in detail. A brief summary of each factor follows. This Statement of Reasons also includes the preliminary Nonbinding Allocation of Responsibility (NBAR) as required by HSC Section 25356.1(e).

1. HEALTH AND SAFETY RISKS – SECTION 25356.1 (D) (1)

A Human Health Risk Assessment (HHRA) is summarized in the RAP. The HHRA evaluated the potential human health risks associated with the presence of chemicals in soil, soil gas, and groundwater at the Site based on current and projected future site use. The HHRA findings are:

The key findings of the human health and ecological risk assessments are summarized below. The human health risks are associated with potential soil and soil vapor/indoor air exposures. Twenty-two Exposure Units (EUs) were evaluated in the risk assessment: fifteen in OU-C and seven in OU-D. The following bullets discuss the EUs identified in the health risk assessment as posing increased risks and/or hazards because of elevated concentrations of COPCs in soil and/or soil vapor. An Exposure Unit may contain one or more AOIs. Issues with respect to specific COPCs are also discussed.

Human Health Risk Assessment

Soil

- At Dry Sheds #4/#5 in OU-C, the risk from potential exposure to PAHs in soil is slightly elevated in a residential land use scenario.
- At the Exposure Unit identified as North of IRM in OU-C, the risk from potential exposure to dioxin TEQs in soil is slightly elevated in a residential land use scenario. However the maximum concentration of dioxin TEQs is 22 parts per trillion (ppt) and is below the unrestricted remedial goal of 50 ppt.
- At Former Parcel 3 MES/Pilot Study in OU-C, the presence of cobalt and arsenic pose a slight increase in the Hazard Index or cancer risk for the construction worker or utility/trench worker.
- At the Exposure Unit identified as OU-D South, dioxins pose slightly elevated risks to potential residents and commercial/industrial workers. However the Exposure Point Concentration (EPC) for dioxin TEQ is 34 ppt and is below the unrestricted remedial goal of 50 ppt.
- Arsenic. The majority of arsenic concentrations in soil detected in OU-C and OU-D soil were within the site-specific background concentration; therefore, the human health risk assessments do not include risk from exposure to arsenic in soil, with the exception of arsenic at the Former MES/Pilot Study and Former Dip Tank. The human health risk evaluation for the Former MES/Pilot Study and Former Dip Tank Exposure Units includes arsenic in the shallow depth interval, and the arsenic EPC was adjusted to exclude the background concentration (10 mg/kg).
- Lead. Using the upper confidence limit (UCL) on the mean the soil lead EPC at the former AST EU exceeded Site Screening Levels (SSLs) for the residential child, the construction worker, and the utility worker receptors.
- Total Petroleum Hydrocarbon diesel (TPH-diesel). TPHs were not identified as contaminants contributing to human health risks or hazards at any EU. Therefore, soil TPH concentrations were evaluated elsewhere based on the protection of groundwater from leaching of TPHs from soil to groundwater.

Soil Vapor

- At Former AST in OU-C, the risks and hazards from potential exposure to VOCs (benzene, ethyl benzene, 1,2,4-trimethylbenzene (TMB), and naphthalene) intruding indoors from subsurface soil are significantly elevated for both the residential and commercial land use scenarios.
- At Former Parcel 3 MES/Pilot Study in OU-C, the risks and hazards from potential exposure to VOCs (benzene, ethylbenzene, 1,2,4-TMB, and naphthalene) intruding indoors from subsurface soil are significantly elevated for the residential and commercial land use scenarios.
- At Planer #2 in OU-D, the risks and hazards from potential exposure to VOCs (vinyl chloride, tetrachloroethylene (PCE), 1,2,4-TMB, and 1,1-dichloroethylene (DCE))

intruding indoors from subsurface soil are significantly elevated for the residential and commercial land use scenarios.

Groundwater

- Because the groundwater is not used at the former mill site, groundwater was not included in the risk assessment. COCs in groundwater were compared to the North Coast Water Quality Objectives to determine if a remedial action was necessary.

Ecological Health Risk Assessment

An ecological health risk assessment was carried out for all AOIs or EUs. The only AOI showing an unacceptable ecological risk is the Riparian AOI sediments within the drainage because of potential exposure by ecological receptors to metals, PAHs and dioxins/furans. This AOI was moved to OU-E for further evaluation, since it is related to the predominant features of OU-E, including the man-made ponds, and will likely be designated as open space.

2. BENEFICIAL USES OF THE SITE RESOURCES – SECTION 25356.1 (D) (2)

The Site is a former lumber mill and is not in use, with the exception of some remaining buildings being used as storage. The closed mill provide open space for wildlife, including coyote, deer, rabbits, and geese. There is no approved plan for redevelopment of the mill site; however, a draft site specific plan envisioned residential, commercial, industrial and recreational uses of the former mill site.

3. EFFECT OF REMEDIAL ACTIONS ON GROUNDWATER RESOURCES – SECTION 25356.1(D) (3)

Although the Regional Water Quality Control Board (RWQCB) has designated groundwater in the area as having beneficial use for domestic and municipal supply, agricultural supply, and industrial supply, groundwater beneath the Site is not a drinking water source. The proposed groundwater remedial actions at seven sites include natural attenuation and restrictions on the domestic use of groundwater. The area affected by the groundwater use restriction is less than five percent of OU-C and OU-D. The restriction on groundwater use would not significantly limit the possibility future use of groundwater resources at the Site.

4. SITE-SPECIFIC CHARACTERISTICS – SECTION 25356.1 (D) (4)

The approximately 415-acre site is located west of Highway 1 along the Pacific Ocean coastline and is bounded by open coastline to the north, the City of Fort Bragg (City) to the east, Noyo Bay to the south, and the Pacific Ocean to the west. According to historical records, Union Lumber Company (ULC) began sawmill operations at the site in 1885. Georgia-Pacific acquired the site in 1973 and ceased lumber operations on August 8, 2002. Much of the equipment and structures associated with the lumber production have since been removed.

The northern area of the site is defined as Operable Unit C (OU-C) and is approximately 114 acres. OU-D is located in the southern part of the site and includes approximately 110 acres. OU-C and OU-D were subdivided into 32 Areas of Interests (AOIs) based on formal use. The OU-C and OU-D Remedial Action Plan (RAP) considered remedial alternatives for eleven AOIs. The Remedial Investigation for OU-C and OU-D was approved by DTSC on April 12, 2011. DTSC approved the Feasibility Study for these OUs on February 17, 2012. The RAP considered Remedial Action for the following AOIs:

1. Parcel 2 AOI:
 - Groundwater: dioxin/furans and pentachlorophenol (PCP)
2. Former Aboveground Storage Tank (AST) AOI:
 - Soil: lead, total petroleum hydrocarbons (TPH)

- Soil vapor: benzene, ethylbenzene, 1,2,4-trimethylbenzene, and naphthalene
 - Groundwater: benzene, naphthalene, total petroleum hydrocarbons in the gasoline range (TPHg), total petroleum hydrocarbons in the diesel range (TPHd), tetrachloroethene (PCE), and cis-1,2-dichloroethene (cis-1,2-DCE)
3. Former Mobile Equipment Shop (MES)/Pilot Study AOI:
 - Soil vapor: benzene, ethylbenzene, 1,2,4-trimethylbenzene, and naphthalene
 - Groundwater: benzene, naphthalene, TPHg, TPHd, PCE, and cis-1,2-DCE
 4. Former Dip Tank AOI:
 - Soil: dioxins/furans and pentachlorophenol (PCP)
 - Groundwater: dioxins/furans and PCP
 5. Rail Lines East AOI:
 - Soil: lead and Benzo(a)Pyrene [B(a)P]
 6. Kilns AOI:
 - Soil: TPHd and B(a)P
 7. Former Machine Shop (MS)/IRM AOI:
 - Soil: TPHd and lead
 - Groundwater: TPHd, benzene, and vinyl chloride
 8. Former Planer #2 AOI:
 - Soil: TPHd and B(a)P
 - Soil Vapor: 1,1-dichloroethene, 1,2,4-trimethylbenzene, PCE, vinyl chloride
 - Groundwater: 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), and naphthalene
 9. Former Shipping Office and Truck Shop AOI:
 - Soil: TPHd
 10. Sawmill//Sorter AOI:
 - Groundwater: arsenic
 11. Greenhouse AOI:
 - Groundwater: atrazine

5. COST-EFFECTIVENESS OF ALTERNATIVE REMEDIAL ACTION MEASURES – SECTION 25356.1(D) (5)

The RAP evaluated remedial alternatives to protect human health and groundwater resources. Focused excavation and removal of residual impacted soil at five AOIs is expected to allow for unrestricted use of the property. Groundwater remediation involves source removal, limited in-situ treatment and natural attenuation. The Feasibility Study included an evaluation of the costs of each remedial alternative. The proposed remedial actions are cost-effective while meeting remedial action objectives.

6. POTENTIAL ENVIRONMENTAL IMPACTS OF REMEDIAL ACTIONS – SECTION 25356.1 (D) (6)

Potential environmental impacts during the remedial action will be controlled by implementation of an Air Emissions Monitoring and Control Plan to address air quality monitoring and dust and odor control, a Storm Water Pollution Prevention Plan to provide monitoring procedures and best management practices for storm water management, a Transportation Plan to describe waste handling and off-site transport procedures, and a Health and Safety Plan that would specify engineering and administrative controls. Cultural Resources shall be protected at excavation sites through implementation of a monitoring program. Based on an evaluation of potential impacts in an Initial Study, DTSC has determined the project might have a significant effect on the environment and a proposed Mitigated Negative Declaration has been prepared pursuant to the California Environmental Quality Act (CEQA) for the recommended remedial alternative. The CEQA Negative Declaration will undergo a 45-day public comment period, concurrent with the Draft RAP. The proposed Mitigated Negative Declaration and the Final Initial Study are presented in Appendix E of the RAP.

7. NONBINDING PRELIMINARY ALLOCATION OF FINANCIAL RESPONSIBILITY – SECTION 25356.1 (E)

Consistent with the purpose of the NBAR, as described above, DTSC sets forth the following preliminary Nonbinding Allocation of Responsibility: Georgia-Pacific Corporation, for purposes of complying with its obligations under the Site Investigation and Remediation Order, Docket No. HAS_RAO 06-07-150, has agreed to be responsible for 100% of the remediation costs for Operable Units C and D of the Site. DTSC understands that this is a nonbinding undivided 100% share of responsibility, subject to the identification of other PRPs at a later date.



Matthew Rodriguez
Secretary for
Environmental Protection



Department of Toxic Substances Control

Deborah O. Raphael, Director
700 Heinz Avenue
Berkeley, California 94710-2721



Edmund G. Brown Jr.
Governor

December 17, 2015

Mr. David G. Massengill
Senior Director
Georgia-Pacific LLC
133 Peachtree Street NE
Atlanta, Georgia 30303
DGMassen@gapac.com

REMEDIAL ACTION PLAN, OPERABLE UNIT C AND OPERABLE UNIT D, DATED
DECEMBER 2015, FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY,
FORT BRAGG, CALIFORNIA

Dear Mr. Massengill:

The Department of Toxic Substances Control (DTSC) has received and reviewed the *Remedial Action Plan Operable Unit C and Operable Unit D* dated December 2015. Georgia-Pacific LLC, submitted the OU-C and OU-D RAP pursuant to Section 5.11 of the Site Investigation and Remediation Order (Order) (Docket No. HSA-RAO 0607- 150) for the former Georgia-Pacific Wood Products Facility located at 90 West Redwood Avenue, Fort Bragg, Mendocino County, California (Site).

In accordance with Chapter 6.8 of the California Health and Safety Code (H&SC), the DTSC approves the OU-C and OU-D RAP. DTSC released the OU-C and OU-D RAP for a 45-day public comment period from June 11, 2015 to July 27, 2015. On July 9, 2015, DTSC held a Public Meeting on the OU-C and OU-D RAP. The comments received are addressed in the Responsiveness Summary, which is included in Appendix E of the Final OU-C and OU-D RAP. DTSC approved the Final Mitigated Negative Declaration for the OU-C and OU-D RAP on December 16, 2015.

Pursuant to Health and Safety Code (HSC) Section 33459.3 (b), DTSC acknowledges that upon proper completion of the work defined within the approved OU-C and OU-D RAP, the immunity provided by HSC section 33459.3 shall apply to the City of Fort Bragg, and any other entities as specified and limited in that section. However, in the event of the failure of the courts to uphold this determination, this determination shall not create any additional rights against DTSC by the City of Fort Bragg or by any third party.

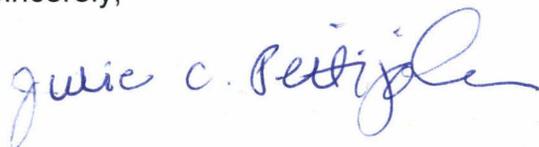
Mr. David G. Massengill

December 17, 2015

Page 2

We look forward to the implementation of the OU-C and OU-D RAP and appreciate your cooperation in achieving our mutual cleanup objectives. If you have any questions, you may contact Mr. Thomas Lanphar of my staff at (510) 540-3776 or via e-mail at Tom.Lanphar@dtsc.ca.gov.

Sincerely,



Julie C. Pettijohn, MPH, CIH
Senior Environmental Scientist Supervisor
Brownfields & Environmental Restoration Program
Department of Toxic Substances Control

cc (via email):

Ms. Linda Ruffing, City Manager
Fort Bragg Community Redevelopment Department
lruffing@fortbragg.com

Marie Jones,
City of Fort Bragg
mjones@fortbragg.com

Mr. Jeremie Maehr
Vice President/Program Manager
ARCADIS BBL
Jeremie.Maehr@arcadis-us.com

Justin Sobieraj, PG
Senior Geologist
ARCADIS
Mark Stelljes
SLR International Corporation
mstelljes@slrconsulting.com

James Tischler
North Coast Regional Water
James.Tischler@waterboards.ca.gov

Mr. David G. Massengill
December 17, 2015
Page 3

Mr. Craig Hunt
North Coast Regional Water
Quality Control Board
Craig.Hunt@waterboards.ca.gov

Glenn Young
Senior Project Manager
gyoung@trcsolutions.com

Attachment 5 – Site Photos – GP Mill Site OUC and D Remediation Locations from South to North.

Please See Figure 2 for an aerial map illustrating remediation locations.

Planner #2 Area Soil Excavation – TPHd and BaP



Planner #2 Area –Land Use Controls (LUC) – 1 Acre



Former Shipping and Truck Shop Area – Land Use Controls (LUC) 0.2 Acre



Kilns Area – Lead Soil Excavation



Rail Lines East Area – Lead Soil Excavation



Former MES/Pilot Study Area – Land Use Control 0.9 acres



Former AST Area – land Use Control 0.9 Acres



Former Dip Tank Area – Dioxin and PCB Soil Excavation



Marie Jones
Community Development Director
416 N. Franklin Street
Fort Bragg, California 95437

Arcadis U.S., Inc.
100 Montgomery Street
Suite 300
San Francisco
California 94104
Tel 415 374 2744
Fax 415 374 2745
www.arcadis.com

Subject:
Coastal Development Permit Application Package

ENVIRONMENT

Dear Ms. Jones:

Arcadis U.S. (Arcadis) is pleased to provide the City of Fort Bragg this Coastal Development Permit (CDP) Application on behalf of Georgia-Pacific LLC (Georgia-Pacific) for the Remedial Action Plan (RAP) for Operable Units C and D (OU-C and OU-D) at the former Georgia-Pacific Wood Products Facility located at 90 West Redwood Avenue, Fort Bragg, Mendocino County, California. Please review and contact myself at 415-491-4530 x24, or justin.sobieraj@arcadis.com, should you have any questions.

Date:
December 17, 2015

Contact:
Justin Sobieraj

Phone:
415-491-4530 x24

Sincerely,

Email:
justin.sobieraj@arcadis.com

Arcadis U.S., Inc.

Our ref:
B0066142.2015.ED771



Justin Sobieraj
Project Manager

Enclosures:

Attachments

- 1 CDP Application
- 2 OU-C and OU-D RAP
- 3 OU-C and OU-D RAP, DTSC Approval Letter
- 4 Check for CDP Application Fees
- 5 (3) Sets of 24" x 36" Drawings pertaining to the OU-C and OU-D RAP

CITY OF FORT BRAGG
COMMUNITY DEVELOPMENT DEPARTMENT
416 North Franklin Street
Fort Bragg, CA 95437
Tel: (707) 961-2827
Fax: (707) 961-2802
http://city.fortbragg.com



Case No(s) _____
Date Filed _____
Fee _____
Receipt No. _____
Received by _____
Office Use Only - December 2011

PLANNING APPLICATION FORM

Please complete this application thoroughly and accurately, and attach the required exhibits as indicated in the applicable brochure available from the Community Development Department. An incomplete application will not be accepted for processing. Please note that administrative permits may require additional fees if an interested party requests a public hearing. Public hearing expenses are borne by the applicant, owner, or agent.

APPLICANT

Name: Dave Massengill, Georgia-Pacific LLC
Mailing Address: 133 Peachtree Street NE Phone: 404-652-5054
City: Atlanta State: GA Zip Code: 30303 Email: dgmassen@gapac.com

PROPERTY OWNER

Name: Georgia-Pacific LLC
Mailing Address: 133 Peachtree Street NE Phone: 404-652-5054
City: Atlanta State: GA Zip Code: 30303 Email: dgmassen@gapac.com

AGENT

Name: _____
Mailing Address: _____ Phone: _____
City: _____ State: _____ Zip Code: _____ Email: _____

STREET ADDRESS OF PROJECT 90 W. Redwood Ave., Fort Bragg, CA 95437

ASSESSOR'S PARCEL NUMBER(S) see below in "Project Description"

PROPERTY SIZE _____ Square Feet or 415 Acres

TYPE OF APPLICATION (Check all applicable boxes)

- | | |
|--|--|
| <input type="checkbox"/> Design Review/Site & Architectural Review | <input type="checkbox"/> Certificate of Compliance |
| <input type="checkbox"/> Use Permit/Minor Use Permit | <input type="checkbox"/> General Plan Amendment |
| <input checked="" type="checkbox"/> Coastal Development Permit | <input type="checkbox"/> Local Coastal Program Amendment |
| <input type="checkbox"/> Variance/Administrative Variance | <input type="checkbox"/> Rezoning |
| <input type="checkbox"/> Lot Line Adjustment | <input type="checkbox"/> Annexation |
| <input type="checkbox"/> Subdivision (no. of parcels) _____ | <input type="checkbox"/> Preapplication Conference |
| <input type="checkbox"/> Certificate of Appropriateness (COA) | <input type="checkbox"/> Limited Term Permit |
| <input type="checkbox"/> Planned Development Permit | <input type="checkbox"/> Permit Amendment (list permits) _____ |

PROJECT DESCRIPTION (Briefly describe project as shown on proposed plans.)

Remedial activities primarily comprised of hot spot excavation in Operable Units C and D - please see attached Remedial Action Plan.
APNs: 008-010-36-00, 008-020-13-00, 008-053-34-00, 008-151-22-00, 008-161-08-00, 008-010-67-00, 008-020-01-00, 018-030-42-00, 018-040-52-00, 018-120-44-00, 018-120-50-00, 018-430-13-00, and 018-430-16-00.

CERTIFICATION

I hereby certify that I have read this completed application and that, to the best of my knowledge, the information in this application and all attachments is complete and accurate. I understand that failure to provide requested information or misstatements submitted in support of the application shall be grounds for either refusing to accept the application, for denying the permit, for suspending or revoking a permit issued on the basis of such misrepresentations, or for seeking of such further relief as may seem proper to the City.

Signature of Applicant/Agent Date David M. [Signature]
Signature of Property Owner 12/14/15 Date

INDEMNIFICATION AND HOLD HARMLESS AGREEMENT

ORDINANCE No. 771, adopted by the Fort Bragg City Council on September 26, 1994, requires applicants for discretionary land use approvals to sign the following Indemnification Agreement. Failure to sign this agreement will result in the application being considered incomplete and withheld from further processing.

As part of this application, the applicant agrees to defend, indemnify, release and hold harmless the City of Fort Bragg, its agents, officers, attorneys, employees, boards and commissions, as more particularly set forth in Fort Bragg Municipal Code Chapter 18.77, from any claim, action or proceeding brought against any of the foregoing individuals or entities, the purpose of which is to attach, set aside, void or annul the approval of this application or adoption of the environmental document which accompanies it. The indemnification shall include, but not be limited to, damages, costs, expenses, attorney fees or expert witness fees that may be asserted by any person or entity, including the applicant, arising out of or in connection with the approval of this application, whether or not there is concurrent, passive or active negligence on the part of the City, its agents, officers, attorneys, employees, boards and commissions.

David M. [Signature]
Signature of Applicant 12/14/15 Date

SITE VIEW AUTHORIZATION

I hereby grant permission for City staff and hearing bodies to enter upon and site view the premises for which this application is made in order to obtain information necessary for the preparation of required reports and render its decision.

David M. [Signature]
Property Owner/Authorized Agent 12/14/15 Date

NOTE: If signed by agent, owner must sign "Authorization of Agent" below.

DECLARATION OF POSTING

At the time the application is submitted for filing, the applicant must complete and post the "Notice of Pending Permit" form at a conspicuous place, easily read by the public and as close as possible to the project site. If the applicant fails to post the completed notice form and sign the Declaration of Posting, the Community Development Department cannot process the application.

I hereby certify that I or my authorized representative posted the "Notice of Pending Permit" form in a conspicuous place, easily seen by the public and as close as possible to the project site for:

Cypress Street Gate

(Describe location where notice is posted)

David M. [Signature]
Property Owner/Authorized Agent 12/14/15 Date

NOTE: If signed by agent, owner must sign "Authorization of Agent" below.

AUTHORIZATION OF AGENT

I hereby authorize _____ to act as my representative and to bind me in all matters concerning this application.

Property Owner Date



Georgia-Pacific LLC

**Remedial Action Plan
Operable Units C and D**

Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

December 2015

© Georgia-Pacific LLC 2015



Erik Mantor, PE
Environmental Engineer (CA# C82252)

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



**Remedial Action Plan
Operable Units C and D**

Former Georgia-Pacific Wood
Products Facility
Fort Bragg, California

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.:
B0066142.2015.ED660

Date:
December 2015

© Georgia-Pacific LLC 2015

This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential and exempt from disclosure under applicable law. Any dissemination, distribution or copying of this document is strictly prohibited.

| | |
|--|----------|
| Acronyms and Abbreviations | x |
| Executive Summary | 1 |
| 1. Introduction | 1 |
| 1.1 Regulatory Framework | 1 |
| 1.2 Objectives | 1 |
| 1.3 Report Organization | 2 |
| 2. Background Information | 4 |
| 2.1 Site Setting | 4 |
| 2.1.1 Geology and Hydrogeology | 4 |
| 2.1.2 Biological Setting | 6 |
| 2.1.3 Cultural Resources | 6 |
| 2.2 General Site History | 7 |
| 2.2.1 OU-C and OU-D Areas of Interest | 8 |
| 2.2.1.1 Parcel 2 AOI (OU-C) | 11 |
| 2.2.1.2 Former AST/Formal Mobile Equipment Shop/Pilot Study AOI/Exposure Unit (OU-C) | 12 |
| 2.2.1.3 Former Dip Tank AOI (OU-C) | 13 |
| 2.2.1.4 Rail Lines East AOI (OU-C) | 13 |
| 2.2.1.5 Kilns AOI, Southern Portion (OU-C) | 13 |
| 2.2.1.6 Former Machine Shop/IRM AOI (OU-C) | 14 |
| 2.2.1.7 Former Planer #2 AOI (OU-D) | 15 |
| 2.2.1.8 Former Shipping Office and Truck Stop AOI (OU-D) | 16 |
| 2.2.1.9 Sawmill and Sorter AOI (OU-D) | 17 |
| 2.2.1.10 Greenhouse AOI (OU-D) | 19 |
| 2.3 Conceptual Site Model | 20 |
| 2.3.1 Potential Sources of Chemicals | 20 |
| 2.3.1.1 OU-C | 20 |
| 2.3.1.2 OU-D | 21 |

| | | |
|---------|---|----|
| 2.3.2 | Chemicals of Interest | 22 |
| 2.3.3 | Fate and Transport Mechanisms | 22 |
| 2.3.3.1 | OU-C | 23 |
| 2.3.3.2 | OU-D | 23 |
| 2.4 | Remedial Investigation Activities (Presented in RI and FS Reports) | 23 |
| 2.4.1 | 1998 Lead-Based Paint Investigation | 24 |
| 2.4.2 | Phase I Environmental Site Assessment | 24 |
| 2.4.3 | Phase II Environmental Site Assessment | 24 |
| 2.4.4 | 2004 Additional Site Assessment | 24 |
| 2.4.5 | 2005 Additional Site Assessment | 25 |
| 2.4.6 | Site Investigation Activities: 2008- 2010 | 25 |
| 2.4.7 | Quarterly Groundwater Monitoring | 25 |
| 2.5 | Supplementary Remedial Investigations | 25 |
| 2.5.1 | Former Parcel 3 MES/Pilot Study, Kilns, and Rail Lines East Investigation | 26 |
| 2.5.1.1 | Summary of Field Activities | 26 |
| 2.5.1.2 | Summary of Results | 27 |
| 2.5.2 | Former AST AOI and Former MES/Pilot Study AOI (OU-C) | 27 |
| 2.5.3 | Former Rail Lines East AOI (OU-C) | 29 |
| 2.5.4 | Kilns AOI (OU-C) | 30 |
| 2.5.5 | Geochemical Investigation and Monitored Natural Attenuation Report | 30 |
| 2.5.5.1 | Summary of Field Activities | 30 |
| 2.5.5.2 | Summary of Results | 31 |
| 2.6 | Previous Remedial Activities | 31 |
| 2.6.1 | UST Removal | 31 |
| 2.6.2 | Interim Remedial Measures | 31 |
| 2.7 | Summary of Baseline Risk Assessment | 32 |

| | | |
|-----------|--|-----------|
| 2.7.1 | Exposure Units | 32 |
| 2.7.2 | Treatment of PRAs in the Baseline Risk Assessment | 33 |
| 2.7.3 | Receptors | 33 |
| 2.7.3.1 | Human Receptors and Relevant Exposure Pathways | 34 |
| 2.7.3.2 | Ecological Receptors and Relevant Exposure Pathways | 35 |
| 2.7.4 | COPC selection and Exposure Point Concentrations | 36 |
| 2.7.5 | Key Findings of the Risk Assessment | 38 |
| 2.7.5.1 | Human Health Risk Assessment | 38 |
| 2.7.5.2 | Ecological Health Risk Assessment | 40 |
| 2.8 | No Further Action AOIs, based on information in the RI Report | 41 |
| 2.8.1 | Rail Lines West Pan Handle Section –OU-D | 41 |
| 2.8.2 | Dry Sheds #4 and #5 area west of Rail Lines Ease | 42 |
| 2.8.3 | Former Planer # 1 and #50 area south of Rail Lines West Pan Handle | 42 |
| 2.8.4 | Former Oil House | 42 |
| 2.8.5 | Miscellaneous | 43 |
| 2.8.6 | Transformer Pad | 44 |
| 2.8.7 | Parcel 6 | 44 |
| 2.8.8 | Former Log Storage and Sediment Stockpile Area South of Parcel 6 AOI | 44 |
| 2.8.9 | Former Log Deck Consolidation Cell Area | 45 |
| 2.8.10 | Former Sheep Barn Consolidation Cell Area | 46 |
| 2.9 | Summary of COCs and AOIs evaluated in the Feasibility Study | 46 |
| 3. | Remedial Action Objectives | 49 |
| 3.1 | Applicable or Relevant and Appropriate Requirements | 49 |
| 3.2 | Remedial Action Objectives | 50 |
| 3.3 | Chemical-Specific Remedial Goals | 51 |
| 4. | Remedial Alternatives and Proposed/Selected Remedial Actions | 55 |

| | | |
|---------|--|----|
| 4.1 | Feasibility Study Summary | 55 |
| 4.1.1 | General Response Actions | 55 |
| 4.1.2 | Process Options | 56 |
| 4.1.2.1 | Retained Soil and Soil Vapor Process Options | 56 |
| 4.1.2.2 | Retained Groundwater Process Options | 58 |
| 4.2 | Monitored Natural Attenuation Evaluation | 60 |
| 4.2.1 | Natural Attenuation Mechanisms | 61 |
| 4.2.2 | Natural Attenuation Investigation Results | 61 |
| 4.3 | Evaluation Criteria | 61 |
| 4.3.1 | Overall Protection of Human Health and the Environment | 62 |
| 4.3.2 | Compliance with ARARs | 62 |
| 4.3.3 | Long-Term Effectiveness and Permanence | 62 |
| 4.3.4 | Reduction of Toxicity, Mobility, or Volume through Treatment | 62 |
| 4.3.5 | Cost – 30-Year Present Worth | 62 |
| 4.3.6 | Short-Term Effectiveness | 63 |
| 4.3.7 | Implementability | 63 |
| 4.3.8 | State Support/Agency Acceptance | 63 |
| 4.3.9 | Community Acceptance | 63 |
| 4.3.10 | Other Criteria | 63 |
| 4.4 | Selected Remedial Actions – General Descriptions | 64 |
| 4.4.1 | Soil and Soil Vapor | 64 |
| 4.4.1.1 | No Further Action | 64 |
| 4.4.1.2 | Soil Excavation and Disposal | 65 |
| 4.4.1.3 | Covers | 65 |
| 4.4.1.4 | Soil Vapor Mitigation | 66 |
| 4.4.1.5 | Operation and Maintenance | 66 |
| 4.4.1.6 | Land Use Covenants | 66 |

| | | |
|---------|--|----|
| 4.4.2 | Groundwater | 67 |
| 4.4.2.1 | Source Area Removal and Treatment | 67 |
| 4.4.2.2 | Natural Attenuation with Monitoring | 67 |
| 4.4.2.3 | Groundwater Use Restrictions through a Land Use Covenant | 67 |
| 4.4.2.4 | Groundwater Operation and Maintenance Plan | 67 |
| 4.5 | Evaluation of Remedial Alternatives and Proposed Remedial Actions for Each AOI | 68 |
| 4.5.1 | Parcel 2 AOI (OU-C) | 68 |
| 4.5.1.1 | Summary of Alternatives Evaluation | 68 |
| 4.5.1.2 | Summary of MNA Report Evaluation | 69 |
| 4.5.1.3 | Proposed Groundwater Remedial Action for Parcel 2 AOI | 69 |
| 4.5.2 | Former AST AOI and Former MES/Pilot Study AOI (OU-C) | 70 |
| 4.5.2.1 | Lead-Affected Surface Soils | 70 |
| 4.5.2.2 | Petroleum Hydrocarbon- Affected Smear Zone Soils | 72 |
| 4.5.2.3 | Soil Vapor | 73 |
| 4.5.2.4 | Petroleum Hydrocarbon-Affected Groundwater | 74 |
| 4.5.3 | Former Dip Tank AOI (OU-C) | 76 |
| 4.5.3.1 | Soil | 76 |
| 4.5.3.2 | Groundwater | 78 |
| 4.5.4 | Rail Lines East AOI (OU-C) | 80 |
| 4.5.4.1 | Soils | 80 |
| 4.5.5 | Kilns AOI (OU-C) | 82 |
| 4.5.5.1 | Summary of Alternatives Evaluation | 82 |
| 4.5.5.2 | Proposed Soil Remedial Action for the Kilns AOI | 83 |
| 4.5.6 | Former MS/IRM AOI (OU-C) | 83 |
| 4.5.7 | Planer #2 AOI (OU-D) | 85 |
| 4.5.7.1 | Soil | 85 |

| | | |
|---------------|---|------------|
| 4.5.7.2 | Soil Vapor | 87 |
| 4.5.7.3 | Groundwater | 87 |
| 4.5.8 | Former Shipping Office and Truck Shop AOI (OU-D) | 89 |
| 4.5.8.1 | Summary of Alternative Evaluation | 89 |
| 4.5.8.2 | Proposed Soil Remedial Action for the Former Shipping Office and Truck Shop AOI | 91 |
| 4.5.9 | Sawmill and Sorter AOI (OU-D) | 91 |
| 4.5.9.1 | Summary of Alternative Evaluation | 91 |
| 4.5.9.2 | Summary of MNA Report Evaluation for the Former Sawmill/Sorter AOI | 92 |
| 4.5.9.3 | Proposed Groundwater Remedial Action for the Sawmill/Sorter AOI | 92 |
| 4.5.10 | Greenhouse AOI (OU-D) | 93 |
| 4.5.10.1 | Summary of Alternatives Evaluation | 93 |
| 4.5.10.2 | Summary of MNA Report Evaluation for the Greenhouse AOI | 94 |
| 4.5.10.3 | Proposed Groundwater Remedial Action for the Greenhouse AOI | 94 |
| 4.6 | Summary of Proposed Remedial Actions, including No Further Action | 94 |
| 4.7 | Remedial Action Implementation | 97 |
| 5. | Reporting, Public Participation, CEQA, and Schedule | 99 |
| 5.1 | Reporting | 99 |
| 5.2 | Public Participation | 99 |
| 5.3 | California Environmental Quality Act | 100 |
| 5.4 | Schedule | 100 |
| 6. | References | 101 |

Tables

| | |
|-----------|--|
| Table 2-1 | Data Gaps Investigation Analytical Results |
| Table 2-2 | Area of Interest (AOI) Status and Proposed Remedial Action |
| Table 2-3 | Exposure Point Concentrations for COCs in Each AOI with Proposed Remedial Action |
| Table 2-4 | Summary of Risk Drivers for Soil and Soil Vapor Excluding Arsenic in OU-C and OU-D |
| Table 3-1 | Applicable or Relevant and Appropriate Requirements (ARARs) and "To be Considered" (TBC) Factors |
| Table 3-2 | Chemical Specific Remedial Action Goals for Groundwater |
| Table 3-3 | Chemical Specific Remedial Action Goals for Soil |
| Table 3-4 | TPH Remedial Action Goals for Soil |
| Table 3-5 | Soil Vapor Remedial Goals for Residential and Commercial Receptors |
| Table 4-1 | Summary of Proposed Alternative Comparisons to Nine Evaluation Criteria |
| Table 4-2 | Excavation Earthwork Quantities |

Figures

| | |
|-------------|---|
| Figure 1-1 | Site Location Map |
| Figure 2-1 | Operable Units and Major Features |
| Figure 2-2 | OU-C and OU-D Area of Interest Status |
| Figure 2-3 | Sample Locations and Features: Parcel 1 and Parcel 2 AOIs |
| Figure 2-4 | Sample Locations and Features: Former Parcel 3 MES/Pilot Study and Former Above Ground Storage Tank AOIs |
| Figure 2-5 | Sample Locations and Features: Dry Sheds #4/#5 and Former Dip Tank AOIs |
| Figure 2-6 | Sample Locations and Features: Rail Lines East, Kilns, Former Parcel 3 Machine Shop/IRM and Construction Engineering AOIs |
| Figure 2-7a | Former Machine Shop and Covered Shed Areas Confirmation Samples – Total Petroleum Hydrocarbons |
| Figure 2-7b | Former Machine Shop and Covered Shed Areas Confirmation Samples – Metals and PCBs |

| | |
|-------------|--|
| Figure 2-8 | Sample Locations and Features: Planer #2 and Sawmill/Sorter AOIs |
| Figure 2-9 | Sample Locations and Features: Former Shipping Office & Truck Shop, Scales, Former Log Storage & Sediment Stockpile, and Riparian AOIs |
| Figure 2-10 | Sample Locations and Features: Greenhouse AOI |
| Figure 2-11 | Land Use Plan |
| Figure 2-12 | Exposure Units for the BHHRA |
| Figure 2-13 | Presumptive Remedy Areas |
| Figure 2-14 | Data Gaps Investigation Results – TPHg in Soil |
| Figure 2-15 | Data Gaps Investigation Results – TPHd in Soil |
| Figure 2-16 | Data Gaps Investigation Results – TPHg in Groundwater |
| Figure 2-17 | Data Gaps Investigation Results – TPHd in Groundwater |
| Figure 2-18 | Human Health Conceptual Site Model for Operable Units C and D |
| Figure 2-19 | Ecological Conceptual Site Model for Operable Unit D |
| Figure 4-1 | Lead Concentrations in Soil at Former AST and Former MES/Pilot Study AOIs |
| Figure 4-2 | Pentachlorophenol and 2,3,7,8-TCDD TEQ Concentrations in Soil and Groundwater at the Former Dip Tank AOI |
| Figure 4-3a | Lead Concentrations in Soil at Former Parcel 3 Machine Shop/IRM AOI and Rail Lines East PRA |
| Figure 4-3b | B(a)P TEQ in Soil at Rail Lines East AOI |
| Figure 4-4 | TPHd Concentrations in Soil and PRA at Kilns AOI |
| Figure 4-5 | TPHd Concentrations in Soil at Former Parcel 3 Machine Shop/IRM AOI – LGW Screening Level Comparison |
| Figure 4-6 | TPHd Concentrations in Soil and PRA at Planer #2 AOI |
| Figure 4-7 | TPHd Concentrations in Soil at Former Shipping Office/Truck Shop AOI |

Appendices

- A Administrative Record List
- B Risk Based Target Level (RBTL) Development
- C TPHd Leaching to Groundwater Remedial Goals Calculation

| | |
|---|--|
| D | California Environmental Quality Act, Initial Study and Negative Declaration |
| E | Responses Summary |
| F | Statement of Reasons and Nonbinding Allocation of Responsibility |

Acronyms and Abbreviations

| | |
|-------------|---|
| 1,1-DCA | 1,1-dichloroethane |
| 1,1-DCE | 1,1-dichloroethene |
| 1,2-DCA | 1,2-dichloroethane |
| 1,2,4-TMB | 1,2,4-trimethylbenzene |
| µg/l | micrograms per liter |
| ACM | asbestos-containing material |
| AOI | area of interest |
| AME | Acton•Mickelson•Environmental, Inc. |
| ARARs | applicable or relevant and appropriate requirements |
| ARCADIS | ARCADIS U.S., Inc. |
| AST | aboveground storage tank |
| B(a)P | benzo(a)pyrene |
| BCI | Blackburn Consulting, Inc. |
| bgs | below ground surface |
| BHHRA | baseline human health risk assessment |
| BLRA | baseline risk assessment |
| BTEX | benzene, toluene, ethylbenzene, and total xylenes |
| CalEPA | California Environmental Protection Agency |
| CAM | California Assessment Manual |
| CCA | chromated copper arsenate |
| CEQA | California Environmental Quality Act |
| CERCLA | Federal Comprehensive Environmental Response, Compensation and Liability Act of 1980 |
| CFR | Code of Federal Regulations |
| CHHSL | California Human Health Screening Level |
| cis-1,2-DCE | cis-1,2-dichloroethene |
| City | City of Fort Bragg, California |
| COI | chemical of interest |
| COC | chemical of concern |
| Complex | Franciscan Complex |

| | |
|-----------------|--|
| COPC | compounds of potential concern |
| CSM | conceptual site model |
| CVOC | chlorinated volatile organic carbon |
| cy | cubic yards |
| dioxins/furans | polychlorinated dibenzo- <i>p</i> -dioxin/polychlorinated dibenzofuran |
| DTSC | Department of Toxic Substances Control |
| EPC | exposure point concentration |
| ERM | Environmental Resources Management |
| ESA | Environmental Site Assessment |
| EU | Exposure Unit |
| FS | Feasibility Study |
| FS Report | <i>Feasibility Study OU-C and OU-D</i> (ARCADIS, 2012a) |
| Georgia-Pacific | Georgia-Pacific LLC |
| GRA | General Response Action |
| HES | Hygienetics Environmental Services, Inc. |
| HHRA | human health risk assessment |
| HSC | Health and Safety Code |
| IC | institutional control |
| IRM | interim remedial measure |
| ISSS | in-situ stabilization/solidification |
| LBP | lead-based paint |
| LGW | leaching to groundwater |
| LPH | liquid-phase hydrocarbon |
| LUC | land use covenant |
| MCL | Maximum Contaminant Level |
| MES | Former Mobile Equipment Shop |
| mg/kg | milligrams per kilogram |
| mg/L | milligrams per liter |
| MNA | monitored natural attenuation |

| | |
|----------------|---|
| MNA Report | <i>Monitored Natural Attenuation Technical Report</i> (ARCADIS, 2013a) |
| MS | Machine Shop |
| MSDS | material safety data sheet |
| MTBE | methyl tertiary-butyl ether |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| NCRWQCB | North Coast Regional Water Quality Control Board |
| O&M | operation and maintenance |
| Order | Site Investigation and Remediation Order (Docket No. HAS-RAO 06-07-150) |
| OU | Operable Unit |
| PAH | polycyclic aromatic hydrocarbons |
| PCB | polychlorinated biphenyl |
| PCE | tetrachloroethene |
| PCP | pentachlorophenol |
| pg/g | picograms per gram |
| PRA | presumptive remedy area |
| RAO | remedial action objective |
| RAP | remedial action plan |
| RDIP | Remedial Design and Implementation Plan |
| RBSC | risk-based screening criteria |
| RBTL | risk based target levels |
| RCRA | Resource Conservation and Recovery Act |
| RI | Remedial Investigation |
| RI Report | <i>Remedial Investigation Operable Units C and D Report</i> (ARCADIS, 2011a) |
| Site-Wide RAWP | <i>Site-Wide Risk Assessment Work Plan</i> (ARCADIS BBL, 2008b) |
| SFRWQCB | San Francisco Bay Regional Water Quality Board |
| site | Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| SMP | Soil Management Plan |

| | |
|----------------------|---|
| Soil Vapor Work Plan | <i>Follow-up Investigation and Soil Vapor Evaluation Work Plan (ARCADIS, 2009c)</i> |
| SSL | soil screening level |
| SVOC | semivolatile organic compound |
| TBC | to-be-considered |
| TCDD | tetrachlorodibenzo-p-dioxin |
| TEQ | toxic equivalent |
| TP Burner | Refuse Burner located in the Sawmill/Sorter Area |
| TPH | total petroleum hydrocarbons |
| TPHd | total petroleum hydrocarbons in the diesel range |
| TPHg | total petroleum hydrocarbons in the gasoline range |
| TPHmo | total petroleum hydrocarbons in the motor oil range |
| TRC | TRC Companies, Inc. |
| UCL | upper confidence limit |
| ULC | Union Lumber Company |
| USEPA | U.S. Environmental Protection Agency |
| UST | underground storage tank |
| VOC | volatile organic compound |
| WQO | water quality objective |

Executive Summary

This document was prepared by ARCADIS U.S., Inc. (ARCADIS) on behalf of Georgia-Pacific LLC (Georgia-Pacific) and presents a Remedial Action Plan (RAP) to address soils and groundwater within Operable Units C and D (OU-C and OU-D) at the former Georgia-Pacific Wood Products Facility (site) located at 90 West Redwood Avenue, Fort Bragg, Mendocino County, California (Figure 1-1). This RAP is required by the Department of Toxic Substances Control (DTSC) under Section 5.11 of the Site Investigation and Remediation Order for the site (Docket No. HSA-RAO-06-07-150; the Order). An administrative record is included as Appendix A.

Background

OU-C and OU-D comprise 282 acres within the 415-acre site. These operable units were used for industrial activities, such as sawmill and planing operations. OU-C and OU-D include 32 areas of interest (AOIs; 20 in OU-C and 12 in OU-D) based on historical use and data derived from previous investigations (Figure 2-2). Eight AOIs received No Further Action (NFA) determinations in the *Remedial Investigation Operable Units C and D Report* (RI Report; ARCADIS, 2011a). Three AOIs (West IRM, IRM, and Riparian) were removed from OU-C and placed into OU-E because of similarities in environmental setting with OU-E and the possible day-lighting of Maple Creek. This RAP addresses the remaining 21 AOIs, proposing remedial actions for 10 AOIs and NFA for 11 AOIs. Table 2-2 summarizes the status of all AOIs in OU-C and OU-D.

The RI Report includes data collected through several investigations from 1998 to 2009. These investigations included: a lead-based paint investigation conducted in 1998 by TRC Companies, Inc. (TRC), a Phase I Environmental Site Assessment (ESA) performed between 2002 and 2004 by TRC, a Phase II ESA performed in 2003 and 2004 by TRC, additional site assessments conducted by TRC in 2004 and Acton•Mickelson•Environmental, Inc. in 2005, site investigation activities conducted between 2008 and 2010 by ARCADIS, and quarterly groundwater monitoring initiated in 2004 by TRC.

Four presumptive remedy areas (PRAs) were identified in the RI Report. The PRAs were identified prior to conducting a risk evaluation, as appropriate for remedial action based on factors that included the presence of hazardous waste or areas considered “hot spots.” These PRAs were excluded from the risk assessment, as they are considered areas that likely pose unacceptable risks or exhibit other criteria that would

require remedial action regardless of the results of any risk evaluations. PRAs are located in the following four AOIs: Former Dip Tank, Rail Lines East, Kilns, and Planer #2 (Figure 2-13). The RI recommended that these four PRAs be carried forward to the remedial planning process.

After establishing the PRAs, the RI Report estimated risks within OU-C and OU-D for both potential future human receptors and ecological receptors based on current industrial use and foreseeable land use scenarios, including child and adult residents, commercial/ industrial workers, construction workers and maintenance/utility workers, and recreational receptors, and plants, soil invertebrates, and representative wildlife receptors (birds and mammals). The risk assessment was conducted under the assumption that at the four soil PRAs would be managed via soil remediation. In the risk assessment, soil sample data within the PRA lateral and vertical boundaries were replaced with concentrations representative of post-remediation conditions (i.e., proxy values). For more information about the risk assessment, refer to Section 2.

The Feasibility Study OU-C and OU-D recommended remedial alternatives to address chemicals of concern (COCs) within soil, soil gas and/or groundwater in 11 areas of interest (AOIs) within OU-C and OU-D (FS Report; ARCADIS, 2012a). After the completion of the FS Report, a supplementary soil and groundwater investigation was conducted in June 2012 to address data gaps identified in the FS in the Former AST, Former Parcel 3 Mobile Equipment Shop (MES)/Pilot Study, Kilns, and Rail Lines East AOIs. During this supplemental investigation, groundwater samples were collected from 20 monitoring wells and analyzed for geochemical parameters to support the monitored natural attenuation evaluation completed in the MNA Report (ARCADIS, 2013a). Soil sample results from the supplementary investigation further delineated presumptive remedy areas (PRAs) identified in the RI for the Kilns and Rail Lines East AOIs and the nature and extent of petroleum hydrocarbons in the Former AST and Former Parcel 3 MES/Pilot Study AOIs. Petroleum hydrocarbons are primarily limited to smear zone soils and groundwater in the vicinity of the AOIs and are related to onsite and offsite sources.

AOIs Determined Not to Require Further Action during the Remedial Investigation Phase

In the OU-C and OU-D RI Report, an analysis of the nature and extent of COCs identified approximately 190 acres that required NFA. The following eight AOIs received NFA determinations:

1. Parcel 1

2. Truck Loading Shed
3. Former Green Chain
4. Construction Engineering
5. Scales
6. Clinker/Fill
7. Former Airstrip
8. Cypress Gate

All or part of 10 AOIs are recommended for NFA in the OU-C and OU-D RAP. These are:

1. Rail Lines West
2. Dry Sheds #4, #5
3. Former Planer #1, #50
4. Former Log Storage and Sediment Stockpile
5. Log Deck
6. Former Sheep Barn
7. Former Oil House
8. Miscellaneous
9. Transformer Pad
10. Parcel 6
11. Former Machine Shop (MS/IRM AOI) was determined not to require further action based on additional data collected and evaluation after the Feasibility Study was completed.

AOIs Evaluated in the Feasibility Study

The OU-C and OU-D FS Report evaluated remedial alternatives for the following 11 AOIs. This list includes the affected media and COCs identified in the RI Report for each AOI.

1. Parcel 2 AOI:
 - Groundwater: dioxin/furans and pentachlorophenol (PCP)

2. Former Aboveground Storage Tank (AST) AOI:
 - Soil: lead, total petroleum hydrocarbons (TPH)
 - Soil vapor: benzene, ethylbenzene, 1,2,4-trimethylbenzene (1,2,4-TMB), and naphthalene
 - Groundwater: benzene, naphthalene, total petroleum hydrocarbons in the gasoline range (TPHg), total petroleum hydrocarbons in the diesel range (TPHd), tetrachloroethene (PCE), and cis-1,2-dichloroethene (cis-1,2-DCE)
3. Former MES/Pilot Study AOI:
 - Soil vapor: benzene, ethylbenzene, 1,2,4-TMB, and naphthalene
 - Groundwater: benzene, naphthalene, TPHg, TPHd, PCE, and cis-1,2-DCE
4. Former Dip Tank AOI:
 - Soil: dioxins/furans and PCP
 - Groundwater: dioxins/furans and PCP
5. Rail Lines East AOI:
 - Soil: lead and benzo(a)pyrene (B[a]P)
6. Kilns AOI:
 - Soil: TPHd and B(a)P
7. Former Machine Shop (MS)/IRM AOI:
 - Soil: TPHd and lead
 - Soil vapor: benzene, bromomethane, 1,2,4-TMB, vinyl chloride
 - Groundwater: TPHd, benzene, and vinyl chloride
8. Former Planer #2 AOI:
 - Soil: TPHd and B(a)P
 - Soil Vapor: 1,1-dichloroethene (1,1-DCE), 1,2,4-TMB, PCE, vinyl chloride
 - Groundwater: 1,1-dichloroethane (1,1-DCA), 1,1-DCE, and naphthalene

9. Former Shipping Office and Truck Shop AOI:

- Soil: TPHd

10. Sawmill//Sorter AOI:

- Groundwater: arsenic

11. Greenhouse AOI:

- Groundwater: atrazine

Remedial Action Objectives and Chemical-Specific Remedial Goals

Remedial action objectives (RAOs) are specific goals for protecting human health and the environment. RAOs are developed by evaluating applicable or relevant and appropriate requirements (ARARs) that are protective of human health and the environment and the results of the RIs, including human and ecological risk assessments. RAOs are used in the development of potential remedial action alternatives and selection of a proposed remedial action. The RAOs presented in the FS Report were developed based on the current environmental conditions and anticipated future use of the site. Remedial action proposed at the site is developed within the framing of the following objectives:

- Protect potential receptors from direct exposure to groundwater or soil that contains chemicals above the proposed site cleanup goals through direct contact and/or ingestion.
- For soil, protect human health and the environment under the reasonably foreseeable future land use scenarios.
- Implement a remediation alternative that will promote reduction of COCs in groundwater and protect future users of groundwater.
- Avoid direct exposure of potential receptors to volatile organic compound (VOC) vapors and implement a remedy that will reduce sources to soil vapor and will provide protective measures for soil vapor exposure.

Chemical-specific remedial action goals will be considered to evaluate remedial action effectiveness following implementation. Media-specific numeric remedial action goals

are presented in Tables 3-2 through 3-5 for COCs recommended for remedial action in the RI Report. Remedial goals were developed from several sources of screening levels and concentration thresholds to achieve RAOs, presented in Section 3.3.

Evaluation of Remedial Action Alternatives

In accordance with U.S. Environmental Protection Agency (USEPA) FS and DTSC RAP guidance, the nine criteria described below were used to evaluate remedial alternatives (USEPA, 1988; DTSC, 1995). For an alternative to be selected, it must meet the first two threshold criteria, which are 1) overall protection of human health and the environment, and 2) compliance with ARARs. Criteria 3 through 7 are the five primary balancing criteria that provide comparisons between the alternatives and identify tradeoffs between them; Criteria 8 and 9 are the two modifying criteria that consider acceptance by the state and local community.

1. Overall Protection of Human Health and the Environment
2. Compliance with ARARs
3. Long-Term Effectiveness and Permanence
4. Reduction of Toxicity, Mobility, or Volume through Treatment
5. Cost – 30-Year Present Worth
6. Short-Term Effectiveness
7. Implementability
8. State Support/Agency Acceptance
9. Community Acceptance

In addition to the remedial alternative comparison included in the FS Report, a separate evaluation was presented in the MNA Report to identify natural attenuation processes occurring in AOIs where groundwater remediation was recommended in the FS Report. The MNA Report evaluates site-specific conditions to determine whether chemicals of concern were naturally attenuating. A summary of the FS and comparison of the recommended remedial action to the nine criteria, for each AOI, is presented in Section 4.5. The summary of the alternatives comparison to the nine criteria is also shown in Table 4-1.

Selected Remedial Actions

The following sections describe the selected Remedial Actions for OU-C and OU-D. General Response Actions were originally outlined in the FS Report as general categories of actions that, when implemented, would meet the RAOs for the site. In Section 4.5 the evaluation of Remedial Alternatives in the FS is summarized and proposed Remedial Actions for each AOI are identified.

No Action (No Further Action)

Current guidance by the National Contingency Plan and the United States Environmental Protection Agency (US EPA) for conducting RI/FS investigations requires that the “No Action” option be developed and examined as a potential remedial action for all sites. The “No Action” option is used as a baseline for comparison to other process options. After an evaluation of alternatives evaluated in the FS Report, including the “No Action” alternative or No Further Action, is recommended for the Machine Shop/Interim Remedial Measure (MS/IRM) AOI. The FS recommended a Land Use Covenant restricting use of the site; however, further evaluation of the past and more recent data determined that lead, TPHd, and B(a)P are below the Remedial Goals of the OU-C and OU-D RAP in soil at the MS/IRM AOI. Metals, TPH and VOCs are below groundwater remedial goals at the MS/IRM AOI. The OU-C and OU-D RAP recommends No Further Action (NFA) for 10 AOIs based on conclusions of the RI Report.

Soil Excavation and Disposal

Soil excavation and disposal is proposed to address COCs in soil at PRAs in the Former AST and MES/Pilot Study (TPHd), Former Dip Tank (dioxin and pentachlorophenol (PCP)), Rail Lines East (lead), Kilns (TPHd and B(a)P), and Planer #2 AOIs (TPHd and B(a)P) (Figures 2-15, 4-2, 4-3a, 4-4, and 4-6). At these AOIs, remaining soil will likely meet unrestricted soil remedial goals. If unrestricted remedial goals are not met, then other remedial actions including a Land Use Covenant, Operations and Maintenance, and possibly a cover or barrier will be necessary. Soil

will be removed using standard excavation practices and equipment. Excavated soil will be transported offsite and disposed of at an appropriately permitted landfill.

Covers and Barriers

A proposed remedial action for soil containing COCs above unrestricted soil remedial goals and remaining onsite is soil containment through the use of a cover or barrier to eliminate exposure and restrict the movement and transport of COCs. Existing soil covers that effectively eliminate the movement of COCs, including asphalt paving or the presence of at least two feet of clean soil, can provide an acceptable cover. Where acceptable covers do not exist, an appropriately designed cover shall be installed. An Operations and Maintenance Plan will specify procedures that will ensure the long term effectiveness of the covers, prevent erosion or transport of contaminants and the management of soil. A barrier Remedial Action is proposed to address lead in soil at the Former AST AOI. The Remedial Actions at AOIs with the cover or barrier remedial action also include a Land Use Covenant (LUC) and Operation and Maintenance.

Soil Vapor Mitigation

Soil Vapor Mitigation is the proposed remedial action for AOIs, including the Former AST, the Former MES/Pilot Study AOIs, and the Planer #2 AOI, where previous investigations have identified the presence of COCs (including benzene, ethyl benzene, 1,2,4-trimethylbenzene, naphthalene, vinyl chloride, 1,1-dichloroethane, 1,1-dichloroethene) in soil vapor that presents an unacceptable risk to public health. The existing conditions (open space) at the former Mill Site do not present an immediate need for the implementation of Soil Vapor Mitigation; however a change in use in these areas may require Soil Vapor Mitigation. At the Former AST and Former MES/Pilot Study AOIs, removal of contaminants in soil, which are the source of soil vapor contamination, is also included in the proposed remedial action for soil vapor. The design of the Soil Vapor Mitigation measures shall be submitted to and approved by DTSC prior to any future use of the AOIs. The Operations and Maintenance Plan will specify procedures that will ensure the long term effectiveness of the barriers if Soil Vapor Management is required. AOIs with the Soil Vapor Mitigation remedial action

also include a Land Use Covenant (LUC) and Operation and Maintenance as part of the remedial actions.

Groundwater Remedial Action: Source Removal and Treatment

The removal of contaminated soil, a source for contamination of groundwater, is proposed for the Former Dip Tank, Former AST, and Former MES/Pilot Study AOIs. At the Former AST and Former MES/Pilot Study AOIs, gypsum will be added to the clean backfill material to aid in the attenuation of petroleum hydrocarbons in groundwater.

Natural Attenuation

Natural attenuation with monitoring is the proposed Remedial Action for AOIs with contaminants in groundwater exceeding the remedial goals listed in Table 3-2, including the Parcel 2, Former Dip Tank, Former AST, Former MES/Pilot Study, Planer #2, Sawmill/Sorter, and Greenhouse AOIs. Natural attenuation will be used to remediate groundwater contaminants including petroleum hydrocarbons, PCP, dioxins, atrazine, arsenic, and VOCs. Monitoring of groundwater, specified in a DTSC approved O&M Plan, will verify whether contaminants in groundwater are declining and if groundwater remedial goals are achieved. Groundwater containing COCs exceeding remedial goals listed in Table 3-2 shall be restricted from use through the use of LUCs.

Operations and Maintenance

An O&M Plan for soil and soil vapor is included in the Remedial Action for all AOIs with residual soil contamination and/or contaminants in soil vapor above unrestricted remedial goals set forth in the OU-C and OU-D RAP including the Former AST, Former MES/Pilot Study, and Planer #2 AOIs. O&M Plans will ensure the long-term effectiveness of the Remedial Action and address soil management (e.g. Soil Management Plan), annual reports and Five-Year Reviews, inspections and maintenance of covers and soil vapor mitigation systems.

An O&M plan for groundwater will be developed for AOIs with natural attenuation as a selected remedial action, detailing monitoring requirements and trend and regression analysis to confirm that natural attenuation processes are occurring, and determine if groundwater remedial goals, listed in Table 3-2, have been met. Monitoring data will be evaluated for trends, spatial delineation and changes, and biogeochemical factors to verify the natural processes of degradation. The O&M Plan will define the groundwater

monitoring program, identifying wells to be sample, monitoring frequency and reporting schedules.

Land Use Covenant

AOIs with COCs in soil or soil vapor remaining in place above levels considered safe for unrestricted use, will also have use restriction placed upon them through a Land Use Covenant (LUC). The LUC will restrict residential and other sensitive land uses. Commercial and Industrial uses may be acceptable at AOIs with LUCs. LUCs remain in effect until they are formally removed or modified.

A LUC is a component of the proposed Remedial Action to address lead and TPH in soil at the Former AST AOI and Former MES/Pilot Study AOI. A LUC is also a component of the proposed Remedial Action to address COC in soil vapor at the Former AST, MES/Pilot Study, MS/IRM, and the Planer #2 AOIs.

Groundwater use shall be restricted, through a LUC, until groundwater remedial goals are met.

Proposed Remedial Actions for each AOI

Below is a summary table outlining the proposed remedial actions for each AOI, including NFA for the MS/IRM AOI described above.

| Summary Table: Proposed Remedial Actions for each AOI |
|---|
| <p>Parcel 2 AOI – Groundwater <i>Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>Natural Attenuation to address dioxins/furans and pentachlorophenol</i> • <i>LUC restricting domestic use of groundwater above remedial goals</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> |

| Summary Table: Proposed Remedial Actions for each AOI |
|---|
| <p>Former AST and MES/Pilot Study AOIs – Surface Soil, Soil Vapor, and Groundwater</p> <p><i>Soil Proposed Alternative: Former AST AOI and MES/Pilot Study AOI</i></p> <ul style="list-style-type: none"> • <i>LUC restricting residential or other sensitive land uses</i> • <i>Operations and Maintenance Plan, including soil management requirements</i> • <i>Excavation and disposal of TPHd contaminated soil</i> <p><i>Soil Vapor Proposed Alternative: Former AST and MES/Pilot Study AOIs</i></p> <ul style="list-style-type: none"> • <i>Source Removal: Excavation and disposal of TPHd contaminated soil</i> • <i>LUC restricting residential or other sensitive land uses</i> • <i>Soil Vapor Mitigation</i> • <i>Operations and Maintenance Plan</i> <p><i>Groundwater Proposed Alternative: Former AST and MES/Pilot Study AOIs</i></p> <ul style="list-style-type: none"> • <i>Source Removal: Excavation and disposal of TPHd contaminated soil</i> • <i>Natural Attenuation of Groundwater</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> • <i>LUC restricting the use of groundwater above remedial goals</i> |
| <p>Former Dip Tank AOI – Soil and Groundwater</p> <p><i>Soil and groundwater Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>Source Removal: Excavation and Disposal of dioxin and PCP contaminated soil</i> • <i>Natural Attenuation of Groundwater</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> |
| <p>Rail Lines East AOI – Surface and Shallow Subsurface Soils</p> <p><i>Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>Excavation and disposal of lead contaminated soil</i> |
| <p>Kilns AOI – Soil</p> <p><i>Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>Excavation and Disposal of TPHd and B(a)P contaminated soil</i> |
| <p>Former MS/IRM AOI – Soil and Groundwater</p> <ul style="list-style-type: none"> • <i>No Further Action as TPHd, lead and B(a)P concentrations are below soil unrestricted remedial goals and TPHd and VOCs are below groundwater remedial goals</i> |

| Summary Table: Proposed Remedial Actions for each AOI |
|--|
| <p>Planer #2 AOI – Soil, Soil Vapor and Groundwater</p> <p><i>Soil Proposed Remedial Action:</i></p> <ul style="list-style-type: none"> • <i>Excavation and disposal of TPHd and B(a)P contaminated soil</i> <p><i>Soil Vapor Proposed Remedial Action:</i></p> <ul style="list-style-type: none"> • <i>Soil Vapor Mitigation</i> • <i>LUC restricting residential or other sensitive land uses</i> • <i>Operations and Maintenance</i> <p><i>Groundwater Proposed Remedial Action:</i></p> <ul style="list-style-type: none"> • <i>Natural Attenuation of Groundwater</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> • <i>LUC restricting the use of groundwater</i> |
| <p>Former Shipping Office and Truck Shop AOI – Soil</p> <p><i>Soil Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>LUC restricting residential or other sensitive land uses</i> • <i>Operations and Maintenance, including soil management</i> |
| <p>Sawmill and Sorter AOI – Groundwater</p> <p><i>Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>Natural Attenuation of Groundwater</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> • <i>LUC restricting the use of groundwater</i> |
| <p>Greenhouse AOI – Groundwater</p> <p><i>Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>Natural Attenuation of Groundwater</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> • <i>LUC restricting the use of groundwater</i> |

Reporting and Scheduling

The proposed schedule for the activities related to the RAP includes a 45-day public review period. A public meeting will be held during the public review period to present the draft RAP and receive public comments. DTSC will respond to all public comments prior to making a final decision on the RAP.

Implementation of the removal activities at the excavations planned for the Former AST, MES/Pilot Study, Dip Tank, Kilns, Rail Lines East, and Planer #2 AOIs are anticipated to last a total of approximately 1 to 2 weeks. Remedial construction activities will proceed after all required permits are acquired. A separate Remedial Design and Implementation Plan will be submitted for DTSC review and approval for the planned excavations and for covers or barriers that are part of the selected remedial action. A design for a soil vapor mitigation system will be submitted to DTSC for review and approval if and when future use will create unacceptable risk to potential receptors.

A LUC and a O&M Plan will be developed and implemented following approval of this RAP. A draft O&M Plan shall be submitted to DTSC for review and approval.

The groundwater O&M Plan will include a schedule for natural attenuation monitoring and reporting.

A Completion Report describing implemented soil excavation activities, installed covers, and installation of replacement groundwater monitoring wells shall be submitted to DTSC for review and approval.

Public Participation

The public participation requirements for the RAP process include the following:

- Developing a Public Participation Plan.
- Holding a minimum 30-day public comment period.
- Publishing a public notice of the availability of the draft RAP for public review and comment in a local newspaper of general circulation.
- Posting a notice of the availability of the draft RAP for public review and comment at the Site.
- Distributing a fact sheet to parties on the site mailing list describing the proposed remedy and the availability of the draft RAP for public comment.
- Making the draft RAP 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.
- Conducting a public meeting during the public comment period.

- Responding to public comments received on the draft RAP and CEQA documents.

California Environmental Quality Act

CEQA requires environmental review of project impacts prior to project approval. A CEQA review is required if a project has potential for resulting in a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment. CEQA applies to all discretionary projects proposed to be carried out or approved by California public agencies, unless an exemption applies.

In accordance with CEQA, DTSC had prepared an Initial Study and a draft Mitigated Negative Declaration for public review to satisfy CEQA requirements. The final Initial Study and Negative Declaration are included in Appendix D. DTSC responses to public comments will be provided in the Responsiveness Summary included in Appendix E of the Final RAP.

1. Introduction

This document was prepared by ARCADIS U.S., Inc. (ARCADIS) on behalf of Georgia-Pacific LLC (Georgia-Pacific) and presents a Remedial Action Plan (RAP) to address soil and groundwater within Operable Units C and D (OU-C and OU-D) at the former Georgia-Pacific Wood Products Facility (site) located at 90 West Redwood Avenue, Fort Bragg, Mendocino County, California (Figure 1-1). This RAP is required by the Department of Toxic Substances Control (DTSC) under Section 5.11 of the Site Investigation and Remediation Order for the site (Docket No. HSA-RAO 06-07-150; the Order). An administrative record is included as Appendix A.

1.1 Regulatory Framework

This RAP has been prepared pursuant to California Health and Safety Code (HSC) Section 25356.1 and in accordance with DTSC Guidance Document No. EO-95-007-PP, *Remedial Action Plan Policy* (DTSC, 1995). Consistent with HSC Section 25356.1, the RAP will be made available for review and comment by the public and regulatory agencies.

The California Environmental Quality Act document will also be circulated for public review simultaneously. In accordance with CEQA, DTSC had prepared an Initial Study and a draft Mitigated Negative Declaration for public review to satisfy CEQA requirements. The final Initial Study and Negative Declaration are included in Appendix D. DTSC responses to public comments will be provided in the Responsiveness Summary included in Appendix E of the Final RAP.

1.2 Objectives

Based on the analysis presented in the *Feasibility Study OU-C and OU-D* (FS Report; ARCADIS, 2012a), remedial alternatives were recommended to address chemicals of concern (COCs) within soil, soil gas and/or groundwater for 11 areas of interest (AOIs) within OU-C and OU-D. After the completion of the FS Report, the monitored natural attenuation (MNA) groundwater remedial alternative was further evaluated and soil data gaps in OU-C and OU-D were investigated. Further evaluation of MNA as a remedial alternative was presented in the *Monitored Natural Attenuation Technical Report* (MNA Report; ARCADIS, 2013a) for select AOIs. The results of the data gap investigation were presented in *OU C/D Data Gaps Soil Investigation Results* (ARCADIS, 2012b). Interpretation of the data gap investigation is included in this RAP. This RAP further outlines proposed remedial actions recommended in the FS Report

and proposes No Further Action (NFA) for areas of OU-C and OU-D not already included in the NFA determination in the *Remedial Investigation Operable Units C and D Report* (RI Report; ARCADIS, 2011a).

Based on the Order and site-specific information, the objectives of this RAP are as follows:

- Summarize background information and findings from the remedial investigation (RI) pertinent to the evaluation and selection of remedial alternatives.
- Summarize the FS Report alternatives considered for each AOI and evaluated using the nine evaluation criteria described in Section 4.3.
- Summarize remedial action objectives (RAOs).
- Summarize results of the data gaps investigation performed following FS Report submittal and previously reported to DTSC on November 12, 2012.
- Detail proposed remedial actions, based on the analysis presented in the FS Report and subsequent data gaps investigation.
- Provide a preliminary schedule for implementation of proposed remedial actions.

1.3 Report Organization

This RAP presents information regarding environmental conditions at the site and proposed remedial actions to address site-related risk to human health and the environment. The remainder of this RAP is organized as follows:

- Section 2 presents background information relevant to the scope of this RAP and describes subsequent investigation activities conducted since the submittal of the RI Report and FS Report for OU-C and OU-D. This section also presents the justification for NFA, based on information presented in the RI Report, for all or part of 10 AOIs not included in the RI Report NFA determination.
- Section 3 summarizes RAOs and chemical-specific cleanup levels defined in the FS Report for remedial actions in AOIs addressed in this RAP.

- Section 4 describes the alternatives evaluated, summarizes the evaluation criteria, provides a summary of the MNA Report, provides the recommended alternatives, and details remedy implementation for AOIs in OU-C and OU-D.
- Section 5 summarizes the reporting and schedule prior to, during, and following RAP implementation.
- Section 6 identifies references cited throughout this RAP.
- Appendix A provides a listing of the Administrative Record.
- Appendix B provides a detailed description of the development process for site-specific risk based target levels (RBTLS).
- Appendix C provides additional analysis of total petroleum hydrocarbon (TPH) leachate data to support the selected TPH leaching to groundwater remedial goal.
- Appendix D provides the CEQA Initial Study and Mitigated Negative Declaration.
- Appendix E provides the response to public comments on the draft RAP and Initial Study and Mitigated Negative Declaration in a Responsiveness Summary.
- Appendix F provides the Statement of Reasons and the Nonbinding Preliminary Allocation of Responsibility.

2. Background Information

This section provides a summary of background information as well as a summary of findings from the RI and FS Reports for OU-C and OU-D (ARCADIS, 2011a; ARCADIS, 2012a). Additional detail regarding the site history, background, setting, investigation results, and selection of remedial alternatives is provided within the RI and FS Reports.

2.1 Site Setting

2.1.1 Geology and Hydrogeology

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 (Complex) and consists of a variety of rock types. In the north coast region, the 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 Complex, ranging in age from the Upper Jurassic to the late Cretaceous. The Coastal Belt consists predominantly of greywacke sandstone and shale.

Relative to the site, the San Andreas Fault is offshore approximately 9 miles. The Coastal Belt has undergone weak to intensive deformation, which has included folding, uplifting, tilting, and overturning. Also of importance to the seismicity of the region is the Mendocino Triple Junction, the terminus of the San Andreas Fault, which is located in the Cape Mendocino area approximately 80 miles to the north-northwest of Fort Bragg. This boundary represents the point at which the San Andreas Fault, the Mendocino Fracture Zone, and the Cascadia Subduction Zone meet. It is an active tectonic and seismic zone and earthquakes have occurred frequently in the area.

Other geologic units present in Fort Bragg and the vicinity include surface geologic units, including deposits of beach and dune sands, alluvium, and marine terrace deposits. The most important of these at the site are the marine terrace deposits of Pleistocene age, which cut bedrock surfaces along the coast and form much of the coastal bluff material overlying bedrock. The marine terrace deposits are massive, semi-consolidated clay, silt, sand, and gravel, ranging from 1 to 140 feet in thickness.

The site is underlain by Quaternary (less than 1.5 million years old) terrace sediments (Blackburn Consulting, Inc. [BCI], 2006). The terrace deposits consist of poorly to

moderately consolidated marine silts, sands, and gravels and are overlain by a 3- to 4-foot-thick mantle of topsoil. The terrace soils are underlain by Tertiary-Cretaceous marine sediments (approximately 65 million years old) of the Coastal Belt Franciscan Formation, composed of well consolidated sandstone, shale, and conglomerate. Currently, the bluffs at the site range from 0 to 80 feet in height (BACE Geotechnical, 2004).

The topsoil, terrace deposits, and Franciscan Formation are each exposed within the bluff face throughout the site. The topsoil is dark brown to black silty and clayey sand. The terrace soils consist of partly cemented, tan and orange-brown, sandy silt, with occasional lenses of cemented pebbly sand. The total thickness of the topsoil and terrace units typically varies from about 5 to 30 feet; in places, up to 20 feet of this can consist of emplaced fill (BACE Geotechnical, 2004).

The marine terraces contain strong, northwesterly trending structural features, including an unnamed, concealed fault south of the site. These features are parallel to the more regional fault traces, such as the San Andreas Fault west of the site (BACE Geotechnical, 2004; BCI, 2006). Several inactive faults and one potentially active fault have been observed in the bluffs at the site. The potentially active fault crosses a small, narrow peninsula within the northern bluffs; however, there is no evidence of movement along the fault within the past 11,000 years.

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

The principal natural hydrological sources for the site are precipitation, surface runoff from adjacent lands, and stormwater discharge from the City of Fort Bragg, California (City). Most of the hydrological features at the site are manmade; the natural hydrology has been significantly changed by over a century of mill operations.

In general, groundwater flows southwesterly in OU-C and northwesterly in OU-D under average horizontal hydraulic gradients of 0.025 foot per foot. On a more local level, however, groundwater flows nearly westerly in the northern portion of OU-C and in the southern portion of OU-D. In the eastern portion of OU-D, groundwater flows nearly

northerly. This bifurcation of flow results from the presence of a topographic high in Parcel 9, where groundwater heads are greatest and flow paths tend to radiate from this location.

2.1.2 Biological Setting

Most of the site, including the majority of OU-C and portions of OU-D, is developed industrial land, characterized by large areas that are covered by asphalt, with occasional weedy ruderal vegetation such as sow thistle (*Sonchus asper*), wild radish (*Raphanus sativa*), and Italian ryegrass (*Lolium multiflorum*). Where no concrete is present, soils are highly compacted and sometimes mixed with wood chips, with some areas dominated by subterranean clover (*Trifolium subterraneum*), Italian ryegrass, and white clover (*Trifolium repens*). The only other plant habitat found to occur within OU-C is associated with a wetland seep located just west of Pond 9. Plant communities that occur within OU-D include planted coniferous woodland, north coast riparian scrub, riparian wetland, seasonal wetland and wetland ditch, and drainages. Most of these are primarily located along the eastern perimeter of the OU and include a riparian area with a small ephemeral drainage. This area is within the Riparian AOI and is now contained within OU-E.

Although the site supports a variety of birds and mammals that may be observed within the boundaries of OU-C, these wildlife likely do not use the significant portions of the upland areas of OU-C for foraging, nesting, or meeting other critical needs, as OU-C provides little to no habitat for these potential receptors. Portions of the upland areas of OU-D do provide suitable habitat for foraging, burrowing, and resting. The upland areas of OU-D are not known to be used by potential avian receptors for nesting. A few special status species may occasionally be observed onsite, but are not frequently observed and are not considered as residents. Because of the lack of suitable habitat, these species are unlikely to occur within OU-C and OU-D.

2.1.3 Cultural Resources

TRC Companies, Inc. (TRC; TRC, 2003; Undated #1; 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 and areas that are likely to contain historic deposits important in understanding the early settlement and development of the local community, as well as the lumber operations onsite.

TRC identified a moderate potential for subsurface prehistoric resources in the northern and eastern areas of OU-C and moderate to high potential for subsurface historic resources over most of OU-C.

Within OU-D, the area identified by TRC that is considered to have a high potential to contain prehistoric cultural remains is the wooded area (Riparian AOI) on the eastern side of the site adjacent to the nursery. This AOI has been largely untouched by the industrial development that occurred on the other portions of the site and has been moved into OU-E. The areas within OU-D that were identified by TRC as having a high potential for containing historic resources include the Planer #2 AOI, the Former Sheep Barn AOI, the Former Sediment Stockpile AOI, and the Former Airstrip AOI. Areas within OU-D that are considered to have a moderate potential for containing historic resources include all areas where former mill activities occurred, including all areas that contained the former rail lines.

2.2 General Site History

According to historical records, Union Lumber Company (ULC) began sawmill operations at the site in 1885. Georgia-Pacific acquired the site in 1973 and ceased lumber operations on August 8, 2002. Most of the equipment and structures associated with the lumber production have since been removed. Industrial operations at the site included lumber production and power generation by burning residual bark and wood.

As defined in the Order, OU-C (the northern area) and OU-D (the southern area) are within the Upland Zone (OU-1). The Upland Zone is the elevated land beginning from the inland edge of the Coastal Trail and Parkland Zone (OU-A described below) and moving inland, which includes the following Assessor's Parcel Numbers: 008-010-26-00, 008-020-09, 008-053-32, 008-053-33, 008-053-34-00, 008-151-22, 008-161-08, 018-010-67-00, 018-020-01, 018-030-42-00, 018-040-52-00, 018-120-43, 018-120-44, 018-430-01-00, 018-430-02-00, 018-430-07-00, and 018-430-08-00. OU-A forms the western boundary of OU-C and OU-D; OU-A received closure from the DTSC in December 2009 and was transferred to the City in January 2010. The Interim Remedial Measure (IRM) and West of IRM AOIs have been removed from OU-C and the Riparian Area AOI has been removed from OU-D; these are reclassified as OU-E for inclusion in future documents due to their proximity to aquatic features. The total revised acreages for OU-C and OU-D are approximately 105 and 159 acres, respectively (Figure 2-1).

Based on a review of historical information, the COCs potentially associated with the former industrial activities at OU-C and OU-D are primarily lead, TPH and other fuel-related hydrocarbons, volatile organic compounds (VOCs), dioxin/furans, pentachlorophenol (PCP) and polycyclic aromatic hydrocarbons (PAHs). In isolated areas of the site chlorophenols and polychlorinated dibenzo-p-dioxin/polychlorinated dibenzofuran (dioxins/furans; associated with limited wood treating activities) as well as herbicides (near the nursery area) are also present.

2.2.1 OU-C and OU-D Areas of Interest

OU-C and OU-D have been subdivided into 32 AOIs (20 in OU-C and 12 in OU-D) based on historical use and data derived from previous investigations (Figure 2-2). This RAP addresses 21 AOIs, proposing Remedial Actions for 10 AOIs and NFA for 11 AOIs. Eight AOIs received NFA determinations in the RI Report. Three AOIs (West IRM, IRM, and Riparian) were removed from OU-C and placed into OU-E because of similarities in environmental setting with OU-E. Table 2-2 summarizes the status of all AOIs in OU-C and OU-D

AOIs with No Further Action Determination during Remedial Investigation

In the RI Report, an analysis of the nature and extent of COCs in AOIs identified approximately 190 acres within 14 AOIs required NFA. Eight of the 14 AOIs received complete NFA determinations, while 6 of the 14 received only partial NFA determinations because of a need to establish buffers from contaminated areas. The following 8 AOIs received NFA determinations for the entire area within the AOI.

1. Parcel 1
2. Truck Loading Shed
3. Former Green Chain
4. Construction Engineering
5. Scales
6. Clinker/Fill
7. Former Airstrip
8. Cypress Gate

AOIs Recommended for NFA based on information in the RI Report

All or portions of 10 AOIs not included in the RI Report NFA determination are recommended for NFA in this OU-C and OU-D RAP. All or portions of 10 AOIs were not included in the RI Report NFA determination because of the need to establish buffers from AOIs with known contamination, or because the former Consolidation Cell was planned within the AOI. The determination for NFA is based on information presented in the RI Report. The Parcel 6 AOI is also recommended for NFA in this RAP. The Parcel 6 AOI was not investigated in the RI, because there is no history of operations that used hazardous substances at the AOI. The following AOIs are recommended for NFA.

1. Rail Lines West
2. Dry Sheds #4, #5
3. Former Planer #1, #50
4. Former Log Storage and Sediment Stockpile
5. Log Deck
6. Former Sheep Barn
7. Former Oil House
8. Miscellaneous
9. Transformer Pad
10. Parcel 6

AOIs Evaluated in the Feasibility Study

The OU-C and OU-D Feasibility Study (FS) evaluated remedial alternative for the following 11 AOIs. This list includes the affected media and COCs identified in the RI Report for each AOI.

1. Parcel 2 AOI:
 - Groundwater: dioxin/furans and PCP
2. Former Aboveground Storage Tank (AST) AOI:
 - Soil: lead, TPH

- Soil vapor: benzene, ethylbenzene, 1,2,4-trimethylbenzene (1,2,4-TMB), and naphthalene
 - Groundwater: benzene, naphthalene, total petroleum hydrocarbons in the gasoline range (TPHg), total petroleum hydrocarbons in the diesel range (TPHd), tetrachloroethene (PCE), and cis-1,2-dichloroethene (cis-1,2-DCE)
3. Former Mobile Equipment Shop (MES)/Pilot Study AOI:
- Soil vapor: benzene, ethylbenzene, 1,2,4-TMB, and naphthalene
 - Groundwater: benzene, naphthalene, TPHg, TPHd, PCE, and cis-1,2-DCE
4. Former Dip Tank AOI:
- Soil: dioxins/furans and PCP
 - Groundwater: dioxins/furans and PCP
5. Rail Lines East AOI:
- Soil: lead and benzo(a)pyrene (B[a]P)
6. Kilns AOI:
- Soil: TPHd and B(a)P
7. Former Machine Shop (MS)/IRM AOI:
- Soil: TPHd and lead
 - Soil vapor: benzene, bromomethane, 1,2,4-TMB, vinyl chloride
 - Groundwater: TPHd, benzene, and vinyl chloride
8. Former Planer #2 AOI:
- Soil: TPHd and B(a)P
 - Soil Vapor: 1,1-dichloroethene (1,1-DCE), 1,2,4-TMB, PCE, vinyl chloride
 - Groundwater: 1,1-dichloroethane (1,1-DCA), 1,1-DCE, and naphthalene
9. Former Shipping Office and Truck Shop AOI:
- Soil: TPHd

10. Sawmill//Sorter AOI:

- Groundwater: arsenic

11. Greenhouse AOI:

- Groundwater: atrazine

Background information for the AOIs evaluated in the FS is presented in the following sections.

2.2.1.1 Parcel 2 AOI (OU-C)

The 7-acre parcel was part of the land ULC purchased from the City in 1949. The parcel contained a high-ceiling, wooden warehouse divided into four areas: Resaw #6, the Breezeway, Dry Shed #2, and the Glue Lam. Resaw #6 was used to reduce lumber thickness from 2 inches to 1 inch. The Breezeway and Dry Shed #2 were primarily used for lumber storage. In the Glue Lam, lumber was bonded to create beams.

Resins used in the glue lamination process may have included small percentages of phenol and formaldehyde (ARCADIS BBL, 2007a; ARCADIS, 2008a). ARCADIS and Georgia-Pacific personnel reviewed historical site-specific material safety data sheets (MSDSs), but could not locate company records on the glues. Parcel 2 features and sample locations associated with RI activities are shown on Figure 2-3.

The warehouse was constructed in phases from 1958 to 1963. Although the concrete area outside the warehouse is known to have been used for the temporary, aboveground storage of used/empty underground storage tanks (USTs; TRC, 2004a), current site staff have confirmed that there was no UST in this area.

Prior to completion of the warehouse, the parcel was primarily used for log storage (from 1949 to 1958); prior to that, the land was owned by the City. Pacific Marine Farms leased the warehouse from 2000 to 2003 in an attempt to establish an abalone farm. Holmes Lumber Company and Rossi Building Materials leased a portion of the warehouse for lumber storage until early 2013.

Parcel 2 also contains a former Helicopter Pad directly north of Dry Shed #2 and a network of firewater lines. Formerly, rail lines were present in the eastern portion of the parcel. According to the Phase I Environmental Site Assessment (ESA; TRC, 2004a), one 10,000-gallon AST containing jet fuel for helicopters was present near the

Helicopter Pad until 1996; however, Mr. Paul Johnson (Johnson and Heitmeyer, 2008) indicated that this statement was incorrect. Rather, mobile fueling units were used to refuel helicopters. No ASTs or USTs were associated with the Helicopter Pad and, hence, no regulatory agency documentation of “removals” would exist.

The remaining structures associated with the Parcel 2 AOI (Glue Lam, Resaw #6, Breezeway, and Dry Shed #2) were demolished in 2013.

2.2.1.2 Former AST/Former Mobile Equipment Shop/Pilot Study AOI/Exposure Unit (OU-C)

The Former AST AOI is located in the northeastern portion of Parcel 3, along the property boundary with the City and the Mendocino Railroad (also known as the Skunk Train) operation. Little historical information exists for these tanks. However, it is likely these tanks were removed at or prior to the time the Former MES was demolished (late 1980s). According to Kennedy/Jenks Consultants (1995), one gasoline AST and one diesel-fuel AST surrounded by a containment wall were located in this area. Kennedy/Jenks Consultants (1995) also indicated that a second diesel-fuel AST was formerly located in this area.

The Georgia-Pacific and Mendocino Railroad property boundary run between the former Georgia-Pacific gasoline AST and the existing Skunk Train AST. The Skunk Train AST is located offsite, upgradient and directly adjacent to the Georgia-Pacific property boundary. Petroleum hydrocarbons migrating from the Skunk Train Depot represents an offsite source.

The Former MES/Pilot Study AOI is located east of Dry Shed #4 and north of Dry Shed #5. Two buildings were located in the AOI. The northern building operated as the lube bay (main building area) and included fuel dispensing (north side of the building) and equipment washing (south side of the building). The southern building was used for equipment storage and washing. According to the Phase I ESA (TRC, 2004a), degreasers were used in both equipment wash areas. The exact former locations of the degreasers are unknown; it is known that wastewater from equipment washing was directed to a concrete catch basin located immediately south of the southern building. A concrete sump was located immediately east of the catch basin. Both buildings had concrete floors and were constructed in the late 1960s to early 1970s. The foundations of these buildings were removed in 2006, including a pipe from the southern building with asbestos-containing material (ACM).

Under DTSC oversight, a pilot study involving the excavation and onsite bioremediation of affected soils from the Former MES/Pilot Study area was completed in 2007 (ARCADIS BBL, 2007b). The results of the pilot study are reported in Appendix B of the Interim Remedial Measures Workplan. Affected soils and the remaining sump were removed, and clean, treated soils, having met screening levels established for the pilot study, were backfilled into this area (ARCADIS, 2008a). The pilot study screening levels are below the OU-C and OU-D RAP unrestricted TPHd remedial goals. Features and sample locations associated with RI activities are shown on Figure 2-4.

2.2.1.3 Former Dip Tank AOI (OU-C)

A dip tank was previously located outside the northwestern corner of Dry Shed #4 in the Former Dip Tank AOI; it was set flush with the ground surface, used between approximately 1964 and 1968, and abandoned in place. The tank held a PCP-based wood preservative (Johnson and Heitmeyer, 2008). Treated wood was stored specifically near this location for only a short period of time prior to being loaded out. Features and sample locations associated with RI activities in the Former Dip Tank AOI are shown on Figure 2-5.

2.2.1.4 Rail Lines East AOI (OU-C)

Several rail lines formerly ran from the Former AST AOI through this AOI to the southern part of the site. The rail lines were used to load and unload supplies and lumber. Although a section of rail line is still present in the northern corner of the AOI, most of the rail lines have been removed. Rail lines were installed and removed throughout the active use of the site. If the earlier rail lines used treated wood, it most likely would have been creosote-based. Rail lines installed more recently mainly consisted of metal installed in asphalt surfaces, but some rails were installed on wooden ties, which may have possibly been treated offsite with chromated copper arsenate (CCA). Features and sample locations associated with RI activities in the Rail Lines East AOI are shown on Figure 2-6.

2.2.1.5 Kilns AOI, Southern Portion (OU-C)

Three kilns were located just east of the Construction Engineering building. Historically, lumber passed through all three buildings in the drying process. A lube oil storage shed was located between the kilns, and transformer boxes were located on the south side of the kilns. The kilns were elevated structures, and a raised roadway is located south

of the kilns. Features and sample locations associated with RI activities in the Kilns AOI are shown on Figure 2-6.

The remaining structures associated with the Kilns AOI were demolished in 2013.

2.2.1.6 Former Machine Shop/IRM AOI (OU-C)

This AOI comprises the Former MS/IRM, Former Sheet Metal/Plumbing and Plant Supply Building, and Former Covered Shed.

The southeastern corner of Parcel 3 contained the Former MS, which can be seen in the 1898 Sanborn map; however, the original building burned down in 1908 and was replaced with a structure that was subsequently demolished in the summer of 2007. The recently demolished structure was a wood building with a concrete floor (the original floor in the building was wood, but was replaced with concrete in the 1950s). Substances used and/or stored in the shop (at the time of the Phase I ESA; TRC, 2004a) included petroleum solvent (northern portion of the building), oxygen, acetylene (southern portion of the building), solvents, lube oil, used oil, coolant, and paint. According to the Phase I ESA, a 1.5-foot by 1.5-foot sump filled with absorbent pads was located in the center of the floor and drained directly to the ground. Additionally, machinery, tools, and other mechanical equipment were stored in the Former MS. A Storage Shed with wood walls and an asphalt floor was located just north of the Former MS. This structure historically stored heating oil, lube oil, cutting fluid, and used oil. The Former Storage Shed was also demolished during the summer of 2007.

The Sheet Metal/Plumbing and Plant Supply Building was located directly south of the Former MS and was constructed in 1978. The Sheet Metal/Plumbing section of the building contained mechanical equipment and was also used to store miscellaneous tools and parts. The Plant Supply section was a large warehouse. Another storage shed, constructed of wired fence with a corrugated metal roof, was located outside this building. A more substantial Covered Shed with a metal roof, concrete floor, and no walls was located near the Plant Supply section of the building. The Covered Shed was constructed in the 1980s or 1990s and has been used to store metal parts, large piping, and motors. Some drum storage, which included lubricants and paint thinner, also reportedly occurred in this area. The Sheet Metal/Plumbing and Plant Supply Building and Covered Shed were demolished during the summer of 2007.

An interim action involving the excavation of affected soils contaminated with TPH, metals and polychlorinated biphenyl (PCBs) from the Former MS/IRM AOI (ARCADIS,

2008a) was completed in 2009. Affected soils were removed, and clean, treated soils, meeting unrestricted standards, were backfilled into this area (ARCADIS, 2010a). Results from confirmation borings collected at the conclusion of interim remedial activities are presented on Figures 2-7a and 2-7b.

Note that just offsite of this AOI is the Unocal 76/Tosco Gasoline Station No. 2211, located at 225 North Main Street. Investigations have identified methyl tertiary-butyl ether (MTBE) and other petroleum compounds emanating from Unocal 76/Tosco Gasoline Station No. 2211. Investigation and remediation at the site is ongoing under the oversight of the North Coast Regional Water Quality Control Board (NCRWQCB). Chemicals of interest (COIs) were not detected in groundwater during additional investigation activities related to the Unocal station performed in 2012. The Unocal station represents an offsite source.

2.2.1.7 Former Planer #2 AOI (OU-D)

During plant operations, lumber was stored and processed as plywood in the Planer #2 AOI by Louisiana Pacific (until the early 1980s) and Georgia-Pacific (from the 1980s until 2002 (TRC, 2004a). The smaller, northwestern portion of Planer #2 was constructed in the 1950s. The ULC site map (ULC, 1962) labeled this structure as the Veneer Plant and noted the presence of a concrete floor. A review of site documentation during the Phase I ESA (TRC, 2004a) revealed a hazardous waste storage room in the northwest corner of the Veneer Plant. Materials stored in this room included waste oil, absorbents, used paint thinners, saw grindings, oils containing PCBs, and asbestos. The ULC map further depicted an area labeled "Log Haul" connecting the western end of the Veneer Plant and Pond 8. A concrete slab was located east of the Veneer Plant; this concrete slab is still present today. East of this slab was an area labeled "300 Gallon Gasoline Tank Buried." The tank was removed and closed under Mendocino County oversight in September 2008 (ARCADIS, 2009a). A small compressor house north of the former Veneer Plant was also depicted on the 1960s facility map.

The remaining larger section of Planer #2 was constructed in the late 1960s/early 1970s. Several hydraulic oil ASTs were observed throughout the facility during the Phase I ESA (TRC, 2004a). In addition, an air compressor, old motors, pieces of transformers, former paint storage areas, and lube oil and hydraulic oil were observed to be stored in the central portion of the facility. NCRWQCB staff also observed the use of antifungal/antistain spray treatment in this area. The area believed to contain the antifungal/antistain spray treatment booth was identified by Georgia-Pacific staff during

a November 4, 2008 site visit and is shown on Figure 2-8. MSDSs provided by Georgia-Pacific for the chemicals used in the spray booth list propiconazole as an active ingredient. In 2008/2009 ARCADIS collected soil and groundwater samples at the spray booth and analyzed for propiconazole, which was not detected (ARCADIS, 2011a). The Planer #2 building, with the exception of the Veneer Plant area, was demolished in July 2008. The remaining structures were demolished in August 2013.

Lumber storage areas were located east of Planer #2. These areas are asphalt-paved and undeveloped. The asphalt was reportedly placed in the late 1980s, and the area was consistently used for lumber storage (TRC, 2004a). Rail lines formerly ran through the northern area of this AOI, between Pond 8 and the Sawmill #2 building. The rail lines were presumably used to transport logs and untreated lumber.

An underground pipe leads from Planer #2 to a depression (Planer Pipe Depression Area) southwest of the building. The purpose of the pipe is unknown. Soil in the vicinity was excavated and samples of soil and water were collected and analyzed for COCs. Additional step-out sampling was subsequently performed. The results of sampling and associated risk assessment were presented in the RI Report and no additional action was recommended. The depression also received water from Pond 3 via an underground pipe. Once the water in the depression attains a sufficient level, it flows into a pipe in the north side of the depression and is conveyed to Pond 8 (Acton•Mickelson•Environmental, Inc. [AME], 2006a).

Features and sample locations associated with RI activities in the Former Planer #2 AOI are shown on Figure 2-8.

2.2.1.8 Former Shipping Office and Truck Stop AOI (OU-D)

The Shipping Office was constructed in the mid-1990s on a pre-existing reinforced concrete foundation that was part of the Former Vehicle Maintenance Shop (Figure 2-9). The maintenance shop operated from the 1960s until the 1980s. Trailers were present on the concrete pad in the interim between the presence of the maintenance shop and the construction of the Shipping Office. TRC (2004a) noted that this area previously contained one transformer located east of the Shipping Office, as shown on Figure 2-9. Plant personnel recollect a fuel pump and fuel tank were located at or near the Former Vehicle Maintenance Shop. TRC discovered an undated site map indicating a 25,000-gallon diesel AST was located east of the Former Vehicle Maintenance Shop.

The area immediately west of the Shipping Office formerly contained Fiber Plant #8. This building is depicted on the ULC site map (ULC, 1962), which noted that it had a concrete floor and was connected to a bark dust collector to the west using elevated steel blow pipe. The map also showed a warehouse adjoining the eastern portion of Fiber Plant #8 (where the Shipping Office was located) and elevated steel blow pipe leaving the southwest corner of the building to go to a refuse burner (TP Burner) located in the Sawmill/Sorter Area. In the middle of this pipe route was a chip loading bin. A Bark Shelter with concrete floor was noted north of Fiber Plant #8, and an Oil House was documented northwest of the Fiber Plant #8. The Georgia-Pacific firewater system map notes "Transformers on Wood Poles" north of the Fiber Plant #8 building.

A former Truck Shop area was located at the southern end of the AOI. The Truck Shop and adjoining equipment storage building were present in aerial photographs from 1963 through 1982. Review of these photographs indicated that previous documents identified the Truck Shop as being east of where it was actually located. A vehicle parking area was located in the eastern portion of this AOI and was visible in aerial photographs beginning in the late 1950s (TRC, 2004a).

Rail lines formerly ran through the center of this AOI in a north/south direction and through the northern portion of this AOI in an east/west direction. The rail lines were presumably used to transport logs and untreated lumber. Sanitary sewer and plant drain system lines also ran through this AOI.

Features and sample locations associated with RI activities are shown on Figure 2-9.

2.2.1.9 Sawmill and Sorter AOI (OU-D)

A review of aerial photographs indicated that, prior to the construction of the Sawmill #2 building, the Sawmill/Sorter AOI was occupied by native vegetation until it was converted to lumber storage in the late 1950s (TRC, 2004a). The construction of Sawmill #2 proceeded in three stages. The westernmost portion was constructed in the early 1960s and was labeled "Gang Mill" on the ULC (1962) site map. The Gang Mill had a concrete floor and a ramp leading up to it made of earthen fill. A building referred to in the ULC (1962) map as the Oil House was located south of the Gang Mill. A transformer was located immediately north of the Gang Mill.

Sawmill #2 construction continued in the early 1980s, and the southernmost part of the structure was added in the late 1980s (TRC, 2004a). Sawmill #2 contained hydraulic equipment for loading logs onto chains and saws for cutting the logs. A Green Chain

extended roughly east from the south side of Sawmill #2. The barks and cuttings from the sawmill operations were sent to the Power House (Parcel 4; OU-E) through a series of overhead conveyors (TRC, 2004a). Sawmill #2 was demolished in 2008, but the earthen ramp is still present.

The former Sorter Building was located east of Sawmill #2 and was built in the early 1990s. It was used for sorting lumber from Sawmill #2 (TRC, 2004a). The Sorter Building was demolished sometime between 2003 and 2005.

A stacker area was located on the north end of the Sorter Building, at the end of the conveyor system that ran north/south through the building. A wood storage area with a conveyor system was located on the east side of the Sorter Building.

Two hazardous materials storage areas were located within the Sawmill #2 building. Additionally, hydraulic oil storage areas have been documented within the Sawmill #2 building and the Sorter Building. These oil storage areas were secondarily contained and provided hydraulic oil for the conveyors. The exact storage location within the Sorter Building is not known.

Between the Sawmill #2 and the Sorter Building were a diesel fuel AST and a piece of equipment used for burning scrap materials (identified as a TP Burner by TRC [2004a] and as a Beehive Burner by AME [2006b]). The diesel AST was removed in the early 1970s. Two transformers, installed on concrete pads in the early 1990s, were previously located in the Sawmill/Sorter AOI. This AOI also contained the chipper/shaker and oil/water separator that were associated with the Sorter Building.

Emergency Response Plan maps provided in the Hazardous Materials Business Plan (Georgia-Pacific, 2003) show a large bark pile outside the southwest corner of Sawmill #2 and an empty oil drum storage area outside the southeast corner. Large electrical transformers were observed in two areas north of the building on concrete/asphalt pads. According to site personnel, these transformers were present since plant construction, but they are no longer there. The Emergency Response Plan maps also show an unidentified line or conveyor extending west of Former Sawmill #2 to the barker.

A Barker Building was formerly located west of the Sawmill #2 building. According to TRC (2004a) and site personnel (Johnson and Heitmeyer, 2008), the building housed small aboveground hydraulic oil tanks that supplied oil directly to the machinery. A Mill Hog was formerly located near the northwest corner of Sawmill #2. A Mill Hog is a

machine used to grind wood debris and bark down to suitable sizes for burning, which is called “hog fuel.” Wood debris (or hog fuel) is not actually burned in a Mill Hog (it is a piece of machinery and not a boiler or burning device). Therefore, no dioxins/furans would be associated with this machinery.

Features and sample locations associated with RI activities in the Sawmill and Sorter AOI are shown on Figure 2-8.

2.2.1.10 Greenhouse AOI (OU-D)

The Greenhouse AOI (Figure 2-10) was historically used for tree nursery activities and contains two major areas: the nursery and the Former Scrap Metal Area. Reviews of available historical information suggest that the majority of this AOI was not utilized for the sawmill operations until the early 1970s, when the nursery was constructed (TRC, 2004a). The nursery contained the following structures:

- Five adjoining greenhouses
- Main Packing Shed
- Pump House and water tank
- Two storage and mixing sheds
- Water filtration and purifier system.

The first two greenhouses were built in 1973, the third greenhouse was built in 1975, and the last two greenhouses were built in 1978. The Main Packing Shed, a chemical mixing shed, and an asphalt parking area were constructed in the late 1970s. A sump was located inside the greenhouse adjacent to the chemical mixing shed. The water filtration and purifier systems were installed in 1994, and the chemical storage shed, pump house, and water tank were constructed in 1996 (BBL, 2006).

Nursery operations reportedly began in the mid-1970s, though there is some anecdotal evidence that operations dated back to 1922. During operation of the nursery, fungicides, herbicides, and insecticides were stored, mixed, and used onsite.

An area along the western boundary of the Greenhouse AOI was used to store scrap metal. The scrap metal was reportedly removed in 1996 (TRC, 2004a). The remaining structures associated with the Greenhouse AOI were demolished in 2013.

Features and sample locations associated with RI activities in the Greenhouse AOI are shown on Figure 2-10.

2.3 Conceptual Site Model

The conceptual site model (CSM) describes the relationship between chemical sources, migration pathways, exposure routes, and possible exposure pathways for human and ecological receptors potentially present in AOIs within OU-C and OU-D selected for remedial activity evaluation in the RI Report.

2.3.1 Potential Sources of Chemicals

2.3.1.1 OU-C

The primary sources of site-related chemicals at OU-C consist of historical facility operations, specifically lumber and log storage, and industrial operations that had the potential to release hazardous substances. These include operational equipment used to move lumber and logs, equipment used to cut and process logs and lumber, operations that involved cleaning and maintaining equipment, refueling and fuel storage activities, and equipment and chemical storage areas, as well as limited wood treatment areas.

OU-C contained numerous industrial and storage buildings. Railroad spurs located throughout the OU were used to load and unload supplies and lumber. Dip tanks were used and spraying of a wood preservative was conducted in specific areas to treat lumber for a short period of time. Various glues and adhesives were used to bond plywood. The Former MES/Pilot Study AOI was used for equipment repair, storage, and washing. Some electric transformers contained PCB insulating oils. ASTs were formerly located on the eastern property boundary, and the Skunk Train is located offsite to the east. Substances used and stored included drums of oil, petroleum solvent, heating oil, lube oil, used oil, dielectric oil (a petroleum-based electrical insulating oil) coolant, paint, oxygen, and acetylene. Lead-based paint (LBP) has been detected on various buildings within OU-C.

As the site was primarily used as a redwood sawmill, limited wood treatment and/or chemical use to support industrial processes occurred historically. Limited treatment of wood occurred using fungicides (only some of which were PCP-based) at dip tanks in the Former Dip Tank AOI. The only other treated wood located onsite is associated with railroad ties, possibly impregnated with CCA or creosote (finished products only, not manufactured onsite), that make up various rail lines and spurs.

2.3.1.2 OU-D

The primary sources of site-related chemicals at OU-D consist of historical facility operations, which are lumber processing, storage, and transport; chemical storage (primarily petroleum); some vehicle maintenance; ash/sediment storage and drying; industrial equipment usage; and nursery activities.

The vast majority of OU-D is undeveloped land that was used for untreated log and lumber storage. Due to the wood being untreated (and the storage in this area mainly being associated with virgin/uncut logs), the wood storage activity from these areas is not considered to be a significant source, except for some potential sources from the former rail lines that ran through these areas.

Industrial operations occurred in the northern portion of OU-D, which includes the Planer #2 AOI, Former Shipping Office and Truck Shop AOI, and Sawmill/Sorter AOI. These AOIs consist primarily of paved surfaces and the foundations of some office and industrial buildings. Former commercial vehicle and equipment operation and maintenance areas are potential sources of TPH. Former chemical and petroleum storage locations are additional potential sources of metals, VOCs, semivolatile organic compounds (SVOCs), PAHs, and TPH.

Rail lines and spurs were previously located throughout OU-D to load and unload supplies and lumber. Railroad ties were possibly impregnated with creosote (finished products only, not manufactured onsite). In addition, LBP has been detected on various buildings within the Planer #2 AOI.

TP/refuse burners were also located in specific areas of OU-D. Sediment and ash were stored in the former sediment stockpile area and are potential sources of dioxins/furans. (ARCADIS BBL, 2008a).

OU-D also receives direct surface water discharge from offsite via a culvert that runs under the road bordering the site on the east (Main Street/Highway 1). The culvert

discharges into a small drainage that runs along the north side of the Riparian AOI, which then flows via another culvert into Pond 8. The source of the water to the first culvert is unknown, but it is likely city stormwater.

2.3.2 Chemicals of Interest

COIs are chemicals that could potentially be associated with the products, materials, and wastes used or generated at the facilities discussed above in Section 2.3.1. The chemical products most frequently used in OU-C and OU-D are petroleum related. Tanks and drums onsite stored gasoline, diesel, motor oil, fuel oil, lube oil, hydraulic oil, and dielectric oil (a petroleum-based electrical insulating oil). Materials containing petroleum and metals were used around rail lines present onsite and are used during ongoing Skunk Train operations that currently occupy rail lines both on and off of the Mill Site. Other chemicals used onsite included antifreeze and transmission fluids for vehicle servicing, water treatment chemicals, small quantities of acids/bases, solvents, and paint and paint thinners. Lead based paint was used in some buildings. Some electrical transformers contained PCB insulating oils. PCP was used (the Former Dip Tank AOI, and one area of the Green Chain AOI), and at one location where propiconazole was used (the dip tank in Dry Shed #5). There was some historical use of pesticides and herbicides within the greenhouse area.

Based on the site history and chemical uses identified, the COIs potentially associated with the sources described above are in the categories of metals, TPH, VOCs, PAHs, SVOCs, PCP, dioxins/furans, and herbicides. Investigations for the COIs within these categories were performed at potential sources in each AOI in OU-C and the results and evaluations of human health and ecological risk were presented in the RI Report. Refer to Section 2.8 for a discussion of the compounds of potential concern (COPCs) and COCs. COPCs are compounds that were selected to be carried through the baseline risk assessment (BLRA) process included in the RI (ARCADIS, 2011a). COCs are compounds identified by the risk assessment as the primary contributors to potentially unacceptable ecological and/or human health exposure risks and are carried forward into the FS and this RAP.

2.3.3 Fate and Transport Mechanisms

Fate and transport mechanisms evaluated in the FS are briefly discussed in the following section. Refer to Section 2.7.3.1 for a discussion of potential and complete exposure pathways evaluated in the BLRA (ARCADIS, 2011a).

2.3.3.1 OU-C

In OU-C, the primary potential migration pathways are direct releases to surface and subsurface soil, infiltration of rainwater and percolation of groundwater, surface water runoff, and volatilization from soil and groundwater to air, as well as dust generation. Because a significant portion of OU-C is paved (and was paved for significant periods of time historically), contamination of surface soils via direct releases and infiltration is not expected to be significant, except in unpaved areas or in areas where the pavement is cracked or compromised. Releases from subsurface features such as USTs or sumps are directly to the subsurface soil. Impacts in the subsurface soil can affect shallow groundwater beneath the site.

2.3.3.2 OU-D

In OU-D, the primary potential migration pathways are direct releases to surface and subsurface soil, infiltration and percolation of rain water and groundwater, surface water runoff, and volatilization from soil and groundwater to air, as well as dust generation. Because a significant area of the northern portion of OU-D is paved (and has been paved for significant periods of time historically), contamination of surface soils via direct releases and infiltration is not expected to be significant, except in unpaved areas or in areas where the pavement is cracked or compromised. Releases from subsurface features such as USTs, pipelines, pits, or sumps are directly to the subsurface soil. Impacts in the subsurface soil can percolate to shallow groundwater beneath the site. Dissolved constituents can be transported downgradient as a result of advective groundwater flow. Transport via dust and vapor is not likely to be a significant transport pathway because the areas where there may be impacts from chemical use during site operations were historically and are currently paved.

2.4 Remedial Investigation Activities (Presented in RI and FS Reports)

The data discussed in the RI Report and evaluated in the FS include data collected through several investigations from 1998 to 2009. Data collected prior to January 1998 were excluded from quantitative assessment in the RI Report because they were not formally validated and have limited quality assurance/quality control information. A brief summary of investigation activities is presented in the following subsections. Concentrations of COPCs in various media in each AOI detected in samples collected during RI activities are presented on Figures 4-1 through 4-7.

2.4.1 1998 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).

2.4.2 Phase I Environmental Site Assessment

TRC performed a Phase I ESA of the site between 2002 and 2004 (TRC, 2004a). The Phase I ESA included visual inspections of each parcel performed on August 11, September 12, October 16, and November 5, 2002; 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.

The Phase I ESA also included a preliminary visual survey of the buildings for the presence of ACMs and LBP. The survey was conducted by Hygienetics Environmental Services, Inc. (HES; HES, 2003) in late 2002, soon after industrial operations were discontinued at the site.

2.4.3 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, 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. The results were presented in the Phase II ESA report (TRC, 2004b).

2.4.4 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. The additional site investigation included the completion of potholes, 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 were presented in the *Additional Site Assessment Report* (TRC, 2004c).

2.4.5 2005 Additional Site Assessment

In the mid-2000s, 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 from September 1, 2005, through May 31, 2006, in general accordance with the *Work Plan for Additional Site Assessment* (AME, 2005a). Analytical data were reported in the *Data Transmittal Report* (AME, 2006b) and the *Dioxin Sampling and Analysis Report* (AME, 2006c).

2.4.6 Site Investigation Activities: 2008- 2010

The purpose of the site investigation work conducted between 2008 and 2010 was to collect additional data needed to prepare the RI Report. Data gaps were identified in the OU-C and OU-D work plans (ARCADIS, 2008b; 2009b) using historical data collected from January 1998 to March 2005. In some areas, there was a lack of sampling in a particular location or depth or for a particular analytical suite. Other data gaps consisted of areas where additional chemical analyses were needed in areas that had been previously tested. Soil vapor and geochemical studies were also necessary to further investigate areas affected by COPCs. Sample location maps from the RI for AOIs included in the scope of this RAP are presented on Figures 2-3 through 2-10.

2.4.7 Quarterly Groundwater Monitoring

Quarterly groundwater monitoring at the site was initiated by TRC (TRC, 2004d) in 2004. Wells have been added and removed since. The comprehensive groundwater monitoring dataset for the site, including data collected through the first quarter of 2013 from actively sampled monitoring wells, is presented in the *First Quarter 2013 Groundwater Monitoring Report* (ARCADIS, 2013b).

2.5 Supplementary Remedial Investigations

Following the submittal of the RI and FS Reports, supplementary RIs were conducted in June 2012. Soil and grab groundwater samples were collected within the Former AST, Former Parcel 3 MES/Pilot Study, Kilns, and Rail Lines East AOIs to further delineate the nature and extent of COPCs. In addition, groundwater samples were collected from selected monitoring wells and analyzed for geochemical parameters to support natural attenuation evaluation of COPCs in several AOIs.

2.5.1 Former Parcel 3 MES/Pilot Study, Kilns, and Rail Lines East Investigation

Soil samples and grab groundwater samples were collected at various locations through the Former Parcel 3/MES Pilot Study, Kilns, and Rail Lines East AOIs to eliminate data gaps identified following the completion of the RI and FS Reports. A summary of investigation activities was previously described in a letter submitted to DTSC on November 12, 2012 and the following subsections (ARCADIS, 2012b). Results of the supplemental RIs are discussed below and shown on Figures 2-14 through 2-17.

2.5.1.1 Summary of Field Activities

In June 2012, ARCADIS conducted additional soil and groundwater sampling for selected COPCs in OU-C and OU-D to support quantity estimates for remediation planning. ARCADIS collected samples from 17 locations on the Georgia-Pacific Mill Site between June 19 and 22, 2012. Samples were collected from the Former AST and MES/Pilot Study AOIs (13), the Rail Lines East AOI (1), and Kilns AOI (3). In addition, Georgia-Pacific supported the Skunk Train's proposed investigation by collecting samples from seven locations on the adjacent Skunk Train property as specified in the *RCRA Facility Investigation Work Plan – Skunk Train, Fort Bragg, CA* (Environmental Resources Management [ERM], 2011). A total of 72 soil samples at discrete depth intervals and 10 grab-groundwater samples were collected as a part of this investigation.

Soil samples were collected using a Geoprobe direct push rig at all locations in the Former AST and Parcel 3 MES/Pilot Study AOIs, as well as locations on Skunk Train property. Surface samples in the Kilns and Rail Lines East AOIs were collected manually with a hand auger. Grab groundwater samples were collected using a peristaltic pump and down-hole tubing. Samples were sealed, placed on ice, and shipped to TestAmerica Laboratories in Pleasanton, California. Samples were analyzed by one or more of the following methods:

- TPHg; benzene, toluene, ethylbenzene, total xylenes (BTEX), di-isopropyl ether; ethyl tertiary butyl ether; MTBE; tertiary amyl methyl ether; tertiary butyl alcohol; ethanol; 1,2-dibromomethane; and 1,2-dichloroethane (1,2-DCA) by USEPA Method 8260B
- TPHd and TPH in the motor oil range (TPHmo) by USEPA Method 8015D

- PAHs by USEPA Method 8270
- Copper, lead, and zinc by USEPA Method 6010

Sampling locations, laboratory analytical reports, daily field notes, and tabulated data are provided in *Operable Units C/D Data Gaps Soil Investigation Results* (ARCADIS, 2012b). Sampling results are discussed below and presented on Figures 2-14 through 2-17.

Field activities also included geophysical investigation of an underground pipeline leading from the Skunk Train diesel AST in the vicinity of groundwater and soil affected by diesel fuel.

2.5.1.2 Summary of Results

Results for COPCs detected in soil and groundwater were compared to screening levels developed in the RI to further evaluate the extent of COPCs. Screening levels are used for discussion and to identify areas for further evaluation.

2.5.2 Former AST AOI and Former MES/Pilot Study AOI (OU-C)

Sixty-eight soil samples were collected from 13 locations onsite within the Former AST and Former MES/Pilot Study AOIs and 7 locations at the adjacent Skunk Train Facility. Samples were analyzed for TPHg, TPHd, and TPHmo, as well as benzene, toluene, ethylbenzene, and xylenes and fuel oxygenates. Additional surface samples were also collected at the Skunk Train's facility by ERM and were reported to DTSC in a Resource Conservation and Recovery Act (RCRA) Facility Investigation Report dated April 10, 2013 (ERM, 2013). Groundwater was typically encountered at soil boring locations from 9 to 11 feet below ground surface (bgs).

TPHd was detected above leaching to groundwater (LGW) screening levels at locations west and downgradient, determined through groundwater investigations, of the Skunk Train diesel AST and former 12,000-gallon gasoline AST with the exception of one location (OUC-DP-1003). TPHd concentrations were below direct contact and protection of indoor air screening levels. TPHg was detected above protection of indoor air screening levels in at least one depth interval (typically between 9 and 12 feet bgs) at locations downgradient of the Skunk Train diesel AST and former 12,000-gallon gasoline AST with the exception of one location (OUC-DP-1003). TPHg concentrations were below direct contact screening levels. TPH screening levels from Appendix D of

the RI were used to develop TPH remedial goals and are presented in Table 3-4. TPHg results are presented on Figures 2-14 and 2-16, and TPHd results are presented on Figures 2-15 and 2-17. TPHd was detected in soil at approximately 10 to 12 feet bgs, where groundwater was first observed, at concentrations between 440 and 9,600 milligrams per kilogram (mg/kg; C10-C24 range). Concentrations in shallower soil were below the LGW screening level with the exception of OUC-DP-1009 (5,900 mg/kg). TPHg was detected in soil at the groundwater interface at concentrations between 0.59 and 470 mg/kg and in shallower soil between 4.1 and 72 mg/kg. TPHg and TPHd concentrations generally decrease with distance south of the AST and west of the property line. Concentrations immediately cross gradient and upgradient of the ASTs (STF-DP-018, STF-DP-019, and OUC-DP-1013) were below screening levels.

Grab groundwater samples were collected at three locations onsite and seven locations on the Skunk Train property. Groundwater samples collected exceeded groundwater risk-based screening criteria (RBSC) for TPHg and TPHd (1.22 milligrams per liter [mg/L]), with the exception of STF-DP-1019 (upgradient of ASTs) and STF-DP-1024 (cross gradient). Significant turbidity was observed in grab groundwater samples. Total TPH reported in groundwater is likely biased high due to sorbed TPH on silt particles in the sample matrix.

Soil samples were analyzed for BTEX and fuel oxygenates. Concentrations of benzene and all oxygenates are reported in Table 2-1 and samples collected during the investigation were below unrestricted screening levels established in the RI Report. Ethylbenzene was detected most frequently (13 of 39 samples collected) with concentrations ranging from 0.0011 mg/kg to 4.4 mg/kg. Toluene (2 of 39 samples) and xylenes (3 of 39 samples) were also detected, with maximum concentrations of 0.0017 mg/kg and 0.22 mg/kg, respectively. Concentrations of detected analytes were located primarily in soil from 9 to 10 feet bgs, where groundwater is first encountered. No analytes were detected in the deepest sample at each location, indicating that detections are potentially attributed to residual smear zone mass. Concentrations for VOC analytes detected during investigation activities were below screening levels of the RI (5,000 mg/kg for toluene, 5.4 mg/kg for ethylbenzene, 630 mg/kg for xylenes).

TPHg and TPHd detected in soil downgradient of the fuel ASTs and the Skunk Train Roundhouse at concentrations above LGW and RBSC screening levels are primarily within the saturated interval and the interval of historical groundwater table fluctuation (in the "smear zone"). TPHg has been detected during this and previous investigations above screening levels at depths shallower than approximately 8 feet at two locations

immediately west of the Skunk Train Roundhouse. TPHd has been detected during this and previous investigations at depths shallower than approximately 8 feet at four locations, three immediately west of the Skunk Train Roundhouse (including the two TPHg locations) and one location south of the AST containment.

Concentrations of COPCs in borings collected upgradient and cross gradient of the ASTs are primarily below screening levels and several orders of magnitude below concentrations detected immediately downgradient of the ASTs. Data collected during the additional field investigation further supports indications of an offsite source present on the adjacent Skunk Train facility discussed in the RI Report.

A geophysical survey was conducted as part of the underground utility location prior to the investigation. The survey indicated an out-of-service offsite subsurface fuel pipeline leading from an offsite AST to the Skunk Train Roundhouse and trackside locomotive fueling areas. A subsurface drain pit and oil/water separator is also present in the Skunk Train Roundhouse.

A discussion of site conditions and proposed remedial actions in these AOIs is discussed in Section 4.5.2.

2.5.3 Former Rail Lines East AOI (OU-C)

As summarized in Table 2-1, one surface soil sample was collected at one location within the Rail Lines East AOI and analyzed for lead to further delineate the lateral extent of the presumptive remedy area (PRA). As discussed in Section 2.7.2, a PRA as defined in the RI is a “hot spot” area that likely poses an unacceptable risk or exhibits other criteria that would require remedial action. Lead has been detected at concentrations greater than 10 times the screening level (80 mg/kg) in surface soil (0 to 0.5 foot bgs) samples at sample location OUC-SS-061. Step-out sampling has been performed to the north, south, and west at this location; however, no sampling had previously been performed to the east of OUC-SS-061. Sample OUC-SS-1017 was collected approximately 20 feet east of OUC-SS-061 and analyzed for lead. Analytical results indicate the concentration of lead in OUC-SS-1017 (42 mg/kg) is below the screening level. Further discussion of remedial action and proposed excavation areas and volumes is presented in Section 4.5.4.

2.5.4 Kilns AOI (OU-C)

As summarized in Table 2-1, three surface soil samples were collected from three locations within the Kilns AOI and analyzed for TPHd and TPHmo to further delineate the lateral extent and depth interval required for remediation. Surface samples were collected at two step-out locations from the original sample exceeding screening levels within the AOI (OUC-SS-058) to delineate the aerial extent of the PRA delineated in the RI Report. An additional sample (OUC-SS-1016) was collected adjacent OUC-SS-058 from 1.5 to 2 feet bgs to delineate the depth of excavation required as recommended in the FS Report.

Analytical results indicate that concentrations of TPHg and TPHd were below LGW screening levels and RBSC for all samples collected within the Kilns AOI. The extent of screening level exceedances has been delineated within the AOI. Further discussion of remedial action and proposed excavation areas and volumes will be presented in Section 4.5.5.

2.5.5 Geochemical Investigation and Monitored Natural Attenuation Report

During the June 2012 supplemental RI, additional groundwater samples were collected from 20 monitoring wells and analyzed for geochemical parameters to support the natural attenuation evaluation presented in the MNA Report.

2.5.5.1 Summary of Field Activities

The supplementary RI was conducted concurrently with routine groundwater sampling using a bladder pump and low-flow methodology consistent with the standard operating procedure presented in the *Quality Assurance Project Plan* (ARCADIS BBL, 2007c).

Collected samples were sealed, placed on ice, and shipped to TestAmerica Laboratories in Pleasanton, California. Samples were analyzed by the following methods:

- Carbon dioxide and methane by Method RSK-175
- Anions (nitrate and sulfate) by USEPA Method 300.1
- Dissolved California Assessment Manual (CAM) 17 metals by USEPA Method 6020/7470A

- Total organic carbon by Standard Method 5310C

Field parameters were collected using a down-hole multi-parameter meter, including dissolved oxygen, oxidation-reduction potential, pH, and turbidity. In addition, ferrous iron readings were collected in the field using a Hach Ferrous Iron test kit.

2.5.5.2 Summary of Results

Analytical results for geochemical indicators are summarized in the MNA Report. Further discussion of the findings of the MNA Report is provided in Section 4.2.

2.6 Previous Remedial Activities

Previous removal and interim remedial actions in OU-C and OU-D are discussed in the subsections below.

2.6.1 UST Removal

A 100-gallon UST was removed from the northeast corner of the Former Planer #2 building (Former Planer #2 AOI) on September 4, 2008. Prior to tank removal, an excavator was used to remove the overlying concrete slab, along with the pipes extending from the tank. Confirmation soil samples were collected from the bottom and three sides of the excavation and analyzed for TPHg, VOCs, and lead. The north side of the tank location was open due to the tank being above grade, so no samples were collected there. The UST removal and analytical results were presented in a letter to the Mendocino County Environmental Health Division (ARCADIS, 2009a).

2.6.2 Interim Remedial Measures

IRM activities as described in the *Interim Action Remedial Action Plan* (ARCADIS, 2008a) and *Interim Action Completion Report* (ARCADIS, 2010b) were initiated in 2008 and completed in 2009. Excavation activities completed in 2009 include:

- Excavation and offsite disposal of soil containing metals and PCBs from the Former MS/IRM AOI
- Excavation and onsite treatment of TPH-affected soil from the Former MS/IRM AOI, Miscellaneous AOI, IRM AOI and West of IRM AOI

- In-situ groundwater treatment for TPH (biosparging and addition of oxygen-releasing material before backfilling)
- Confirmation sampling
- Backfilling of excavated areas with treated soil meeting unrestricted screening levels.

TPH-affected soil was also removed from the Former MES/Pilot Study AOI in Parcel 3 in 2007 (ARCADIS BBL, 2007b; 2007d). Affected soil and the remaining sump were removed and soil was treated and used as backfill in the same area.

Excavation boundaries for the MS/IRM AOI are presented on Figures 2-7 and 2-7b. Because soil was removed, data for soil and groundwater grab samples collected from within the areas that were later excavated were not used to evaluate the nature and extent of COPCs or for the risk assessment.

2.7 Summary of Baseline Risk Assessment

As noted above, the RI Report identified approximately 190 acres within OU-C and OU-D that require no further remedial action and 14 specific AOIs within the OUs that required further evaluation. Three of those 14 AOIs (IRM, West of IRM, and Riparian Area) will be evaluated in the forthcoming OU-E FS. As such, the following subsections focus on the risk assessment conducted for the 11 AOIs outlined in Section 2.2.1.

2.7.1 Exposure Units

The spatial area over which exposure to COPCs may occur is defined as an Exposure Unit (EU). EUs were developed for the BLRA to account for proposed or likely future land use, known historical uses, and the spatial distribution of COPCs relating to the degree of homogeneity or heterogeneity of the chemical distribution. EUs were identified based on the AOI boundaries previously developed and based on the proposed future land uses outlined in the *Draft Mill Site Specific Plan* (City, 2011). These future uses are reflected in a Land Use Plan map developed as part of the *Draft Mill Site Specific Plan*. Development of the EUs was discussed with DTSC (including a draft map of EUs) prior to development of associated datasets. As shown on Figure 2-12, the eleven AOIs that are considered in this RAP were each treated as a separate EU. Parcel and AOI boundaries are also shown on Figure 2-12. The proposed future land uses for the Mill Site are shown on Figure 2-11. All 11 EUs were evaluated for

potential current and future human exposures in the BLRA. In one out of the 11 EUs identified for this RAP in OU-D (Greenhouse)¹, suitable terrestrial ecological habitat for ecological receptors is present and could remain in the future. Suitable habitat is not available in OU-C, and plans for future land use indicate that habitat will not be present in the future in OU-C and many areas of OU-D.

2.7.2 Treatment of PRAs in the Baseline Risk Assessment

Prior to conducting the risk assessment, four PRAs were identified in four EUs based on a comparison of soil data with conservative human health risk-based screening levels. These PRAs were not included in the risk assessment, because it was assumed that these areas would require remedial action based on soil concentrations present in those areas compared to relevant screening levels. As shown on Figure 2-13, the PRAs are located in: 1) the Former Dip Tank AOI/EU in OU-C (dioxin/furans and PCP), 2) the Rail Lines East AOI/EU in OU-C (lead), 3) the Kilns AOI/EU in OU-C (TPHd and PAHs), and 4) the Former Planer #2 AOI/EU in OU-D (TPHs and PAHs). The RI recommended that these four areas be carried forward to the remedial planning process.

The BLRA was conducted under the assumption that at the four soil PRAs will be managed via soil remediation. In the risk assessment, soil sample data within the PRA lateral and vertical boundaries were replaced with concentrations representative of post-remediation conditions (i.e., proxy values). The proxy values for organic constituents are zero, while inorganic proxy values were all below unrestricted screening levels. For example, the proxy value for lead is 4.5 mg/kg and zero B(a)P and TPHd (ARCADIS, 2011a).

2.7.3 Receptors

Consistent with the *Site-Wide Risk Assessment Work Plan* (Site-Wide RAWP; ARCADIS BBL, 2008b), the BLRA (ARCADIS, 2011a) evaluated the potential human and ecological receptors described in the following subsections. Human and ecological receptors were identified based on current and foreseeable land uses, considering a reasonable and conservative reuse scenario within both OU-C and OU-D.

¹¹ The IRM and West of IRM AOIs have been removed from OU-C and the Riparian Area AOI has been removed from OU-D; these are reclassified as OU-E for inclusion in future documents due to their proximity to aquatic features.

2.7.3.1 Human Receptors and Relevant Exposure Pathways

Human receptors were identified based upon current and potential future uses of OU-C and OU-D, including residential, commercial/industrial, and recreational uses. Related construction and maintenance activities are expected to occur within the two OUs as well. Based on the current and foreseeable land uses described in the RI Report, the following receptors were identified as potential receptors in OU-C and OU-D and evaluated in the BLRA.

- **Child/Adult Resident:** This combined child and adult receptor was evaluated to assess future development of areas of OU-C and OU-D for residential use.
- **Commercial/Industrial Worker:** This adult receptor was evaluated to assess future commercial or industrial uses occurring in OU-C and OU-D, including exposure to indoor air in future buildings in these areas.
- **Construction Worker:** This adult receptor was evaluated to assess exposures during future soil intrusive activities occurring at either OU-C or OU-D during or after site development.
- **Utility/Trench Worker:** This adult receptor was evaluated to assess exposures during potential short-term maintenance activities and to address potential repair activities on underground utilities in OU-C and OU-D.

Potential land uses in OU-C include parks within residential areas for recreational use. Because these will be within areas designated for potential residential use, the recreator exposure scenario was not evaluated separately from the higher exposure residential scenario in OU-C. Foreseeable land use in OU-D includes open space and could include recreational uses not associated with residential development. Therefore, in OU-D, the following additional receptor was evaluated in the BLRA:

- **Recreational Visitor:** Two separate recreational visitor scenarios were evaluated: an occasional visitor and a frequent visitor (such as a jogger) living near the site. The occasional visitor was evaluated as both a child and an adult and was assumed to engage in mainly passive recreational activities (e.g., walking).

Potential exposure pathways for human receptors are presented on Figure 2-18. After development at the site, the surface soil may be mildly disturbed or possibly graded with subsurface soil. Resident adults and children and commercial workers may

potentially be exposed to soils from 0 to 2 feet bgs and from 0 to 10 feet bgs via incidental soil ingestion, soil particulate inhalation, and direct dermal contact. Therefore, for both soil depth intervals, incidental soil ingestion, inhalation of airborne soil particulates, and dermal contact with soil are considered potentially complete exposure pathways for adult and child residents and commercial workers. Inhalation of vapors from soil or groundwater migrating to indoor air is also a potentially complete exposure pathway for future residents and commercial workers in areas where VOCs are present.

During development of the site, construction workers may be exposed to soils in either the 0 to 2 feet bgs or the 0 to 10 feet bgs depth interval via incidental soil ingestion, soil particulate inhalation, and direct dermal contact. Maintenance/utility workers may be exposed to soils within the 0 to 2 feet bgs or the 0 to 10 feet bgs depth intervals as well during trenching or other maintenance activities via incidental soil ingestion, soil particulate inhalation, and direct dermal contact. Therefore, for both soil depths, incidental soil ingestion, inhalation of airborne soil particulates, and dermal contact with soil are considered potentially complete exposure pathways for construction workers. Inhalation of vapors emanating from soil or groundwater migrating to ambient air is also a potentially complete exposure pathway for trench workers in areas where VOCs are present.

Because groundwater at the site has multiple designated beneficial uses, including municipal and domestic supply (i.e., drinking water), domestic and commercial groundwater use was evaluated in the risk assessment to estimate cumulative risk from exposure to all media. Exposure pathways for residents from domestic use of site groundwater include ingestion and direct dermal contact, as well as inhalation of VOCs (during bathing) if they are present. The primary exposure pathway for commercial workers from use of site groundwater is ingestion.

As further discussed below, inhalation of vapors in indoor air and in ambient air were evaluated in the BLRA (ARCADIS, 2011a) using soil vapor data in the following AOs considered in this RAP: Former AST, Former MES/Pilot Study, Former MS/IRM, and Planer #2.

2.7.3.2 Ecological Receptors and Relevant Exposure Pathways

As discussed in Section 2.1.2, habitat within OU-C is not considered suitable to sustain or significantly contribute to the sustainability of populations of ecological receptors. Future uses of OU-C include potential development, with the only "green spaces"

consisting of landscaped city parks and/or ball fields. Plants, invertebrates, and wildlife (mammals and birds) in identified terrestrial and aquatic habitats are the primary ecological receptors in OU-D, although the northwestern portions of OU-D as well as other portions of OU-D are identified for potential commercial/industrial development. Only those areas that currently contain ecological habitat are considered as potential future ecological habitat areas.

Consistent with the Site-Wide RAWP, the representative species selected for terrestrial receptors of interest in the terrestrial areas of OU-C and OU-D are: plants, soil invertebrates, herbivorous birds (California quail), invertivorous birds (killdeer), carnivorous birds (American kestrel), herbivorous mammals (mule deer), carnivorous mammals (red fox), and invertivorous mammals (ornate shrew).

Potential exposure pathways for ecological receptors are presented on Figure 2-19. Ecological receptors may be directly exposed to chemicals through the following exposure pathways in the terrestrial portions of OU-D considered in this RAP:

- Plant and invertebrate direct exposure to soil
- Wildlife incidental ingestion of constituents in soil
- Wildlife consumption of prey items (i.e., plants, invertebrates, and wildlife) through the food web

Based on the foraging habits of the identified receptors, the 0 to 0.5 foot depth profile is appropriate for all receptors evaluated in the BLRA (ARCADIS, 2011a), with the exception of the shrew and possibly plants. For burrowing ecological receptors (i.e., the shrew) and plants, the intervals between 0 to 0.5 foot bgs, 0 to 2 feet bgs, and 0 to 6 feet bgs were evaluated.

2.7.4 COPC selection and Exposure Point Concentrations

As part of the BLRA, soil, groundwater, and soil vapor/indoor air data were compiled into EU-specific datasets. In accordance with the methods presented in the Site-Wide RAWP, COPCs were identified in soil and groundwater in each EU for further evaluation. Soil vapor COPCs were identified in four EUs (Former AST, Former MES/Pilot Study, Former MS/IRM, and Planer #2) identified as having areas of potential concern for vapor intrusion based on a screening evaluation presented in the *Follow-up Investigation and Soil Vapor Evaluation Work Plan* (Soil Vapor Work Plan;

ARCADIS, 2009c) and the *Response to DTSC Comments, Follow-Up Investigation and Soil Vapor Evaluation Work Plan, OU-C and OU-D* (ARCADIS, 2009d). The soil vapor COPCs were used in the BLRA to evaluate potential indoor air impacts for future buildings in these EUs.

Generally, chemicals were selected as COPCs in the BLRA if they were detected at concentrations exceeding background levels. For additional details of the COPC selection process for the BLRA, refer to the RI Report.

An exposure point concentration (EPC) was calculated for each COPC. The EPC is the concentration of a COPC in an environmental medium to which a hypothetical receptor might be exposed. EPCs equivalent to the 95% upper confidence limit (UCL) on the mean (as recommended by ProUCL Software) were used to estimate residual risks. For smaller datasets (less than eight samples or less than five detects) the maximum detected concentration was used to represent the EPC. Soils down to 10 feet bgs were assessed, with the higher concentrations generally in the 0- to 0.5-foot bgs interval.

EPC are used, in comparison to the soil remedial goals (Table 3-5), to determine if an unacceptable risk is present and a remedial action is necessary to protect public health. Table 2-3 list the EPCs for each COC associated within an AOI.

As part of the BLRA, soil, groundwater, and soil vapor/indoor air data were compiled into EU-specific datasets. In accordance with the methods presented in the Site-Wide RAWP, COPCs were identified in soil and groundwater in each EU for further evaluation. Soil vapor COPCs were identified in four EUs (Former AST, Former MES/Pilot Study, Former MS/IRM, and Planer #2) identified as having areas of potential concern for vapor intrusion based on a screening evaluation presented in the Soil Vapor Work Plan and associated response (ARCADIS, 2009c,d). The soil vapor COPCs were used in the BLRA to evaluate potential indoor air impacts for future buildings in these EUs.

Generally, chemicals were selected as COPCs in the BLRA if they were detected at concentrations exceeding background levels. For additional details of the COPC selection process for the BLRA, refer to the RI Report.

An EPC was calculated for each COPC at each EU. The EPC is the concentration of a COPC in an environmental medium to which a hypothetical receptor might be exposed. EPCs equivalent to the 95% UCL on the mean were used to estimate residual risks. For smaller datasets (less than eight samples or less than five detects) the maximum

detected concentration was used to represent the EPC. Soils down to 10 feet bgs were assessed, with the higher concentrations generally in the 0- to 0.5-foot bgs interval.

EPCs were compared to soil remedial goals (Table 3-5), to determine if an unacceptable risk is present and a remedial action is necessary to protect public health. Table 2-3 lists the EPCs for each COC within an AOI.

2.7.5 Key Findings of the Risk Assessment

The human health risks are associated with potential soil and soil vapor/indoor air exposures. Exposure to groundwater was not evaluated in the risk assessment because concentrations of contaminants were compared to groundwater remedial goals to determine if a remedial action, including use restrictions, were necessary. Groundwater will be controlled via use restrictions as discussed in Section 4.4.2.3. There were 22 AOIs or EUs identified for evaluation in the risk assessment: 15 in OU-C and 7 in OU-D.

The following bullets discuss AOIs or EUs identified in the health risk assessment as posing increased risks and/or hazards because of elevated concentrations of COPCs in soil and/or soil vapor. These AOIs/EUs were recommended in the risk assessment to be carried forward for further evaluation in the RAP. Issues with respect to specific COPCs are also discussed.

2.7.5.1 Human Health Risk Assessment

Soil

- At Dry Sheds #4/#5 in OU-C, the risk from potential exposure to PAHs in soil is slightly elevated in a residential land use scenario.
- At the AOI identified as North of IRM in OU-C, the risk from potential exposure to dioxin toxic equivalent (TEQs) in soil is slightly elevated in a residential land use scenario.
- At Former Parcel 3 MES/Pilot Study in OU-C, the presence of cobalt and arsenic pose a slight increase in the Hazard Index or cancer risk for the construction worker or utility/trench worker.

- At the EU identified as OU-D South, dioxins pose slightly elevated risks to potential residents and commercial/industrial workers.
- **Arsenic:** The majority of arsenic concentrations in soil detected in OU-C and OU-D soil were within the site-specific background concentration; therefore, the human health risk assessment did not include risk from exposure to arsenic in soil, with the exception of arsenic at the Former MES/Pilot Study and Former Dip Tank. The human health risk evaluation for the Former MES/Pilot Study and Former Dip Tank EUs includes arsenic in the shallow depth interval, and the arsenic EPC was adjusted to exclude the background concentration (10 mg/kg).
- **Lead:** Using the UCL on the mean, as requested by DTSC, the soil lead EPC at the former AST EU exceeded soil screening levels (SSLs) for the residential child, the construction worker, and the utility worker receptors. The risk assessment recommended that lead concentrations in the Former AST EU be carried forward to the FS. Refer to Table 2-4 for a comparison of lead EPCs in soil at the Former AST EU to site-specific SSLs established in the risk assessment. The UCL soil lead EPC at the North of IRM exceeded SSLs for the residential adult/child, and construction/utility/trench workers. The risk assessment concluded that these elevated concentrations are due to sources from the nearby public roadway. Maximum soil lead concentrations exceeded SSLs at the Former Parcel 3 MES/Pilot Study, Dry Sheds #4/5, former Dip Tank, Construction Engineering and North of IRM EUs, but it was concluded in the risk assessment that these concentrations do not reasonably represent potential exposure at these EUs.
- **TPHd:** TPHs were not identified as contaminants contributing to human health risks or hazards at any EU. Therefore, soil TPH concentrations were evaluated elsewhere based on the protection of groundwater from leaching of TPHs from soil to groundwater.

Soil Vapor

- At Former AST in OU-C, the risks and hazards from potential exposure to VOCs (benzene, ethyl benzene, 1,2,4-TMB, and naphthalene) intruding indoors from subsurface soil are significantly elevated for both the residential and commercial land use scenarios.
- At Former Parcel 3 MES/Pilot Study in OU-C, the risks and hazards from potential exposure to VOCs (benzene, ethylbenzene, 1,2,4-TMB, and naphthalene)

intruding indoors from subsurface soil are significantly elevated for the residential and commercial land use scenarios.

- At Planer #2 in OU-D, the risks and hazards from potential exposure to VOCs (vinyl chloride, PCE, 1,2,4-TMB, and 1,1-DCE intruding indoors from subsurface soil are significantly elevated for the residential land use scenarios.

2.7.5.2 Ecological Health Risk Assessment

An ecological health risk assessment was carried out for all AOIs or EUs. The only AOI showing an unacceptable ecological risk is the Riparian AOI sediments within the drainage because of potential exposure by ecological receptors to metals, PAHs and dioxins/furans. This AOI was moved to OU-E for further evaluation, since it is related to the predominant features of OU-E, including the man-made ponds, and will likely be designated as open space.

Groundwater

As stated above, groundwater was not evaluated in the risk assessment. Below is a summary of COPCs of interest detected in groundwater in the various AOIs.

- Parcel 2 – dioxins and furans
- Former AST/Formal MES/Pilot Study – TPHs VOCs, lead
- Former MS/IRM – TPHs, VOCs, arsenic
- At Former MS/IRM – TPHs, VOCs, arsenic
- IRM and West of IRM – TPHs
- Former Planer #2 – VOCs
- Former Sawmill/Sorter – arsenic
- Greenhouse – atrazine

Isolated Elevated Soil Concentrations

Isolated elevated soil concentrations of PAHs were detected at Dry Shed #4 and Parcel 2. Isolated elevated soil TPHd concentrations were detected in North of IRM, Rail Lines West, and Sawmill/Sorter. The RI Report concluded that these exceedances are minor and do not warrant further consideration.

2.8 No Further Action AOIs, based on information in the RI Report

All or portions of ten of the AOIs listed below were not included in the RI Report NFA determination, but are now recommended for NFA in this RAP (Figure 2-2). Support for the NFA recommendation is presented in this section.

1. Rail Lines West
2. Dry Sheds #4, #5
3. Former Planer #1, #50
4. Former Log Storage and Sediment Stockpile
5. Log Deck
6. Former Sheep Barn
7. Former Oil House
8. Miscellaneous
9. IRM West
10. Parcel 6

2.8.1 Rail Lines West Pan Handle Section –OU-D

Several railroad spurs that were formerly used to load and unload supplies and lumber are located between the Truck Loading Shed and Former Planer #1. Portions of these railroad spurs have been removed. A NFA determination was made for a large portion of the AOI in the RI Report. The pan handle section of the AOI was not included in the NFA determination because plumes from Parcel 2 and the Former Dip Tank may migrate onto this AOI. Any groundwater contamination within the Rail Lines West AOI shall be addressed in the remedial actions for Parcel 2 AOI and the Dip Tank AOI. NFA is recommended for the Rail Lines West AOI.

2.8.2 Dry Sheds #4 and #5 area west of Rail Lines Ease

Dry Sheds #4 and #5 were historically used primarily for lumber storage. Based on the evaluation of nature and extent, as well as the risk evaluations provided in RI Report, a large portion of this AOI was included in the RI Report NFA determination. However, the plume from the Former Parcel 3 MES/Pilot Study crosses over this AOI boundary to the east and the eastern part of the Dry Sheds #4 and #5 AOI was not included in the NFA determination. Any groundwater contamination within the Dry Sheds #4 and #5 AOI shall be addressed in the remedial action for the Former MES/Pilot Study AOI. NFA is recommended for the Former Planer #1 and Planer #50 AOI.

2.8.3 Former Planer # 1 and #50 area south of Rail Lines West Pan Handle

Former Planer #1 and Planer #50 are located north of the Yard Office. Planer #50 is a wood building with asphalt flooring constructed between 1957 and 1963. Historically, it was used only for planer operations, and as such, housed heavy equipment such as trim saws.

Based on the evaluation of nature and extent, as well as the risk evaluations provided in the OU-C and OU-D RI Report, this AOI has no unacceptable risks or water quality exceedances. However, the plume from the Former Dip Tank crosses over this AOI boundary to the east. Therefore, only a portion of this AOI was included in the RI Report NFA determination. Any groundwater contamination within the Former Planer #1 and Planer #50 AOI shall be addressed in the remedial action for the Former Dip Tank AOI. NFA is recommended for the Former Planer #1 and Planer #50 AOI.

2.8.4 Former Oil House

The 1919 Sanborn map indicates that the Former Oil House measured approximately 10 feet by 20 feet (AME, 2005b). Initial characterization of the soil in the Former Oil House area identified TPHd impacts only in deep soil (1,820 mg/kg at 7 feet bgs). In 2008, ARCADIS collected two rounds of step-out soil samples to better define the extent. A total of 11 samples were collected from 6 locations. All samples were analyzed for TPHd and PAHs.

Samples from locations OUC-DP-032 through OUC-DP-034 were also analyzed for metals. Samples collected from the deepest interval (between 5.5 and 10 feet bgs) were also analyzed for dioxins/furans based on the observation of a sedimentary layer.

TPHd was detected below the groundwater leaching screening level of 2,730 mg/kg in 17 samples within the deepest interval (8 to 10 feet bgs). Only in boring OUC-DP-033 (total TPHd of 6,017 mg/kg) do TPHd concentrations exceed the groundwater leaching remedial goal. The one TPHd detection above the groundwater leaching goal is below the human health direct contact remedial goal.

Concentrations of arsenic, lead, and B(a)P TEQ were detected at concentrations slightly exceeding screening levels, but at levels below remedial goals in this RAP. The 2,3,7,8-tetrachlorodibenzo-p-dioxin [TCDD] TEQ in samples from OUC-DP-032 and OUC-DP-033 exceeded the California Human Health Screening Level (CHHSL) (4.6 picograms per gram [pg/g]) but not the CDRG (50 pg/g), with concentrations ranging from 5.90 to 21.6 pg/g.

Based on the evaluation of nature and extent, as well as the risk evaluations provided in the RI Report, this AOI has no unacceptable risks or water quality exceedances and is recommended for NFA.

2.8.5 Miscellaneous

A review of Sanborn maps indicates that the Miscellaneous AOI, although largely paved, had no specific industrial use. The Sanborn map of 1941 shows a bunkhouse and boarding house in the area north of Pond 5. Pond 8 historically extended into the western boundary of this AOI. This AOI also includes the Training Center Building, which is located in the same area as the Sheet Metal/Plumbing and Plant Supply Building. The Training Center Building is a wooden building constructed in the early 1990s that has been and still is used exclusively for employee training and meetings; a portion of it fronts a city street.

The interim action (ARCADIS, 2010a) completed in 2009 extended into the southern part of this AOI. Soils contaminated with TPHd were removed, and clean, treated soils, meeting unrestricted screening levels, were backfilled into this area (ARCADIS, 2010b). A review of the dataset for non-excavated soil and groundwater in the Miscellaneous AOI indicates that both soil and groundwater are relatively unimpacted.

Based on the evaluation of nature and extent, as well as the risk evaluations provided in the RI Report, this AOI has no unacceptable risks or water quality exceedances and is recommended for NFA.

2.8.6 Transformer Pad

The Transformer Pad AOI is located adjacent to and northeast of Pond 5. The Transformer pad first appears on a Sanborn map from 1941. There are currently no transformers present in this location, but transformers were historically located on this pad.

During previous investigations, 13 soil samples were collected from 7 locations. All samples were analyzed for TPHd, TPHmo, and total PCBs, with the exception of three samples which were analyzed for Aroclor® 1260 only. Soil samples were collected from the shallow subsurface (0.5 foot bgs) down to 5.8 feet bgs. TPHd, TPHmo, and PCB concentrations were below unrestricted screening levels.

Based on the evaluation of nature and extent, as well as the risk evaluations provided in the RI Report, this AOI has no unacceptable risks or water quality exceedances and is recommended for NFA.

2.8.7 Parcel 6

The Parcel 6 AOI is located south of the IRM AOI. The AOI is vacant and there were no soil or groundwater samples collected within the AOI as part of the RI investigation. Parcel 6 AOI was excluded from the RI Report NFA determination because the AOI is adjacent to the IRM AOI and West of IRM AOI, where groundwater contamination is present. The IRM and West of IRM AOIs have been moved to OU-E. Any groundwater contamination extending onto Parcel 6 AOI shall be addressed in the remedial action for the IRM AOI and the West of IRM AOI. NFA is recommended for the Parcel 6 AOI.

2.8.8 Former Log Storage and Sediment Stockpile Area South of Parcel 6 AOI

Lumber was previously stored in this area from the early 1970s to the early 1980s. The area was then converted into a sediment storage and drying area. The sediment originated from the aeration and settling ponds (Ponds 1 and 4). Once dry, the sediments were sent offsite for soil amendment at the McGuire Ranch Property, Little Valley, and other locations. An ash stockpile was present in the sediment drying area when the mill closed in 2002. This ash pile was removed and appropriately disposed of during the summer of 2006 (ARCADIS BBL, 2007a). A sanitary sewer line traverses the north end of this AOI.

Based on the evaluation of nature and extent, as well as the risk evaluations provided in the RI Report, a large portion of this AOI was included in the NFA determination. However, a portion at the northern part of this AOI is between AOIs (Riparian AOI in OU-E and the Former Shipping Office and Truck Shop AOI) which required evaluation in the FS.

There are no groundwater plumes migrating onto the AOI and COCs in soil in the Riparian and Former Shipping Office and Truck Shop are well characterized. The Former Log Storage and Sediment Stockpile AOI is recommended for NFA.

2.8.9 Former Log Deck Consolidation Cell Area

The Log Deck AOI encompasses a significant portion of the southern half of OU-D and was used primarily for raw log and finished lumber storage. Several historical rail lines ran through the central portion of this AOI. The rail lines were presumably used to transport logs and untreated lumber, and are no longer present in this area.

COIs in soil and groundwater either had concentrations below screening levels or were not detected. Based on the evaluation of nature and extent, as well as the risk evaluations provided in the RI Report, this AOI was included in the NFA determination. However, the former Consolidation Cell was located within this AOI in an area otherwise suitable for NFA. The Consolidation Cell area was excluded from the NFA determination for this AOI.

The Consolidation Cell, originally constructed within OU-D for the storage of dioxin contaminated soil from OU-A excavations, was removed in 2011. Dioxin contaminated soil from OU-A was removed and disposed of prior to the removal of the bottom liner materials. The liner was inspected for potential breaches and native marine sediments underlying the potential breaches were investigated for releases to soil by visual means. The nature of the constituents (low solubility) and the distinctive dark color of the ash material indicated that visual observation of the dark ash material or differences in lithology would be sufficient to evaluate potential release. No visual signs of releases were observed. As a result of the cell removal and appropriate waste and soil disposal activities, agreements and land use covenants (LUCs) previously required by DTSC are no longer needed. The land formerly occupied by the cell has been restored (i.e., graded and revegetated) to approximate pre-cell conditions (ARCADIS, 2012c). DTSC approved the *Final OU-A Consolidation Cell Removal Completion Report* on April 11, 2012 (DTSC, 2012). Therefore, NFA is recommended for the entire Former Log Deck AOI.

2.8.10 Former Sheep Barn Consolidation Cell Area

The Former Sheep Barn is situated within the Log Deck AOI. This building was referred to as the Post and Pole Plant on the ULC (1962) site map. The sheep barn was used to house sheep that grazed in the area. Formerly, rail lines were present across the northern and eastern sides of this AOI.

The RI Report reported that concentrations of COCs in soil were below screening levels or were not detected. Based on the evaluation of nature and extent, as well as the risk evaluations provided in the RI Report the AOI was included in the NFA determination. However, a small portion of the Consolidation Cell may have extended onto this AOI. The Consolidation Cell area was excluded from the NFA determination for this AOI.

As mentioned above in Section 2.8.9, the Consolidation Cell was removed in 2011, approximate pre-cell conditions have been restored, and associated LUCs are no longer required; DTSC approved the *Final OU-A Consolidation Cell Removal Completion Report* on April 11, 2012 (DTSC, 2012). Therefore, No Further Action is recommended for the entire Former Sheep Barn AOI.

2.9 Summary of COCs and AOIs evaluated in the Feasibility Study

COCs are 1) compounds in soil and soil vapor identified as the primary contributors to potential unacceptable risk in the BLRA (See Section 2.7 for a summary of the BLRA), 2) compounds that were identified as PRAs in the BLRA, or 3) TPH concentrations that exceed the site-specific LGW criteria. For groundwater, COCs were defined as compounds with concentrations that exceed NCRWQCB water quality objectives (WQOs) and were evaluated in the FS Report. Based on preliminary point-by-point screening and identification of PRAs in the RI, results of the risk assessment, and an evaluation of groundwater concentrations, the following AOIs within OU-C and OU-D and their respective compounds of concern were identified in the RI Report and evaluated in the FS Report.

The following is a list of the AOIs evaluated in the FS and includes the media addressed and COCs.

1. Parcel 2 AOI:
 - Groundwater: dioxin/furans and PCP

2. Former AST AOI:
 - Soil: lead, TPH
 - Soil vapor: benzene, ethylbenzene, 1,2,4-TMB, and naphthalene
 - Groundwater: benzene, naphthalene, TPHg, TPHd, PCE, and cis-1,2-DCE
3. Former MES/Pilot Study AOI:
 - Soil vapor: benzene, ethylbenzene, 1,2,4-TMB, and naphthalene
 - Groundwater: benzene, naphthalene, TPHg, TPHd, PCE, and cis-1,2-DCE
4. Former Dip Tank AOI:
 - Soil: dioxins/furans and PCP
 - Groundwater: dioxins/furans and PCP
5. Rail Lines East AOI:
 - Soil: lead and B(a)P
6. Kilns AOI:
 - Soil: TPHd and B(a)P
7. Former MS/IRM AOI:
 - Soil: TPHd and lead
 - Soil vapor: benzene, bromomethane, 1,2,4-TMB, vinyl chloride
 - Groundwater: TPHd, benzene, and vinyl chloride
8. Former Planer #2 AOI:
 - Soil: TPHd and B(a)P
 - Soil Vapor: 1,1-DCE, 1,2,4-TMB, PCE, vinyl chloride
 - Groundwater: 1,1-DCA, 1,1-DCE, and naphthalene
9. Former Shipping Office and Truck Shop AOI:
 - Soil: TPHd



**Remedial Action Plan
Operable Units C and D**

Former Georgia-Pacific Wood
Products Facility
Fort Bragg, California

10. Sawmill//Sorter AOI:

- Groundwater: arsenic

11. Greenhouse AOI:

- Groundwater: atrazine

3. Remedial Action Objectives

RAOs are specific goals for protecting human health and the environment. RAOs are developed by evaluating applicable or relevant and appropriate requirements (ARARs) that are protective of human health and the environment and the results of the RIs, including the human and ecological risk assessments. Chemical specific numerical remedial goals are used to evaluate site conditions following remediation to confirm that site conditions are protective of human and ecological receptors.

Laws and regulations (ARARs) that may apply to the remediation were identified in the FS Report.

3.1 Applicable or Relevant and Appropriate Requirements

The Federal Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and its regulations (40 Code of Federal Regulations [CFR] 300 et seq., referred to as the National Oil and Hazardous Substances Pollution Contingency Plan [NCP]) provide an established, and generally accepted, framework for evaluating and remediating industrial sites (USEPA, 1990). Under the NCP, remedial actions must attain (or justify the waiver of) any federal or more stringent state environmental standards and facility citing laws that are “applicable or relevant and appropriate.” These regulatory requirements are known as the ARARs.

ARARs have been compiled for the soil and groundwater in the AOIs addressed in this RAP using federal, state, and local statutes, regulations, and guidance as outlined in the FS Report. ARARs establish the criteria for remedial action and can be chemical-specific, action-specific, or location-specific. Some requirements applicable to AOIs addressed in this report may not meet the definition of an ARAR, but may still be useful in determining what degree of action is necessary. These requirements are called to-be-considered (TBC) criteria. The TBC requirements are non-promulgated advisories or guidance issued by federal, state, or local government that may not be legally binding, but may provide useful information or recommend procedures for remedial action. TBC factors will be used as guidance documents but not as requirements for the remedial action. ARARs are included in Table 3-1.

ARARs for groundwater at the site are based on the Water Quality Control Plan for the North Coast Region (“Basin Plan”, North Coast RWQCB, 2011). The Basin Plan establishes Water Quality Objectives (WQOs) which are chemical specific requirements that, as stated in the Basin Plan, “form the basis for establishment of

waste discharge requirements, waste discharge prohibitions, or maximum acceptable cleanup standards for all individuals and dischargers.” These WQOs are considered to be necessary to protect present and probable future uses and to protect existing high quality waters of the State.

The Basin Plan provides that “[w]henver the existing quality of water is better than the water quality objectives established herein, such existing quality shall be maintained unless otherwise provided by the provisions of the State Resources Control Board Resolution No. 68-16, ‘Statement of Policy with Respect to Maintaining High Quality of Waters in California’, including any revisions thereto.” State Water Resources Control Board Resolution No. 68-16 (State Board Resolution 68-16) contains the state Antidegradation Policy that applies to both groundwater and surface waters whose quality meets or exceeds (is better than) WQOs. As such, MCLs established for Drinking Water represent minimum cleanup standards. State Water Resources Control Board Resolution No. 92-49 (State Board Resolution No. 92-49) requires cleanup and abatement of discharges and threatened discharges of waste to the extent feasible. As specified in State Board Resolution 92-49, cleanup and abatement activities are to provide attainment of background levels of water quality or the best water quality which is reasonable if background levels of water quality cannot be restored. Alternative cleanup levels less stringent than background concentrations shall be permitted only if the discharger demonstrates that: it is not feasible to attain background levels; the alternative cleanup levels are consistent with the maximum benefit to the people of the State; alternative cleanup levels will not unreasonable affect present and anticipated beneficial uses of such water; and they will not result in water quality less than that prescribed in the Basis Plan and Policies adopted by the State and Regional Water Boards.

3.2 Remedial Action Objectives

RAOs are guidelines used in the development of potential remedial action alternatives and selection of a proposed remedial action. The RAOs presented in the FS Report were developed based on the current environmental conditions and anticipated future use of the site. Remedial action proposed at the site is developed within the framing of the following objectives:

1. Protect potential receptors from direct exposure to groundwater or soil that contains chemicals above the proposed site cleanup goals through direct contact and/or ingestion.

2. For soil, protect human health and the environment under the reasonably foreseeable future land use scenarios.
3. Implement a remediation alternative that will promote reduction of COCs in groundwater and protect future users of groundwater.
4. Avoid direct exposure of potential receptors to VOC vapors and implement a remedy that will reduce sources to soil vapor and will provide protective measures for soil vapor exposure.

The relevant human exposure pathways are dermal contact or ingestion of groundwater and soil, and inhalation of vapors emanating from groundwater and soil.

3.3 Chemical-Specific Remedial Goals

Chemical-specific remedial goals will be used to evaluate remedial action effectiveness following implementation and identify appropriate foreseeable future land use. Consistent with DTSC guidance for risk-based cleanups, chemical-specific remedial action goals will be applied based on a conservative estimate of the average concentration (e.g., 95% UCL on the mean) of a COC across an exposure area. This concentration is referred to as the EPC.

Media-specific numeric remedial goals for are presented in Tables 3-2 (groundwater), 3-3 (soil), 3-4 (TPH in soil), and 3-5 (soil vapor) for the COCs recommended for remedial action within the scope of the RAP.

As shown in Table 3-2, the remedial goals for groundwater at the site are based on Water Quality Objectives (WQOs) set forth in the Water Quality Control Plan for the North Coast Region ("Basin Plan"; North Coast RWQCB, 2011). For some volatile organic chemicals, the remedial goals are below detection limits typically achieved by analytical laboratories. When a remedial goal is below the detection limit for a volatile organic chemical, the detection limit, listed in footnote 1 of Table 3-2, will be used to determine compliance with the remedial goal. In addition, the background level of arsenic at this site is above the WQO for arsenic. Therefore, the background concentration for arsenic for the Former Georgia-Pacific Mill Site is the Remedial Goal for this COC (ARCADIS, 2010c).

In areas where VOCs are present in groundwater at levels that may pose an indoor air inhalation risk exists, the remedial goals listed in Table 3-2 are considered to be

protective of the soil vapor/indoor air pathway. Table 3-2 lists the screening levels for evaluation of potential vapor intrusion from groundwater calculated by the San Francisco Bay Regional Water Quality Board (SFRWQCB, 2013) and shows that selected groundwater remedial goals are also protective of vapor inhalation risk.

The primary remedial goals for soil COCs within the OU-C and OU-D AOIs are protective of residential users and support the unrestricted use of an AOI. Alternative goals are included for the commercial, construction, and utility worker; and for passive and the occasional recreator. Table 3-3 lists the primary (unrestricted/residential receptor) and the alternative remedial goals. The primary remedial goals for soil COCs are discussed below.

Dioxins

A residential dioxin soil remedial goal of 50 pg/g was selected based on the DTSC Human Health Risk Assessment (HHRA) Note 2 (DTSC, 2009a). The DTSC HHRA note presents a suite of suggested dioxin-TEQ soil remedial goals that have been developed for consideration at mitigation sites in California for the protection of human health.

PCP

ARCADIS relied on the exposure parameters and toxicity values approved in the Site-Wide RAWP (ARCADIS BBL, 2008b) to calculate soil remedial goals for PCP and for B(a)P. A PCP soil remedial goal of 12 mg/kg was calculated for unrestricted residential use.

B(a)P TEQs

The residential B(a)P soil of 0.40 mg/kg (applicable to B[a]P TEQs for carcinogenic PAHs) remedial goal was selected based on the UCL of urban background levels of PAHs converted to B(a)P TEQ concentrations in northern California (DTSC, 2009b).

Lead

Lead remedial goals were previously derived and presented in the Section 9.6 of the approved RI Report. ARCADIS reviewed the lead screening levels derived in Section 9.2 of the RI Report and selected the child resident value of 102 mg/kg for unrestricted

residential use, which represents the soil lead screening value of 80 mg/kg, plus the background lead soil value.

TPHd

Two remedial goals for TPHd in soil have been selected; one for the protection of groundwater and a second for the protection of human health (Table 3-4). The TPHd soil remedial goal, for the protection of groundwater, 2,730 mg/kg, is based on the data and statistical analyses discussed in the *Site-Specific TPH Leaching Evaluation* dated April 2010 (ARCADIS, 2010c) and follow up review of the discrete sample dataset presented in Appendix C. Based on the 95% UCL for the discrete sample data set used during the leaching evaluation there is less than 5% probability that soil leachate concentrations exceed the 0.1 mg/L taste and odor threshold WQO when soil concentrations are less than 2,730 mg/kg.

To further support selection of 2,730 mg/kg as the remedial goal, the soil results for the discrete sample data set were rank ordered and samples were classified based on sample depth and hydrocarbon type as interpreted from laboratory chromatographs. Appendix C presents the rank order data with depth and hydrocarbon classifications. The nine highest soil sample results were from samples collected at depths consistent with smear zone soil and chromatographs typically exhibited characteristics of diesel or motor oil. The eight lowest soil sample results were collected at or near the surface and chromatographs typically exhibited characteristics of lube or hydraulic oils. This indicates two distinctive datasets are present. Within the group of top nine soil sample results, from which leaching would be most likely, the soil concentration at which a leachate concentration was first observed above the WQO of 0.1 mg/L was 3,330 mg/kg. The next lowest soil sample value of 2,730 mg/kg is also the 95% UCL.

Based on these two lines of evidence, a concentration of 2,730 mg/kg total TPHd in soil is justified as a remedial goal that would result in leachate concentrations less than 0.1 mg/L and is conservatively recommended for use in the AST, MES Pilot Study, Kilns, and Planer #2 AOIs for evaluating the leaching to groundwater pathway. Soil confirmation sampling data and results of additional DI-WET leachate testing performed on confirmation samples will be compared to WQOs to evaluate the successful completion of TPHd remediation.

Soil TPHd remedial goals for the protection of human health are presented in Table 3-4 for aliphatic and aromatic gasoline and diesel. The investigation of sites with TPHs in OU-C and OU-D included BTEX and PAHs, so the TPH remedial goals are derived

from hazards posed by the presumed remaining aliphatic and aromatic TPHs. These remedial goals are used to determine if human health hazards exist from direct contact and indoor air exposure.

The soil TPHd (aliphatic) direct contact remedial goal (14,066 mg/kg) and indoor air remedial goal (10,772 mg/kg) are based on unrestricted use of property (Table 3-4). TPHd concentrations of TPHd below 10,772 mg/kg meet the unrestricted land use criteria. Soil excavations meeting the 2,730 mg/kg remedial goal, for TPHd, are also protective of potential residential receptors and support unrestricted land use.

VOCs

Remedial goals for VOCs in soil vapor are presented in Table 3-5. Both residential and commercial remedial goals are presented to illustrate soil vapor levels that are protective of either residential or commercial uses. The target indoor air concentrations were obtained from the most recent Regional Screening Levels published by the U.S. Environmental Protection Agency (USEPA, 2014) modified for specific chemicals as described in (HHRA Note 3 (DTSC, 2014)). The target cancer risk for each chemical is one-in-a-million (10^{-6}), and the target Hazard Index is one. The soil vapor remedial goals were calculated using the target indoor air concentrations for residential and commercial use and dividing these by the residential or commercial site-specific attenuation factor taken from the RI Report.

4. Remedial Alternatives and Proposed/Selected Remedial Actions

This section presents a summary of the evaluation criteria utilized to compare alternatives in the FS Report, the conclusions of the MNA Report, a summary of the alternatives evaluated for each AOI, and a description of the recommended alternatives. Proposed and selected Remedial Actions detailed within the scope of this RAP to address chemically affected media at the site are based on Remedial Alternatives presented in the FS Report and the associated MNA Report.

4.1 Feasibility Study Summary

4.1.1 General Response Actions

The OU-C and OU-D FS included an evaluation and screening of General Response Actions (GRAs). GRAs are general categories of actions that, when implemented, will meet the RAOs for a site. These GRAs were refined throughout the FS process to develop appropriate cleanup alternatives. Combinations of GRAs may be used to meet the RAOs. GRAs for groundwater, soil, and soil vapor considered for OU-C and OU-D in the FS are summarized below:

1. No action: no additional action is taken to remediate the site
2. Institutional controls: enforceable land use restrictions, contained in a LUC, that limit they type of acceptable land uses and activities such as groundwater use and soil movement at a remediated site
3. Natural attenuation: reliance on natural attenuation processes (including biodegradation, dispersion, sorption, and chemical transformation) to reduce the concentration of target compounds; no human intervention is involved
4. Physical containment: process options that employ barriers to restrict human or environmental (e.g., wind and rain) access to chemicals or to restrict their movements without changing their inherent nature
5. In-situ treatment and/or removal of contaminants: process options that destroy contaminants in the ground or transfer the contaminants to another medium (i.e., water or air) in the ground with subsequent possible extraction and aboveground treatment

6. Removal, ex-situ treatment, replacement, and/or offsite disposal: process options that remove affected media and treat the contaminants in aboveground reactors or dispose of media offsite

4.1.2 Process Options

Process Options are remedial approaches and technologies that have a potential to address contamination at an AOI and meet the RAOs. Specific process options that fit into each of the GRA categories listed above were initially screened in the FS for effectiveness, implementability, and cost-effectiveness. Retained Process Options were then screened, using the same criteria, for each AOI. Process Options that were retained after the AOI specific evaluation were then evaluated further using the nine evaluation criteria described in Section 4.3.

4.1.2.1 Retained Soil and Soil Vapor Process Options

The following Process Options for soil were retained after the evaluating effectiveness, implementability, and cost-effectiveness for each AOI.

No Action

Current guidance by the NCP and USEPA for conducting RI/FS investigations requires that the “No Action” option be developed and examined as a potential remedial action for all sites. The “No Action” option is used as a baseline for comparison to other process options.

Restricted Use/Institutional Controls

Institutional controls (ICs) affect site management and/or future activities occurring at the site. The primary objective of an IC is to limit potential for exposure to COIs, remaining at a site, by restricting use and/or access to impacted areas. A LUC is the legal document establishing use restrictions. As a remedial action, Use Restrictions established through a LUC are necessary at sites where remedial action includes covers and or barriers, consolidation cells, and Operation and Maintenance (O&M).

Deed Notifications and Restrictions

Deed notifications are descriptions of the property contained in the property deed to convey information about the land to future buyers. The deed notification would, in

perpetuity, notify any potential purchaser that historic activities at the site included the use and storage of hazardous materials. Deed restrictions are provisions built into a property deed prohibiting, limiting, or controlling certain uses of or activities at the property.

Capping – Barriers and Covers

A barrier or cover is a containment process option that prevents exposure of potential receptors to affected media. A cover can be constructed of pavement materials such as concrete or asphalt, clean soil protected from erosion by vegetative growth or other erosion control measures, or an engineered cap or structure that may include low permeability materials or liners. The cover layer may consist of clean material that is already in place above affected media and is restricted from being removed. The cover layer may limit potential direct contact with affected soils, migration of vapors, or infiltration of water. O&M is required for sites with a cap, cover and/or barrier remedial action.

Consolidation Cell

A consolidation cell is a containment process option that prevents exposure of potential receptors to affected media that has been excavated from multiple locations and placed in a central location. A consolidation cell consists of an excavated pit containing a liner and a cover to limit infiltration and exposure to receptors. A cover can be constructed of pavement materials such as concrete or asphalt, liners, low permeability materials, or a combination plastic liners and clays. O&M is required for consolidation cells.

In-Situ and Ex-Situ Chemical Treatment – Solidification/Stabilization

In-Situ Stabilization/Solidification (ISSS) technologies can be used to immobilize organic and inorganic compounds in saturated and vadose zone soil, using reagents to produce an inert, geotechnically strong, and relatively less permeable material.

Ex-Situ Soil Remediation

Ex-situ soil remediation can be combined with soil excavation to provide an alternative to offsite disposal for VOCs and other COIs at the site, which are amenable to biological degradation. For this FS, land farming and biopiling are the ex-situ soil remediation alternatives.

Soil Vapor Extraction

Soil vapor extraction, also known as soil venting or vacuum extraction, is a process option commonly used to remove VOCs and SVOCs in vapor from vadose zone soils. A typical soil vapor extraction system consists of vapor extraction wells, a vacuum blower or pump, air/water separator, and, if necessary, a vapor treatment system.

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 offsite and is required to meet federal and state transportation and disposal regulations.

4.1.2.2 Retained Groundwater Process Options

No Action

Current guidance by the NCP and USEPA for conducting RI/FS investigations requires that the “No Action” option be developed and examined as a potential remedial action for all sites. The “No Action” option was retained and examined as a baseline to which other remediation technologies were compared.

Groundwater Use Restriction

Groundwater use restrictions are established through a LUC and may limit the locations and types of allowable groundwater use at the site. Groundwater use restrictions do not physically alter conditions at the site and do not, or are not intended to, reduce the mobility, toxicity, or volume of COCs at the site as part of the remedial process option. The primary objective of groundwater restrictions is to eliminate potential for exposure to COCs by restricting access to affected groundwater. As a remedial action, groundwater use restrictions are used in concert with other groundwater remedial actions described below and the restrictions may be removed after groundwater remedial goals are met.

Monitored Natural Attenuation

MNA entails monitoring to confirm that COC concentrations are attenuating over time via natural subsurface processes such as dilution, dispersion, volatilization, biodegradation, adsorption, and abiotic chemical reactions. Intrinsic biodegradation is generally the dominant attenuation mechanism. O&M is required for sites with MNA groundwater remedial actions.

Natural Attenuation Analysis

Natural attenuation relies on natural subsurface processes to remediate COCs overtime. The predominant mechanism contributing to the attenuation is biodegradation (both aerobic and anaerobic depending on ambient biogeochemical conditions). Consideration of this alternative requires a biogeochemical assessment and evaluation of COC degradation rates and pathways; however, additional data collection may not be needed to demonstrate natural attenuation as an appropriate remedy for a given site.

Groundwater Extraction and Treatment

Groundwater extraction and treatment is primarily used as a containment strategy, although some benefit of mass removal can be realized for dissolved contaminants. Groundwater extraction wells can be used to control the migration of COCs in groundwater by altering the hydraulic gradient of the aquifer; they can also be used to withdraw groundwater for ex-situ treatment or offsite disposal. Extraction wells are screened at an appropriate depth to capture groundwater. Groundwater is then treated prior to discharge.

Air Sparge

Air sparging is an in-situ groundwater treatment process option in which air is injected into the subsurface. Injected air moves horizontally and vertically in channels through the soil column, removing COIs by volatilization and stripping. Injected air flushes volatile COIs into the unsaturated zone, where a vapor extraction system is usually implemented to remove vapors.

Enhanced Aerobic Bioremediation

Aerobic bioremediation degrades COCs in the subsurface by enhancing the natural microbial biodegradation processes by delivering oxygen to the subsurface through sparging or diffusing gases such as air or pure oxygen or by injection of reagents containing dissolved oxygen or oxygen releasing compounds. This process option increases the ambient amount of oxygen available in the saturated zone to better facilitate bacterial respiration, and in turn, expedites naturally occurring biodegradation processes.

Anaerobic Bio-Oxidation

Anaerobic bio-oxidation is a collection of processes where a microorganism uses a chemical other than oxygen for respiration in order to metabolize a carbon source. Anaerobic bio-oxidation can use non-metals, metals, and even other carbon sources to serve as terminal electron acceptors.

In-situ Chemical Oxidation

In-situ chemical oxidation involves the addition of oxidant(s) into the subsurface to facilitate the conversion of organic compounds to carbon dioxide and water or to more biodegradable intermediates.

4.2 Monitored Natural Attenuation Evaluation

Although MNA was evaluated in the FS and identified as the preferred alternative for groundwater remediation, the FS did not provide a technical evaluation of the mechanisms, historical trends, and expected time frames for the natural attenuation at each AOI. Therefore, a MNA Report was prepared as an addendum to the FS to identify natural attenuation processes occurring in AOIs where groundwater remediation was recommended in the RI Report. The MNA Report provides assessments of the various natural attenuation processes in each AOI and supports the recommendations presented in the FS Report. The MNA Report compared proven attenuation mechanisms with site-specific data, evaluated geochemical indicators, and conducted a regression of analytical data to demonstrate trends in the selected AOIs. A summary of the methods employed to assess natural attenuation is provided below.

4.2.1 Natural Attenuation Mechanisms

Possible natural attenuation mechanisms relevant to each of the COCs at the site were evaluated in the MNA Report and site-specific analytical and geochemical data were assessed to identify the most likely natural attenuation mechanism(s). The COCs and their respective potential natural attenuation mechanisms are identified in the MNA Report and summarized below.

- Chlorinated hydrocarbons: Anaerobic and aerobic biodegradation, abiotic degradation
- Chlorinated phenols: Anaerobic and aerobic biodegradation
- Petroleum hydrocarbons: Anaerobic and aerobic biodegradation
- Dioxin-like compounds: Anaerobic and aerobic biodegradation, precipitation, sorption, dispersion
- Atrazine: Anaerobic and aerobic biodegradation (limited), dispersion

4.2.2 Natural Attenuation Investigation Results

Results of the natural attenuation investigation are presented in the MNA Report and are discussed for each relevant AOI in Section 4.4.

4.3 Evaluation Criteria

The retained Process Options, listed above, were evaluated in comparison to the nine criteria presented below in accordance with USEPA FS and DTSC RAP guidance for each AOI. The nine criteria described were used to evaluate remedial alternatives (USEPA, 1988; DTSC, 1995). For an alternative to be selected, it must meet the first two threshold criteria, which are 1) overall protection of human health and the environment, and 2) compliance with ARARs. Criteria 3 through 7 are the five primary balancing criteria that provide comparisons between the alternatives and identify tradeoffs between them; Criteria 8 and 9 are the two modifying criteria that consider acceptance by the state and local community. The results of the criteria evaluation for each AOI are included in Section 4.4 and summarized in Table 4-1.

4.3.1 Overall Protection of Human Health and the Environment

This criterion addresses whether a remedy provides adequate protection of human health and the environment and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls (ICs).

4.3.2 Compliance with ARARs

Compliance with ARARs is evaluated based on whether a remedy will meet all appropriate federal, state, and local environmental laws and regulations. Site-specific ARARs are summarized in Table 3-1.

4.3.3 Long-Term Effectiveness and Permanence

Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have initially been met.

4.3.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Reduction of toxicity, mobility, and volume through treatment refers to the ability of a remedy to reduce the toxicity, mobility, and volume of the hazardous substances or constituents present at the site.

4.3.5 Cost – 30-Year Present Worth

Cost criterion is used to evaluate the estimated 30-year present worth capital and operation and maintenance costs of each alternative.

The level of accuracy of the costs estimated is “Order of Magnitude,” as defined by the American Association of Cost Engineers. The accuracy of an Order of Magnitude estimate is plus 50% and minus 30%. Construction cost estimates at this level may be used to compare alternatives, but should not be used to plan, finance, or develop projects.

4.3.6 Short-Term Effectiveness

Short-term effectiveness addresses the period of time needed to complete the remedy, and additional risk to human health and the environment that may be posed during the construction and implementation period, until the cleanup standards are achieved.

4.3.7 Implementability

Implementability refers to the technical and administrative feasibility of a remedy, including the availability of materials and services needed to carry out a particular option.

4.3.8 State Support/Agency Acceptance

This criterion indicates whether, based on current knowledge of regulations and agency mandates, the applicable regulatory agencies would agree with the preferred alternative. The rankings listed in the sections below are based on preliminary input from agency meetings and knowledge of regulatory mandates. Actual assessment of regulatory agency acceptance is dependent on comments received during the agency review and public comment periods.

4.3.9 Community Acceptance

This criterion indicates whether community concerns are addressed by the remedy, and whether the community has a preference for a remedy. Each alternative is evaluated in terms of currently available public input and the anticipated public reaction to the alternative. However, actual assessment of community acceptance is dependent on comments received during the public comment period of the draft RAP.

4.3.10 Other Criteria

California HSC Section 25356.1(d) also outlines the following six additional criteria that must be addressed for the recommended remedial alternative.

1. Health and Safety risk posed by conditions at site.
2. The effect of contamination upon present, future, and probable beneficial uses of contaminated, polluted, or threatened resources.

3. The effect of alternative remedial action measures on the reasonable availability of groundwater resources for present, future, and probable beneficial uses.
4. Site-specific characteristics, including the potential for offsite migration of hazardous substances, the surface or subsurface soil, and the hydrogeologic conditions, as well as preexisting background contamination levels.
5. Cost-effectiveness of alternative remedial action measures, including short-term and long-term costs.
6. The potential environmental impacts of alternative remedial action measures, including, but not limited to, land disposal of the untreated hazardous substances as opposed to treatment of the hazardous substances to remove or reduce its volume, toxicity, or mobility prior to disposal.

An evaluation of these criteria is discussed in the Statement of Reasons in Appendix F.

4.4 Selected Remedial Actions – General Descriptions

The following sections describe the selected Remedial Actions for OU-C and OU-D. The descriptions of the Remedial Action are general and not specific to any AOI. The Remedial Actions are based on the evaluation of Process Options and Remedial Alternatives presented in the FS. The proposed Remedial Actions for each AOI will incorporate one or more of the Remedial Actions described in this Section. In Section 4.5 the evaluation of Remedial Alternatives in the FS is summarized and proposed Remedial Actions for each AOI are identified.

4.4.1 Soil and Soil Vapor

4.4.1.1 No Further Action

A NFA determination results in no remedial action and the AOI is then available for unrestricted use. This OU-C and OU-D RAP recommends NFA for one AOI, the MS/IRM AOI. Lead, TPHd and B(a)P were found to be below the remedial goals of this RAP at the MS/IRM AOI. NFA is also proposed for 10 AOIs based on conclusions in the RI Report. The NFA justification for these 10 AOIs is presented in Section 2.8.

4.4.1.2 Soil Excavation and Disposal

Soil excavation and disposal is proposed to address COCs in soil at the Former AST and MES/Pilot Study (TPHd), Former Dip Tank (dioxin and PCP), Rail Lines East (lead), Kilns (TPHd and B[a]P), and Planer #2 AOIs (TPHd and B[a]P) (Figures 2-15, 4-2, 4-3a, 4-4, and 4-6). Soil will be removed using standard excavation practices and equipment. Excavated soil will be transported offsite and disposed of at an appropriately permitted landfill.

For all of these AOIs, the post excavation EPC of COCs are expected to meet the unrestricted remedial goals. If unrestricted remedial goals are not met, then other remedial actions, including covers, O&M and LUC may be required. In the RI Report, three areas within OU-C and one area within OU-D were identified as PRAs (Former Dip Tank, Rail Lines East, Kilns, and Planer #2 AOIs). A PRA is defined as an area that likely poses an unacceptable risk or exhibits other criteria that would require remedial action. Excavation and offsite disposal is the proposed Remedial Action for the PRA. The RAP uses the terminology 'excavation area' instead of PRA to describe the areas in the AOIs where excavation is proposed.

Estimated earthwork quantities for these four excavations are presented in Table 4-2 and include 170 cubic yards (cy) to be excavated from Former Dip Tank AOI, 40 cy from Rail Lines East AOI, 7.5 cy from Kilns AOI, and 140 cy from Planer #2 AOI. Earthwork quantities presented in Table 4-2 are based on quantities established in the RI Report. Confirmation sampling will be conducted following the excavation to determine if remedial goals (Table 3-5) have been met. Actual soil quantities excavated from these four sites may differ from the quantities listed in Table 4-2.

In addition to the four excavations at the Former Dip Tank, Rail Lines East, Kilns, and Planer #2 AOIs, approximately 750 to 1500 cy of soil from areas shown in Figure 2-15 will be excavated and disposed from the Former AST and MES/Pilot Study AOIs.

4.4.1.3 Covers

A proposed Remedial Action for soil containing COCs above unrestricted soil remedial goals and remaining onsite is soil containment through the use of a cover to restrict the movement of COCs to the surface. Existing soil covers that effectively eliminate the movement of COCs, including asphalt paving or the presence of at least two feet of clean soil, can provide an acceptable cover. Where acceptable covers do not exist, an appropriately designed cover shall be installed. An O&M Plan will specify procedures

that will ensure the long-term effectiveness of the covers. AOIs with the cover remedial action also include a LUC and O&M.

4.4.1.4 Soil Vapor Mitigation

Soil vapor mitigation is the proposed Remedial Action for AOIs with contaminants in soil vapor, including the Former AST AOI, the Former MES/Pilot Study AOI, and the Planer #2 AOI. Previous investigations at these AOIs have identified the presence of COCs in soil vapor (including benzene, ethyl benzene, -1,2,4-TMB, naphthalene, vinyl chloride, 1,1-DCA, 1,1-DCE) at concentrations that present an unacceptable risk to public health. The existing conditions (open space) at the former Mill Site do not present an immediate need for the implementation of soil vapor mitigation; however a change in use in these areas may require soil vapor mitigation. At the Former AST and Former MES/Pilot Study AOIs, removal of contaminants in soil, which are the source of soil vapor contamination, is also included in the Remedial Alternative for soil vapor. A design for a soil vapor mitigation system will be submitted to DTSC, for review and approval, if and when future use will create unacceptable risk to potential receptors. The O&M Plan will specify procedures that will monitor the long-term effectiveness of the barriers if soil vapor mitigation is required. AOIs with the soil vapor mitigation remedial action also include a LUC and O&M as part of the remedial actions.

4.4.1.5 Operation and Maintenance

An O&M Plan is included in the Remedial Action for all AOIs with residual soil contamination and/or contaminants in soil vapor above unrestricted remedial goals set forth in this RAP. O&M plans will confirm the long-term effectiveness of the Remedial Action and address soil management (e.g. Soil Management Plan [SMP]), annual reports and Five-Year Reviews, inspections and maintenance of covers and soil vapor mitigation systems.

4.4.1.6 Land Use Covenants

AOIs with residual contaminants, above levels considered safe for unrestricted use, will also have use restriction placed upon them through a LUC. The LUC will restrict residential and other sensitive land uses unless special conditions, identified in the LUC, are met.

A LUC is a component of the proposed Remedial Action to address lead in soil in the Former AST AOI. A LUC is also proposed to address soil vapor at the Former AST and Former MES/Pilot Study AOI, and the Planer #2 AOI.

4.4.2 Groundwater

4.4.2.1 Source Area Removal and Treatment

The removal of contaminated soil, which is a source for groundwater contamination, is proposed for the Former Dip Tank, Former AST, and Former MES/Pilot Study AOIs. At the Former AST and Former MES/Pilot Study AOIs, gypsum will be added to the clean backfill material to aid in the attenuation of petroleum hydrocarbons in groundwater.

4.4.2.2 Natural Attenuation with Monitoring

Natural attenuation with monitoring is the proposed Remedial Action for AOIs with contaminants in groundwater exceeding the remedial goals listed in Table 3-2, including the Parcel 2, Former Dip Tank, Former AST, Former MES/Pilot Study, Planer #2, Sawmill/Sorter, and Greenhouse AOIs. Natural attenuation with monitoring will be used to remediate groundwater contaminants including petroleum hydrocarbons, PCP, dioxins, atrazine, arsenic, and VOCs. Monitoring of groundwater, specified in a DTSC approved O&M Plan, will verify whether contaminants in groundwater are declining and if groundwater remedial goals are achieved.

4.4.2.3 Groundwater Use Restrictions through a Land Use Covenant

Groundwater containing COCs exceeding remedial goals listed in Table 3-2 shall be restricted from use through a LUC.

4.4.2.4 Groundwater Operation and Maintenance Plan

A groundwater O&M plan will be developed for AOIs with natural attenuation with monitoring as a selected Remedial Action, detailing monitoring requirements and trend and regression analysis to confirm that natural attenuation processes are occurring, and determine if groundwater remedial goals, listed in Table 3-2, have been met. Monitoring data will be evaluated for trends, spatial delineation and changes, and biogeochemical factors to verify the natural processes of degradation. The O&M Plan will define the groundwater monitoring program, identifying wells to be sampled, monitoring frequency and reporting schedules.

4.5 Evaluation of Remedial Alternatives and Proposed Remedial Actions for Each AOI

The evaluation presented in the FS Report combined several process options to form remedial alternatives that meet RAOs, control exposure pathways, and address media identified as requiring remediation. Alternatives and evaluation of the each alternative against the nine criteria were presented in the FS Report. The recommended remedies are summarized in the following subsections.

4.5.1 Parcel 2 AOI (OU-C)

Remedial alternatives were evaluated in the FS Report to address PCP and dioxins/furans in groundwater.

4.5.1.1 Summary of Alternatives Evaluation

Dioxins/furans and PCP have been detected in groundwater at MW-2.3 at concentrations below their respective Maximum Contaminant Levels (MCLs) but above their respective WQOs. Remedial alternatives evaluated in the FS for groundwater at Parcel 2 AOI include:

- No Action - A baseline to which other remedial technologies are compared.
- Natural Attenuation Analysis - Demonstrated natural degradation of contaminants without long term monitoring. This alternative includes restrictions on the use of groundwater through a LUC.
- Natural Attenuation with Monitoring and Use Restrictions - Demonstrated natural degradation of contaminants with long term monitoring. O&M and restrictions on the use of groundwater are included in this alternative.
- Groundwater Extraction and Treatment - Removal of groundwater through extraction wells and treatment of groundwater to reduce contaminants.

Based on analysis presented in the FS, Natural Attenuation with Monitoring ranked highest amongst the identified alternatives. Of the evaluation criteria, protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, state support/agency acceptance, and reduction of toxicity, mobility, or volume through treatment receive high rankings because monitoring and analysis

associated with the remedy would show that natural attenuation mechanisms including active physical, biological, and geochemical reactions are successfully reducing COC concentrations and WQOs would be achieved in a reasonable time frame. Short-term effectiveness was ranked high because minimal exposure to affected media would be required. Implementability also received a high ranking. Community acceptance was ranked moderate because COCs are currently below drinking water standards, but may be present above WQOs in a potentially residential area beyond the timeframe for redevelopment. Full discussion of the remedial alternative selection process is provided in the FS Report.

Table 4-1 summarizes the comparison of the alternatives for each AOI to the evaluation criteria.

4.5.1.2 Summary of MNA Report Evaluation

Following the FS Report, the MNA Report was prepared to provide an assessment of the various natural attenuation processes in each AOI and support the recommendations presented in the FS Report. Trend analysis of concentrations of COCs in groundwater was conducted within the scope of the MNA Report. Evaluation presented in the MNA Report indicates that concentrations of dioxins/furans and PCPs within Parcel 2 are below detection limits, or, where trend analysis could be completed, exhibit stable to decreasing trends. Geochemical conditions within Parcel 2 indicate aerobic to mildly reducing conditions that are conducive to biodegradation of PCP and lesser-chlorinated dioxin-like compounds. The combination of stable to decreasing COC concentrations trends and geochemical conditions conducive to biodegradation indicate that natural attenuation, coupled with monitoring and a LUC, is an appropriate response for COCs in groundwater in the Parcel 2 AOI.

4.5.1.3 Proposed Groundwater Remedial Action for Parcel 2 AOI

Based on historical groundwater monitoring data, comparison of alternatives with evaluation criteria, and analysis presented in the MNA Report, natural attenuation with monitoring and use restrictions is recommended to address PCP and dioxins/furans in groundwater in the Parcel 2 AOI. A LUC will restrict the use of groundwater exceeding remedial goals. Groundwater monitoring and natural attenuation verification will be described in a groundwater O&M Plan.

4.5.2 Former AST AOI and Former MES/Pilot Study AOI (OU-C)

Remedial alternatives were evaluated in the FS Report to address lead in surface soils and TPH in smear-zone soils (soil just above the groundwater table) and groundwater. Remedial alternatives within the Former AST and Former MES/Pilot Study AOIs were combined within the FS evaluation process due to physical proximity and similarities in the nature and extent of COCs in soil and groundwater at the two AOIs. Separate remedial alternatives were selected for three affected areas within the AOIs.

4.5.2.1 Lead-Affected Surface Soils

4.5.2.1.1 Summary of Alternatives Evaluation

Lead in soil is found at both the Former MES/Pilot Study AOI and the Former AST AOI. At the Former MES/Pilot Study AOI, TPH contaminated soil was excavated in the vicinity of the Former MES South in spring 2007 (Figure 4-1). Lead exceeds the 102 mg/kg remedial goal at five locations in the Former AST AOI and ranges from 110 mg/kg to 260 mg/kg in the top 2 feet of soil. Lead in the Former AST AOI is found where the former AST was once located and is in an area that is within an active rail yard used by the California Western Railroad. Remedial alternatives evaluated in the FS for surface soil at the Former AST AOI/Former MES/Pilot Study AOI include:

- No Action – A baseline to which other remedial technologies are compared.
- LUCs, ICs and O&M, including a Soil Management Plan (SMP) – A LUC is a legal mechanism restricting the future use of a property from residential and other sensitive uses. ICs are non-engineered instruments, such as administrative and legal controls, that help eliminate human exposure to contamination. A SMP is an aspect of O&M and specifies soil management procedures.
- Capping – Barrier and Covers – Physical barriers that contain and restrict the movement on contaminants.
- ISSS – Use of reagents to produce an inert and less permeable material to eliminate movement of contaminants.
- Excavation and Disposal – Removal of contaminated soil and transport of soil to offsite disposal facility.

Based on analysis presented in the FS, LUCs and ICs and O&M including a SMP ranked highest amongst the identified alternatives. Of the evaluation criteria, protection of human health and the environment, long-term effectiveness and permanence, short-term effectiveness, implementability, compliance with ARARs, and state support/agency acceptance receive high rankings because exposure pathways to affected media would be interrupted and uncontrolled contact with soil would not be permitted. Reduction of toxicity, mobility, or volume through treatment received a low ranking because COCs would remain in place. In soil, natural attenuation mechanisms including active physical, biological, and geochemical reactions would reduce concentrations of degradable COCs such as hydrocarbons, but would have little to no effect on compounds such as lead. Community acceptance was ranked moderate. Implementability received a high ranking.

The FS stated that this alternative may be used in conjunction with a future active remedial alternative and that the SMP, a component of the O&M Plan, would control and limit movement of soil and exposure of soil to users of the site. An active remedial alternative could include excavation or an installed cover or barrier.

Table 4-1 summarizes the comparison of the alternatives for each AOI to the evaluation criteria.

4.5.2.1.2 Proposed Soil Remedial Action to address lead at the Former AST and Former MES/Pilot Study AOIs

A LUC and O&M is the proposed remedial action to address surface soil containing lead above unrestricted remedial goal of 102 mg/kg in the Former AST and Former MES/Pilot Study AOIs. The LUC will restrict sensitive use such as residential, schools, hospitals, and day cares and require the use of an O&M Plan and SMP during soil disturbing activities. This soil remedial action is appropriate because the lead contaminated area is within an industrial/commercial area and active rail yard. Access to the contaminated area at the Former AST AOI rail yard is currently restricted and must remain restricted. O&M shall limit erosion and transport of contaminated soil away from the AOIs. Additional remedial actions, including the placement of a cover or barrier, may be required by DTSC if the land use of the AOIs change from a rail yard and industrial uses, and potential future receptors require further protection. Access to the contaminated area must remain restricted through appropriate controls.

4.5.2.2 Petroleum Hydrocarbon- Affected Smear Zone Soils

4.5.2.2.1 Summary of Alternative Evaluation

The periodically saturated smear zone identified in the RI Report is located between approximately 7 and 13 feet bgs. Concentrations of petroleum hydrocarbons at 28 locations between 7 and 13 feet bgs were above screening levels for TPH. Remedial alternatives evaluated in the FS for smear zone soil at the Former AST AOI/Former MES/Pilot Study AOI include:

- No Action – A baseline to which other remedial technologies are compared.
- Ex-Situ Soil Remediation – Bioremediation of soil in Biopiles.
- Ex-Situ Soil Remediation – Bioremediation of soil through Land Farming.
- ISSS – Use of reagents to produce an inert and less permeable material to eliminate movement of contaminants.
- Excavation and Disposal – Removal of contaminated soil and transport of soil to offsite disposal facility.

Based on analysis presented in the FS, hotspot Excavation and Disposal along with LUC, O&M and a SMP ranked highest amongst the identified alternatives. Of the evaluation criteria, protection of human health and the environment, compliance with ARARs, reduction of toxicity, mobility, or volume through treatment, long-term effectiveness and permanence, and state support/agency acceptance receive high rankings because affected media would be removed from the site. Short-term effectiveness received a moderate ranking because of construction activities associated with the excavation. Community acceptance was ranked moderate. The removal of affected soil from the site is offset by community concerns related to the implementation of this alternative, such as truck traffic and fugitive dust. Implementability received a moderate ranking compared to the implementability of other alternatives for this media. Full discussion of the remedial alternative selection process is provided in the FS Report. Table 4-1 summarizes the comparison of the alternatives for each AOI to the evaluation criteria.

4.5.2.2.2 Proposed Soil Remedial Action to address Petroleum Hydrocarbons at the Former AST and Former MES/Pilot Study AOIs

Since the FS Report was submitted in January 2012, additional site investigation activities described above were completed in the Former AST and MES/Pilot Study AOIs. Based on new data, soil removal is the proposed remedial actions for petroleum hydrocarbon affected smear zone soils in the Former AST and MES/Pilot Study AOIs.

Remedial action within these AOIs will include source removal in areas where TPH is present above the smear zone and LUCs. Confirmation sampling will be conducted as to evaluate if further source removal is necessary to meet remedial goals. The possible extent of excavation shown on Figure 2-15 may expand past the limits shown in the figure. The estimated soil excavation volume range is between approximately 750 and 1,500 cy.

Contingency Remedy: If the unrestricted remedial goals are not met due to physical or engineering constraints, then a contingency remedial action would be implemented that includes a Land Use Covenant restricting sensitive uses and an Operations and Maintenance Plan that addresses soil management and operation and maintenance of a cover, if required. A cover (i.e., asphalt, concrete, or clean fill material) will be required, if contaminants in soil remain above commercial remedial goals, or if contaminant transport could result in an unacceptable risk to public health or to other environmental receptors.

4.5.2.3 Soil Vapor

4.5.2.3.1 Summary of Alternatives Evaluation

Soil vapor sampling performed in 2008 and reported in the RI Report indicates a potential vapor intrusion risk based on VOC concentrations in soil vapor above screening levels in the Former AST AOI and the eastern portion of the MES/Pilot Study AOI. The Recommended Alternative in the FS included soil vapor monitoring in order to confirm the elimination of the soil vapor exposure pathway. Remedial alternatives for soil vapor were evaluated concurrently in the alternative evaluation for soil in FS Report.

4.5.2.3.2 Proposed Soil Vapor Remedial Action at the Former AST and Former MES/Pilot Study AOIs

The proposed remedial action to address soil vapor risks are source removal, soil vapor mitigation, LUC, and O&M. Soil removal may address potential sources of soil vapor and is a component of the proposed soil vapor remedial action. Post soil removal soil vapor sampling will confirm whether a LUC, O&M and additional soil vapor mitigation is necessary at the Form AST and MES/Pilot Study AOIs. The existing conditions (open space) at the former Mill Site do not present an immediate need for the implementation of soil vapor mitigation; however, future construction and use in these areas may require soil vapor mitigation. The design of the soil vapor mitigation measures shall be submitted to and approved by DTSC prior to any future use of the AOIs. The O&M Plan will specify procedures that will ensure the long-term effectiveness of the covers.

4.5.2.4 Petroleum Hydrocarbon-Affected Groundwater

4.5.2.4.1 Summary of Alternative Evaluation

Samples collected from monitoring wells in this AOI have contained concentrations of TPHg, TPHd, benzene, naphthalene, 1,2-DCE and PCE at concentrations exceeding screening levels. Liquid-phase hydrocarbon (LPH) has also been occasionally detected in nearby monitoring well MW-3.2; generally detections of LPH have corresponded with times of relatively low water levels, suggesting the presence of pockets of residual LPH in the smear zone. Remedial alternatives to be implemented following the hot spot soil removal evaluated in the FS for groundwater at the Former AST AOI/Former MES/Pilot Study AOI include:

- No Action – A baseline to which other remedial technologies are compared.
- Natural Attenuation Analysis – Demonstrated natural degradation of contaminants without long term monitoring.
- Natural Attenuation with Monitoring and Use Restriction – Demonstrated natural degradation of contaminants with long term monitoring. O&M and restrictions on the use of groundwater are included in this alternative.
- Groundwater Extraction and Treatment – Removal of groundwater through extraction wells and treatment of groundwater to reduce contaminants.

- In-Situ Anaerobic Bio-Oxidation – Bioremediation of contaminants in groundwater.
- Direct Push In-Situ Chemical Oxidation with MNA – Use of oxidants to reduce contaminant levels followed by natural attenuation.
- Repeated In-Situ Chemical Oxidation Injections – Successive additions of oxidants into groundwater until remedial goals are met.

Based on analysis presented in the FS, Natural Attenuation with Monitoring ranked highest amongst the identified alternatives. Of the evaluation criteria, protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, state support/agency acceptance, and reduction of toxicity, mobility, or volume through treatment receive high rankings because monitoring and analysis associated with the remedy would show that natural attenuation mechanisms including active physical, biological, and geochemical reactions are successfully reducing COC concentrations and WQOs would be achieved in a reasonable time frame. Short-term effectiveness was ranked high because minimal exposure to affected media would be required. Implementability also received a high ranking. Community acceptance was ranked moderate because COCs are currently below drinking water standards, but may be present above WQOs in a potentially residential area beyond the timeframe for redevelopment. Full discussion of the remedial alternative selection process is provided in the FS Report. Table 4-1 summarizes the comparison of the alternatives for each AOI to the evaluation criteria.

4.5.2.4.2 Summary of MNA Report Evaluation for the AST and MES/IRM AOIs

Following the FS Report, the MNA Report was prepared to provide an assessment of the various natural attenuation processes in each AOI and support the recommendations presented in the FS. Trend analysis of concentrations of COCs in groundwater was conducted within the scope of the MNA Report. Evaluation presented in the MNA Report indicates that concentrations of petroleum hydrocarbons (benzene, naphthalene, TPHd and TPHg) and chlorinated volatile organic compounds (CVOCs; cis-1,2-DCE and PCE) at the Former AST AOI and MES/Pilot Study AOIs at most locations are decreasing with time, with predicted times to reach the screening levels of less than 5 years for petroleum hydrocarbons and less than 41 years for CVOCs. Geochemical data indicate that reducing conditions which support anaerobic biodegradation of COCs are present in groundwater in the AOI. Concentrations of TPHd at monitoring well MW-3.2 are variable and have a statistically significant increasing trend while TPHg concentrations have no trend. The presence of

measurable LPH occasionally detected at this location may be affecting dissolved phase concentrations of TPHg and TPHd. Removal of the source of TPH in soil will further support natural attenuation of COCs in groundwater in the Former AST AOI and the MES/Pilot Study AOI. Ongoing evaluation of natural attenuation with monitoring as a response for TPH in groundwater in this AOI should be performed as TPH in soil and groundwater attenuate.

4.5.2.4.3 Proposed Groundwater Remedial Action at the Former AST and Former MES/Pilot Study AOIs

Source removal, treatment of backfill material with gypsum, natural attenuation, O&M including monitoring, and use restrictions through a LUC are the recommended remedial actions for groundwater containing TPH in the Former AST/Former MES/Pilot Study AOIs. As discussed previously, remediation of TPH related impacts within these AOIs is subject to remediation of residual impacts in smear-zone soil. Focused soil excavation and enhanced degradation with gypsum of petroleum hydrocarbons in the Former AST/Former MES/Pilot Study AOIs is likely to have a positive effect on attenuation rates of petroleum hydrocarbons in groundwater. A LUC will restrict the use of groundwater and a groundwater O&M Plan will describe groundwater monitoring along with criteria for curtailment of monitoring.

4.5.3 Former Dip Tank AOI (OU-C)

Remedial alternatives were evaluated in the FS Report to address PCP in soils and groundwater.

4.5.3.1 Soil

4.5.3.1.1 Summary of Alternative Evaluation

The RI Report identified a PRA (excavation area) based on the concentrations of PCP (maximum concentration of 20 mg/kg) and dioxin/furans (maximum TCDD-TEQ concentration of 404 pg/g) in soil (Figure 4-2); these concentrations are above the remedial goal for PCP (12.3 mg/kg) and the remedial goal for dioxin (DTSC, 2009a) of 50 pg/g, respectively. Remedial alternatives evaluated in the FS for soil at the Former Dip Tank AOI include:

- No Action – A baseline to which other remedial technologies are compared.

- LUCs and ICs and SMP – A LUC is a legal mechanism restricting the future use of a property from residential and other sensitive uses. ICs are non-engineered instruments, such as administrative and legal controls, that help eliminate human exposure to contamination. A SMP is an aspect of O&M and specifies soil management procedures. The potential use of covers and barriers is included in this alternative.
- Ex-Situ Soil Remediation – Bioremediation of contaminants through Land Farming.
- ISSS – Use of reagents to produce an inert and less permeable material to eliminate movement of contaminants.
- Excavation and Disposal – Removal of contaminated soil and transport of soil to an offsite disposal facility.

Based on analysis presented in the FS, Excavation and Disposal ranked highest amongst the identified alternatives. Of the evaluation criteria, protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment and state support/agency acceptance receive high rankings because affected media would be removed from the site. Short-term effectiveness received a moderate ranking because of construction activities associated with the excavation. Community acceptance was ranked moderate. The removal of affected soil from the site is offset by community concerns related to the implementation of this alternative, such as truck traffic and fugitive dust. Implementability received a moderate ranking compared to the implementability of other alternatives for this media. Full discussion of the remedial alternative selection process is provided in the FS Report. Table 4-1 summarizes the comparison of the alternatives for each AOI to the evaluation criteria.

4.5.3.1.2 Proposed Soil Remedial Action for the Former Dip Tank AOI

Removal and disposal of PCP and dioxin/furans in soil at the Former Dip Tank AOI can significantly reduce PCP and dioxin/furan migration to and concentrations in groundwater and the overall cost is low. Therefore, based on these factors and comparison of alternatives with evaluation criteria, excavation and disposal of approximately 170 cy of soil at the location shown on Figure 4-2 is the recommended remedial action to address PCP and dioxins/furans in soils in the Former Dip Tank AOI.

The former dip tank is listed as “abandoned in place”; therefore, if encountered during soil excavation and is at an accessible depth and configuration relative to the adjacent Dry Shed 4 foundations, the former dip tank will be removed. Confirmation sampling will be conducted following excavation. Dioxin and PCP concentrations in soil confirmation samples will be compared to the unrestricted remedial goals of 50 pg/g and 12.3 mg/kg, respectively. Based on existing data and risk assessment results, unrestricted use is expected following remedy implementation.

Contingency Remedy: If the unrestricted remedial goals are not met due to physical or engineering constraints, then a contingency remedial action would be implemented that includes a Land Use Covenant restricting sensitive uses and an Operations and Maintenance Plan that addresses soil management and operation and maintenance of a cover, if required. A cover (i.e., asphalt, concrete, or clean fill material) will be required, if contaminants in soil remain above commercial remedial goals, or if contaminant transport could result in an unacceptable risk to public health or to other environmental receptors.

4.5.3.2 Groundwater

4.5.3.2.1 Summary of Alternatives Evaluation

Concentrations of PCP and dioxin/furans in groundwater at MW-3.12 are correlated strongly with groundwater elevation, indicating that COCs in groundwater are a result of contact with COCs in soil in the seasonally saturated zone. Remedial alternatives evaluated in the FS for groundwater remediation in addition to soil remediation discussed above to address PCP and dioxin/furans in groundwater at the Former Dip Tank AOI include:

- No Action – A baseline to which other remedial technologies are compared.
- Natural Attenuation Analysis – Demonstrated natural degradation of contaminants without long term monitoring.
- Natural Attenuation with Monitoring and Use Restrictions – Demonstrated natural degradation of contaminants with long term monitoring. O&M and restrictions on the use of groundwater are included in this alternative.
- Groundwater Extraction and Treatment – Removal of groundwater through extraction wells and treatment of groundwater to reduce contaminants.

Based on analysis presented in the FS, Natural Attenuation with Monitoring ranked highest amongst the identified alternatives. Of the evaluation criteria, protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, state support/agency acceptance, and reduction of toxicity, mobility, or volume through treatment receive high rankings because monitoring and analysis associated with the remedy would show that natural attenuation mechanisms including active physical, biological, and geochemical reactions are successfully reducing COC concentrations and WQOs would be achieved in a reasonable time frame. Short-term effectiveness was ranked high because minimal exposure to affected media would be required. Implementability also received a high ranking. Community acceptance was ranked moderate because COCs are currently below drinking water standards, but may be present above WQOs in a potentially residential area beyond the timeframe for redevelopment. Full discussion of the remedial alternative selection process is provided in the FS Report. Table 4-1 summarizes the comparison of the alternatives for each AOI to the evaluation criteria.

4.5.3.2.2 Summary of MNA Report Evaluation for the Dip Tank AOI

Following the FS Report, the MNA Report was prepared to provide an assessment of the various natural attenuation processes in each AOI and support the recommendations presented in the FS. Trend analysis of concentrations of COCs in groundwater was conducted within the scope of the MNA Report. Evaluation presented in the MNA Report indicates that no trends were observed in PCP and dioxin concentrations in groundwater at MW-3.12 in the Dip Tank AOI. Residual PCP and dioxins in soil may contribute to increased concentrations in groundwater when groundwater levels rise at this location. Excavation of PCP and dioxin-affected soil will result in lower concentrations of COCs in groundwater. Geochemical parameters indicate mildly to moderately reducing conditions in groundwater, which are favorable for anaerobic biodegradation of PCP and reductive dechlorination of dioxin-like compounds. Excavation of COC-affected soil will further support natural attenuation of PCP and dioxin congeners in groundwater in the Former Dip Tank AOI. Further evaluation of natural attenuation with monitoring as a response for PCP and dioxin congeners in groundwater in this AOI should be performed following additional activities.

4.5.3.2.3 Proposed Groundwater Remedial Action and the Former Dip Tank AOI

Based on this correlation and comparison of alternatives with evaluation criteria, source removal, natural attenuation with monitoring and use restrictions are the

recommended remedial actions to address PCP and dioxins/furans in groundwater in the Former Dip Tank AOI. Findings presented in the MNA Report indicate that source removal would further support natural attenuation of COCs in groundwater. Included in the proposed remedial action is a LUC that will restrict the use of groundwater. Further, a groundwater O&M Plan will describe groundwater monitoring along with criteria for curtailment of monitoring and acceptance of unrestricted use.

4.5.4 Rail Lines East AOI (OU-C)

The RI Report identified a presumptive remedial area based on the concentration of lead (4,600 mg/kg) in sample OUC-SS-061 (Figure 4-3a). The excavation area is based on one sample that is above the remedial goal for lead (102 mg/kg).

Analysis conducted in the RI indicates B(a)P concentrations above the of 0.038 mg/kg screening level, used in the RI, and a potential risk drivers for future residential uses. Therefore, the FS evaluated alternative remedial actions for addressing B(a)P. The DTSC recognized urban background level for B(a)P is 0.40 mg/kg and this concentration is the remedial goal for B(a)P. The EPC for B(a)P at the Rail Lines East is 0.120 mg/kg in the first 6 inches of soil and 0.10 in the top 2 feet of soil. Because B(a)P concentrations in the Rail Lines East AOI are below the remedial goal of 0.40 mg/kg, a remedial action for soil containing B(a)P is not necessary and is not included in the proposed Remedial Action.

Remedial alternatives were evaluated in the FS Report to address lead in surface soils and subsurface soils.

4.5.4.1 Soils

4.5.4.1.1 Summary of Alternatives Evaluation

Lead has been detected at 4,600 mg/kg, above the remedial goal of 102 mg/kg, within the top 1.5 feet of soil at this AOI. Remedial alternatives evaluated in the FS for surface and shallow subsurface soil at the Rail Lines East AOI include:

- No Action – A baseline to which other remedial technologies are compared.
- LUCs and ICs and SMP – A LUC/IC are a legal mechanism restricting the future use of a property from residential and other sensitive uses. ICs are non-engineered instruments, such as administrative and legal controls, that help eliminate human

exposure to contamination. A SMP is an aspect of O&M and specifies soil management procedures.

- Capping – Barriers and Covers – Physical barriers that contain and restrict the movement on contaminants.
- In-Situ Solidification/Stabilization – Use of reagents to produce an inert and less permeable material to eliminate movement of contaminants.
- Excavation and Disposal – Removal of contaminated soil and transport of soil to offsite disposal facility.

Based on analysis presented in the FS, Excavation and Disposal ranked highest amongst the identified alternatives for addressing lead contaminated soil. Of the evaluation criteria, protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment and state support/agency acceptance receive high rankings because affected media would be removed from the site. Short-term effectiveness received a moderate ranking because of construction activities associated with the excavation. Community acceptance was ranked moderate. The removal of affected soil from the site is offset by community concerns related to the implementation of this alternative, such as truck traffic and fugitive dust. Implementability received a moderate ranking compared to the implementability of other alternatives for this media. Full discussion of the remedial alternative selection process is provided in the FS Report.

Table 4-1 summarizes the comparison of the alternatives for each AOI to the evaluation criteria.

4.5.4.1.2 Proposed Soil Remedial Action at the Rail Lines East AOI

Based on the overall estimated cost and scope and comparison of alternatives with evaluation criteria, excavation and disposal of approximately 40 cy of soil in the excavation area as shown on Figure 4-3b is recommended to address lead affected soil at the Rail Lines East AOI. Confirmation sampling will be conducted following excavation and compared with the unrestricted remedial goal for lead.

Contingency Remedy: If the unrestricted remedial goals are not met due to physical or engineering constraints, then a contingency remedial action would be implemented that includes a Land Use Covenant restricting sensitive uses and an Operations and

Maintenance Plan that addresses soil management and operation and maintenance of a cover, if required. A cover (i.e., asphalt, concrete, or clean fill material) will be required, if contaminants in soil remain above commercial remedial goals, or if contaminant transport could result in an unacceptable risk to public health or to other environmental receptors.

4.5.5 Kilns AOI (OU-C)

Remedial alternatives were evaluated in the FS Report to address TPH and B(a)P in soils.

4.5.5.1 Summary of Alternatives Evaluation

The RI Report identified a presumptive remedial area based on the concentration of TPHd (7,000 mg/kg) in one sample (OUC-SS-058). The sample was originally collected based on visual observation of staining. Because of the visual nature of the staining, it is assumed that the excavation will be limited to the stained area (Figure 4-4). Additional sampling conducted in 2012 confirms concentrations of TPHd are below screening levels outside of the stained area. Co-located with the TPHd is B(a)P at 0.89 mg/kg and above the remedial goal of 0.40 mg/kg. Remedial alternatives evaluated in the FS for soil at the Kilns AOI include:

- No Action – A baseline to which other remedial technologies are compared.
- LUC and ICs with a SMP – A LUC is a legal mechanism restricting the future use of a property from residential and other sensitive uses. A SMP is an aspect of O&M and specifies soil management procedures.
- Capping – Barriers and Covers – Physical barriers that contain and restrict the movement on contaminants.
- Ex-Situ Soil Remediation – Bioremediation of soil through Land Farming.
- ISSS – Use of reagents to produce an inert and less permeable material to eliminate movement of contaminants.
- Excavation and Disposal – Removal of contaminated soil and transport of soil to offsite disposal facility.

Based on analysis presented in the FS, Excavation and Disposal ranked highest amongst the identified alternatives. Of the evaluation criteria, protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment and state support/agency acceptance receive high rankings because affected media would be removed from the site. Short-term effectiveness received a moderate ranking because of construction activities associated with the excavation. Community acceptance was ranked moderate. The removal of affected soil from the site is offset by community concerns related to the implementation of this alternative, such as truck traffic and fugitive dust. Implementability received a moderate ranking compared to the implementability of other alternatives for this media. Full discussion of the remedial alternative selection process is provided in the FS Report. Table 4-1 summarizes the comparison of the alternatives for each AOI to the evaluation criteria.

4.5.5.2 Proposed Soil Remedial Action for the Kilns AOI

Based on the overall estimated cost and scope and comparison of alternatives with evaluation criteria, excavation and disposal of approximately 7.5 cy of soil at the location shown on Figure 4-4 is recommended to address TPHd and B(a)P in soils at the Kilns AOI. Confirmation sampling will be conducted following excavation and analytical results will be compared with the remedial goal for B(a)P of 0.40 mg/kg and the LGW remedial goal for TPHd of 2,730 mg/kg.

Contingency Remedy: If the unrestricted remedial goals are not met due to physical or engineering constraints, then a contingency remedial action would be implemented that includes a Land Use Covenant restricting sensitive uses and an Operations and Maintenance Plan that addresses soil management and operation and maintenance of a cover, if required. A cover (i.e., asphalt, concrete, or clean fill material) will be required, if contaminants in soil remain above commercial remedial goals, or if contaminant transport could result in an unacceptable risk to public health or to other environmental receptors.

4.5.6 Former MS/IRM AOI (OU-C)

Past remedial efforts, including soil removal for TPHd, PCB, and lead as part of the Interim Remedial Measures, have removed much of the affected soil at this AOI. While TPHd and lead are still present in soil within this AOI, the concentrations of TPH and lead are below human health remedial goals. A revised risk assessment for the MS/IRM AOI determined that the risk to a future resident from soil in the top 2 feet is

7×10^{-6} (7 in one-million) and from soil, to a depth of 10 feet, is 1×10^{-6} (one in one-million).

The RI Report reported elevated TPHd concentrations in soil just south of the 2009 excavation area at MW-3.21 (8,230 mg/kg at 3 to 4 feet bgs). Data also indicate elevated concentrations of lead at two locations (180 mg/kg and 220 mg/kg) in subsurface (2 to 4ft bgs) zone soil east of the Covered Shed and at the 2009 excavation area. Lead concentrations were below lead remedial goal of 102 mg/kg in nine other locations east of the Covered Shed. The EPC for lead at the Former MS/IRM AOI in soil between 0 and 0.5 feet is 30 mg/kg and 67 mg/kg from 0 to 10 feet. Therefore, NFA is recommended for TPHd and lead in soil at the MS/IRM area.

The RI Report also reported TPHd in groundwater at MW-3.21 below the TPHd Primary Screening Level of 1.22 mg/L and WQO of 0.47mg/L. Because TPHd in groundwater were below the Primary Screening Level and the WQO, MW-3.21 was removed from the Comprehensive Groundwater Monitoring Program.

Historically, TPH and VOCs have also been detected in groundwater above screening levels along the eastern edge of the AOI, though these COCs are attributed to an offsite source, a gas station which is being remediated under the oversight of the NCRWQCB. Three monitoring wells for the gas station investigation are located on the Georgia-Pacific property (Stantec, 2013). All TPH constituent concentrations have been non detect or below screening levels at MW-3.4 and MW-3.6 since 2005 and at MW-3.21 since sampling began in 2009. VOCs and MTBE have been non detect or below screening levels at MW-3.4 since 2007 and at MW-3.21 since sampling began in 2009. PAHs have been non detect at MW-3.21 since sampling began in 2009. Although barium concentrations at MW-3.21 have exceeded background concentrations (25.6 micrograms per liter [$\mu\text{g/L}$]), they are well below the screening level (1,000 $\mu\text{g/L}$). With the exception of arsenic, all dissolved metals concentrations have been non detect or below WQOs at MW-3.21 since sampling began in 2009. The applicable WQO for arsenic is the site background concentration of 2.5 $\mu\text{g/L}$. With the exception of one result of 2.6 $\mu\text{g/L}$ in September 2010, arsenic concentrations have been below the applicable WQO since sampling began in 2009. One VOC, vinyl chloride was detected in MW-30 below the detection limit in all four quarters in 2010. Groundwater monitoring at monitoring wells in the MS/IRM AOI was discontinued in 2011 (CMP Update #5, October 2011).

Past groundwater contamination at the MS/IRM area is attributed to TPH in soil at an offsite source. The Interim Remedial Measures conducted removed TPH in soil and

groundwater monitoring wells down gradient from the removal area have not detected TPHd above screening level of 1.22 mg/L (ARCADIS, 2011a). The remediation of the offsite source, the Unocal Service Station, for groundwater contamination is managed by the NCRWQCB. Three wells, included in the Unocal investigation are located within the MS/IRM AOI. Concentrations of TPHd, TPHg, MTBE, and BTEX have been non-detect since May 2012 (Stantec, 2013). Because concentrations of COCs in wells monitored by both parties are non-detect or below WQOs, NFA is recommended for groundwater at the MS/IRM AOI.

Remedial alternatives were evaluated in the FS Report to address lead and TPHd in soils and TPHd and VOCs in groundwater. Because COCs in soil, soil vapor and groundwater are below remedial goals and the risk assessment did not show an unacceptable risk, NFA is recommended for the MS/IRM AOI.

4.5.7 Planer #2 AOI (OU-D)

Remedial alternatives were evaluated in the FS Report to address TPH and B(a)P in soils and VOCs in groundwater.

4.5.7.1 Soil

4.5.7.1.1 Summary of Alternatives Evaluation

The remedial area is based detection of TPHd in one sample (OUD-DP-090), which is above the RBSC (for direct contact and indoor air pathway) and the LGW screening level for TPHd. Further samples were collected showing concentrations above the screening levels for B(a)P (Figure 4-6); however, these locations were not added to the excavation based on the BLRA and an EPC for B(a)P at 0.053 mg/kg from 0-2 feet bgs, which is below the B(a)P remedial goal of 0.40 mg/kg. Step-out sampling defined the lateral and vertical extent of TPHd and B(a)P. Remedial alternatives evaluated in the FS for soil at the Planer #2 AOI include:

- No Action – A baseline to which other remedial technologies are compared.
- LUCs and ICs and SMP – A LUC/IC are a legal mechanism restricting the future use of a property from residential and other sensitive uses. ICs are non-engineered instruments, such as administrative and legal controls, that help eliminate human exposure to contamination. A SMP is an aspect of O&M and specifies soil management procedures.

- Capping – Barriers and Covers – Physical barriers that contain and restrict the movement on contaminants.
- ISSS – Use of reagents to produce an inert and less permeable material to eliminate movement of contaminants.
- Ex-Situ Soil Remediation – Bioremediation of soil in Biopiles
- Ex-Situ Soil Remediation – Bioremediation of soil through Land Farming
- Excavation and Disposal – Removal of contaminated soil and transport of soil to offsite disposal facility.

Based on analysis presented in the FS, Excavation and Disposal ranked highest amongst the identified alternatives. Of the evaluation criteria, protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment and state support/agency acceptance receive high rankings because affected media would be removed from the site. Short-term effectiveness received a moderate ranking because of construction activities associated with the excavation. Community acceptance was ranked moderate. The removal of affected soil from the site is offset by community concerns related to the implementation of this alternative, such as truck traffic and fugitive dust. Implementability received a moderate ranking compared to the implementability of other alternatives for this media. Full discussion of the remedial alternative selection process is provided in the FS Report.

4.5.7.1.2 Proposed Soil Remedial Action for the Planer #2 AOI

Based on the overall estimated cost and scope and comparison of alternatives with evaluation criteria, soil excavation and disposal are the proposed remedial actions for soil at the Planer #2 AOI. Excavation and disposal of approximately 140 cy of soil in the excavation area as shown in Figure 4-6 is recommended to address TPHd at 33,000 mg/kg and B(a)P in soils at one location at the Planer #2 AOI. Confirmation sampling will be conducted following excavation and the resulting EPC compared with the unrestricted remedial goal for B(a)P of 0.40 mg/kg and the leaching to groundwater remedial goal for TPHd of 2,730 mg/kg.

Contingency Remedy: If the unrestricted remedial goals are not met due to physical or engineering constraints, then a contingency remedial action would be implemented that

includes a Land Use Covenant restricting sensitive uses and an Operations and Maintenance Plan that addresses soil management and operation and maintenance of a cover, if required. A cover (i.e., asphalt, concrete, or clean fill material) will be required, if contaminants in soil remain above commercial remedial goals, or if contaminant transport could result in an unacceptable risk to public health or to other environmental receptors.

4.5.7.2 Soil Vapor

During the RI, soil vapor samples were collected directly from the subsurface to evaluate baseline risk due to soil vapor inhalation in ambient air and indoor air. As discussed in Section 2.7.5, health risks and hazards associated with soil vapor/indoor air exceeded acceptable thresholds in the BLRA. Process options detailed in the FS Report were developed to evaluate remedial alternatives for soil and soil vapor concurrently.

4.5.7.2.1 Proposed Soil Vapor Remedial Action for the Planer #2 AOI

The proposed remedial action to address soil vapor risks are soil vapor mitigation, LUC, and O&M. The existing conditions (open space) at the former Mill Site do not present an immediate need for the implementation of soil vapor mitigation; however, future construction and use in these areas may require soil vapor mitigation. The design of the soil vapor mitigation measures shall be submitted to and approved by DTSC prior to any future use of the AOIs. The O&M Plan will specify procedures that will ensure the long-term effectiveness of the covers. Soil vapor remedial goals are shown in Table 3-5.

4.5.7.3 Groundwater

4.5.7.3.1 Summary of FS Evaluation

1,1-DCA and 1,1-DCE were detected in groundwater at low concentrations close to the screening level. Arsenic is detected in one well (MW-6.3) at concentrations ranging from a high of 25 µg/L in March of 2010 to 7.1 µg/L in August of 2013. Although arsenic levels in groundwater are declining, concentrations are still above the groundwater background concentration and remedial goal of 2.5 µg/L. Naphthalene was detected in groundwater in grab samples only. In addition, as discussed in Section 2.7.5, vinyl chloride, PCE, and 1,2,4-TMB contribute to soil vapor risks in the AOI due to

volatilization from groundwater. Remedial alternatives evaluated in the FS for groundwater at the Planer #2 AOI include:

- No Action – A baseline to which other remedial technologies are compared.
- Natural Attenuation Analysis – Demonstrated natural degradation of contaminants without long term monitoring.
- Natural Attenuation with Monitoring – Demonstrated natural degradation of contaminants with long term monitoring.
- Groundwater Extraction and Treatment – Removal of groundwater through extraction wells and treatment of groundwater to reduce contaminants.

Based on analysis presented in the FS, Natural Attenuation with Monitoring (PL2GW-3) ranked highest amongst the identified alternatives. Of the evaluation criteria, protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, state support/agency acceptance, and reduction of toxicity, mobility, or volume through treatment receive high rankings because monitoring and analysis associated with the remedy would show that natural attenuation mechanisms including active physical, biological, and geochemical reactions are successfully reducing COC concentrations and WQOs would be achieved in a reasonable time frame. Short-term effectiveness was ranked high because minimal exposure to affected media would be required. Implementability also received a high ranking. Community acceptance was ranked moderate because COCs may be present above groundwater remedial goals beyond the timeframe for redevelopment. Full discussion of the remedial alternative selection process is provided in the FS Report.

4.5.7.3.2 Summary of MNA Report Evaluation for Planer #2 AOI

Following the FS Report, the MNA Report was prepared to provide an assessment of the various natural attenuation processes in each AOI and support the recommendations presented in the FS. Trend analysis of concentrations of COCs in groundwater was conducted within the scope of the MNA Report. Evaluation presented in the MNA Report indicates that concentrations of COCs within the Planer #2 AOI show decreasing to stable trends with the exception of MW-6.7, with many monitoring locations having current concentrations below the WQO. Geochemical data indicate that anaerobic biodegradation of COCs likely is occurring in some locations, resulting in

decreasing concentrations of 1,1-DCE and 1,1-DCA. Concentrations of COCs are likely to continue to decline with time. 1,1,1-TCA and TCE have been occasionally detected below screening levels at MW-6.7 and in MW-6.6, IW-6.2, and IW-6.3. The presence and increase in 1,1-DCE concentration is evidence of conditions favorable to the breakdown of residual parent chlorinated solvents and is likely to attenuate following exhaustion of residual parent mass. The presence of chloroethane below screening levels at MW-6.7 is further evidence of ongoing chlorinated hydrocarbon transformation in this area. The absence of vinyl chloride at MW-6.7 may be related to the utilization of aerobic degradation pathways that favor vinyl chloride at this location. Decreasing concentrations of chlorinated solvents with distance from MW-6.7 provides further evidence of attenuation. Active remediation including a pilot study for in-situ chemical oxidation in this area was considered and rejected as unlikely to be effective with concurrence from DTSC. Arsenic is present in MW-6.3 at concentrations above the remedial goal and background concentration of 2.5 µg/L and is below the MCL of 10 µg/L. Arsenic concentrations above background concentrations are a result of microbial iron reduction, which is enhanced due to organic contaminants present at the Planer #2 AOI, resulting in a release of naturally occurring arsenic, and will decrease to background concentrations once native redox conditions are established. These results indicate natural attenuation with monitoring is an appropriate response for COCs in groundwater in the Planer #2 AOI.

4.5.7.3.3 Proposed Groundwater Remedial Action for the Planer #2 AOI

Based on historical groundwater monitoring data and comparison of alternatives with evaluation criteria, natural attenuation with monitoring and use restrictions is recommended to address VOCs and arsenic in groundwater in the Planer #2 AOI. A LUC will restrict the use of groundwater exceeding remedial goals. Groundwater monitoring and natural attenuation verification will be described in a groundwater O&M Plan.

4.5.8 Former Shipping Office and Truck Shop AOI (OU-D)

Remedial alternatives were evaluated in the FS Report to address TPHd in soils.

4.5.8.1 Summary of Alternative Evaluation

Maximum concentrations of TPHd in soil are concentrated in a limited area at the Former Bark Shelter and northwest of the former #8 Fiber Plant and Storage Area (Figure 4-7). The maximum TPHd concentration (9,090 mg/kg total TPHd C10 – C24)

at OU-DP-18 and 9 feet bgs is below the TPHd (aliphatic) direct contact and indoor air remedial goal of 10,772 mg/kg for total TPHd (C10 – C24). Concentrations of TPHd in other parts of this AOI, while above the screening levels, are just below the TPHd direct contact and indoor air remedial goal of 10,772 mg/kg. B(a)P has also been detected at the Former Shipping Office and Truck Shop AOI; however, the EPC for B(a)P is 0.044 mg/kg and is below the B(a)P remedial goal of 0.40 mg/kg and was not considered in the FS alternative analysis. Remedial alternatives evaluated in the FS to address TPHd in soil at the Former Shipping Office and Truck Shop AOI include:

- No Action – A baseline to which other remedial technologies are compared.
- LUCs and ICs and SMP – A LUC is a legal mechanism restricting the future use of a property from residential and other sensitive uses. ICs are non-engineered instruments, such as administrative and legal controls, that help eliminate human exposure to contamination. A SMP is an aspect of O&M and specifies soil management procedures.
- ISSS – Use of reagents to produce an inert and less permeable material to eliminate movement of contaminants.
- Ex-Situ Soil Remediation – Bioremediation of soil in Biopiles.
- Ex-Situ Soil Remediation – Bioremediation of soil through Land Farming.
- Excavation and Disposal – Removal of contaminated soil and transport of soil to offsite disposal facility.

Based on analysis presented in the FS, LUCs and ICs and a SMP ranked highest amongst the identified alternatives. Of the evaluation criteria, protection of human health and the environment, long-term effectiveness and permanence, short-term effectiveness, implementability, compliance with ARARs, and state support/agency acceptance receive high rankings because exposure pathways to affected media would be interrupted and uncontrolled contact with soil would not be permitted. Reduction of toxicity, mobility, or volume through treatment received a low ranking because COCs would remain in place. In soil, natural attenuation mechanisms including active physical, biological, and geochemical reactions would reduce concentrations of degradable COCs such as hydrocarbons, but would have little to no effect on compounds such as lead. Community acceptance was ranked moderate. The presence of COCs beyond the timeframe for redevelopment is offset by the absence of

community concerns related to the implementation of this alternative, such as truck traffic and fugitive dust. Implementability received a high ranking.

4.5.8.2 Proposed Soil Remedial Action for the Former Shipping Office and Truck Shop AOI

The RI identified the presence of TPHd at levels just below the TPHd remedial goal near the Former Bank Shelter and #8 Fiber Plant and Storage Area. Results of the BLRA (ARCADIS, 2011a) indicate that the risk associated with TPHd in this AOI is relatively small compared to the high cost to excavate the material. Based on the above and comparison of alternatives with evaluation criteria, LUCs/ICs and SMP is recommended to address the TPHd in soil at the Former Shipping Office and Truck Stop AOI. The LUC will restrict sensitive use such as residential, schools, hospitals, and day cares and require the use of an O&M and SMP during soil disturbing activities. The areal extent of the LUC will be proposed in the Remedial Design Document for OU-C and OU-D.

4.5.9 Sawmill and Sorter AOI (OU-D)

Remedial alternatives were evaluated in the FS Report to address arsenic in groundwater.

4.5.9.1 Summary of Alternative Evaluation

Arsenic was detected above the MCL in several groundwater samples just north and west of the Former Gang Mill Area in the Sawmill and Sorter AOI. Remedial alternatives evaluated in the FS for groundwater at the Sawmill and Sorter AOI include:

- No Action – A baseline to which other remedial technologies are compared.
- Natural Attenuation Analysis – Demonstrated natural degradation of contaminants without long term monitoring.
- Natural Attenuation with Monitoring – Demonstrated natural degradation of contaminants with long term monitoring.
- Groundwater Extraction and Treatment – Removal of groundwater through extraction wells and treatment of groundwater to reduce contaminants.

- Repeated In-Situ Chemical Oxidation Injections – Successive additions of oxidants into groundwater until remedial goals are met.

Based on analysis presented in the FS, Natural Attenuation with Monitoring (O&M) ranked highest amongst the identified alternatives. Of the evaluation criteria, protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, state support/agency acceptance, and reduction of toxicity, mobility, or volume through treatment receive high rankings because monitoring and analysis associated with the remedy would show that natural attenuation mechanisms including active physical, biological, and geochemical reactions are successfully reducing COC concentrations and WQOs would be achieved in a reasonable time frame. Short-term effectiveness was ranked high because minimal exposure to affected media would be required. Implementability also received a high ranking. Community acceptance was ranked moderate because COCs are currently below drinking water standards, but may be present above WQOs in a potentially residential area beyond the timeframe for redevelopment. Full discussion of the remedial alternative selection process is provided in the FS Report

4.5.9.2 Summary of MNA Report Evaluation for the Former Sawmill/Sorter AOI

Following the FS Report, the MNA Report was prepared to provide an assessment of the various natural attenuation processes in each AOI and support the recommendations presented in the FS. Trend analysis of concentrations of COCs in groundwater was conducted within the scope of the MNA Report. Evaluation presented in the MNA Report indicates that concentrations of arsenic in groundwater at the Former Sawmill/Sorter AOI monitoring wells indicate arsenic concentrations are stable to decreasing. Arsenic concentrations above background concentrations are a result of microbial iron reduction resulting in a release of naturally occurring arsenic, and will decrease to background concentrations once native redox conditions are established. Concentrations of arsenic generally decrease with distance along the flow path and natural attenuation will further reduce arsenic concentrations in groundwater in the Sawmill and Sorter AOI. These results indicate that natural attenuation with monitoring is an appropriate response for COCs in groundwater in this AOI.

4.5.9.3 Proposed Groundwater Remedial Action for the Sawmill/Sorter AOI

Based on evaluation of the nature and extent of COCs presented in the FS Report and comparison of alternatives with evaluation criteria, natural attenuation with monitoring and use restrictions is recommended to address arsenic in groundwater in the Sawmill

and Sorter AOI. A LUC will restrict the use of groundwater, exceeding remedial goals. Groundwater monitoring and natural attenuation verification will be described in a groundwater O&M Plan.

4.5.10 Greenhouse AOI (OU-D)

Remedial alternatives were evaluated in the FS Report to address atrazine in groundwater.

4.5.10.1 Summary of Alternatives Evaluation

Atrazine was detected above screening levels in four grab groundwater samples and two monitoring well samples from within the greenhouse AOI. Remedial alternatives evaluated in the FS for groundwater at the Greenhouse AOI include:

- No Action – A baseline to which other remedial technologies are compared.
- Natural Attenuation Analysis – Demonstrated natural degradation of contaminants without long term monitoring.
- Natural Attenuation with Monitoring – Demonstrated natural degradation of contaminants with long term monitoring.
- Groundwater Extraction and Treatment – Removal of groundwater through extraction wells and treatment of groundwater to reduce contaminants.

Based on analysis presented in the FS, Natural Attenuation with Monitoring ranked highest amongst the identified alternatives. Of the evaluation criteria, protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, state support/agency acceptance, and reduction of toxicity, mobility, or volume through treatment receive high rankings because monitoring and analysis associated with the remedy would show that natural attenuation mechanisms including active physical, biological, and geochemical reactions are successfully reducing COC concentrations and WQOs would be achieved in a reasonable time frame. Short-term effectiveness was ranked high because minimal exposure to affected media would be required. Implementability also received a high ranking. Community acceptance was ranked moderate because COCs are currently below drinking water standards, but may be present above WQOs in a potentially residential area beyond the timeframe for

redevelopment. Full discussion of the remedial alternative selection process is provided in the FS Report.

4.5.10.2 Summary of MNA Report Evaluation for the Greenhouse AOI

Following the FS Report, the MNA Report was prepared to provide an assessment of the various natural attenuation processes in each AOI and support the recommendations presented in the FS. Trend analysis of concentrations of COCs in groundwater was conducted within the scope of the MNA Report. Evaluation presented in the MNA Report indicates that atrazine concentrations within the Greenhouse AOI are stable to decreasing. Groundwater geochemical conditions are aerobic to mildly reducing and may support aerobic degradation of atrazine. These results indicate natural attenuation with monitoring is an appropriate response for atrazine in Greenhouse AOI groundwater.

4.5.10.3 Proposed Groundwater Remedial Action for the Greenhouse AOI

Evaluation presented in the FS Report indicates that plume migration is not likely. Therefore, based on historical groundwater monitoring data and comparison of alternatives with evaluation criteria, Natural Attenuation with Monitoring and use restrictions is recommended to address atrazine in groundwater in the Greenhouse AOI. A LUC will restrict the use of groundwater, exceeding remedial goals. Groundwater monitoring and natural attenuation verification will be described in a groundwater O&M Plan. Remedy details and a discussion of implementation are presented in Section 4.7.

4.6 Summary of Proposed Remedial Actions, including No Further Action

Eleven AOIs included in the OU-C and OU-D FS are considered in the OU-C and OU-D RAP. All or portions of following ten AOIs, excluded from the FS, are proposed for NFA based on the data in the RI Report and a re-evaluation in the OU-C and OU-D RAP as presented in Section 2.8.

1. Rail Lines West
2. Dry Sheds #4, #5
3. Former Planer #1, #50
4. Former Log Storage and Sediment Stockpile
5. Log Deck

6. Former Sheep Barn
7. Former Oil House
8. Miscellaneous
9. Transformer Pad
10. Parcel 6

A summary of proposed remedial actions for 11 AOIs evaluated in the FS, including NFA for MS/IRM AOI is provided in the table below.

| Summary Table: Proposed Remedial Actions |
|--|
| <p>Parcel 2 AOI – Groundwater <i>Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>Natural Attenuation to address dioxins/furans and pentachlorophenol</i> • <i>LUC restricting domestic use of groundwater above Remedial Goals</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> |
| <p>Former AST and MES/Pilot Study AOIs – Surface Soil, Soil Vapor, and Groundwater <i>Soil Proposed Alternative: Former AST AOI and MES/Pilot Study AOI</i></p> <ul style="list-style-type: none"> • <i>LUC restricting residential or other sensitive land uses</i> • <i>Operations and Maintenance Plan, including soil management requirements</i> • <i>Excavation and disposal of TPHd contaminated soil</i> <p><i>Soil Vapor Proposed Alternative: Former AST and MES/Pilot Study AOIs</i></p> <ul style="list-style-type: none"> • <i>Source Removal: Excavation and disposal of TPHd contaminated soil</i> • <i>LUC restricting residential or other sensitive land uses</i> • <i>Soil Vapor Mitigation</i> • <i>Operations and Maintenance Plan</i> <p><i>Groundwater Proposed Alternative: Former AST and MES/Pilot Study AOIs</i></p> <ul style="list-style-type: none"> • <i>Source Removal: Excavation and disposal of TPHd contaminated soil</i> • <i>Natural Attenuation of Groundwater</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> • <i>LUC restricting the use of groundwater above Remedial Goals</i> |

| Summary Table: Proposed Remedial Actions |
|---|
| <p>Former Dip Tank AOI – Soil and Groundwater <i>Soil and groundwater Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>Source Removal: Excavation and Disposal of dioxin and PCP contaminated soil</i> • <i>Natural Attenuation of Groundwater</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> |
| <p>Rail Lines East AOI - Surface and Shallow Subsurface Soils <i>Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>Excavation and disposal of lead contaminated soil</i> |
| <p>Kilns AOI – Soil <i>Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>Excavation and Disposal of TPHd and B(a)P contaminated soil</i> |
| <p>Former MS/IRM AOI – Soil and Groundwater</p> <ul style="list-style-type: none"> • <i>No Further Action as TPHd, lead and B(a)P concentrations are below soil unrestricted remedial goals and TPHd and VOCs are below groundwater remedial goals</i> |
| <p>Planer #2 AOI – Soil, Soil Vapor and Groundwater <i>Soil Proposed Remedial Action:</i></p> <ul style="list-style-type: none"> • <i>Excavation and disposal of TPHd and B(a)P contaminated soil</i> <p><i>Soil Vapor Proposed Remedial Action:</i></p> <ul style="list-style-type: none"> • <i>Soil Vapor Mitigation</i> • <i>LUC restricting residential or other sensitive land uses</i> • <i>Operations and Maintenance</i> <p><i>Groundwater Proposed Remedial Action:</i></p> <ul style="list-style-type: none"> • <i>Natural Attenuation of Groundwater</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> • <i>LUC restricting the use of groundwater</i> |
| <p>Former Shipping Office and Truck Shop AOI – Soil <i>Soil Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>LUC restricting residential or other sensitive land uses</i> • <i>Operations and Maintenance, including soil management plan</i> |

| Summary Table: Proposed Remedial Actions |
|---|
| <p>Sawmill and Sorter AOI – Groundwater <i>Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>Natural Attenuation of Groundwater</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> • <i>LUC restricting the use of groundwater</i> |
| <p>Greenhouse AOI – Groundwater <i>Proposed Alternative:</i></p> <ul style="list-style-type: none"> • <i>Natural Attenuation of Groundwater</i> • <i>Operations and Maintenance Plan specifying groundwater monitoring requirements</i> • <i>LUC restricting the use of groundwater</i> |

4.7 Remedial Action Implementation

Separate Remedial Design and Implementation Plans (RDIPs) for soil excavations, soil covers/barriers, and soil vapor mitigation shall be submitted to DTSC for review and approval prior to implementation of the remedial action. The Soil Vapor Mitigation RDIP will be submitted if and when future use will create unacceptable risk to potential receptors. A Soil Cover/Barrier RDIP shall address the location and design of covers and/or barriers that will eliminate exposure and prevent transport of contaminated soil.

The Soil Excavation and RDIP will include the excavation implementation plan, including design features, permit requirements, best management practices, mitigation measures, and sampling requirements for the AOIs recommended for soil excavation and disposal in the RAP. The Soil Excavation RDIP will include, but is not limited to the following elements:

- Description of equipment used to excavate, handle, and transport contaminated material
- A transportation plan identifying routes of travel and final destination of the RAP wastes generated and disposed
- Identification of necessary permits and agreements

- Dust Control and air monitoring
- Mitigation measures to address cultural, historical and biological resources and erosion control
- Excavation procedures and soil management

A summary of anticipated area and volume of the planned soil excavations is provided in the table below. Post-remedy confirmation samples will be compared to chemical specific remedial goals for evaluation of remedy effectiveness. The values in the table are estimates and the actual areal extent, volume and weight of excavation soil will depend on the results of confirmation sampling and achievement of remedial goals.

Summary Table: Proposed Soil Excavations: estimated area, volume and weight

| AOI | Area (square feet) | Depth (feet) | Volume (cubic yards) | Weight (tons) |
|-----------------------------------|-------------------------------|-------------------------|-------------------------------------|--------------------------|
| Former Dip Tank | 2,250 | 2 | 170 | 221 |
| Rail Lines East | 540 | 2 | 40 | 52 |
| Kilns | 100 | 2 | 7.5 | 9.75 |
| Planer #2 | 625 | 6 | 140 | 182 |
| Former AST and MES/Pilot Study | 1,350 - 2,700 | 15 | 750 - 1,500 | 975 - 1,950 |
| Total | 4,865 - 6,215 | | 1,108 - 1,858 | 1,440 - 2,415 |

Notes:

^a Volume estimates for AST and MES/Pilot Study Area include a range due to greater uncertainty.

5. Reporting, Public Participation, CEQA, and Schedule

5.1 Reporting

Following implementation of the excavations at the Former AST, MES/Pilot Study, Dip Tank, Rail Line East, Kilns, and Planer #2 AOIs, a report documenting the remedial actions will be submitted.

A groundwater O&M plan will specify monitoring, evaluation, and reporting requirements associated with the natural attenuation remedy. Routine natural attenuation reporting will include at a minimum analysis of current concentrations, trend regression assessments, and comparison with benchmarks established in the O&M Plan to evaluate the ongoing effectiveness of the remedial approach. When groundwater cleanup goals are achieved, requests for NFA at selected AOIs will be submitted.

A RDIP will be submitted for DTSC review and approval for the planned excavations. A design for a soil vapor mitigation system will be submitted to DTSC for review and approval, if and when future use will create unacceptable risk to potential receptors.

5.2 Public Participation

The public participation requirements for the RAP process include the following:

- Developing a Public Participation Plan.
- Holding a minimum 30-day public comment period.
- Publishing a public notice of the availability of the draft RAP for public review and comment in a local newspaper of general circulation.
- Posting a notice of the availability of the draft RAP for public review and comment at the Site.
- Distributing a fact sheet to parties on the site mailing list describing the proposed remedy and the availability of the draft RAP for public comment.
- Making the draft RAP and other supporting documents (i.e., CEQA document) available for public review at the DTSC office and in the local information repositories.
- Conducting a public meeting during the public comment period.

- Responding to public comments received on the draft RAP and CEQA documents.

5.3 California Environmental Quality Act

CEQA requires environmental review of project impacts prior to project approval. A CEQA review is required if a project has a potential for resulting in a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment. CEQA applies to all discretionary projects proposed to be carried out or approved by California public agencies, unless an exemption applies.

In accordance with CEQA, DTSC had prepared an Initial Study and a draft Mitigated Negative Declaration for public review to ensure that CEQA requirements are satisfied. The final Initial Study and Negative Declaration are included in Appendix D. DTSC responses to public comments will be provided in the Responsiveness Summary included in Appendix E of the Final RAP.

5.4 Schedule

The total duration of removal activities at the excavations is anticipated to last approximately 6 weeks. Remedial construction activities will proceed after all required permits are acquired.

A LUC and a O&M Plan will be developed and implemented following approval of this RAP. A draft O&M Plan shall be submitted to DTSC for review and approval.

The groundwater O&M Plan will include a schedule for natural attenuation monitoring and reporting.

A Completion Report describing implemented soil excavation activities and installation of replacement groundwater monitoring wells shall be submitted to DTSC for review and approval.

6. References

- Acton•Mickelson•Environmental, Inc. (AME). 2005a. *Work Plan for Additional Site Assessment, Georgia-Pacific California Wood Products Manufacturing Facility, 90 West Redwood Avenue, Fort Bragg, California*. Project No. 16017.07. Acton•Mickelson•Environmental, Inc. June.
- AME. 2005b. *Response to RWQCB Comments on AME's Work Plan for Additional Site Assessment, Former Georgia-Pacific California Wood Products Manufacturing Facility, Fort Bragg, California*. Project No. 16017.10. AME, Inc. August 18.
- AME. 2006a. *Soil and Water Sampling, Area Southwest of Planer #2. Former Georgia-Pacific California Wood Products Manufacturing Facility, Fort Bragg, California*. Acton•Mickelson•Environmental, Inc. September 7.
- AME. 2006b. *Data Transmittal Report, Georgia-Pacific California Wood Products Manufacturing Facility, 90 West Redwood Avenue, Fort Bragg, California*. Prepared for Georgia-Pacific Corporation. Project No. 16017.08. Acton•Mickelson•Environmental, Inc. August 14.
- AME. 2006c. *Dioxin Sampling and Analysis Report, Georgia-Pacific California Wood Products Manufacturing Facility, 90 West Redwood Avenue, Fort Bragg, California*. Prepared for Georgia-Pacific Corporation. Project No. 16017.08. Acton•Mickelson•Environmental, Inc. July.
- ARCADIS U.S., Inc. (ARCADIS). 2008a. *Interim Action Remedial Action Plan, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California*. Prepared for Georgia-Pacific LLC. ARCADIS U.S., Inc. June.
- ARCADIS. 2008b. *Site Investigation Work Plan Operable Unit C, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California*. Prepared for Georgia-Pacific LLC. September.
- ARCADIS. 2009a. *Removal of Small Underground Storage Tank Near Planer #2 Building, Former Georgia-Pacific Wood Products Manufacturing Facility, Fort Bragg, California*. Prepared for Georgia-Pacific LLC. ARCADIS U.S., Inc. January.

ARCADIS. 2009b. *Site Investigation Work Plan, Operable Unit D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California*. Prepared for Georgia-Pacific LLC. ARCADIS U.S., Inc. Original version: September 2008. Revised version: July.

ARCADIS. 2009c. *Follow-up Investigation and Soil Vapor Evaluation Work Plan, Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California* (Soil Vapor Work Plan). Prepared for Georgia-Pacific LLC. ARCADIS U.S., Inc. September.

ARCADIS. 2009d. *Response to DTSC Comments on Follow-up Investigation and Soil Vapor Evaluation Work Plan, Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California*. Prepared for Georgia-Pacific LLC. ARCADIS U.S., Inc. September.

ARCADIS. 2010a. *Interim Action Completion Reports, Operable Units C & E, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California*. Prepared for Georgia-Pacific LLC. ARCADIS U.S., Inc. April.

ARCADIS. 2010b. *Interim Action Completion Report, Operable Units C & E, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California*. Prepared for Georgia-Pacific LLC. ARCADIS U.S., Inc. April.

ARCADIS. 2010c. Letter from Bridgette DeShields, ARCADIS, to Thomas Lanphar, DTSC, re: *Site-Specific TPH Leaching Evaluation*. Prepared for Georgia-Pacific LLC. April 13.

ARCADIS. 2011a. *Remedial Investigation Operable Units C and D Report, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California* (RI Report). Prepared for Georgia-Pacific LLC. ARCADIS U.S., Inc. February.

ARCADIS. 2012a. *Feasibility Study Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California* (FS Report). Prepared for Georgia-Pacific LLC. January.

ARCADIS. 2012b. *Operable Units C/D Data Gaps Soil Investigation Results, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California*. Prepared for Georgia-Pacific LLC. November.

ARCADIS. 2012c. *Final OU-A Consolidation Cell Removal Completion Report, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California*. Prepared for Georgia-Pacific LLC. March.

ARCADIS. 2013a. *Monitored Natural Attenuation Technical Report, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California (MNA Report)*. Prepared for Georgia-Pacific LLC.

ARCADIS 2013b. *First Quarter 2013 Groundwater Monitoring Report. Former Georgia-Pacific Wood Products Facility, Fort Bragg, California*. Prepared for Georgia-Pacific LLC, September.

ARCADIS. BBL. 2007a. *Response to Agency Comments on the Current Conditions Report, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California*. Prepared for Georgia-Pacific LLC. ARCADIS BBL, an ARCADIS company. March.

ARCADIS BBL. 2007b. *Ex-Situ Bioremediation Pilot Study. Former Georgia-Pacific Wood Products Facility, Fort Bragg, California*. Prepared for Georgia-Pacific LLC. ARCADIS BBL, an ARCADIS company. June.

ARCADIS BBL. 2007c. *Quality Assurance Project Plan. Former Georgia-Pacific Wood Products Facility, Fort Bragg, California*. Prepared for Georgia-Pacific LLC. February 2007, revised March 2007, revised September 2007.

ARCADIS BBL. 2007d. *Ex-Situ Bioremediation Pilot Study Work Plan. Former Georgia-Pacific Wood Products Facility, Fort Bragg, California*. Prepared for Georgia-Pacific LLC. ARCADIS BBL, an ARCADIS company. June.

ARCADIS BBL. 2008a. *Remedial Investigation Report, Operable Unit A, Coastal Trail and Parkland Zone. Former Georgia-Pacific Wood Products Facility, Fort Bragg California*. Prepared for Georgia-Pacific LLC. ARCADIS BBL, an ARCADIS company. October.

ARCADIS BBL. 2008b. *Site-Wide Risk Assessment Work Plan, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California (Site-Wide RAWP)*. Prepared for Georgia-Pacific LLC. ARCADIS BBL, an ARCADIS company. Original version: October 2007. Revised: May 2008.

BACE Geotechnical. 2004. *Engineering Geologic Reconnaissance Report, Planned Blufftop Access Trail, Georgia-Pacific Property, Fort Bragg, California*. Prepared for the City of Fort Bragg. Project No. 11886.1. BACE Geotechnical (a division of Brunsing Associates, Inc.). September.

BBL. 2006. *Current Conditions Report, Georgia-Pacific Wood Products Manufacturing Facility, Fort Bragg, California*. Prepared for Georgia-Pacific Corporation, Fort Bragg, California. Blasland, Bouck & Lee, Inc., an ARCADIS company. December.

Blackburn Consulting, Inc. (BCI). 2006. Letter from Mr. Rick Sowers, PE, CEG, Senior Project Manager, and Mr. Tom Blackburn, GE, Principal, to Mr. John Matthey, Acton•Mickelson•Environmental, Inc., re: *Geotechnical Evaluation, Bearing Support for Heavy Equipment Loads, Georgia-Pacific Mill Site, Fort Bragg, California*. BCI File 924.1. Blackburn Consulting, Inc. February.

California Department of Water Resources. 1982. *Mendocino County Coastal Ground Water Study*. June.

City of Fort Bragg (City). 2011. Draft Mill Site Specific Plan. Available online at <http://city.fortbragg.com/pages/viewpage.lasso?pagename=4|Specific%20Plan>

Department of Toxic Substances Control (DTSC), 1995. *Remedial Action Plan Policy*, DTSC Guidance Document No. EO-95-007-PP.

DTSC. 2009a. *Remedial Goals for Dioxins and Dioxin-like Compounds for Consideration at California Hazardous Waste Sites*. HHRA Note 2. Available online at: www.dtsc.ca.gov/AssessingRisk/upload/HHRA_Note2_dioxin.pdf.

DTSC. 2009b. *Use of the Northern and Southern California Polynuclear Aromatic Hydrocarbon (PAH) Studies in the Manufactured Gas Plant Site Cleanup Process*. California Environmental Protection Agency, Department of Toxic Substances Control.

DTSC. 2012. Letter from Thomas Lanphar, Senior Hazardous Substance Scientist, DTSC to David Massengill, Senior Director, Georgia-Pacific LLC., re: *Approval of the OU-A Consolidation Cell Removal Completion Report dated March 30, 2012*.

DTSC. 2014. *DTSC recommended methodology for use of U.S. EPA Regional Screening Levels (RSLs) in Human Health Risk Assessment process at hazardous waste sites and permitted facilities*. HHRA Note 3. Available online at: www.dtsc.ca.gov/AssessingRisk/upload/HHRA-Note-3-2.pdf.

Environmental Resources Management (ERM). 2011. *RCRA Facility Investigation Work Plan – Skunk Train, Fort Bragg, CA*.

Environmental Resources Management (ERM). 2013. *RCRA Facility Investigation Results*.

Georgia-Pacific. 2003. *Hazardous Materials Business Plan, Georgia-Pacific West, Inc., 90 West Redwood Avenue, Fort Bragg, California 95437*. Submitted to the Mendocino County Department of Public Health, Division of Environmental Health. March 31.

Hygienetics Environmental Services, Inc. (HES). 2003. *Asbestos and Lead Based Paint Inspection Report, Georgia Pacific Site, 90 West Redwood Avenue, Fort Bragg, California*. February.

Johnson, P. and D. Heitmeyer. 2008. Personal communications with Judith Nedoff, ARCADIS. January-August.

Kennedy/Jenks Consultants. 1995. *Limited Soil and Groundwater Investigation Report*. Prepared for Georgia-Pacific Sawmill Facility, Fort Bragg, California. February.

San Francisco Regional Water Quality Control Board (SFRWQCB). 2013. *Environmental Screening Levels*. December.

Stantec. 2013. *First Quarter 2013 Groundwater Monitoring Report. Unocal 76/TOSCO No. 2211. Case No.: 1TMC412*. April 19.

State Water Resources Control Board (SWRCB). 2012. *Resolution No. 2012-0016, Water Quality Control Policy for Low-Threat Underground Storage Tank Case Closure*. May 1.

TRC Companies, Inc. (TRC). Undated #1. *Phase II Determination of Significance Standing Structures Georgia Pacific Lumber Mill Fort Bragg, California*. TRC Companies, Inc. Draft Report.

TRC. Undated #2. *Site Specific Treatment Plan for Cultural Resources*. TRC Companies, Inc. Draft Report.

TRC. 1998. 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. April 1.

TRC. 2003. *Archaeological Survey of the Georgia Pacific Lumber Mill Fort Bragg, California*. TRC Companies, Inc. March.

TRC. 2004a. *Phase I Environmental Site Assessment, Georgia-Pacific California Wood Products Manufacturing Division, 90 West Redwood Avenue, Fort Bragg, California* (Phase I ESA). Prepared for Georgia-Pacific Corporation, 133 Peachtree Street, NE, Atlanta, Georgia. Project No. 41-041901. TRC Companies, Inc. March.

TRC. 2004b. *Phase II Environmental Site Assessment, Georgia-Pacific, 90 West Redwood Avenue, Fort Bragg, California 95437* (Phase II ESA). Prepared for Georgia-Pacific, 133 Peachtree Street, NE, Atlanta, Georgia. Project No. 41-041908. TRC Companies, Inc. May 14.

TRC. 2004c. *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. October.

TRC. 2004d. Letter from Mr. Mohammad Bazargani, P.E., Senior Associate, and Mr. Steve Kemnitz, Project Scientist, to Mr. Craig Hunt, California Regional Water Quality Control Board, North Coast Region, re: *Groundwater Monitoring Report, Third Quarter 2004, Georgia Pacific Former Sawmill Site, 90 West Redwood Avenue, Fort Bragg, California*. Project No. 41-0419-13. TRC Companies, Inc. November 3.

Union Lumber Company (ULC). 1962. *Miscellaneous Site Maps of the Fort Bragg Sawmill* (only partial copies of originals were available).

U.S. Environmental Protection Agency (USEPA). 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies (RI/FS) under CERCLA*. Report No. EPA/540/G-89/004. October.

USEPA. 1990. National Oil and Hazardous Substances Pollution Contingency Plan (NCP). 40 CFR 300 et seq.

USEPA. 2002b. *Calculation and Use of First-Order Rate Constants for Monitored Natural Attenuation Studies*. EPA/540/S-02/500, National Risk Management Research Laboratory, Office of Research and Development, Cincinnati, OH. November.

USEPA. 2014. *Regional Screening Levels for Chemical Contaminants at Superfund Sites*. Available online at <http://www.epa.gov/region09/superfund/prg/index.html>. U.S. Environmental Protection Agency. April 2009. Updated 2014.

USEPA. 2011. *Frequent Questions from Risk Assessors on the Adult Lead Methodology (ALM)*. Available online at <http://www.epa.gov/superfund/health/contaminants/lead/almfaq.htm#equation>.



Tables

Table 2-1
Data Gaps Investigation Analytical Results

Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

| Area of Interest | Location | Sample Type: | Depth Interval (ft bgs) | TPHg, BTEX and Oxygenates | | | | | | | | | | | TPHd/TPHmo | | Metals | |
|---|-------------|--------------|-------------------------|---------------------------|----------------------|-------------------------|----------------------|------------------------------|---------------------------------|----------------------|----------------------|---------------------|-------------------------|--------------------------------|------------------------------------|-----------------------------------|--------------|-----|
| | | | | Benzene (ug/kg or ug/L) | DIPE (ug/kg or ug/L) | Ethanol (ug/kg or ug/L) | ETBE (ug/kg or ug/L) | Ethylbenzene (ug/kg or ug/L) | Gasoline C6-C10 (ug/kg or ug/L) | MTBE (ug/kg or ug/L) | TAME (ug/kg or ug/L) | TBA (ug/kg or ug/L) | Toluene (ug/kg or ug/L) | Xylenes, Total (ug/kg or ug/L) | Diesel Oil C10-C24 (mg/kg or ug/L) | Motor Oil C24-C36 (mg/kg or ug/L) | Lead (mg/kg) | |
| Former AST and Former Parcel 3 MES / Pilot Study AOlS | OUC-DP-1001 | SO | 6-7 | <5.2 | <5.2 | <520 | <5.2 | <5.2 | <260 | <5.2 | <5.2 U* | <10 | <5.2 | <10 | 1.1 | <50 | --- | |
| | | SO | 10.5-11.5 | <480 | <480 | <19,000 | <480 | 160 J | 52,000 | <480 | <480 U* | <970 | <480 | <970 | 780 | 41 J | --- | |
| | | SO | 16-17 | <4.2 | <4.2 | <420 | <4.2 | <4.2 | <210 | <4.2 | <4.2 U* | <8.4 | <4.2 | <8.4 | 1.5 | <50 | --- | |
| | OUC-DP-1002 | SO | 6-7 | <5.3 | <5.3 | <530 | <5.3 | <5.3 | <270 | <5.3 | <5.3 U* | <11 | <5.3 | <11 | 0.57 JB | 4.5 JB | --- | |
| | | SO | 10-11 | <4.8 | <4.8 | <480 | <4.8 | 170 | 140,000 | <4.8 | <4.8 U* | <9.6 | <4.8 | <9.6 | 3,300 B | 240 J | --- | |
| | | SO | 16-17 | <4.7 | <4.7 | <470 | <4.7 | <4.7 | <240 | <4.7 | <4.7 U* | <9.4 | <4.7 | <9.4 | <1.0 | <50 | --- | |
| | OUC-DP-1003 | SO | 6-7 | <5.2 | <5.2 | <520 | <5.2 | <5.2 | <260 | <5.2 | <5.2 U* | <10 | <5.2 | <10 | <1.0 | <50 | --- | |
| | | SO | 10.5-11.5 | <4.2 | <4.2 | <420 | <4.2 | 1.1 J | 590 | <4.2 | <4.2 U* | <8.4 | <4.2 | <8.4 | 440 | 27 J | --- | |
| | OUC-DP-1004 | WG | -- | -- | <25 | <25 | <13,000 | <25 | 130 | 27,000 | <25 | <25 | <200 | <25 | <50 | 56,000 | 2,000 | --- |
| | | WG/DUP | -- | -- | <25 | <25 | <13,000 | <25 | 110 | 30,000 | <25 | <25 | <200 | <25 | <50 | 120,000 | 3,800 J | --- |
| | | SO | 6-7 | <5.5 | <5.5 U* | <550 U* | <5.5 | 41 | 4,100 | <5.5 | <5.5 | <11 | <5.5 | <11 | 2,700 | 350 J | --- | |
| | | SO | 10-11 | <4.20 | <4.20 | <17,000 | <4.20 | 4,400 | 470,000 | <4.20 | <4.20 U* | <8.50 | <4.20 | <8.50 | 9,600 | 410 J | --- | |
| | OUC-DP-1005 | SO | 6-7 | <5.4 | <5.4 | <540 | <5.4 | 9.1 | 6,400 | <5.4 | <5.4 U* | <11 | <5.4 | <11 | 740 | 39 J | --- | |
| | | SO | 10-11 | <4.40 | <4.40 | <18,000 | <4.40 | 650 | 220,000 | <4.40 | <4.40 U* | <8.80 | <4.40 | <8.80 | 2,000 | 94 J | --- | |
| | | SO | 16-17 | <4.4 | <4.4 | <440 | <4.4 | <4.4 | <220 | <4.4 | <4.4 U* | <8.9 | <4.4 | <8.9 | <0.99 | <50 | --- | |
| | OUC-DP-1006 | SO | 6-7 | <5.3 | <5.3 | <530 | <5.3 | <5.3 | <270 | <5.3 | <5.3 U* | <11 | <5.3 | <11 | 18 | <50 | --- | |
| | | SO | 9.5-10.5 | <4.80 | <4.80 | <19,000 | <4.80 | 700 | 170,000 | <4.80 | <4.80 U* | <9.60 | <4.80 | <9.60 | 1,600 | 66 J | --- | |
| | | SO | 16-17 | <4.3 | <4.3 | <430 | <4.3 | <4.3 | <210 | <4.3 | <4.3 U* | <8.5 | <4.3 | <8.5 | <0.98 | <49 | --- | |
| | OUC-DP-1007 | WG | -- | -- | <25 | <25 | <13,000 | <25 | 52 | 99,000 | <25 | <25 | <200 | <25 | <50 | 360,000 | 8,300 J | --- |
| | | SO | 6-7 | <5.1 | <5.1 U* | <510 U* | <5.1 | <5.1 | <260 | <5.1 | <5.1 U* | <10 | <5.1 | <10 | 1.4 | <50 | --- | |
| SO | | 10-11 | <4.10 | <4.10 | <16,000 | <4.10 | 190 J | 150,000 | <4.10 | <4.10 U* | <8.20 | <4.10 | <8.20 | 3,500 B | 110 JB | --- | | |
| OUC-DP-1008 | SO | 6-7 | <5.4 | <5.4 | <540 | <5.4 | <5.4 | 1,800 | <5.4 | <5.4 U* | <11 | <5.4 | <11 | 870 B | 79 J | --- | | |
| | SO | 10-11 | <4.7 | <4.7 | <470 | <4.7 | 1,100 | 200,000 | <4.7 | <4.7 U* | <9.3 | 1.7 J | 8.7 J | 4,200 B | 240 J | --- | | |
| | SO | 13-14 | <5.4 | <5.4 | <540 | <5.4 | <5.4 | <270 | <5.4 | <5.4 U* | <11 | <5.4 | <11 | 8.1 | <50 | --- | | |
| OUC-DP-1009 | SO | 6-7 | <5.00 | <5.00 | <20,000 | <5.00 | 52 J | 72,000 | <5.00 | <5.00 U* | <1,000 | <5.00 | 220 J | 5,900 B | 310 J | --- | | |
| | SO | 9.5-10.5 | <5.2 | <5.2 | <520 | <5.2 | 720 | 160,000 | <5.2 | <5.2 U* | <10 | 1.2 J | 250 | 2,000 B | 130 J | --- | | |
| | SO | 13.5-14.5 | <5.2 | <5.2 | <520 | <5.2 | <5.2 | 620 | <5.2 | <5.2 U* | <10 | <5.2 | <10 | 60 B | 24 J | --- | | |
| OUC-DP-1010 | SO | 6-7 | <5.2 | <5.2 | <520 | <5.2 | <5.2 | <260 | <5.2 | <5.2 U* | <10 | <5.2 | <10 | 0.35 J | <50 | --- | | |
| | SO | 11-12 | <4.30 | <4.30 | <17,000 | <4.30 | <4.30 | 140,000 | <4.30 | <4.30 U* | <8.50 | <4.30 | <8.50 | 1,700 | 46 J | --- | | |
| | SO | 16-17 | <5.1 | <5.1 | <510 | <5.1 | <5.1 | <250 | <5.1 | <5.1 U* | <10 | <5.1 | <10 | 3.1 | <50 | --- | | |
| OUC-DP-1011 | SO | 6.5-7 | <5.4 | <5.4 | <540 | <5.4 | <5.4 | <270 | <5.4 | <5.4 | <11 | <5.4 | <11 | 0.45 J | 1.8 JB | --- | | |
| | SO | 11-12 | <4.5 | <4.5 | <450 | <4.5 | 46 | 61,000 | <4.5 | <4.5 | <8.9 | <4.5 | <8.9 | 810 | 32 JB | --- | | |
| | SO | 16-17 | <5.1 | <5.1 | <510 | <5.1 | <5.1 | <260 | <5.1 | <5.1 U* | <10 | <5.1 | <10 | 6.4 | 1.8 JB | --- | | |
| OUC-DP-1012 | WG | -- | <10 | <10 | <5,000 | <10 | 2.3 J | 2,800 | <10 | <10 | <80 | <10 | <20 | 130,000 | 5,000 J | --- | | |
| | SO | 6-7 | <5.4 | <5.4 | <540 | <5.4 | <5.4 | <270 | <5.4 | <5.4 U* | <11 | <5.4 | <11 | 0.44 J | 2.3 JB | --- | | |
| | SO | 11.5-12.5 | <4.1 | <4.1 | <410 | <4.1 | 32 | 120,000 | <4.1 | <4.1 U* | <8.3 | <4.1 | <8.3 | 2,400 | <2,500 | --- | | |
| Former AST and Former Parcel 3 MES / Pilot Study AOlS | OUC-DP-1013 | SO | 6.5-7 | <5.1 | <5.1 | <510 | <5.1 | <5.1 | <260 | <5.1 | <5.1 U* | <10 | <5.1 | <10 | 0.64 J | 2.6 JB | --- | |
| | | SO | 11.5-12 | <4.4 | <4.4 | <440 | <4.4 | <4.4 | <220 | <4.4 | <4.4 U* | <8.9 | <4.4 | <8.9 | 690 | 20 JB | --- | |
| | | SO | 16.5-17 | <5.0 | <5.0 | <500 | <5.0 | <5.0 | <250 | <5.0 | <5.0 U* | <10 | <5.0 | <10 | 12 | 13 JB | --- | |
| Kilns AOl | OUC-DP-1014 | SO | 0-0.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 28 B | 510 B | --- | |
| | OUC-DP-1015 | SO | 0-0.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 160 B | 1,200 B | --- | |
| | OUC-DP-1016 | SO | 1.5-2 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 2.9 B | 35 JB | --- | |
| Rail Lines EastAOI | OUC-SS-1017 | SO | 0-0.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 42 | |

Notes for Table 2-1

Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

Bold entries indicate measured concentrations.

| | | |
|------------------|---|--|
| X/X after result | = | Data qualifiers. The first was added by the laboratory and the second by ARCADIS during data validation. If there is only a laboratory qualifier, it is shown without a slash after (e.g., J). |
| -- | = | not available, not measured, not analyzed, not applicable, or not established |
| < | = | sample result is less than the indicated MRL. |
| AOI | = | area of interest |
| B | = | analyte was also detected in the associated method blank. |
| BTEX | = | benzene, toluene, ethylbenzene, and total xylenes |
| DIPE | = | di-isopropyl ether |
| DUP | = | duplicate sample |
| ETBE | = | ethyl tertiary butyl ether |
| ft bgs | = | feet below ground surface |
| J | = | Indicates that the associated numerical value is an estimated concentration. |
| MDL | = | method detection limit |
| mg/kg | = | milligrams per kilogram |
| MRL | = | method reporting limit |
| MTBE | = | methyl tertiary butyl ether |
| ND | = | not detected |
| OU | = | operable unit |
| PAH | = | polycyclic aromatic hydrocarbon |
| SO | = | soil sample |
| TAME | = | tertiary amyl methyl ether |
| TBA | = | tertiary butyl alcohol |
| TPHd | = | total petroleum hydrocarbons as diesel |
| TPHg | = | total petroleum hydrocarbons as gasoline |
| TPHmo | = | total petroleum hydrocarbons as motor oil |
| U | = | not detected |
| µg/L | = | microgram(s) per liter |
| µg/kg | = | microgram(s) per kilogram |

**Table 2-2
OU-C and OU-D
Area of Interest (AOI) Status and Proposed Remedial Action**

**Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

| AOI | OU | NFA in RI Report | Proposed NFA In RAP, but not included in FS | Proposed Remedial Action in RAP, with media listed |
|---|-------------------------|------------------|---|---|
| Parcel 1 | C | X | | |
| Parcel 2 | C | | | Groundwater (GW) |
| Rail Lines West | C | Partial | X | |
| Former Dip Tank | C | | | GW,SOIL |
| Former AST | C | | | GW,SOIL |
| Former MES/Pilot Study | C | | | GW,SOIL |
| Dry Sheds #4,#5 | C | Partial | X | |
| Former Planer #1, #50 | C | Partial | X | |
| Truck Loading Shed | C | X | | |
| Former Green Chain | C | X | | |
| Construction Engineering | C | X | | |
| Rail Lines East | C | | | SOIL |
| Kilns | C | | | SOIL |
| Former MS/IRM | C | | | NFA for soil and GW after further evaluation in RAP |
| Former Oil House | C | | X | |
| Miscellaneous | C | | X | |
| Transformer Pad | C | | X | |
| West of IRM | Moved to OU E from OU C | | | |
| IRM | Moved to OU E from OU C | | | |
| Parcel 6 | C | | X | |
| Planer #2 | D | | | GW, SOIL |
| Former Shipping Off. & Truck Shop | D | Partial | | SOIL |
| Sawmill/Sorter | D | Partial | | GW |
| Greenhouse | D | | | GW |
| Scales | D | X | | |
| Former Log Storage and Sediment Stockpile | D | Partial | X | |
| Log Deck | D | Partial | X | |
| Riparian | Moved to OU E from OU D | | | |
| Clinker/Fill | D | X | | |
| Former Sheep Barn | D | Partial | X | |
| Former Airstrip | D | X | | |
| Cypress Gate | D | X | | |

Notes:

- FS - Feasibility Study
- NFA - No Further Action
- OU - Operable Unit
- RAP - Remedial Action Plan
- RI - Remedial Investigation

**Table 2-3
Exposure Point Concentrations for COCs
in Each AOI with Proposed Remedial Action**

**Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

| AOI | Depth | Lead mg/kg | B(a)P mg/kg | Dioxin TEQ mg/kg | Pentachlorophenol mg/kg |
|----------------------------------|-----------------|-----------------|-------------------|---------------------|----------------------------|
| Remedial Goal | | 102 | 0.4 | 5.00E-05 | 12.3 |
| Parcel 2 | 0 - 0.5 ft. bgs | 39 | 0.078 | - | - |
| | 0 - 2 ft. bgs | 30 | 0.078 | - | - |
| | 0- 10 ft. bgs | 22 | 0.078 | - | 2 ^m |
| Former AST | 0 - 0.5 ft. bgs | 150 | 0.065 | - | - |
| | 0 - 2 ft. bgs | 140 | 0.057 | - | - |
| | 0- 10 ft. bgs | 220 | 0.018 | - | - |
| MES/Pilot Study | 0 - 0.5 ft. bgs | 160 | - | - | - |
| | 0 - 2 ft. bgs | 150 | - | - | - |
| | 0- 10 ft. bgs | 100 | - | - | - |
| Former Dip Tank- post excavation | 0 - 0.5 ft. bgs | 29 ^m | - | 8.90E-06 | - |
| | 0 - 2 ft. bgs | 29 ^m | - | 1.70E-05 | 0.99 ^m |
| | 0- 10 ft. bgs | 16 | - | 6.00E-06 | - |
| Rail Lines East- post excavation | 0 - 0.5 ft. bgs | 73 | 0.12 | - | - |
| | 0 - 2 ft. bgs | 71 | 0.1 | - | - |
| | 0- 10 ft. bgs | 70 | 0.082 | - | - |
| Kilns- post excavation | 0 - 0.5 ft. bgs | 60 | - | - | - |
| | 0 - 2 ft. bgs | 60 | - | - | - |
| | 0- 10 ft. bgs | 60 | - | - | - |
| Former MS/IRM | 0 - 0.5 ft. bgs | 30 | 0.0066 | - | - |
| | 0 - 2 ft. bgs | - | 0.0052 | - | - |
| | 0- 10 ft. bgs | 67 | 0.037 | - | - |
| Planer #2- post excavation | 0 - 0.5 ft. bgs | 15 | 0.086 | - | - |
| | 0 - 2 ft. bgs | 13 | 0.053 | - | - |
| | 0- 10 ft. bgs | 10 | 0.046 | - | - |
| Former Shipping Office | 0 - 0.5 ft. bgs | - | 0.055 | - | - |
| | 0 - 2 ft. bgs | 13 | 0.044 | - | - |
| | 0- 10 ft. bgs | 9.9 | 0.023 | - | - |
| Sawmill Sorter | 0 - 0.5 ft. bgs | 41 | .011 ^m | - | - |
| | 0 - 2 ft. bgs | 32 | 0.0062 | - | - |
| | 0- 10 ft. bgs | 38 | 0.0045 | - | - |
| Greenhouse | 0 - 0.5 ft. bgs | 28 ^m | - | - | - |
| | 0 - 2 ft. bgs | 28 ^m | - | - | - |
| | 0- 10 ft. bgs | 28 ^m | - | - | - |

Notes:

EPC are calculated for expected post excavation concentrations for the Former Dip Tank, Rail Lines East, Kilns, and Planer #2 AOIs.

^m = maximum concentration used for EPC

**Table 2-4
Summary of Risk Drivers for Soil and Soil Vapor Excluding Arsenic in OU-C and OU-D**

**Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California.**

| OU | EU | Scenario | Unacceptable Risk | | | | Pathway | Pathway % Contribution | COC | COC % Contribution | |
|------------------------------|---------------------|---------------------------------|---------------------|---------------------|---------------------|---------------|--------------|---------------------------------|--------------|--------------------|-----|
| | | | Receptor | Depth | ELCR/HI | Risk | | | | | |
| OU-C | Former AST | RME | Resident | 0-0.5 or 0-2 ft bgs | ELCR | 5E-02 | Soil Vapor | >99% | Benzene | 75% | |
| | | | | | HI | 900 | Soil Vapor | >98% | Ethylbenzene | 14% | |
| | | | | 1,2,4-TMB | 69% | Naphthalene | 12% | | | | |
| | | | | Benzene | 12% | | | | | | |
| | | | 0-10 ft bgs | ELCR | 5E-02 | Soil Vapor | >99% | Benzene | 75% | | |
| | | | | HI | 900 | Soil Vapor | >98% | Ethylbenzene | 14% | | |
| | | | | 1,2,4-TMB | 69% | Naphthalene | 12% | | | | |
| | | | | Benzene | 12% | | | | | | |
| | | Commercial/Industrial Worker | 0-0.5 or 0-2 ft bgs | ELCR | 4E-03 | Soil Vapor | >99% | Benzene | 75% | | |
| | | | | HI | 80 | Soil Vapor | >99% | Ethylbenzene | 14% | | |
| | | | 1,2,4-TMB | 69% | Naphthalene | 12% | | | | | |
| | | | Benzene | 12% | | | | | | | |
| | | | 0-10 ft bgs | ELCR | 4E-03 | Soil Vapor | >99% | Benzene | 75% | | |
| | | | | HI | 80 | Soil Vapor | >99% | Ethylbenzene | 14% | | |
| | 1,2,4-TMB | 69% | Naphthalene | 12% | | | | | | | |
| | Benzene | 12% | | | | | | | | | |
| | Lead Evaluation | Child Resident | 0-0.5 or 0-2 ft bgs | -- | -- | Soil Exposure | 100% | 0-0.5 ft bgs: 153 / 105 mg/kg * | | | |
| | | | 0-10 ft bgs | -- | -- | Soil Exposure | 100% | 0-2 ft bgs: 141 / 105 mg/kg * | | | |
| | | Construction Worker | 0-10 ft bgs | -- | -- | Soil Exposure | 100% | 220 / 105 mg/kg * | | | |
| | | Utility/Trench Worker | 0-10 ft bgs | -- | -- | Soil Exposure | 100% | 220 / 185 mg/kg * | | | |
| | | Former Parcel 3 MES/Pilot Study | RME | Resident | 0-0.5 or 0-2 ft bgs | ELCR | 5E-02 | Soil Vapor | >99% | Benzene | 75% |
| | | | | | | HI | 900 | Soil Vapor | >99% | Ethylbenzene | 14% |
| | 1,2,4-TMB | | | | 69% | Naphthalene | 12% | | | | |
| | Benzene | | | | 12% | | | | | | |
| 0-10 ft bgs | ELCR | | | 5E-02 | Soil Vapor | >99% | Benzene | 75% | | | |
| | HI | | | 900 | Soil Vapor | >99% | Ethylbenzene | 14% | | | |
| | 1,2,4-TMB | | | 69% | Naphthalene | 12% | | | | | |
| | Benzene | | | 12% | | | | | | | |
| Commercial/Industrial Worker | 0-0.5 or 0-2 ft bgs | | ELCR | 4E-03 | Soil Vapor | >99% | Benzene | 75% | | | |
| | | | HI | 80 | Soil Vapor | >98% | Ethylbenzene | 14% | | | |
| | 1,2,4-TMB | | 69% | Naphthalene | 12% | | | | | | |
| | Benzene | | 12% | | | | | | | | |
| | 0-10 ft bgs | | ELCR | 4E-03 | Soil Vapor | >99% | Benzene | 75% | | | |
| | | | HI | 80 | Soil Vapor | >99% | Ethylbenzene | 14% | | | |
| | 1,2,4-TMB | | 69% | Naphthalene | 12% | | | | | | |
| | Benzene | | 12% | | | | | | | | |

**Table 2-4
Summary of Risk Drivers for Soil and Soil Vapor Excluding Arsenic in OU-C and OU-D**

**Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California.**

| OU | EU | Scenario | Unacceptable Risk | | | | Pathway | Pathway % Contribution | COC | COC % Contribution | | |
|------------------------------|----------------------------------|----------|------------------------------|---------------------|------------------------------|---------------------|------------|------------------------|----------------|--------------------|----------------|-----|
| | | | Receptor | Depth | ELCR/HI | Risk | | | | | | |
| OU-C | Former Parcel 3 Machine Shop/IRM | RME | Resident | 0-0.5 or 0-2 ft bgs | ELCR | 3E-04 | Soil Vapor | >99% | Vinyl Chloride | 52% | | |
| | | | | | HI | 2 | Soil Vapor | >95% | Benzene | 31% | | |
| | | | | 0-10 ft bgs | ELCR | 3E-04 | Soil Vapor | >98% | 1,2,4-TMB | 44% | | |
| | | | | | HI | 2 | Soil Vapor | >82% | Bromomethane | 19% | | |
| | | | Commercial/Industrial Worker | 0-0.5 or 0-2 ft bgs | ELCR | 3E-05 | Soil Vapor | >99% | Benzene | 14% | | |
| | | | | 0-10 ft bgs | ELCR | 3E-05 | Soil Vapor | >99% | Vinyl Chloride | 52% | | |
| | | | Rail Lines East | RME | Resident | 0-0.5 or 0-2 ft bgs | ELCR | 2E-06 | Soil | 100% | Benzene | 31% |
| | | | | | | | HI | 2 | Soil | 100% | Vinyl Chloride | 52% |
| | OU-D | Planer#2 | RME | Resident | 0-0.5 or 0-2 ft bgs | ELCR | 2E-03 | Soil Vapor | >99% | B(a)P-TEQ | 76% | |
| | | | | | | HI | 30 | Soil Vapor | >98% | Vinyl Chloride | 37% | |
| 0-10 ft bgs | | | | | | ELCR | 2E-03 | Soil Vapor | >99% | PCE | 31% | |
| | | | | | | HI | 30 | Soil Vapor | >98% | 1,2,4-TMB | 42% | |
| Commercial/Industrial Worker | | | | | 0-0.5 or 0-2 ft bgs | ELCR | 2E-04 | Soil Vapor | >92% | PCE | 24% | |
| | | | | | 0-10 ft bgs | ELCR | 2E-04 | Soil Vapor | >99% | 1,1-DCE | 11% | |
| | | | | | | HI | 3 | Soil Vapor | >97% | Vinyl Chloride | 37% | |
| | | | | | Commercial/Industrial Worker | 0-0.5 or 0-2 ft bgs | ELCR | 2E-04 | Soil Vapor | >92% | PCE | 31% |
| 0-10 ft bgs | | | | ELCR | | 2E-04 | Soil Vapor | >99% | 1,2,4-TMB | 42% | | |
| | | | | HI | | 3 | Soil Vapor | >98% | PCE | 24% | | |
| 0-10 ft bgs | | | | ELCR | | 2E-04 | Soil Vapor | >99% | 1,1-DCE | 11% | | |
| | | | | HI | 3 | Soil Vapor | >98% | Vinyl Chloride | 37% | | | |

Notes:

Table presents ELCR and HI risk summaries for AOIs with an ELCR greater than 1E-06 and/or an HI greater than 1.

* = For the lead hazard evaluation: Lead EPC / Receptor Specific Screening Level

-- = Not applicable

> = greater than

1,1-DCE = 1,1-Dichloroethane

1,2,4-TMB = 1,2,4-trimethylbenzene

AOI = area of interest

AST = aboveground storage tank

bgs = below ground surface

COC = chemical of concern

EPC = exposure point concentration

ELCR = excess lifetime cancer risk

EU = exposure unit

ft = feet

HI = hazard index

IRM = interim remedial measure

MES = mobile equipment shop

mg/kg = milligrams per kilogram

OU = operable unit

B(a)P TEQ = Benzo(a)pyrene toxicity equivalents (carcinogenic PAHs)

PCE = tetrachloroethene

RME = reasonable maximum exposure

**Table 3-1
Applicable or Relevant and Appropriate Requirements (ARARs) and "To be Considered" (TBC) Factors**

**Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

| Standard, Requirement, Criteria, Limitation | Citation | Description | Type of ARARs |
|--|----------------------------------|---|----------------------|
| Federal | | | |
| Resource Conservation and Recovery Act | 40 CFR Part 261 | Establishes criteria to determine whether solid waste exhibits characteristics that makes it a regulated hazardous waste | Chemical/ Action |
| | 40 CFR 263 | Standards applicable to transporters of hazardous waste | Chemical/ Action |
| Toxic Substances Control Act | 40 CFR 761.60 , 761.61, 761.75 | Regulations that determine the appropriate characterization, cleanup, and disposal requirements for PCBs. | Chemical/ Action |
| Clean Water Act | 33 USCA 1251-1376 40 CFR 100-149 | Regulations requiring development and implementation of a storm water pollution prevention plan | Action |
| Clean Air Act | 42 USC 7401-7642 | Emission Standards from stationary and mobile sources | Chemical |
| Occupational Health and Safety | 29 CFR 1910.120 | Establishes requirements for health and safety training | Action |
| National Archaeological and Historical Preservation Act | 16 USC § 469 36 CFR Part 65 | Provides requirements if significant scientific/cultural/historical artifacts are found | TBC |
| Risk Assessment Guidance for Superfund; Ecological Risk Assessment Guidance for Superfund; Ecological Screening Levels | USEPA, 1989, 1997, 2005 | Guidance and framework to assess human and ecological risks | TBC |
| Preliminary Remediation Goals | USEPA Region 9, 2004 | Risk-based concentrations that are intended to assist risk assessors and others in initial screening-level evaluations of environmental measurements. | TBC |
| State and Local | | | |
| Title 22, California Hazardous Waste Control Act of 1972 | 22 CCR 66260.1 et seq. | Establishes criteria for determining waste classification for the purposes of transportation and disposal of wastes | Chemical/ Action |
| | 22 CCR 66262.1 et seq. | Establishes standards applicable to generators of hazardous waste | Action |
| | 22 CCR Chapter 18 | Identifies hazardous waste restricted from land disposal unless specific treatment standards are met | Chemical/ Action |

**Table 3-1
Applicable or Relevant and Appropriate Requirements (ARARs) and "To be Considered" (TBC) Factors**

**Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

| Standard, Requirement, Criteria, Limitation | Citation | Description | Type of ARARs |
|--|--|---|----------------------|
| Title 27, Division 2 of the California Code of Regulations | 27 CCR 20005 et seq. | Regulation of solid waste | Chemical/ Action |
| Water Quality Control Plan for the North Coast Region | NCRWQCB, May 2011 | Beneficial uses, water quality objectives, and implementation plans | Chemical/ Action |
| SWRCB Resolution No. 68-16 | SWRCB, October 1968 | Establishes policy for the regulation of discharges to waters of the state. | TBC |
| SWRCB Resolution No. 92-49 | SWRCB October 1996 Water Code Section 13304 | Establishes policies and procedures for investigation and cleanup and abatement of discharges. | TBC |
| SWRCB Resolution No. 2012-0016 | SWRCB, 2012 | Provides a framework and environmental standards for evaluating the need for active remediation and monitoring to protect human health and the environment from petroleum hydrocarbon constituents in soil, soil vapor, and groundwater | TBC |
| Ambient Air Quality Standards | H&S Sec. 39000-44071 and Mendocino County Air Quality Management District Regulations | Establishes standards for emissions of chemical vapors and dust | Chemical |
| California Coastal Act | Public Resources Code Division 20 | Establishes permitting requirements and conditions for any "development" which remedial activities qualify as. | Location/ Action |
| Manifest System, Record-Keeping, Reporting and Transportation of Hazardous Waste | 22 CCR Chapter 13 | Governs transportation of hazardous materials | Action |
| State PCB Requirements | 22 CCR 66261.113 | Establishes standards to disposal of PCBs | Chemical/ Action |
| California Hazardous Waste Control | Health and Safety Code, Chapter 6.5, Sec. 25100-25250.26 | Establishes hazardous waste control measures | Action |
| California Hazardous Substances Account Act | Health and Safety Code, Chapter 6.8, Sec 25300-25395.15 | Establishes site mitigation and cost recovery programs | Action |
| Site Investigation and Remediation Order | Docket No. HSA-RAO 06-07-150 | Establishes requirements for investigation and site remediation | Action |
| California Environmental Quality Act | Public Resources Code Section 21000-21177 | Mandates environmental impact review of projects approved by governmental agencies | Action |

**Table 3-1
Applicable or Relevant and Appropriate Requirements (ARARs) and "To be Considered" (TBC) Factors**

**Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

| Standard, Requirement, Criteria, Limitation | Citation | Description | Type of ARARs |
|---|--|---|----------------------|
| Discharges of Hazardous Waste to Land | Title 23, California Code of Regulations, Division 3, Ch. 15 | Applies to discharge of waste | Action |
| Emission Standard | MCAQMD Regulation 1 Chapters 1, 2 and 4. | Establishes emission standards and permitting requirements for equipment and dust. | Action |
| City of Fort Bragg Grading Permit Requirements and Procedures | Title 18, Chapter 18.60 | Establishes requirements for excavation and grading. | Location/ Action |
| Stockpiling Requirements of Contaminated Soil | H&S Sec. 25123.3(a)(20) | Establishes standards for stockpiling of non-RCRA contaminated soil | Location/ Action |
| Requirements for Substances Deleterious to Fish and Wildlife | California Fish and Game Code Section 5650 | Makes it unlawful to deposit into, permit to pass into, or place where it can pass into the waters of the state certain specified pollutants. | Chemical/ Action |
| Relevant Policies for the Protection and Conservation of Fish and Wildlife | California Fish and Game Code Section 2014 | Requires conservation of natural resources and prevention of the willful or negligent destruction of birds, mammals, fish, reptiles, or amphibia. | Location/ Action |
| | California Fish and Game Code Section 1600 | Establishes protection and conservation of the fish and wildlife resources. | Location/ Action |
| Occupational Health and Safety | 8 CCR GISO 5192 | Establishes worker health and safety requirements | Action |
| Remedial Action Plan Policy | EO-95-007-PP | Guidance and framework to develop a remedial action plan | TBC |
| Porter-Cologne Water Quality Control Act | California Water Code Section 13000 SWRCB, 2011 | Establishes policy for preservation and enhancement of the beneficial uses of the waters of the state | SWRCB |
| Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazardous Waste Sites and Permitted Facilities; Guidance for Ecological Risk Assessment at Hazardous Waste Sites and Permitted Facilities | CalEPA, 1992 CalEPA, 1996 | Guidance and framework to assess human and ecological risks | TBC |
| California Human Health Screening Levels | CalEPA, 2006 | Risk-based concentrations for human receptors that are intended to assist risk assessors and others in initial screening-level evaluations of environmental measurements. | TBC |

**Table 3-1
Applicable or Relevant and Appropriate Requirements (ARARs) and "To be Considered" (TBC) Factors**

**Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

| Standard, Requirement, Criteria, Limitation | Citation | Description | Type of ARARs |
|---|----------|-------------|---------------|
|---|----------|-------------|---------------|

Notes:

| | |
|---|---|
| CalEPA - California Environmental Protection Agency | SWRCB – State Water Resources Control Board |
| CCR – California Code of Regulation | TBC - to be considered |
| CFR – Code of Federal Regulation | USC – United States Code |
| GISO - General Industry Safety Order | USCA – United States Code Annotated |
| HSC - Health and Safety Code | USEPA - United States Environmental Protection Agency |
| MCAQMD – Mendocino County Air Quality Management District | |
| RCRA - Resource Conservation and Recovery Act | |
| RWQCB - Regional Water Quality Control Board | |

References:

CalEPA. 1992. Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazardous Waste Sites and Permitted Facilities. California Environmental Protection Agency, Office of Scientific Affairs. July.

CalEPA. 2006. Public Health Goals for Drinking Water. Available at: <http://www.oehha.ca.gov/water/phg/index.html>. California Environmental Protection Agency. Accessed on December 22, 2006.

**Table 3-2
Chemical Specific Remedial Action Goals for Groundwater**

**Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

| Constituent/Analytical Group | Chemical Specific Remedial Goals - Groundwater | | | | |
|---|--|---|----------------|--|--|
| | Chemical Specific Remedial Goal (µg/L) | Remedial Goal Below Detection Limit? ¹ | Source | Drinking Water MCL (for comparison) (µg/L) | Vapor Intrusion ² (for comparison) (µg/L) |
| Metals | | | | | |
| Arsenic | 2.5 | No | Background | 10 | NA |
| Volatile Organic Compounds (VOCs) | | | | | |
| Benzene | 0.15 | Yes | OEHHA PHG | 1 | 27 |
| 1,2,4-Trimethylbenzene | 15 | No | CVWQCB T&O | NA | NA |
| Tetrachloroethene | 0.06 | Yes | OEHHA PHG | 5 | 63 |
| Trichloroethene | 1.7 | No | OEHHA PHG | 5 | 130 |
| cis-1,2-Dichloroethene | 6 | No | CA Primary MCL | 6 | 3,100 |
| 1,1-Dichloroethane | 3 | No | OEHHA PHG | 5 | NA |
| 1,1-Dichloroethene | 6 | No | CA Primary MCL | 6 | 16,000 |
| 1,2-Dichloroethane | 0.4 | Yes | OEHHA PHG | 0.5 | 100 |
| Vinyl Chloride | 0.05 | Yes | OEHHA PHG | 0.5 | 1.8 |
| Semivolatile Organic Compounds (SVOCs) | | | | | |
| Pentachlorophenol | 0.3 | No | OEHHA PHG | 1 | NA |
| Pesticides | | | | | |
| Atrazine | 0.15 | Yes | OEHHA PHG | 3 | NA |
| Dioxins and Furans | | | | | |
| 2,3,7,8 TCDD TEQ ³ | 5E-08 | Some Congeners | OEHHA PHG | 3E-05 | NA |
| Total Petroleum Hydrocarbons | | | | | |
| Total Gasoline (C6-C10) | 50 | No | T&O Threshold | NA | NA |
| Total Diesel (C10-C24) | 100 | No | T&O Threshold | NA | NA |

¹ Where indicated, Remedial Goal is below detection limits typically achieved by analytical laboratories.

Compliance with remedial goals will be achieved if these constituents are not detected above the following typical detection limits (µg/L):

- Benzene - 0.5
- Tetrachloroethene - 0.5
- 1,2-Dichloroethane - 0.5
- Vinyl Chloride - 0.5
- Atrazine - 0.5

A range of detection limits is possible for individual Dioxin and Furan congeners. Compliance with remedial goals will be achieved based on comparison of TEQ values calculated using only detected congeners.

² Environmental Screening Level for Evaluation of Potential Vapor Intrusion for Residential Land Use; Prepared by San Francisco Regional Water Quality Control Board (Table E-1; December 2013)

³ Note 5E-08 µg/L and 3E-5 µg/L are equal to 0.05 pg/L and 30 pg/L respectively
1 µg/L = 1,000 ng/L = 1,000,000 pg/L

Acronyms and Abbreviations:

| | |
|----------------|--|
| CA Primary MCL | California Department of Public Health Primary MCL |
| Cal/EPA | California Environmental Protection Agency |
| Cal/EPA CPF | One-in-a-Million Incremental Cancer Risk Estimates for Drinking Water, Cal/EPA Cancer Potency Factor |
| CVWQCB T&O | CVRWQCB (2004) TPH water quality objectives for taste and odor |
| MCL | Maximum Contaminant Level |
| OEHHA PHG | Office of Environmental Health and Safety Public Health Goal |
| PHG | public health goal |
| SVOC | semi volatile organic compound |
| TCDD | tetrachlorodibenzo-p-dioxin |
| TEQ | toxic equivalent |
| T&O | taste and odor |
| VOC | volatile organic compound |
| µg/L | micrograms per liter (1E-6 grams per liter = parts per billion) |
| ng/L | nanograms per liter (1E-9 grams per liter = parts per trillion) |

**Table 3-3
Chemical Specific Remedial Action Goals for Soil**

**Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

| COC | Units | Soil Remedial Goal ¹ | | | | | |
|----------------------|-------|---|-----------------------------------|-------------------------------------|--------------------------------|-----------------------------------|---------------------------------------|
| | | Unrestricted (Resident Adult/Child) | Commercial Worker ² | Construction Worker ² | Utility Worker ² | Passive Recreator ² | Occassional Recreator ² |
| Lead | mg/kg | 1.02E+02 | 3.95E+02 | 1.85E+02 | 1.85E+02 | NA | NA |
| Dioxin TEQ (mammals) | mg/kg | 5.00E-05 | 2.00E-04 | 1.41E-03 | 2.52E-03 | NA | NA |
| Pentachlorophenol | mg/kg | 1.23E+01 | 1.33E+01 | 9.54E+01 | 7.79E+01 | NA | NA |
| Benzo(a)pyrene | mg/kg | 4.00E-01 | 4.00E-01 | 1.66E+00 | 2.97E+00 | 1.53E+00 | 4.00E-01 |

Notes:

mg/kg = milligrams per kilogram

NA = not applicable

¹ See Appendix B for development of remedial goals

² Alternative goals are provided for use with restricted land use scenarios.

**Table 3-4
TPH Remedial Action Goals for Soil**

**Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

| Compound | Soil | | |
|--------------------------------------|--|---|---|
| | Direct Contact RBSC ^a (design and construction of buildings are subject to LUC; unrestricted soil contact) | Direct Contact and Indoor Air RBSC ^a (unrestricted use) | Leaching to Groundwater Criteria ^c |
| Units | mg/kg | mg/kg | mg/kg |
| Aliphatics^c | | | |
| TPH as Gasoline (C6-C8) | 5,627 | 2.6 | -- |
| TPH as Gasoline (C8-C10) | 14,066 | 9.8 | -- |
| Total Gasoline (C6-C10) | 14,066 | 9.8 | -- |
| TPH as Gasoline (C7-C12) | 14,066 | 9.8 | -- |
| TPH as Diesel (C10-C12) | 14,066 | 51 | -- |
| TPH as Diesel (C12-C16) | 14,066 | 648 | -- |
| TPH as Diesel (C16-C24) | 14,066 | 10,772 | -- |
| Total Diesel (C10-C24) | 14,066 | 10,772 | 2,730 |
| TPH as Diesel (C10-C24) | 14,066 | 10,772 | 2,730 |
| TPH as Motor Oil (C24-36) | 281,346 | 281,346 | -- |
| Aromatics^c | | | |
| TPH as Gasoline (C6-C8) | NA | NA | -- |
| TPH as Gasoline (C8-C10) | 4,220 | 1.6 | -- |
| Total Gasoline (C6-C10) ¹ | 4,220 | 1.6 | -- |
| TPH as Gasoline (C7-C12) | 4,220 | 1.6 | -- |
| TPH as Diesel (C10-C12) | 4,220 | 8.5 | -- |
| TPH as Diesel (C12-C16) | 4,220 | 110 | -- |
| TPH as Diesel (C16-C24) | 4,220 | 4,220 | -- |
| Total Diesel (C10-C24) ² | 4,220 | 4,220 | 2,730 |
| TPH as Diesel (C10-C24) | 4,220 | 4,220 | 2,730 |
| TPH as Motor Oil (C24-36) | 4,220 | 4,220 | -- |

Notes:

^a Site-specific risk-based screening concentrations (RBSCs, [ARCADIS BBL, 2008]). Total Gasoline, the sum of TPH as gasoline (TPHg) ranges C6-C8 and C8-C10, and TPHg reported as the C7-C12 range are compared to the RBSCs for the C8-C10 range. Total Diesel, the sum of TPH as Diesel (TPHd) ranges C10-C12, C12-C16 and C16-C24, and TPHd reported as the C10-C24 range are compared to the RBSCs for the

^b From Appendix G, Upper bound concentration that would result in leachate concentrations less than the RWQCB TPH Limit of 0.1 mg/L. Soil remedial goal is combined with DI-WET leachate results compared with

^c Aliphatic remedial goals apply unless BTEX and PAH data are not available, Aromatic remedial goals may be used if BTEX and PAH data are unavailable.

**Table 3-5
Soil Vapor Remedial Goals for Residential and Commercial Receptors**

**Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

| Chemical | Health Effect ^a | Residential | | Commercial | |
|------------------------|----------------------------|--------------------------------|---------------------------------------|--------------------------------|---------------------------------------|
| | | Target Indoor Air ^b | Remedial Goal Soil Vapor ^c | Target Indoor Air ^b | Remedial Goal Soil Vapor ^d |
| | | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ |
| Benzene | C | 0.084 | 56 | 0.42 | 700 |
| Ethyl Benzene | C | 1.1 | 733 | 4.9 | 8,166 |
| Bromomethane | NC | 5.2 | 3,466 | 22 | 36,666 |
| 1,1 Dichloroethylene | NC | 73 | 48,666 | 310 | 516,666 |
| Napthalene | C | 0.083 | 55 | 0.36 | 600 |
| Tetrachloroethylene | C | 0.41 | 273 | 2.08 | 3,466 |
| 1,2,4 Trimethylbenzene | NC | 7.3 | 4,866 | 31 | 51,666 |
| Vinyl Chloride | C | 0.031 | 20 | 0.16 | 266 |

Notes:

^a C - carcinogenic chemical; NC – non-carcinogenic chemical

^b From US EPA RSLs (May 2014), except benzene, 1,1 dichloroethylene, tetrachloroethylene, and vinyl chloride target air concentrations are from HERO HHRA Note 3 (May 2013, rev July 2014)

^c Target air concentration divided by 0.0015

^d Target air concentration divided by 0.0006

Table 4-1
Summary of Proposed Alternative Comparisons to Nine Evaluation Criteria

Remedial Action Plan - Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

| AOI | Media | Process Option (Retained) | Remedial Alternative | Objective | Overall Protection of Human Health and the Environment | Compliance with ARARs | Long Term Effectiveness and Permanence | Reduction of Toxicity, Mobility, or Volume Through Treatment | Short Term Effectiveness | Implementability | Cost | State Support / Agency Acceptance | Community Acceptance |
|--|-----------------|--|----------------------|--|--|-----------------------|--|--|--------------------------|------------------|-------------|-----------------------------------|----------------------|
| Parcel 2 AOI | Groundwater | No Action | P2GW-1 | Provides no additional control or action to protect human health or the environment from affected groundwater | Moderate | Moderate | Moderate | Low | High | High | \$0 | Low | Moderate |
| | | Natural Attenuation Analysis | P2GW-2 | Demonstrate a stable and decreasing exposure trend using historical monitoring data | High | High | High | High | High | High | \$50,000 | Low | Moderate |
| | | Monitored Natural Attenuation | P2GW-3 | Periodic sampling of groundwater to evaluate natural biological and chemical remediation of COIs with contingency for potential future remedial actions. | High | High | High | High | High | High | \$111,700 | High | Moderate |
| | | Groundwater Extraction and Treatment | P2GW-4 | Containment and Extraction of affected groundwater; discharge of treated groundwater | High | High | High | High | High | Moderate | Moderate | \$2,328,600 | High |
| Former AST AOI and MES/Pilot Study AOI | Surface Soil | No Action | ASTSS-1 | Provides no additional control or action to protect human health or the environment from affected soil | Low | Low | Low | Low | High | High | \$0 | Low | Low |
| | | Deed Restriction / Notification | ASTSS-2 | Restrict future land uses and implement soil management plan based on COIs and associated risks. | High | High | High | Low | High | High | \$50,000 | High | Moderate |
| | | Capping - Barriers and Covers | ASTSS-3 | Eliminate exposure pathways through containment and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | Moderate | Moderate | Moderate | Low | \$150,000 | High | Low |
| | | In-Situ Solidification / Stabilization | ASTSS-4 | Immobilization of COIs and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | High | High | Moderate | Moderate | \$330,000 | High | Moderate |
| | | Excavation and Disposal | ASTSS-5 | Remove affected soil and dispose offsite at a permitted disposal facility. Stockpile clean material and reuse for backfill | High | High | High | High | Moderate | Moderate | \$170,000 | High | Moderate |
| | Smear Zone Soil | No Action | ASTSZS-1 | Provides no additional control or action to protect human health or the environment from affected soil | Low | Low | Low | Low | High | High | \$0 | Low | Low |
| | | Ex-Situ Soil Remediation | ASTSZS-2 | Eliminate soil and groundwater exposure pathways by removing COI-affected soils, treating them at the site, and backfilling the excavation with treated soil. | High | High | High | High | Moderate | Moderate | \$1,000,000 | High | Moderate |
| | | | ASTSZS-3 | Eliminate soil and groundwater exposure pathways by removing COI-affected soils, treating them at the site, and backfilling the excavation with treated soil. | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate | \$1,500,000 | Moderate | Moderate |
| | | In-Situ Solidification / Stabilization | ASTSZS-4 | Immobilization of COIs and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | High | High | Moderate | Moderate | \$2,225,000 | High | Moderate |
| | | Excavation and Disposal | ASTSZS-5 | Remove affected soil and dispose offsite at a permitted disposal facility. Stockpile clean material and reuse for backfill. Further Data collection may be required to define the affected area. | High | High | High | High | Moderate | Moderate | \$1,200,000 | High | Moderate |

Table 4-1
Summary of Proposed Alternative Comparisons to Nine Evaluation Criteria

Remedial Action Plan - Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

| AOI | Media | Process Option (Retained) | Remedial Alternative | Objective | Overall Protection of Human Health and the Environment | Compliance with ARARs | Long Term Effectiveness and Permanence | Reduction of Toxicity, Mobility, or Volume Through Treatment | Short Term Effectiveness | Implementability | Cost | State Support / Agency Acceptance | Community Acceptance |
|--|-------------|--|----------------------|--|--|-----------------------|--|--|--------------------------|------------------|-------------|-----------------------------------|----------------------|
| Former AST AOI and MES/Pilot Study AOI | Groundwater | No Action | ASTGW-1 | Provides no additional control or action to protect human health or the environment from affected groundwater | Low | Low | Low | Low | High | High | \$0 | Low | Low |
| | | Natural Attenuation Analysis | ASTGW-2 | Demonstrate a stable and decreasing exposure trend using historical monitoring data | High | High | High | High | High | Low | \$100,000 | Low | Moderate |
| | | Monitored Natural Attenuation | ASTGW-3 | Periodic sampling of groundwater to evaluate natural biological and chemical remediation of COIs with contingency for potential future remedial actions. | High | High | High | High | High | High | \$372,300 | High | Moderate |
| | | Groundwater Extraction and Treatment | ASTGW-4 | Containment and Extraction of affected groundwater; discharge of treated groundwater | Moderate | High | Moderate | Moderate | Moderate | Moderate | \$3,447,000 | High | Moderate |
| | | In-Situ Anaerobic Bio Oxidation | ASTGW-5 | Anaerobic bio-oxidation of COIs followed by treatment through natural attenuation mechanisms. | High | High | High | High | Moderate | High | \$683,300 | High | Moderate |
| | | In-Situ Chemical Oxidation | ASTGW-6 | One-time injection of highly reactive oxidation solution for treatment of contaminants followed by periodic groundwater sampling to confirm that WQOs will be reached within a reasonable timeframe. | High | High | High | High | Moderate | Moderate | \$615,000 | High | Moderate |
| | | | ASTGW-7 | Periodic injection of highly reactive oxidation solution for treatment of contaminants | High | High | High | High | Moderate | Moderate | \$985,000 | High | Moderate |
| Former Dip Tank AOI | Soil | No Action | FDTS-1 | Provides no additional control or action to protect human health or the environment from affected soil | Low | Low | Low | Low | High | High | \$0 | Low | Low |
| | | Deed Restriction / Notification | FDTS-2 | Restrict future land uses and implement soil management plan based on COIs and associated risks. | High | High | High | Low | High | High | \$75,000 | High | Moderate |
| | | Ex-Situ Soil Remediation | FDTS-3 | Eliminate soil and groundwater exposure pathways by removing COI-affected soils, treating them at the site, and backfilling the excavation with treated soil. | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate | \$975,000 | Moderate | Moderate |
| | | In-Situ Solidification / Stabilization | FDTS-4 | Immobilization of COIs and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | High | High | Moderate | Moderate | \$275,000 | High | Moderate |
| | | Excavation and Disposal | FDTS-5 | Remove affected soil and dispose offsite at a permitted disposal facility. Stockpile clean material and reuse for backfill | High | High | High | High | Moderate | Moderate | \$32,000 | High | Moderate |

Table 4-1
Summary of Proposed Alternative Comparisons to Nine Evaluation Criteria

Remedial Action Plan - Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

| AOI | Media | Process Option (Retained) | Remedial Alternative | Objective | Overall Protection of Human Health and the Environment | Compliance with ARARs | Long Term Effectiveness and Permanence | Reduction of Toxicity, Mobility, or Volume Through Treatment | Short Term Effectiveness | Implementability | Cost | State Support / Agency Acceptance | Community Acceptance |
|---------------------|--------------------------------------|--|----------------------|---|--|-----------------------|--|--|--------------------------|------------------|----------------------|-----------------------------------|----------------------|
| Former Dip Tank AOI | Groundwater | No Action | FDTGW-1 | Provides no additional control or action to protect human health or the environment from affected groundwater | Low | Low | Low | Low | High | High | \$0 | Low | Low |
| | | Natural Attenuation Analysis | FDTGW-2 | Demonstrate a stable and decreasing exposure trend using historical monitoring data | High | High | High | High | High | Moderate | \$50,000 | Low | Moderate |
| | | Monitored Natural Attenuation | FDTGW-3 | Periodic sampling of groundwater to evaluate natural biological and chemical remediation of COIs with contingency for potential future remedial actions. | High | High | High | High | High | High | \$372,300 | High | Moderate |
| | | Groundwater Extraction and Treatment | FDTGW-4 | Containment and Extraction of affected groundwater; discharge of treated groundwater | High | High | High | High | High | Moderate | Moderate | \$2,266,600 | High |
| Rail Lines East AOI | Rail line Surface Soils | No Action | RLESS-1 | Provides no additional control or action to protect human health or the environment from affected soil | Low | Low | Low | Low | High | High | \$0 | Low | Low |
| | | Deed Restriction / Notification | RLESS-2 | Restrict future land uses and implement soil management plan based on COIs and associated risks. | High | High | High | Low | High | High | \$100,000 | High | Moderate |
| | | Capping - Barriers and Covers | RLESS-3 | Eliminate exposure pathways through containment and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | Moderate | Moderate | Moderate | Low | \$245,000 | High | Low |
| | | In-Situ Solidification / Stabilization | RLESS-4 | Immobilization of COIs and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | High | High | Moderate | Moderate | \$525,000 | High | Moderate |
| | | Excavation and Disposal | RLESS-5 | Remove affected soil and dispose offsite at a permitted disposal facility. Stockpile clean material and reuse for backfill | High | High | High | High | Moderate | Moderate | \$50,000 - \$385,000 | High | Moderate |
| | Surface and Shallow Subsurface Soils | No Action | RLESSS-1 | Provides no additional control or action to protect human health or the environment from affected soil | Low | Low | Low | Low | High | High | \$0 | Low | Low |
| | | Deed Restriction / Notification | RLESSS-2 | Restrict future land uses and implement soil management plan based on COIs and associated risks. | High | High | High | Low | High | High | \$75,000 | High | Moderate |
| | | Capping - Barriers and Covers | RLESSS-3 | Eliminate exposure pathways through containment and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | Moderate | Moderate | Moderate | Low | \$195,000 | High | Low |
| | | Ex-Situ Soil Remediation | RLESSS-4 | Eliminate soil and groundwater exposure pathways by removing COI-affected soils, treating them at the site, and backfilling the excavation with treated soil. | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate | \$990,000 | Moderate | Moderate |
| | | In-Situ Solidification / Stabilization | RLESSS-5 | Immobilization of COIs and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | High | High | Moderate | Moderate | \$875,000 | High | Moderate |
| | | Excavation and Disposal | RLESSS-6 | Remove affected soil and dispose offsite at a permitted disposal facility. Stockpile clean material and reuse for backfill | High | High | High | High | Moderate | Moderate | \$1,150,000 | High | Moderate |

Table 4-1
Summary of Proposed Alternative Comparisons to Nine Evaluation Criteria

Remedial Action Plan - Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

| AOI | Media | Process Option (Retained) | Remedial Alternative | Objective | Overall Protection of Human Health and the Environment | Compliance with ARARs | Long Term Effectiveness and Permanence | Reduction of Toxicity, Mobility, or Volume Through Treatment | Short Term Effectiveness | Implementability | Cost | State Support / Agency Acceptance | Community Acceptance |
|-------------------|-------|--|----------------------|---|--|-----------------------|--|--|--------------------------|------------------|-----------|-----------------------------------|----------------------|
| Kilns AOI | Soil | No Action | KSS-1 | Provides no additional control or action to protect human health or the environment from affected soil | Low | Low | Low | Low | High | High | \$0 | Low | Low |
| | | Deed Restriction / Notification | KSS-2 | Restrict future land uses and implement soil management plan based on COIs and associated risks. | High | High | High | Low | High | High | \$50,000 | High | Moderate |
| | | Capping - Barriers and Covers | KSS-3 | Eliminate exposure pathways through containment and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | Moderate | Moderate | Moderate | Low | \$165,000 | High | Low |
| | | Ex-Situ Soil Remediation | KSS-4 | Eliminate soil and groundwater exposure pathways by removing COI-affected soils, treating them at the site, and backfilling the excavation with treated soil. | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate | \$300,000 | Moderate | Moderate |
| | | In-Situ Solidification / Stabilization | KSS-5 | Immobilization of COIs and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | High | High | Moderate | Moderate | \$400,000 | High | Moderate |
| | | Excavation and Disposal | KSS-6 | Remove affected soil and dispose offsite at a permitted disposal facility. Stockpile clean material and reuse for backfill | High | High | High | High | Moderate | Moderate | \$175,000 | High | Moderate |
| Former MS/IRM AOI | Soil | No Action | FMSS-1 | Provides no additional control or action to protect human health or the environment from affected soil | Low | Low | Low | Low | High | High | \$0 | Low | Low |
| | | Deed Restriction / Notification | FMSS-2 | Restrict future land uses and implement soil management plan based on COIs and associated risks. | High | High | High | Low | High | High | \$25,000 | High | Moderate |
| | | Capping - Barriers and Covers | FMSS-3 | Eliminate exposure pathways through containment and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | Moderate | Moderate | Moderate | Low | \$95,000 | High | Low |
| | | In-Situ Solidification / Stabilization | FMSS-4 | Immobilization of COIs and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | High | High | Moderate | Moderate | \$280,000 | High | Moderate |
| | | Excavation and Disposal | FMSS-5 | Remove affected soil and dispose offsite at a permitted disposal facility. Stockpile clean material and reuse for backfill | High | High | High | High | Moderate | Moderate | \$25,000 | High | Moderate |

Table 4-1
Summary of Proposed Alternative Comparisons to Nine Evaluation Criteria

Remedial Action Plan - Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

| AOI | Media | Process Option (Retained) | Remedial Alternative | Objective | Overall Protection of Human Health and the Environment | Compliance with ARARs | Long Term Effectiveness and Permanence | Reduction of Toxicity, Mobility, or Volume Through Treatment | Short Term Effectiveness | Implementability | Cost | State Support / Agency Acceptance | Community Acceptance | |
|-------------------|-------------|--------------------------------------|----------------------|--|--|-----------------------|--|--|--------------------------|------------------|-------------|-----------------------------------|----------------------|----------|
| Former MS/IRM AOI | Groundwater | No Action | FMSGW-1 | Provides no additional control or action to protect human health or the environment from affected groundwater | Low | Low | Low | Low | High | High | \$0 | Low | Low | |
| | | Natural Attenuation Analysis | FMSGW-2 | Demonstrate a stable and decreasing exposure trend using historical monitoring data | High | High | High | High | High | High | \$50,000 | Low | Moderate | |
| | | Monitored Natural Attenuation | FMSGW-3 | Periodic sampling of groundwater to evaluate natural biological and chemical remediation of COIs with contingency for potential future remedial actions. | High | High | High | High | High | High | \$372,300 | High | Moderate | |
| | | Groundwater Extraction and Treatment | FMSGW-4 | Containment and Extraction of affected groundwater; discharge of treated groundwater | High | High | Moderate | Moderate | Moderate | Moderate | \$2,887,800 | High | Moderate | |
| | | Enhanced Aerobic Bioremediation | FMSGW-5 | One-time injection of calcium peroxide solution for treatment of contaminants followed by periodic groundwater sampling to confirm that WQOs will be reached within a reasonable timeframe. | High | High | High | High | High | Moderate | Moderate | \$889,800 | High | Moderate |
| | | | FMSGW-6 | Periodic injection of calcium peroxide solution for treatment of contaminants | High | High | High | High | High | Moderate | Moderate | \$600,000 | High | Moderate |
| | | Enhanced Anaerobic Bioremediation | FMSGW-7 | Anaerobic bio-oxidation of COIs followed by treatment through natural attenuation mechanisms. | High | High | High | High | High | Moderate | Moderate | \$416,400 | High | Moderate |
| | | | FMSGW-8 | Periodic injections to enhance anaerobic bio-oxidation of COIs | High | High | High | High | High | Moderate | Moderate | \$480,000 | High | Moderate |
| | | In-Situ Chemical Oxidation | FMSGW-9 | One-time injection of highly reactive oxidation solution for treatment of contaminants followed by periodic groundwater sampling to confirm that WQOs will be reached within a reasonable timeframe. | High | High | High | High | High | Moderate | Moderate | \$590,100 | High | Moderate |
| | | | FMSGW-10 | Periodic injection of highly reactive oxidation solution for treatment of contaminants | High | High | High | High | High | Moderate | Moderate | \$400,000 | High | Moderate |

Table 4-1
Summary of Proposed Alternative Comparisons to Nine Evaluation Criteria

Remedial Action Plan - Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

| AOI | Media | Process Option (Retained) | Remedial Alternative | Objective | Overall Protection of Human Health and the Environment | Compliance with ARARs | Long Term Effectiveness and Permanence | Reduction of Toxicity, Mobility, or Volume Through Treatment | Short Term Effectiveness | Implementability | Cost | State Support / Agency Acceptance | Community Acceptance |
|---------------|-------------|--|----------------------|---|--|-----------------------|--|--|--------------------------|------------------|----------------------|-----------------------------------|----------------------|
| Planer #2 AOI | Soil | No Action | PL2S-1 | Provides no additional control or action to protect human health or the environment from affected soil | Low | Low | Low | Low | High | High | \$0 | Low | Low |
| | | Deed Restriction / Notification | PL2S-2 | Restrict future land uses and implement soil management plan based on COIs and associated risks. | High | High | High | Low | High | High | \$25,000 | High | Moderate |
| | | Capping - Barriers and Covers | PL2S-3 | Eliminate exposure pathways through containment and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | Moderate | Moderate | Moderate | Low | \$130,000 | High | Low |
| | | In-Situ Solidification / Stabilization | PL2S-4 | Eliminate exposure pathways through containment and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | High | High | Moderate | Moderate | \$465,000 | High | Moderate |
| | | Ex-Situ Soil Remediation | PL2S-5 | Eliminate soil and groundwater exposure pathways by removing COI-affected soils, treating them at the site, and backfilling the excavation with treated soil. | High | High | High | High | Moderate | Moderate | \$300,000 | High | Moderate |
| | | | PL2S-6 | Eliminate soil and groundwater exposure pathways by removing COI-affected soils, treating them at the site, and backfilling the excavation with treated soil. | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate | \$250,000 | Moderate | Moderate |
| | | Excavation and Disposal | PL2S-7 | Remove affected soil and dispose offsite at a permitted disposal facility. Stockpile clean material and reuse for backfill | High | High | High | High | Moderate | Moderate | \$85,000 - \$590,000 | High | Moderate |
| | Groundwater | No Action | PL2GW-1 | Provides no additional control or action to protect human health or the environment from affected groundwater | Low | Low | Low | Low | High | High | \$0 | Low | Low |
| | | Natural Attenuation Analysis | PL2GW-2 | Demonstrate a stable and decreasing exposure trend using historical monitoring data | High | High | High | High | High | High | \$50,000 | Low | Moderate |
| | | Monitored Natural Attenuation | PL2GW-3 | Periodic sampling of groundwater to evaluate natural biological and chemical remediation of COIs with contingency for potential future remedial actions. | High | High | High | High | High | High | \$186,100 | High | Moderate |
| | | Groundwater Extraction and Treatment | PL2GW-4 | Containment and Extraction of affected groundwater; discharge of treated groundwater | High | High | High | High | Moderate | Moderate | \$2,347,000 | High | Moderate |

Table 4-1
Summary of Proposed Alternative Comparisons to Nine Evaluation Criteria

Remedial Action Plan - Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

| AOI | Media | Process Option (Retained) | Remedial Alternative | Objective | Overall Protection of Human Health and the Environment | Compliance with ARARs | Long Term Effectiveness and Permanence | Reduction of Toxicity, Mobility, or Volume Through Treatment | Short Term Effectiveness | Implementability | Cost | State Support / Agency Acceptance | Community Acceptance | |
|---|-------------|--|----------------------|---|--|-----------------------|--|--|--------------------------|------------------|-----------|-----------------------------------|----------------------|----------|
| Former Shipping Office & Truck Shop AOI | Soil | No Action | FSOS-1 | Provides no additional control or action to protect human health or the environment from affected soil | Low | Low | Low | Low | High | High | \$0 | Low | Low | |
| | | Deed Restriction / Notification | FSOS-2 | Restrict future land uses and implement soil management plan based on COIs and associated risks. | High | High | High | High | High | High | \$100,000 | High | Moderate | |
| | | In-Situ Solidification / Stabilization | FSOS-3 | Immobilization of COIs and elimination of future exposure pathways through deed restrictions and implementation of a risk management plan. | High | High | High | High | Moderate | Moderate | \$570,000 | High | Moderate | |
| | | Ex-Situ Soil Remediation | FSOS-4 | Eliminate soil and groundwater exposure pathways by removing COI-affected soils, treating them at the site, and backfilling the excavation with treated soil. | High | High | High | High | High | Moderate | Moderate | \$400,000 | High | Moderate |
| | | | FSOS-5 | Eliminate soil and groundwater exposure pathways by removing COI-affected soils, treating them at the site, and backfilling the excavation with treated soil. | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate | \$260,000 | Moderate | Moderate |
| | | Excavation and Disposal | FSOS-6 | Remove affected soil and dispose offsite at a permitted disposal facility. Stockpile clean material and reuse for backfill | High | High | High | High | High | Moderate | Moderate | \$670,000 | High | Moderate |
| Sawmill and Sorter AOI | Groundwater | No Action | SSGW-1 | Provides no additional control or action to protect human health or the environment from affected groundwater | Low | Low | Low | Low | High | High | \$0 | Low | Low | |
| | | Natural Attenuation Analysis | SSGW-2 | Demonstrate a stable and decreasing exposure trend using historical monitoring data | High | High | High | High | High | High | \$50,000 | Low | Moderate | |
| | | Monitored Natural Attenuation | SSGW-3 | Periodic sampling of groundwater to evaluate natural biological and chemical remediation of COIs with contingency for potential future remedial actions. | High | High | High | High | High | High | \$111,700 | High | Moderate | |
| | | Groundwater Extraction and Treatment | SSGW-4 | Containment and Extraction of affected groundwater; discharge of treated groundwater | High | High | High | High | High | Moderate | Moderate | \$5,680,739 | High | Moderate |
| | | In-Situ Chemical Oxidation | SSGW-5 | Periodic injection of highly reactive oxidation solution for treatment of contaminants | High | High | High | High | High | Moderate | Moderate | \$500,000 | High | Moderate |
| Greenhouse AOI | Groundwater | No Action | GHGW-1 | Provides no additional control or action to protect human health or the environment from affected groundwater | Low | Low | Low | Low | High | High | \$0 | Low | Low | |
| | | Natural Attenuation Analysis | GHGW-2 | Periodic sampling of groundwater to evaluate natural biological and chemical remediation of COIs with contingency for potential future remedial actions. | High | High | High | High | High | High | \$50,000 | Low | Moderate | |
| | | Monitored Natural Attenuation | GHGW-3 | Periodic sampling of groundwater to evaluate natural biological and chemical remediation of COIs with contingency for potential future remedial actions. | High | High | High | High | High | High | \$111,700 | High | Moderate | |
| | | Groundwater Extraction and Treatment | GHGW-4 | Containment and Extraction of affected groundwater; discharge of treated groundwater | High | High | High | High | High | Moderate | Moderate | \$2,347,000 | High | Moderate |

Recommended alternatives are outlined with bold lines.

**Table 4-2
Excavation Earthwork Quantities**

**Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

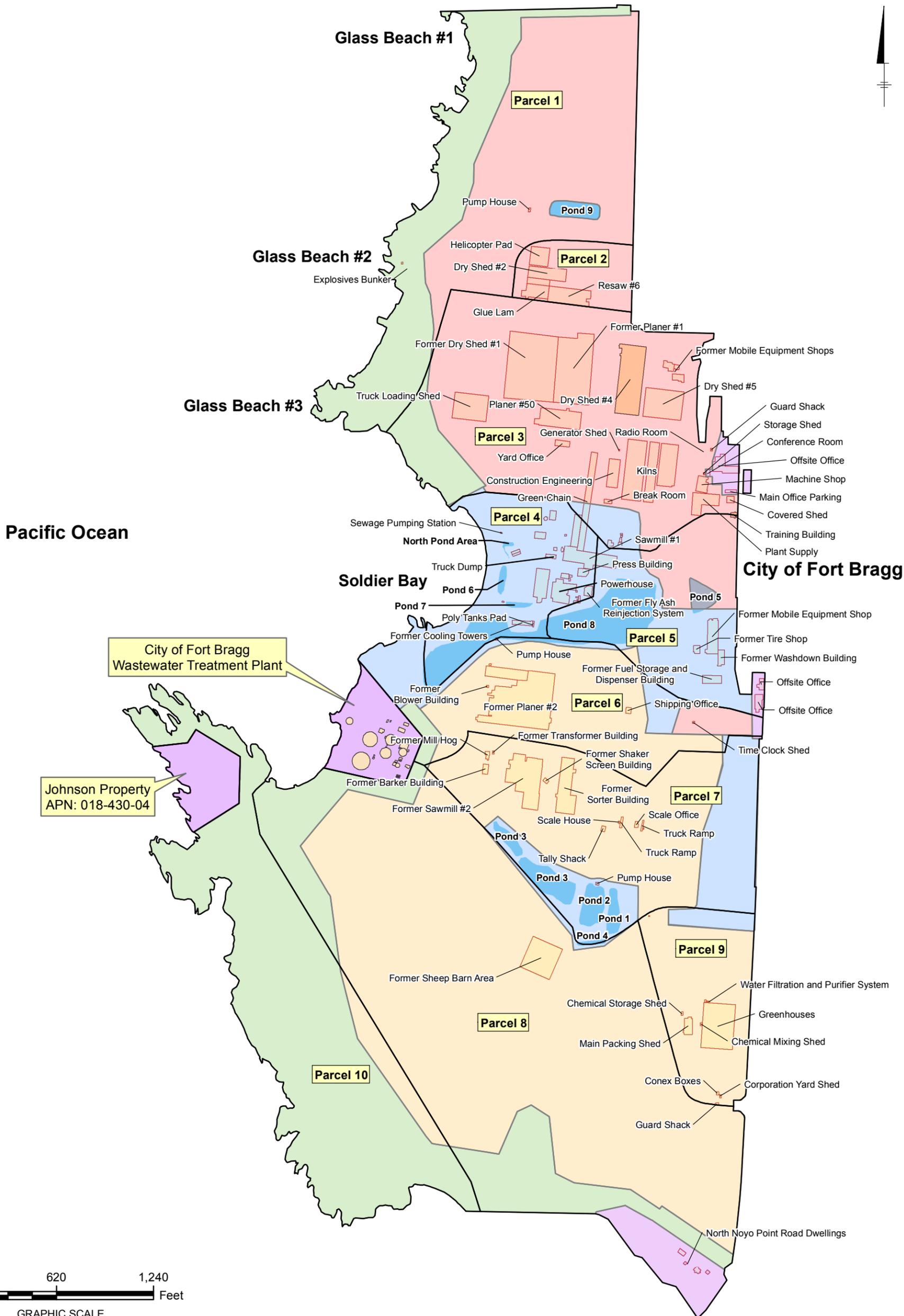
| AOI | Area (square feet) | Depth (feet) | Volume (cubic yards) | Weight (tons) |
|---|-------------------------------|-------------------------|---------------------------------|--------------------------|
| Former Dip Tank | 2,250 | 2 | 170 | 221 |
| Rail Lines East | 540 | 2 | 40 | 52 |
| Kilns | 100 | 2 | 7.5 | 10 |
| Planer #2 | 625 | 6 | 140 | 182 |
| Former AST and MES/Pilot Study ^a | 1,350 - 2,700 | 15 | 750 - 1,500 | 975 - 1950 |
| Total | 4,865 - 6,215 | | 1,108 - 1,858 | 1,440 - 2,415 |

Notes:

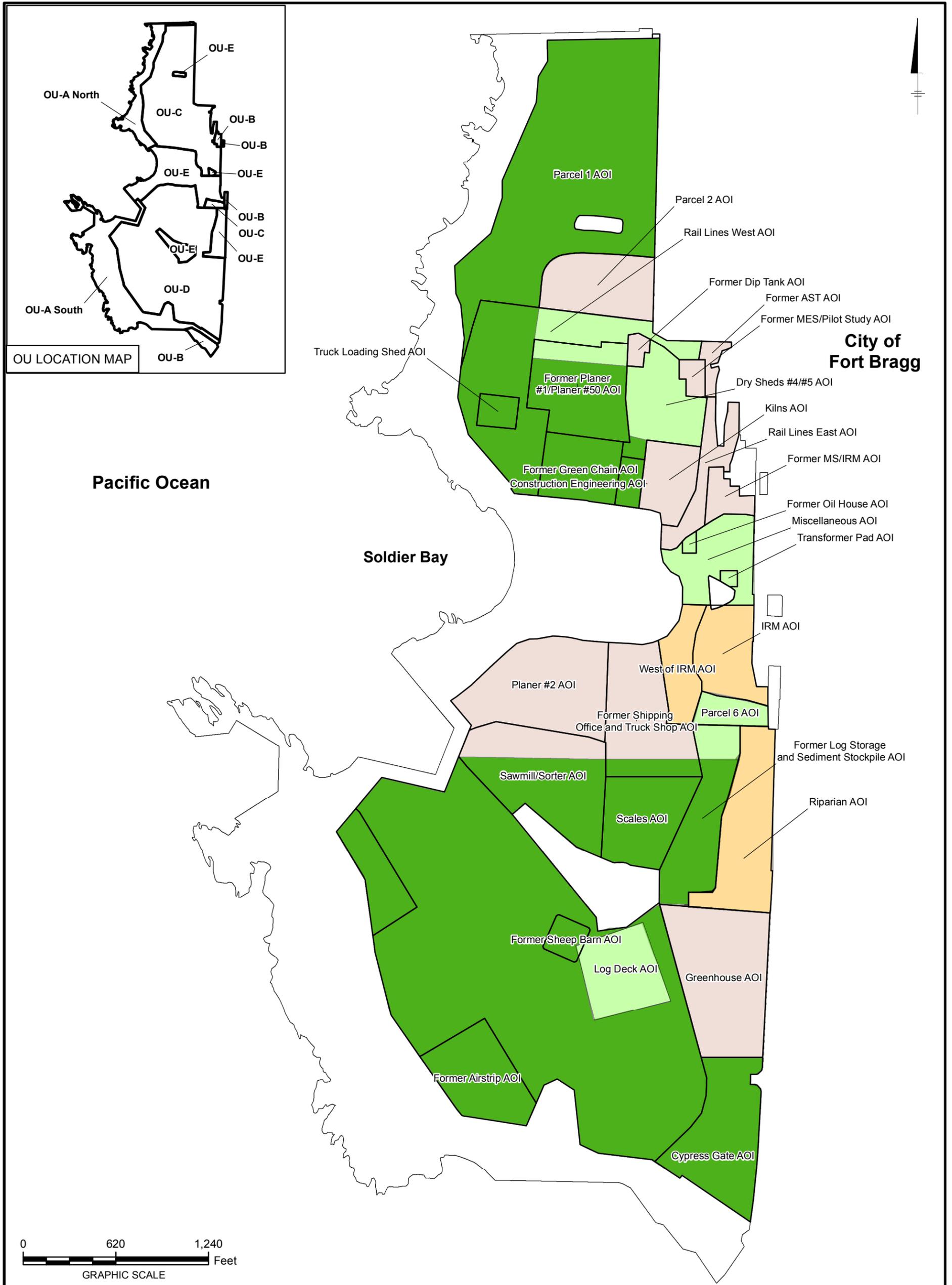
a. Volume estimates for AST and MES/Pilot Study Area include a range due to greater uncertainty.
AOI - Area of Interest



Figures



| | | | |
|--|--|--------------------------|--|
| 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 | FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY FORT BRAGG, CALIFORNIA OPERABLE UNITS C AND D REMEDIAL ACTION PLAN OPERABLE UNITS AND MAJOR FEATURES ARCADIS FIGURE 2-1 |
|--|--|--------------------------|--|



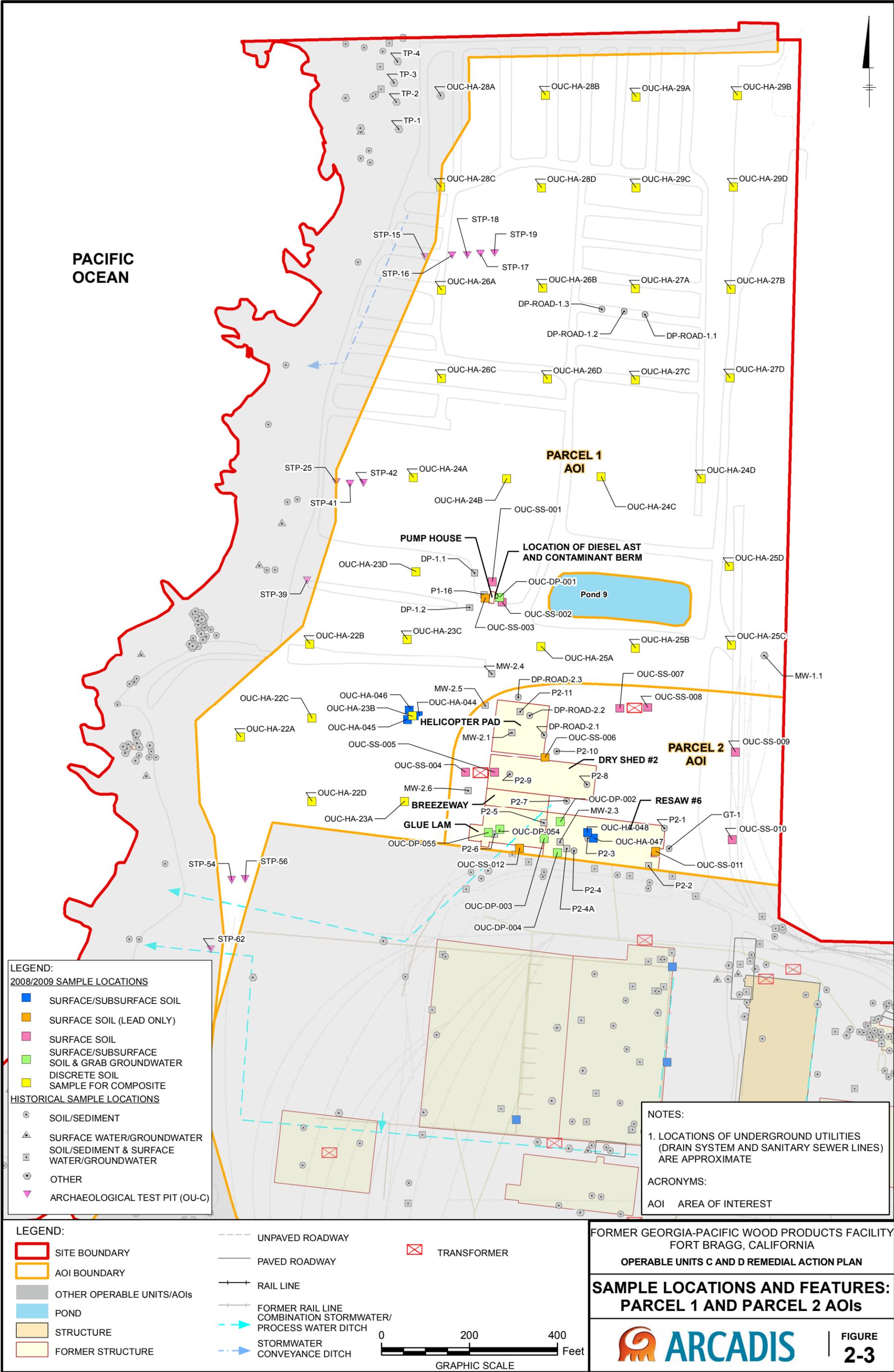
LEGEND:

- AOI BOUNDARY
- CONSIDERED FOR REMEDIAL ACTION IN RAP
- DETERMINED NO FURTHER ACTION IN RI REPORT
- AOIS NOT INCLUDED IN FEASIBILITY STUDY, RECOMMENDED FOR NFA IN RAP
- AOIS MOVED TO OUE

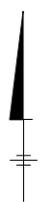
FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
 REMEDIAL INVESTIGATION OPERABLE UNITS C AND D

**OU-C AND OU-D
 AREAS OF INTEREST STATUS**





PACIFIC OCEAN



LEGEND:
 2008/2009 SAMPLE LOCATIONS

- SURFACE/SUBSURFACE SOIL
- SURFACE SOIL (LEAD ONLY)
- SURFACE SOIL
- SURFACE/SUBSURFACE SOIL & GRAB GROUNDWATER
- DISCRETE SOIL SAMPLE FOR COMPOSITE

HISTORICAL SAMPLE LOCATIONS

- SOIL/SEDIMENT
- ▲ SURFACE WATER/GROUNDWATER SOIL/SEDIMENT & SURFACE WATER/GROUNDWATER
- OTHER
- ▼ ARCHAEOLOGICAL TEST PIT (OU-C)

NOTES:
 1. LOCATIONS OF UNDERGROUND UTILITIES (DRAIN SYSTEM AND SANITARY SEWER LINES) ARE APPROXIMATE

ACRONYMS:
 AOI AREA OF INTEREST

LEGEND:

- SITE BOUNDARY
- AOI BOUNDARY
- OTHER OPERABLE UNITS/AOIs
- POND
- STRUCTURE
- FORMER STRUCTURE
- UNPAVED ROADWAY
- PAVED ROADWAY
- + RAIL LINE
- + FORMER RAIL LINE
- COMBINATION STORMWATER/PROCESS WATER DITCH
- STORMWATER CONVEYANCE DITCH
- TRANSFORMER

0 200 400
 Feet

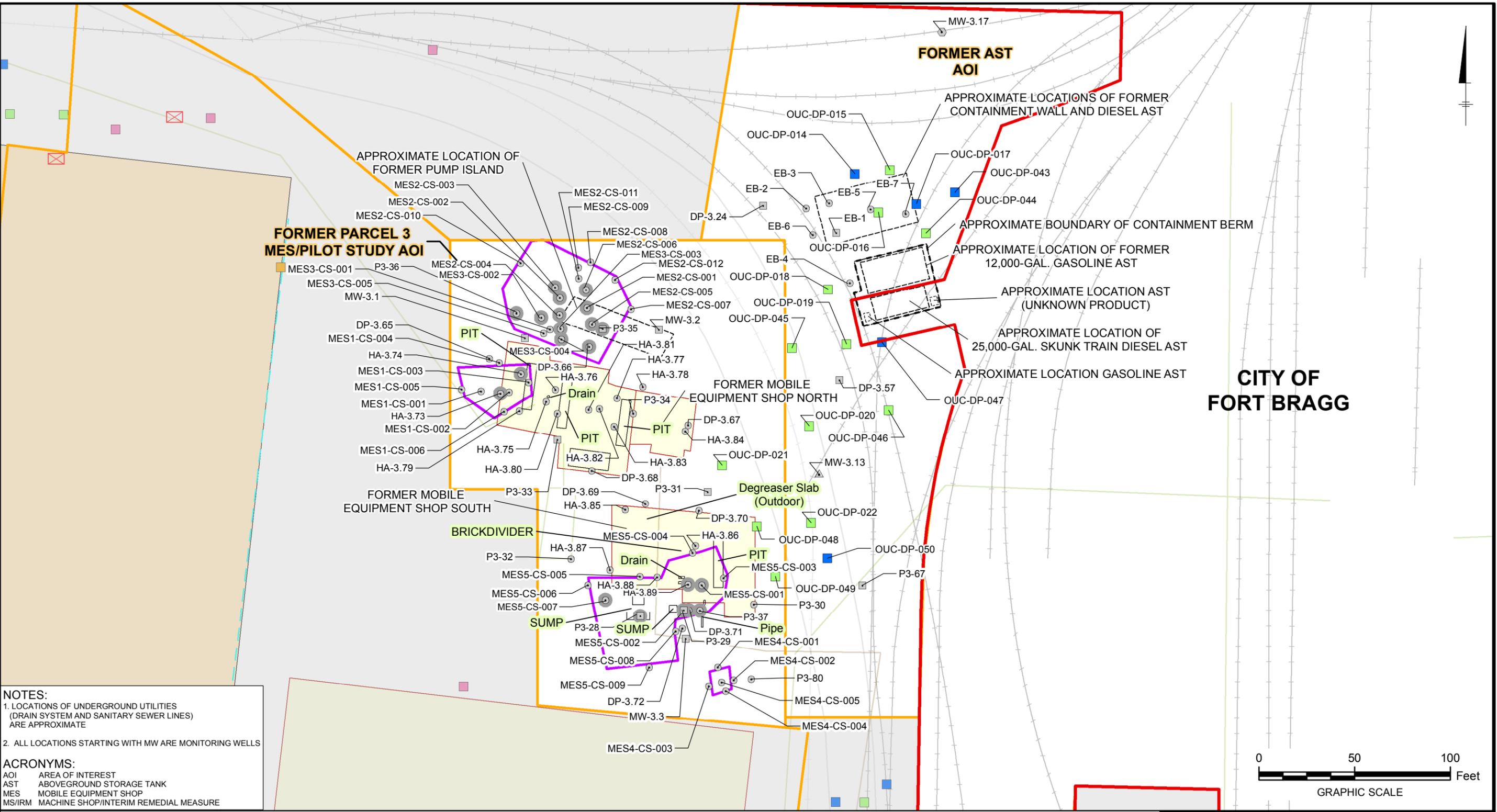
GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
 OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

**SAMPLE LOCATIONS AND FEATURES:
 PARCEL 1 AND PARCEL 2 AOIs**

**FIGURE
2-3**

CITY: HR DIV/GRUP: AIT GIS DB: BCG
 Project # 80066128.0001.00010
 Document Path: I:\FortBragg\MXD\OUC_OUD_RAP092413\Fig 2-4 Samples\Locs\Parcel3_MES_PilotArea.mxd Date: 10/30/2013 Time: 8:03:35 AM



NOTES:
 1. LOCATIONS OF UNDERGROUND UTILITIES (DRAIN SYSTEM AND SANITARY SEWER LINES) ARE APPROXIMATE
 2. ALL LOCATIONS STARTING WITH MW ARE MONITORING WELLS

ACRONYMS:
 AOI AREA OF INTEREST
 AST ABOVEGROUND STORAGE TANK
 MES MOBILE EQUIPMENT SHOP
 MS/IRM MACHINE SHOP/INTERIM REMEDIAL MEASURE

| LEGEND: | |
|--|--|
| HISTORICAL SAMPLE LOCATIONS | 2008/2009 SAMPLE LOCATIONS |
| ● SOIL/SEDIMENT | ■ SURFACE/SUBSURFACE SOIL |
| ▲ SURFACE WATER/GROUNDWATER | ■ SURFACE SOIL (LEAD ONLY) |
| ■ SOIL/SEDIMENT & SURFACE WATER/GROUNDWATER | ■ SURFACE SOIL |
| ● OTHER | ■ SURFACE/SUBSURFACE SOIL & GRAB GROUNDWATER |
| ● EXCAVATED OR PARTIALLY-EXCAVATED SAMPLE LOCATION | ■ DISCRETE SOIL SAMPLE FOR COMPOSITE |
| ■ SITE BOUNDARY | ■ OTHER OPERABLE UNITS/AOIs |
| ■ AOI BOUNDARY | ■ STRUCTURE |
| ■ EXCAVATION BOUNDARY | ■ FORMER STRUCTURE |
| ■ HISTORICAL GEOPHYSICAL SURVEY AREA | — PLANT DRAIN SYSTEM LINE |
| — PAVED ROADWAY | — SANITARY SEWER LINE |
| — RAIL LINES | — UNPAVED ROADWAY |
| — FORMER RAIL LINES | ⊠ TRANSFORMER |
| — COMBINATION STORMWATER/PROCESS WATER DITCH | |

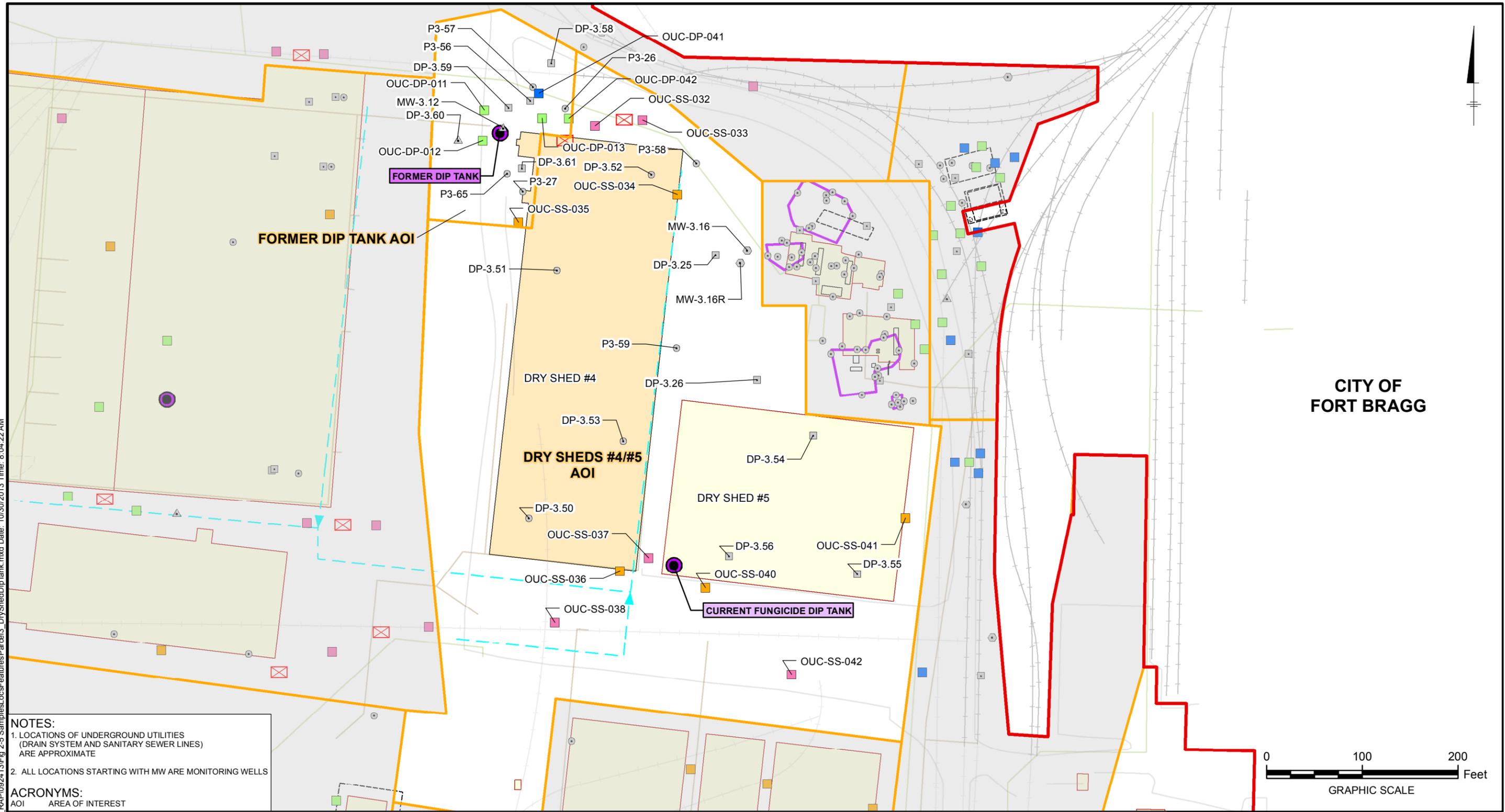
FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA

OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

**SAMPLE LOCATIONS AND FEATURES:
 FORMER PARCEL 3 MES/PILOT STUDY AND
 FORMER ABOVE GROUND STORAGE TANK AOIs**

ARCADIS | **FIGURE 2-4**

CITY: HR DIV/GROUP: AIT GIS DBBCG
 Project # 80066128.0001.00010
 Document Path: I:\FortBragg\MXD\OUC_OUD_RAP\092413\Fig 2-5 Samples\ocsf\features\Parcel3_DryShedDipTank.mxd Date: 10/30/2013 Time: 8:04:22 AM



NOTES:
 1. LOCATIONS OF UNDERGROUND UTILITIES (DRAIN SYSTEM AND SANITARY SEWER LINES) ARE APPROXIMATE
 2. ALL LOCATIONS STARTING WITH MW ARE MONITORING WELLS

ACRONYMS:
 AOI AREA OF INTEREST

| LEGEND: | |
|--|--|
| HISTORICAL SAMPLE LOCATIONS | 2008/2009 SAMPLE LOCATIONS |
| • SOIL/SEDIMENT | ■ SURFACE/SUBSURFACE SOIL |
| ▲ SURFACE WATER/GROUNDWATER | ■ SURFACE SOIL (LEAD ONLY) |
| ■ SOIL/SEDIMENT & SURFACE WATER/GROUNDWATER | ■ SURFACE SOIL |
| ○ OTHER | ■ SURFACE/SUBSURFACE SOIL & GRAB GROUNDWATER |
| | ■ DISCRETE SOIL SAMPLE FOR COMPOSITE |
| □ SITE BOUNDARY | □ AOI BOUNDARY |
| □ OTHER OPERABLE UNITS/AOIs | □ STRUCTURE |
| □ FORMER STRUCTURE | |
| ■ HISTORICAL GEOPHYSICAL SURVEY AREA | □ EXCAVATION BOUNDARY |
| — PAVED ROADWAY | — PLANT DRAIN SYSTEM LINE |
| — RAIL LINES | — SANITARY SEWER LINE |
| — FORMER RAIL LINES | — UNPAVED ROADWAY |
| — COMBINATION STORMWATER/PROCESS WATER DITCH | ● DIP TANK |
| | ⊠ TRANSFORMER |

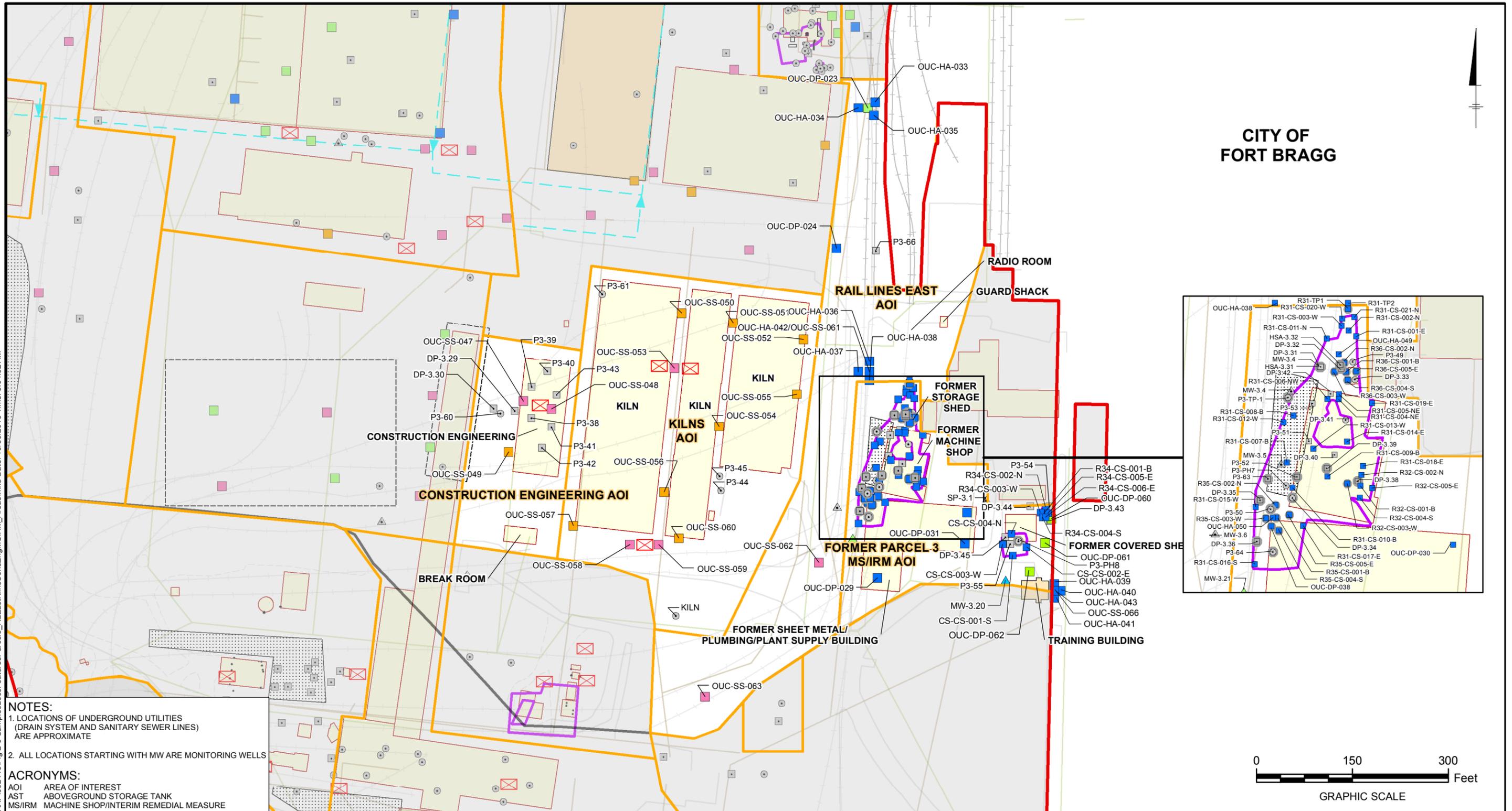
FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA

OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

**SAMPLE LOCATIONS AND FEATURES:
 DRY SHEDS #4/#5 AND FORMER DIP TANK AOIs**

ARCADIS | **FIGURE 2-5**

CITY: HR_DIV/GRP: AIT GIS_DB: BCG
 Project # B0066138.0005.00002
 Document Path: I:\FortBragg\MXD\OUC_OD_RAP092413\Fig 2-6 Samples\LocsFeaturesParcel3_RLEastKilnsConsEng\MSIRM_Areas.mxd Date: 10/30/2013 Time: 8:04:52 AM



CITY OF
FORT BRAGG

NOTES:
 1. LOCATIONS OF UNDERGROUND UTILITIES (DRAIN SYSTEM AND SANITARY SEWER LINES) ARE APPROXIMATE
 2. ALL LOCATIONS STARTING WITH MW ARE MONITORING WELLS

ACRONYMS:
 AOI AREA OF INTEREST
 AST ABOVEGROUND STORAGE TANK
 MS/IRM MACHINE SHOP/INTERIM REMEDIAL MEASURE

LEGEND:

| HISTORICAL SAMPLE LOCATIONS | 2008/2009 SAMPLE LOCATIONS | 2009 MONITORING WELL LOCATIONS |
|---|--|--------------------------------|
| SOIL/SEDIMENT | SURFACE/SUBSURFACE SOIL | GROUNDWATER DATA ONLY |
| SURFACE WATER/GROUNDWATER SOIL/SEDIMENT & SURFACE WATER/GROUNDWATER | SURFACE SOIL (LEAD ONLY) | SOIL AND GROUNDWATER DATA |
| EXCAVATED OR PARTIALLY-EXCAVATED SAMPLE LOCATION | SURFACE SOIL | |
| | SURFACE/SUBSURFACE SOIL & GRAB GROUNDWATER | |
| | DISCRETE SOIL | |
| | SAMPLE FOR COMPOSITE | |

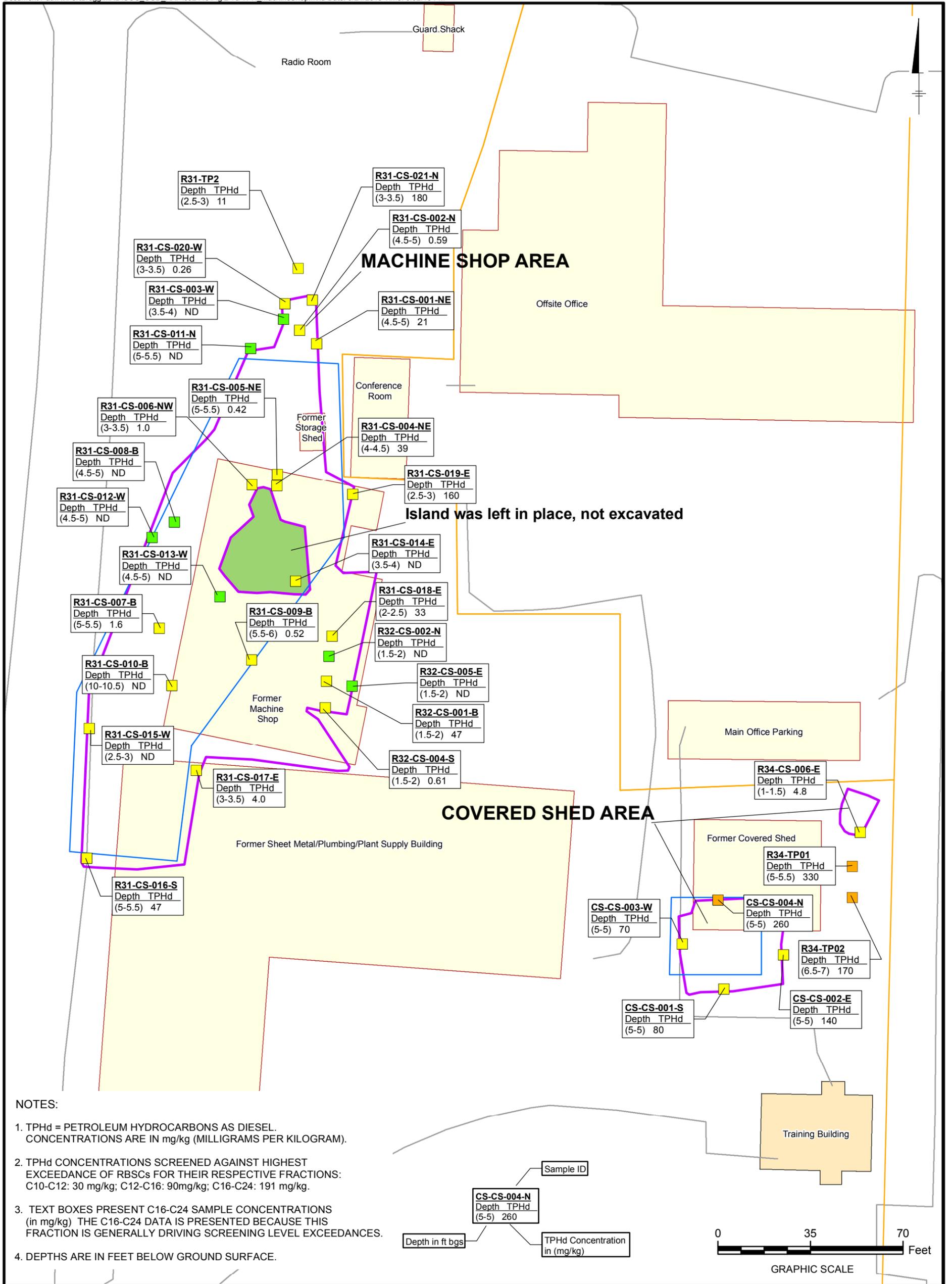
| | |
|------------------------------------|--|
| OTHER OPERABLE UNITS/AOIs | SANITARY SEWER LINE |
| STRUCTURE | UNPAVED ROADWAY |
| FORMER STRUCTURE | PAVED ROADWAY |
| HISTORICAL GEOPHYSICAL SURVEY AREA | RAIL LINES |
| EXCAVATION BOUNDARY | FORMER RAIL LINES |
| PLANT DRAIN SYSTEM LINE | COMBINATION STORMWATER/PROCESS WATER DITCH |
| | TRANSFORMER |

| |
|---------------|
| SITE BOUNDARY |
| AOI BOUNDARY |

| | | |
|---------------|-----|-----|
| 0 | 150 | 300 |
| Foot | | |
| GRAPHIC SCALE | | |

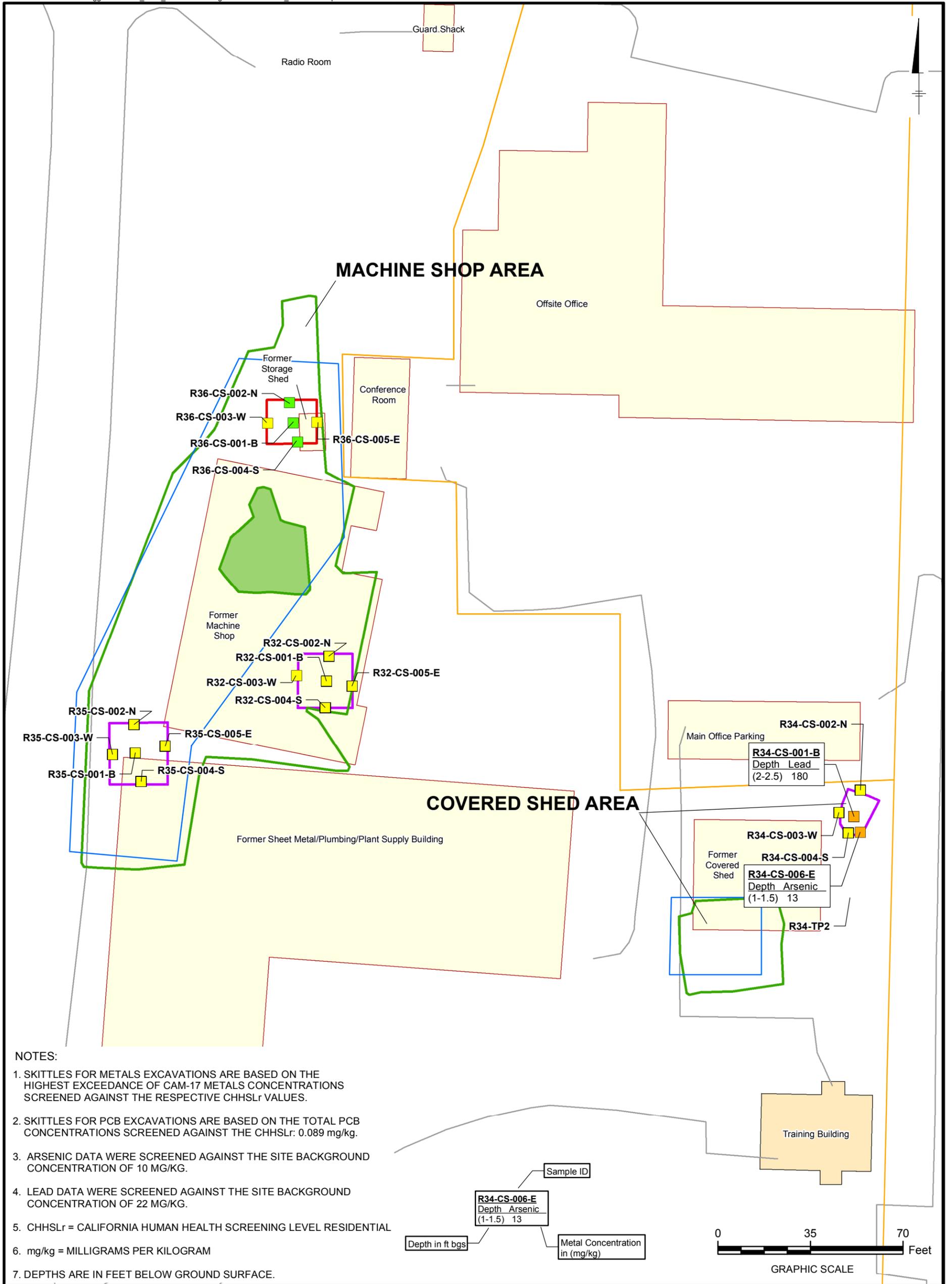
FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
 OPERABLE UNITS C AND D REMEDIAL ACTION PLAN
 SAMPLE LOCATIONS AND FEATURES: RAIL LINES EAST, KILNS, FORMER PARCEL 3 MACHINE SHOP/IRM AND CONSTRUCTION ENGINEERING AOIs





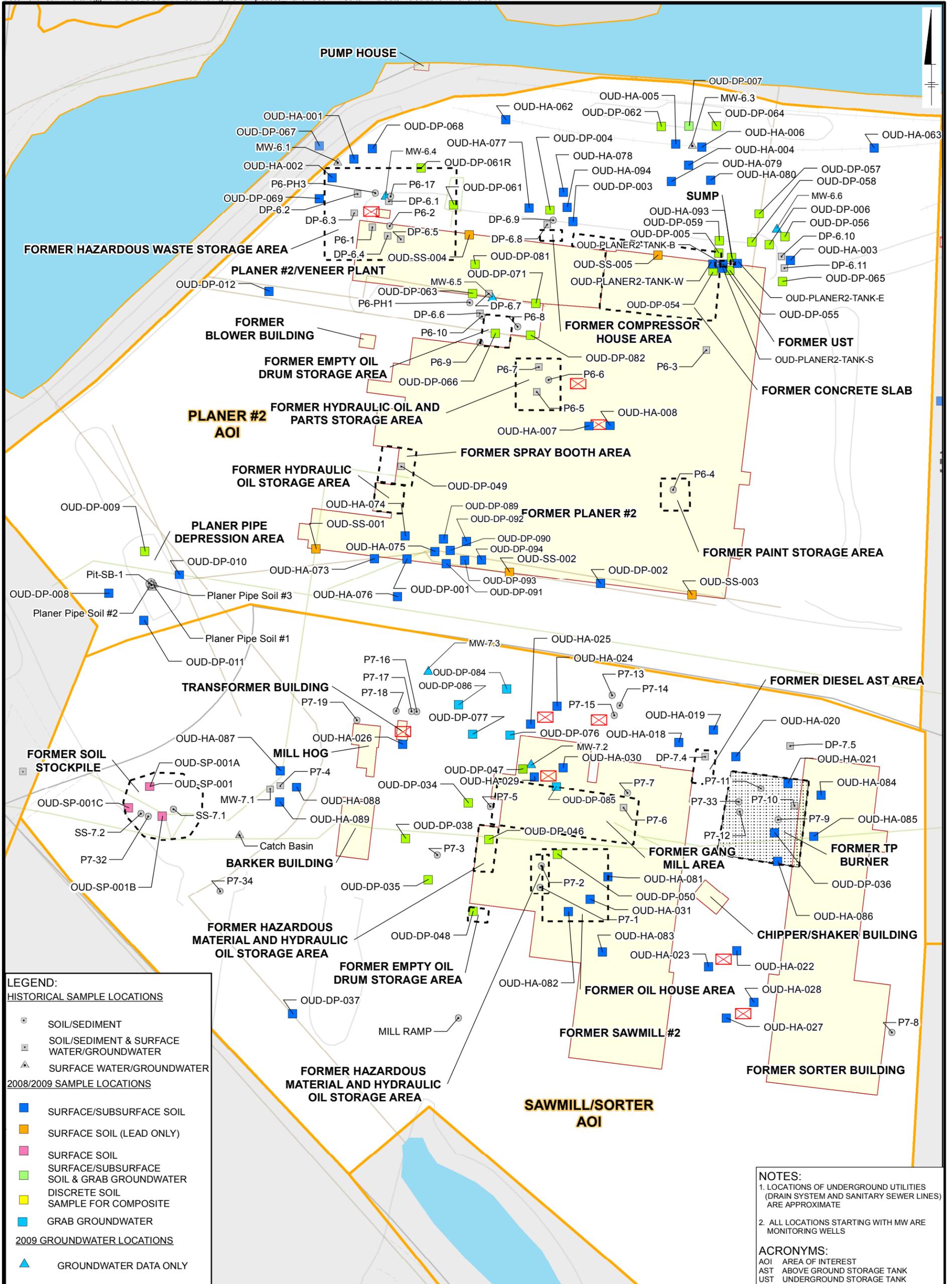
FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
OPERABLE UNITS C AND D REMEDIAL ACTION PLAN
**FORMER MACHINE SHOP AND COVERED SHED
 AREAS CONFIRMATION SAMPLES - TOTAL
 PETROLEUM HYDROCARBONS**

ARCADIS | **FIGURE 2-7a**



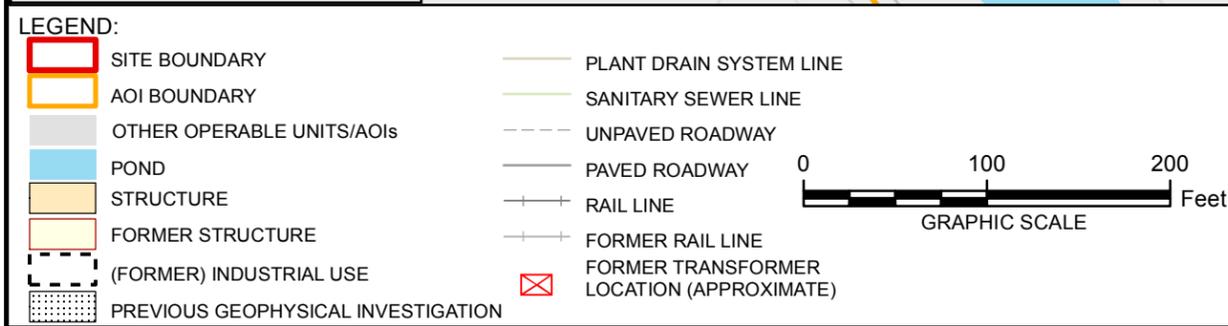
FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
OPERABLE UNITS C AND D REMEDIAL ACTION PLAN
FORMER MACHINE SHOP AND COVERED SHED AREAS CONFIRMATION SAMPLES - METALS AND PCBs

ARCADIS | **FIGURE 2-7b**



NOTES:
 1. LOCATIONS OF UNDERGROUND UTILITIES (DRAIN SYSTEM AND SANITARY SEWER LINES) ARE APPROXIMATE
 2. ALL LOCATIONS STARTING WITH MW ARE MONITORING WELLS

ACRONYMS:
 AOI AREA OF INTEREST
 AST ABOVE GROUND STORAGE TANK
 UST UNDERGROUND STORAGE TANK

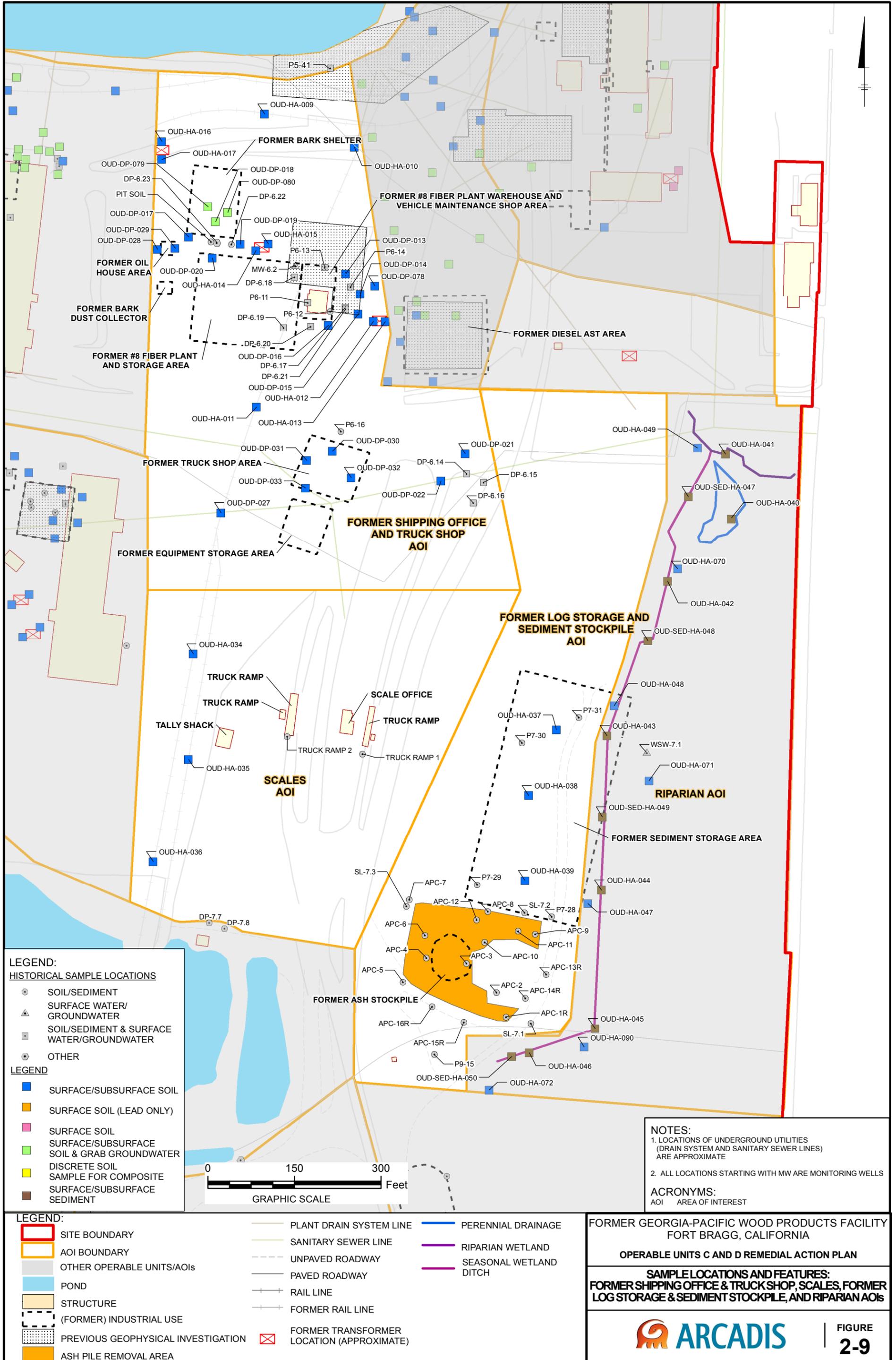


FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA

OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

**SAMPLE LOCATIONS AND FEATURES:
 PLANER #2 AND SAWMILL/SORTER AOIs**

| **FIGURE 2-8**

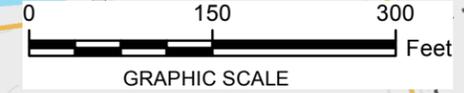


LEGEND:
HISTORICAL SAMPLE LOCATIONS

- SOIL/SEDIMENT
- ▲ SURFACE WATER/GROUNDWATER
- SOIL/SEDIMENT & SURFACE WATER/GROUNDWATER
- OTHER

LEGEND

- SURFACE/SUBSURFACE SOIL
- SURFACE SOIL (LEAD ONLY)
- SURFACE SOIL
- SURFACE/SUBSURFACE SOIL & GRAB GROUNDWATER
- DISCRETE SOIL SAMPLE FOR COMPOSITE
- SURFACE/SUBSURFACE SEDIMENT



NOTES:
 1. LOCATIONS OF UNDERGROUND UTILITIES (DRAIN SYSTEM AND SANITARY SEWER LINES) ARE APPROXIMATE
 2. ALL LOCATIONS STARTING WITH MW ARE MONITORING WELLS

ACRONYMS:
 AOI AREA OF INTEREST

LEGEND:

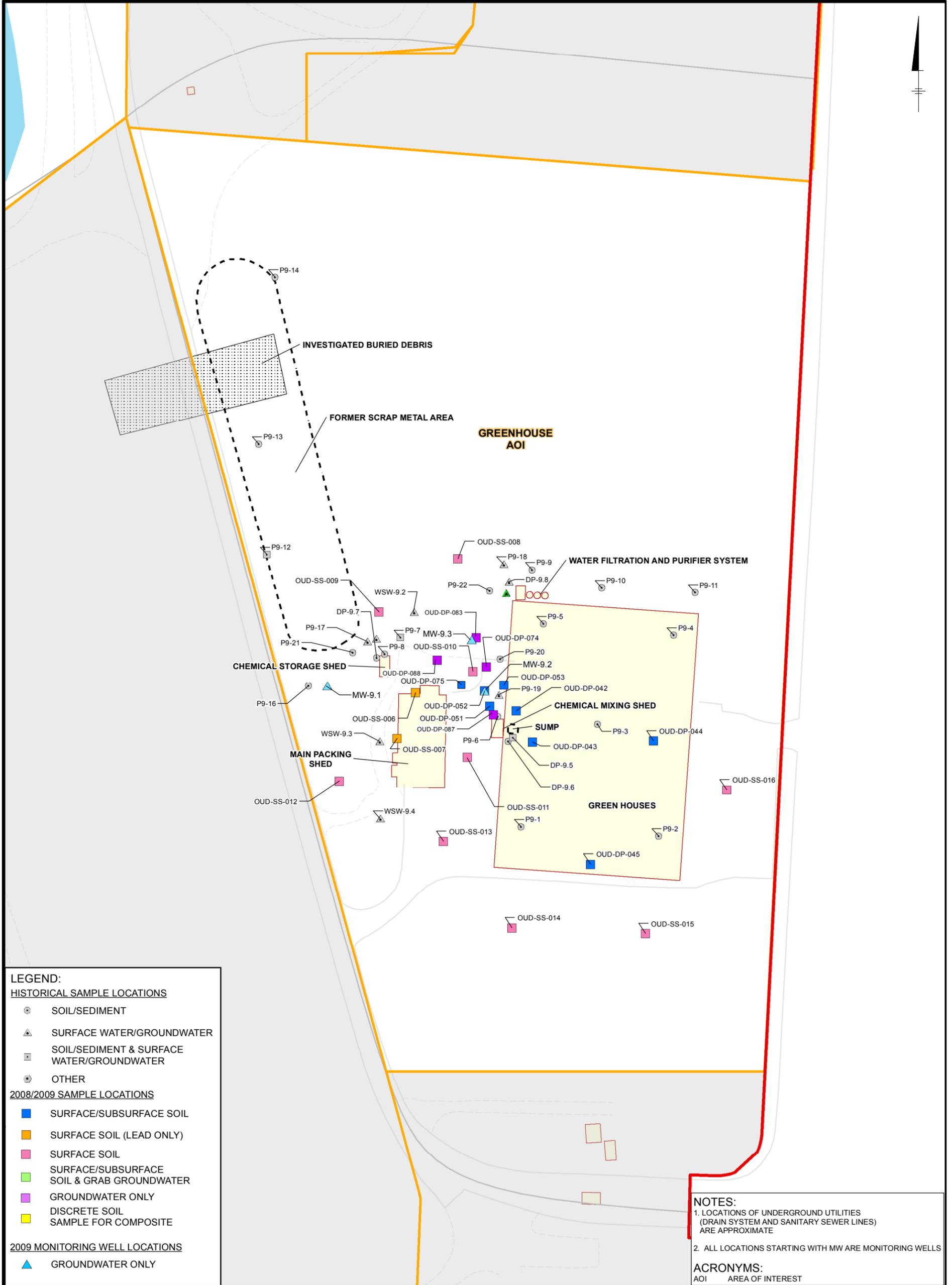
- ▭ SITE BOUNDARY
- ▭ AOI BOUNDARY
- ▭ OTHER OPERABLE UNITS/AOIs
- ▭ POND
- ▭ STRUCTURE
- ▭ (FORMER) INDUSTRIAL USE
- ▭ PREVIOUS GEOPHYSICAL INVESTIGATION
- ▭ ASH PILE REMOVAL AREA
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE
- UNPAVED ROADWAY
- PAVED ROADWAY
- RAIL LINE
- FORMER RAIL LINE
- ⊠ FORMER TRANSFORMER LOCATION (APPROXIMATE)
- PERENNIAL DRAINAGE
- RIPARIAN WETLAND
- SEASONAL WETLAND DITCH

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA

OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

**SAMPLE LOCATIONS AND FEATURES:
 FORMER SHIPPING OFFICE & TRUCK SHOP, SCALES, FORMER LOG STORAGE & SEDIMENT STOCKPILE, AND RIPARIAN AOIs**

FIGURE 2-9



LEGEND:

HISTORICAL SAMPLE LOCATIONS

- SOIL/SEDIMENT
- ▲ SURFACE WATER/GROUNDWATER
- SOIL/SEDIMENT & SURFACE WATER/GROUNDWATER
- OTHER

2008/2009 SAMPLE LOCATIONS

- SURFACE/SUBSURFACE SOIL
- SURFACE SOIL (LEAD ONLY)
- SURFACE SOIL
- SURFACE/SUBSURFACE SOIL & GRAB GROUNDWATER
- GROUNDWATER ONLY
- DISCRETE SOIL SAMPLE FOR COMPOSITE

2009 MONITORING WELL LOCATIONS

- ▲ GROUNDWATER ONLY

NOTES:

1. LOCATIONS OF UNDERGROUND UTILITIES (DRAIN SYSTEM AND SANITARY SEWER LINES) ARE APPROXIMATE
2. ALL LOCATIONS STARTING WITH MW ARE MONITORING WELLS

ACRONYMS:
 AOI AREA OF INTEREST

LEGEND:

- ▭ SITE BOUNDARY
- ▭ AOI BOUNDARY
- ▭ OTHER OPERABLE UNITS/AOIs
- ▭ POND
- ▭ STRUCTURE
- ▭ FORMER STRUCTURE
- ▭ FACILITY PARCEL
- ▭ PREVIOUS GEOPHYSICAL INVESTIGATION
- ▭ (FORMER) INDUSTRIAL USE
- PAVED ROADWAY
- - - UNPAVED ROADWAY
- RAIL LINE
- - - FORMER RAIL LINE
- ▲ SUMP LOCATION

0 100 200 Feet
 GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA

OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

**SAMPLE LOCATIONS AND FEATURES:
 GREENHOUSE AOI**

ARCADIS

FIGURE 2-10



Land Use Plan

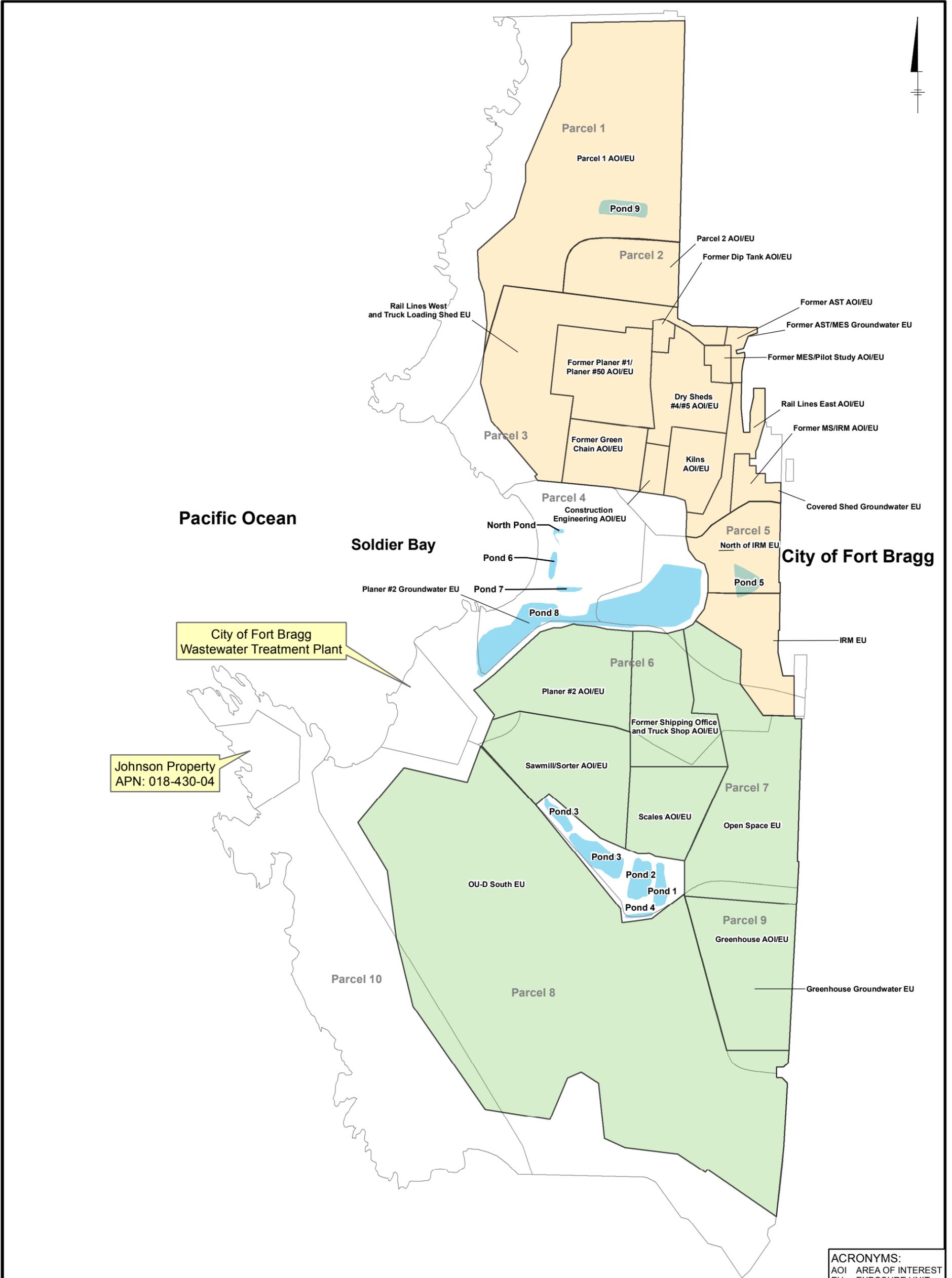
- Specific Plan Area Boundary
- Specific Plan Study Area Boundary
- District Boundary
- NP Conceptual Neighborhood Park Location
- * Alternative Neighborhood Park Location
- Mill Site Residential (MSR)
- Mill Site Commercial Mixed-Use (MSCMU)
- Mill Site Visitor Serving (MSVS)
- Mill Site Mixed-Use Residential (MSMU-R)
- Mill Site Light Industrial Flex (MSLIF)
- Future Coastal Trail and Parkland Area
- Open Space
- Mill Site Highway Commercial (MSHC)
- Mill Site Industrial (MSI)
- Mill Site Mixed-Use Employment Zone (MUEZ)
- Mill Site Urban Reserve (MSUR)
- Restricted Land Use Area
- Public Facilities
- Timber Resources Industrial Opportunity / Use Priority Sites

AOI BOUNDARY

**FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
 OPERABLE UNITS C AND D REMEDIAL ACTION PLAN**

LAND USE PLAN

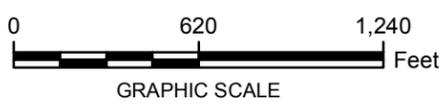




ACRONYMS:
 AOI AREA OF INTEREST
 EU EXPOSURE UNIT

LEGEND:
 POND
 FACILITY PARCEL

OU-C WIDE GROUNDWATER EXPOSURE UNIT
 OU-D WIDE GROUNDWATER EXPOSURE UNIT

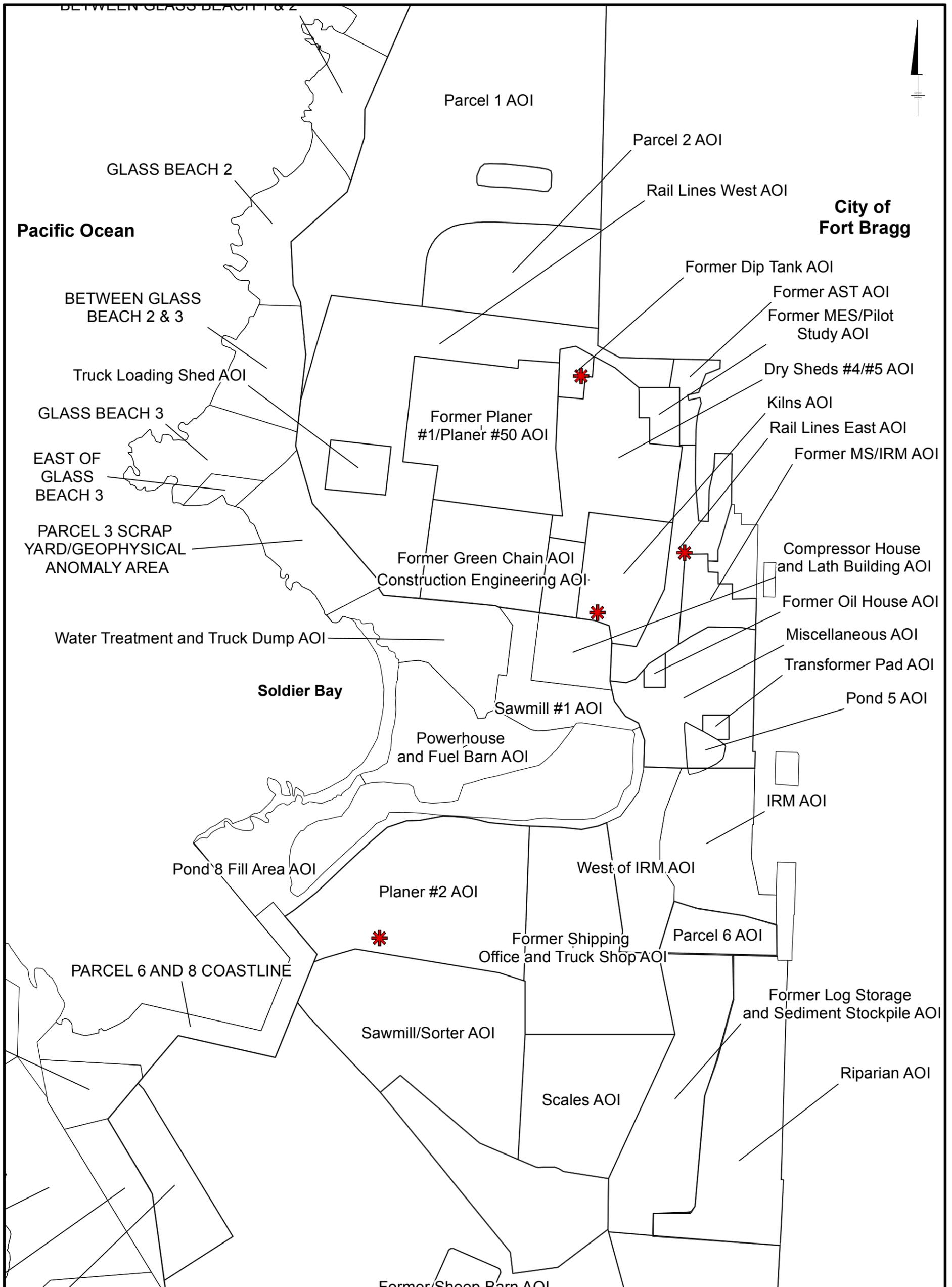


FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
 OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

**EXPOSURE UNITS
 FOR THE BHHRA**



FIGURE
2-12



LEGEND:

 AOI BOUNDARY

 PRESUMPTIVE REMEDY AREAS

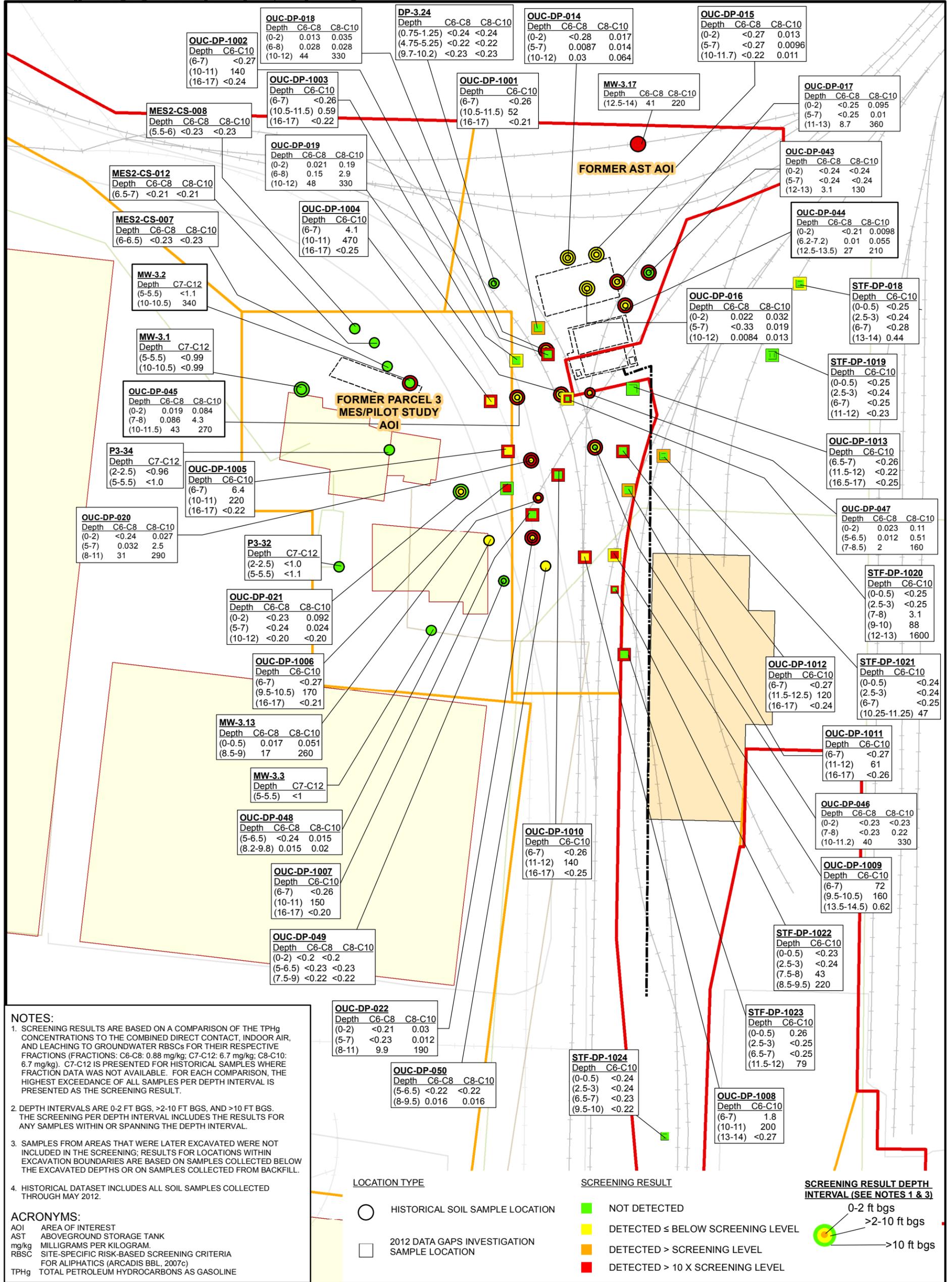


GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
 REMEDIAL INVESTIGATION OPERABLE UNITS C AND D

PRESUMPTIVE REMEDY AREAS





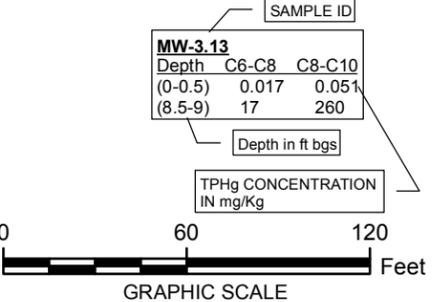
NOTES:

- SCREENING RESULTS ARE BASED ON A COMPARISON OF THE TPHg CONCENTRATIONS TO THE COMBINED DIRECT CONTACT, INDOOR AIR, AND LEACHING TO GROUNDWATER RBSCs FOR THEIR RESPECTIVE FRACTIONS (FRACTIONS: C6-C8: 0.88 mg/kg; C7-C12: 6.7 mg/kg; C8-C10: 6.7 mg/kg). C7-C12 IS PRESENTED FOR HISTORICAL SAMPLES WHERE FRACTION DATA WAS NOT AVAILABLE. FOR EACH COMPARISON, THE HIGHEST EXCEEDANCE OF ALL SAMPLES PER DEPTH INTERVAL IS PRESENTED AS THE SCREENING RESULT.
- DEPTH INTERVALS ARE 0-2 FT BGS, >2-10 FT BGS, AND >10 FT BGS. THE SCREENING PER DEPTH INTERVAL INCLUDES THE RESULTS FOR ANY SAMPLES WITHIN OR SPANNING THE DEPTH INTERVAL.
- SAMPLES FROM AREAS THAT WERE LATER EXCAVATED WERE NOT INCLUDED IN THE SCREENING; RESULTS FOR LOCATIONS WITHIN EXCAVATION BOUNDARIES ARE BASED ON SAMPLES COLLECTED BELOW THE EXCAVATED DEPTHS OR ON SAMPLES COLLECTED FROM BACKFILL.
- HISTORICAL DATASET INCLUDES ALL SOIL SAMPLES COLLECTED THROUGH MAY 2012.

ACRONYMS:
 AOI AREA OF INTEREST
 AST ABOVEGROUND STORAGE TANK
 mg/kg MILLIGRAMS PER KILOGRAM
 RBSC SITE-SPECIFIC RISK-BASED SCREENING CRITERIA FOR ALIPHATICS (ARCADIS BBL, 2007c)
 TPHg TOTAL PETROLEUM HYDROCARBONS AS GASOLINE

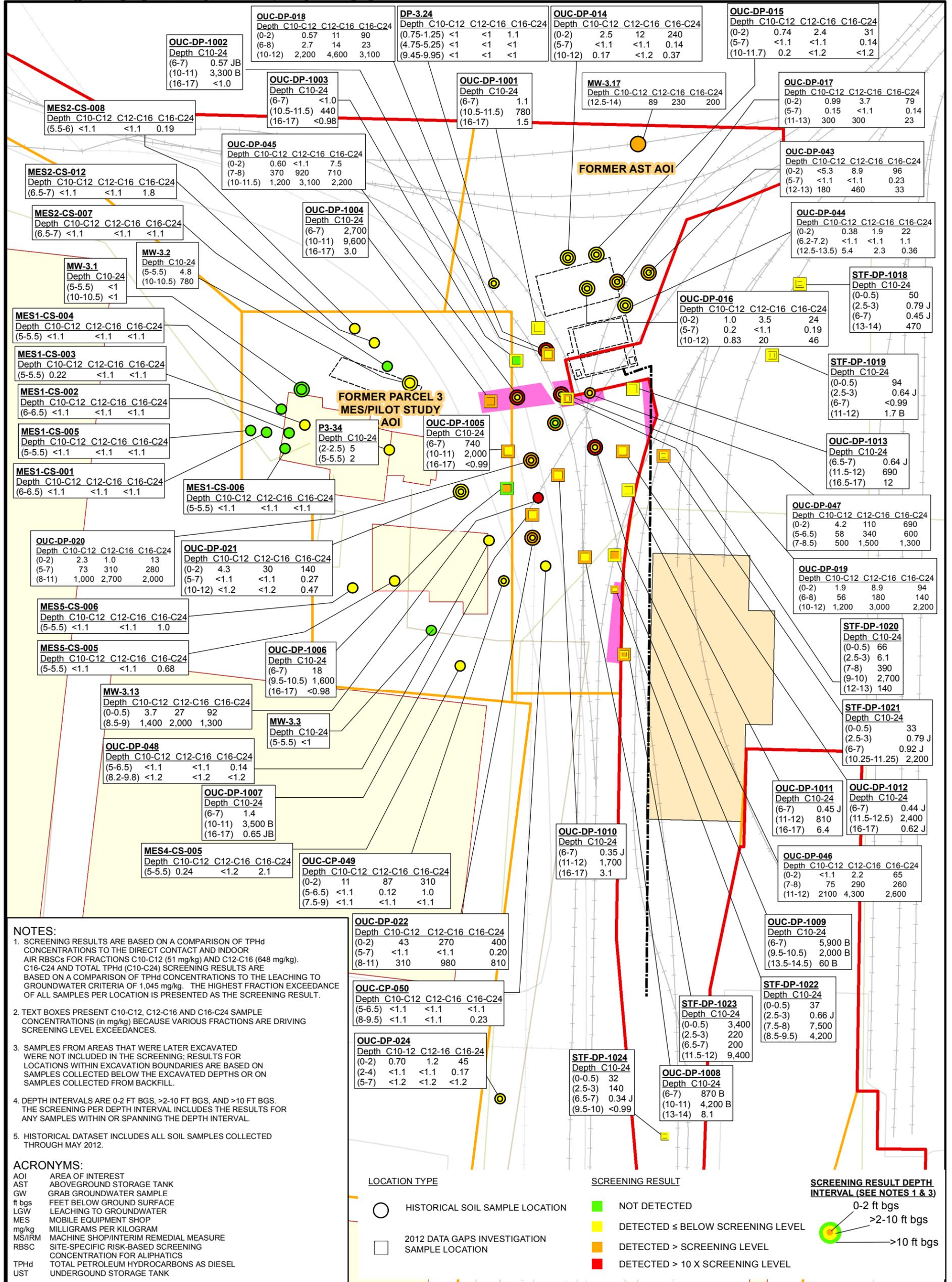
LEGEND:

- SITE BOUNDARY
- AOI BOUNDARY
- STRUCTURE
- FORMER STRUCTURE
- (FORMER) INDUSTRIAL USE
- PAVED ROADWAY
- UNPAVED ROADWAY
- FORMER RAIL LINE
- RAIL LINE
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE



FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

DATA GAPS INVESTIGATION RESULTS - TPHg IN SOIL



NOTES:

- SCREENING RESULTS ARE BASED ON A COMPARISON OF TPHd CONCENTRATIONS TO THE DIRECT CONTACT AND INDOOR AIR RBSCs FOR FRACTIONS C10-C12 (51 mg/kg) AND C12-C16 (648 mg/kg). C16-C24 AND TOTAL TPHd (C10-C24) SCREENING RESULTS ARE BASED ON A COMPARISON OF TPHd CONCENTRATIONS TO THE LEACHING TO GROUNDWATER CRITERIA OF 1,045 mg/kg. THE HIGHEST FRACTION EXCEEDANCE OF ALL SAMPLES PER LOCATION IS PRESENTED AS THE SCREENING RESULT.
- TEXT BOXES PRESENT C10-C12, C12-C16 AND C16-C24 SAMPLE CONCENTRATIONS (in mg/kg) BECAUSE VARIOUS FRACTIONS ARE DRIVING SCREENING LEVEL EXCEEDANCES.
- SAMPLES FROM AREAS THAT WERE LATER EXCAVATED WERE NOT INCLUDED IN THE SCREENING; RESULTS FOR LOCATIONS WITHIN EXCAVATION BOUNDARIES ARE BASED ON SAMPLES COLLECTED BELOW THE EXCAVATED DEPTHS OR ON SAMPLES COLLECTED FROM BACKFILL.
- DEPTH INTERVALS ARE 0-2 FT BGS, >2-10 FT BGS, AND >10 FT BGS. THE SCREENING PER DEPTH INTERVAL INCLUDES THE RESULTS FOR ANY SAMPLES WITHIN OR SPANNING THE DEPTH INTERVAL.
- HISTORICAL DATASET INCLUDES ALL SOIL SAMPLES COLLECTED THROUGH MAY 2012.

ACRONYMS:

AOI AREA OF INTEREST
 AST ABOVEGROUND STORAGE TANK
 GW GRAB GROUNDWATER SAMPLE
 ft bgs FEET BELOW GROUND SURFACE
 LGW LEACHING TO GROUNDWATER
 MES MOBILE EQUIPMENT SHOP
 mg/kg MILLIGRAMS PER KILOGRAM
 MS/IRM MACHINE SHOP/INTERIM REMEDIAL MEASURE
 RBSC SITE-SPECIFIC RISK-BASED SCREENING CONCENTRATION FOR ALIPHATICS
 TPHd TOTAL PETROLEUM HYDROCARBONS AS DIESEL
 UST UNDERGROUND STORAGE TANK

LOCATION TYPE

- HISTORICAL SOIL SAMPLE LOCATION
- 2012 DATA GAPS INVESTIGATION SAMPLE LOCATION

SCREENING RESULT

- NOT DETECTED
- DETECTED ≤ BELOW SCREENING LEVEL
- DETECTED > SCREENING LEVEL
- DETECTED > 10 X SCREENING LEVEL

SCREENING RESULT DEPTH INTERVAL (SEE NOTES 1 & 3)

- 0-2 ft bgs
- >2-10 ft bgs
- >10 ft bgs

LEGEND:

- SITE BOUNDARY
- AOI BOUNDARY
- STRUCTURE
- FORMER STRUCTURE
- (FORMER) INDUSTRIAL USE
- PROPOSED SOIL EXCAVATION AREA
- PAVED ROADWAY
- UNPAVED ROADWAY
- FORMER RAIL LINE
- RAIL LINE
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE

GRAPHIC SCALE

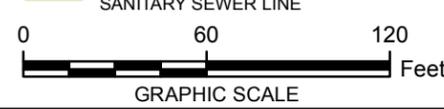
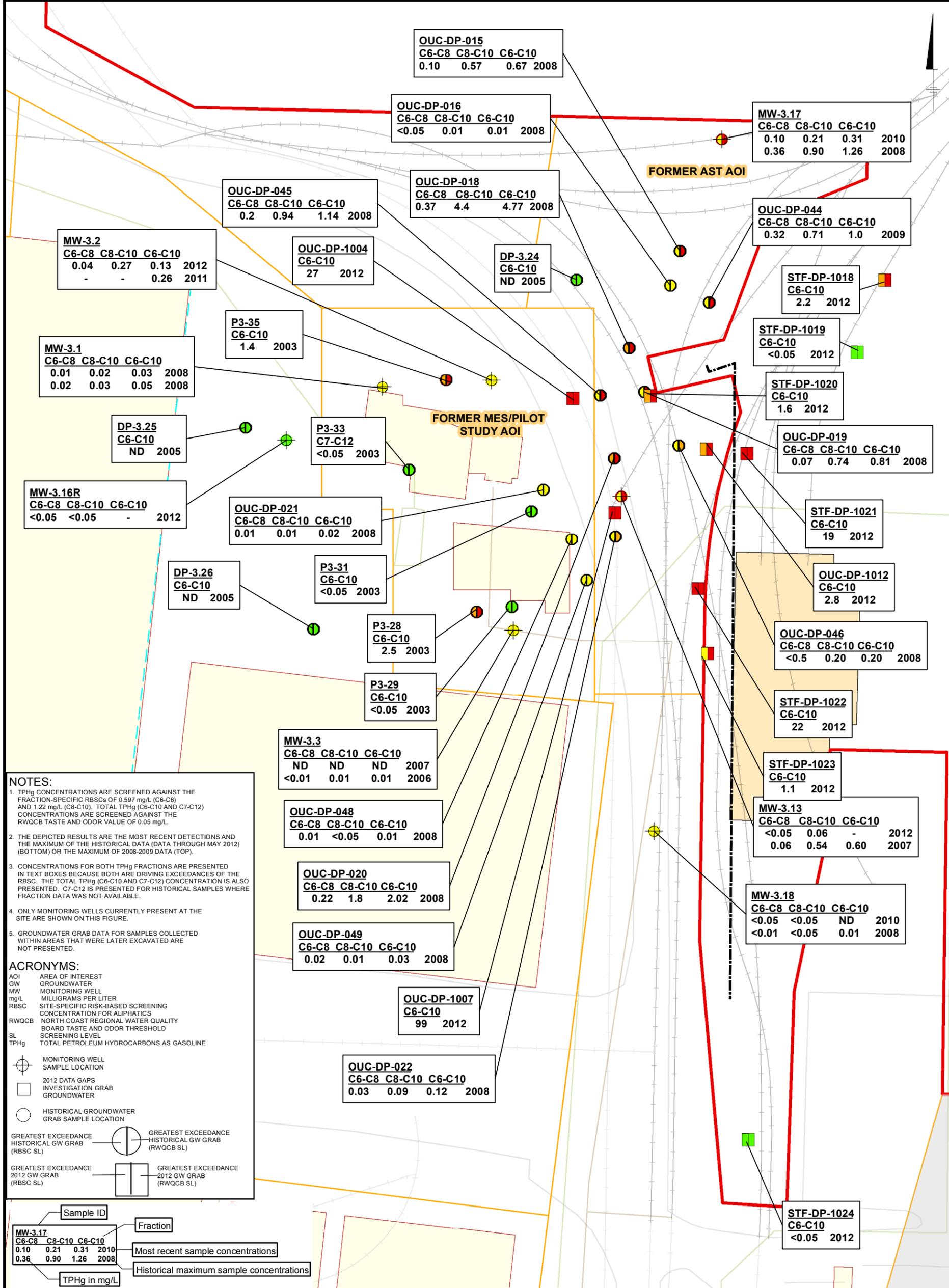
0 60 120 Feet

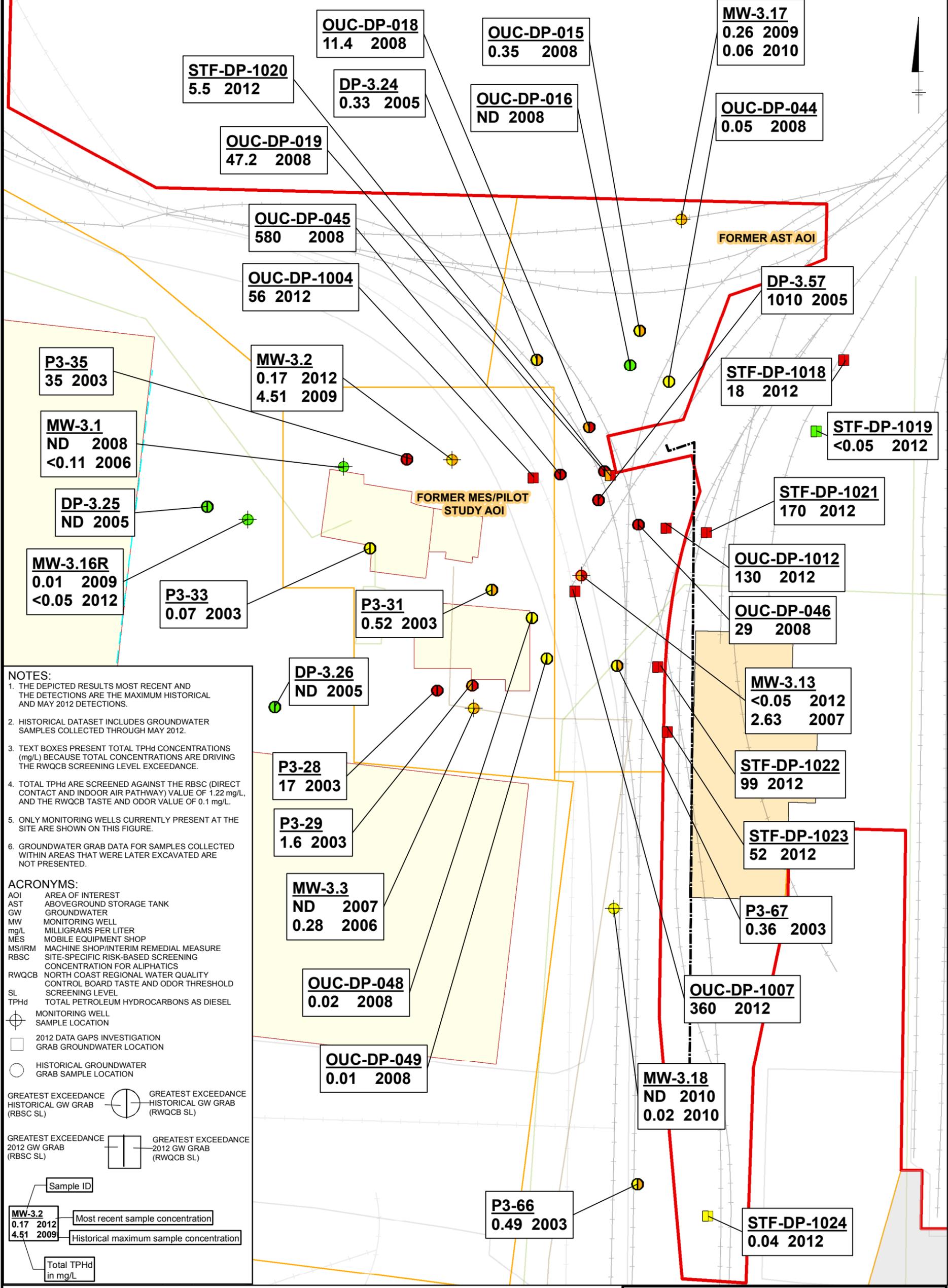
FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

DATA GAPS INVESTIGATION RESULTS - TPHd IN SOIL

ARCADIS

FIGURE 2-15





NOTES:

1. THE DEPICTED RESULTS MOST RECENT AND THE DETECTIONS ARE THE MAXIMUM HISTORICAL AND MAY 2012 DETECTIONS.
2. HISTORICAL DATASET INCLUDES GROUNDWATER SAMPLES COLLECTED THROUGH MAY 2012.
3. TEXT BOXES PRESENT TOTAL TPHd CONCENTRATIONS (mg/L) BECAUSE TOTAL CONCENTRATIONS ARE DRIVING THE RWQCB SCREENING LEVEL EXCEEDANCE.
4. TOTAL TPHd ARE SCREENED AGAINST THE RBSC (DIRECT CONTACT AND INDOOR AIR PATHWAY) VALUE OF 1.22 mg/L, AND THE RWQCB TASTE AND ODOR VALUE OF 0.1 mg/L.
5. ONLY MONITORING WELLS CURRENTLY PRESENT AT THE SITE ARE SHOWN ON THIS FIGURE.
6. GROUNDWATER GRAB DATA FOR SAMPLES COLLECTED WITHIN AREAS THAT WERE LATER EXCAVATED ARE NOT PRESENTED.

ACRONYMS:

AOI AREA OF INTEREST
 AST ABOVEGROUND STORAGE TANK
 GW GROUNDWATER
 MW MONITORING WELL
 mg/L MILLIGRAMS PER LITER
 MES MOBILE EQUIPMENT SHOP
 MS/IRM MACHINE SHOP/INTERIM REMEDIAL MEASURE
 RBSC SITE-SPECIFIC RISK-BASED SCREENING CONCENTRATION FOR ALIPHATICS
 RWQCB NORTH COAST REGIONAL WATER QUALITY CONTROL BOARD TASTE AND ODOR THRESHOLD SCREENING LEVEL
 SL SCREENING LEVEL
 TPHd TOTAL PETROLEUM HYDROCARBONS AS DIESEL

MONITORING WELL SAMPLE LOCATION
 2012 DATA GAPS INVESTIGATION GRAB GROUNDWATER LOCATION
 HISTORICAL GROUNDWATER GRAB SAMPLE LOCATION

GREATEST EXCEEDANCE HISTORICAL GW GRAB (RBSC SL) GREATEST EXCEEDANCE HISTORICAL GW GRAB (RWQCB SL)

GREATEST EXCEEDANCE 2012 GW GRAB (RBSC SL) GREATEST EXCEEDANCE 2012 GW GRAB (RWQCB SL)

Sample ID

MW-3.2
 0.17 2012 Most recent sample concentration
 4.51 2009 Historical maximum sample concentration

Total TPHd in mg/L

LEGEND:

- NO DATA AVAILABLE
- NOT DETECTED
- DETECTED BELOW SCREENING LEVEL
- DETECTED ABOVE SCREENING LEVEL
- DETECTED ABOVE 10X SCREENING LEVEL
- SITE BOUNDARY
- AOI BOUNDARY
- OTHER OPERABLE UNITS/AOIs
- POND
- STRUCTURE
- FORMER STRUCTURE
- FORMER STRUCTURE-FOUNDATION INTACT
- EXCAVATION BOUNDARY
- PAVED ROADWAY
- UNPAVED ROADWAY
- FORMER RAIL LINES
- RAIL LINE
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE

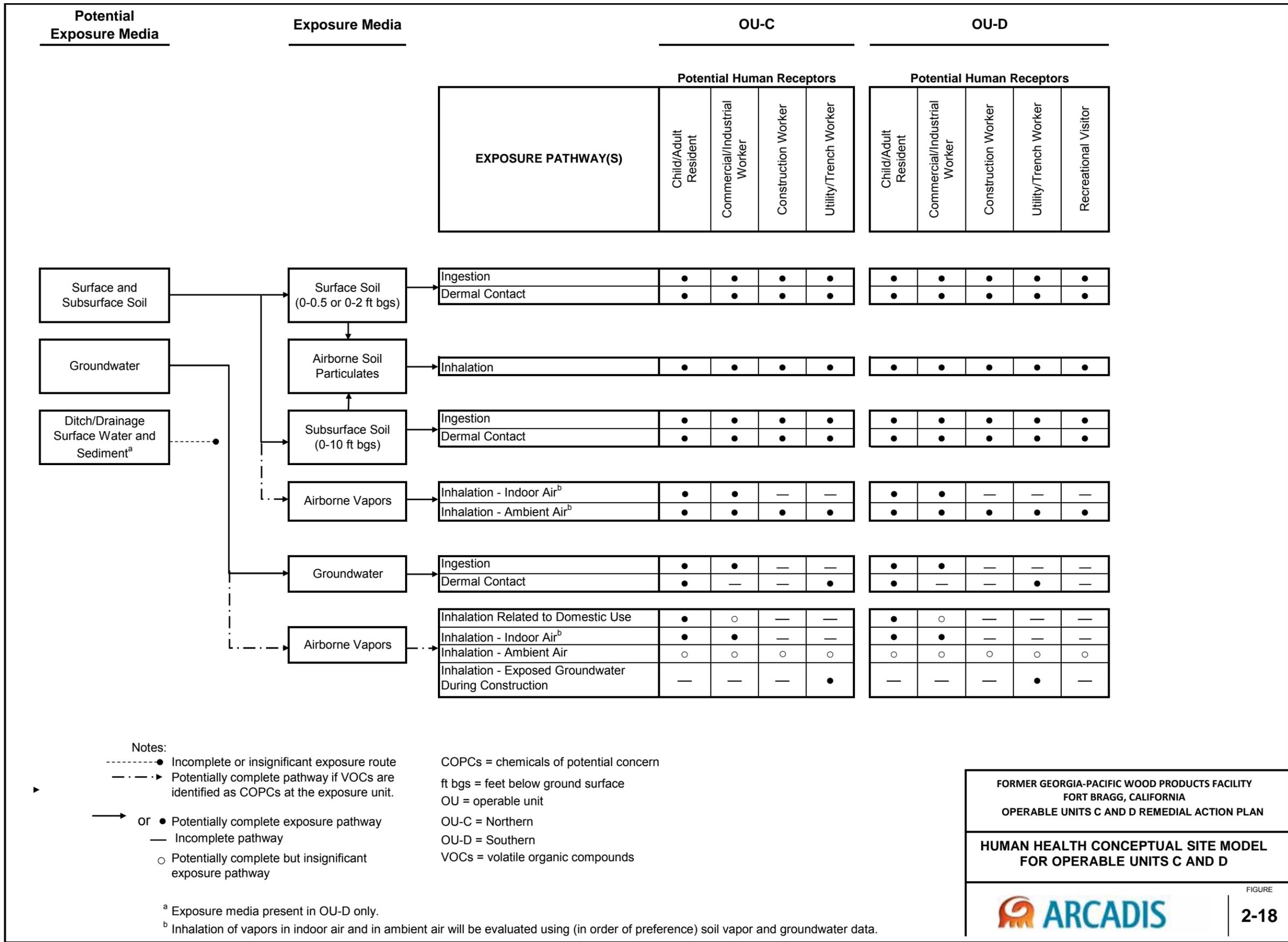
0 60 120 Feet
 GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
 OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

**DATA GAPS INVESTIGATION
 RESULTS - TPHd IN GROUNDWATER**

ARCADIS

FIGURE 2-17



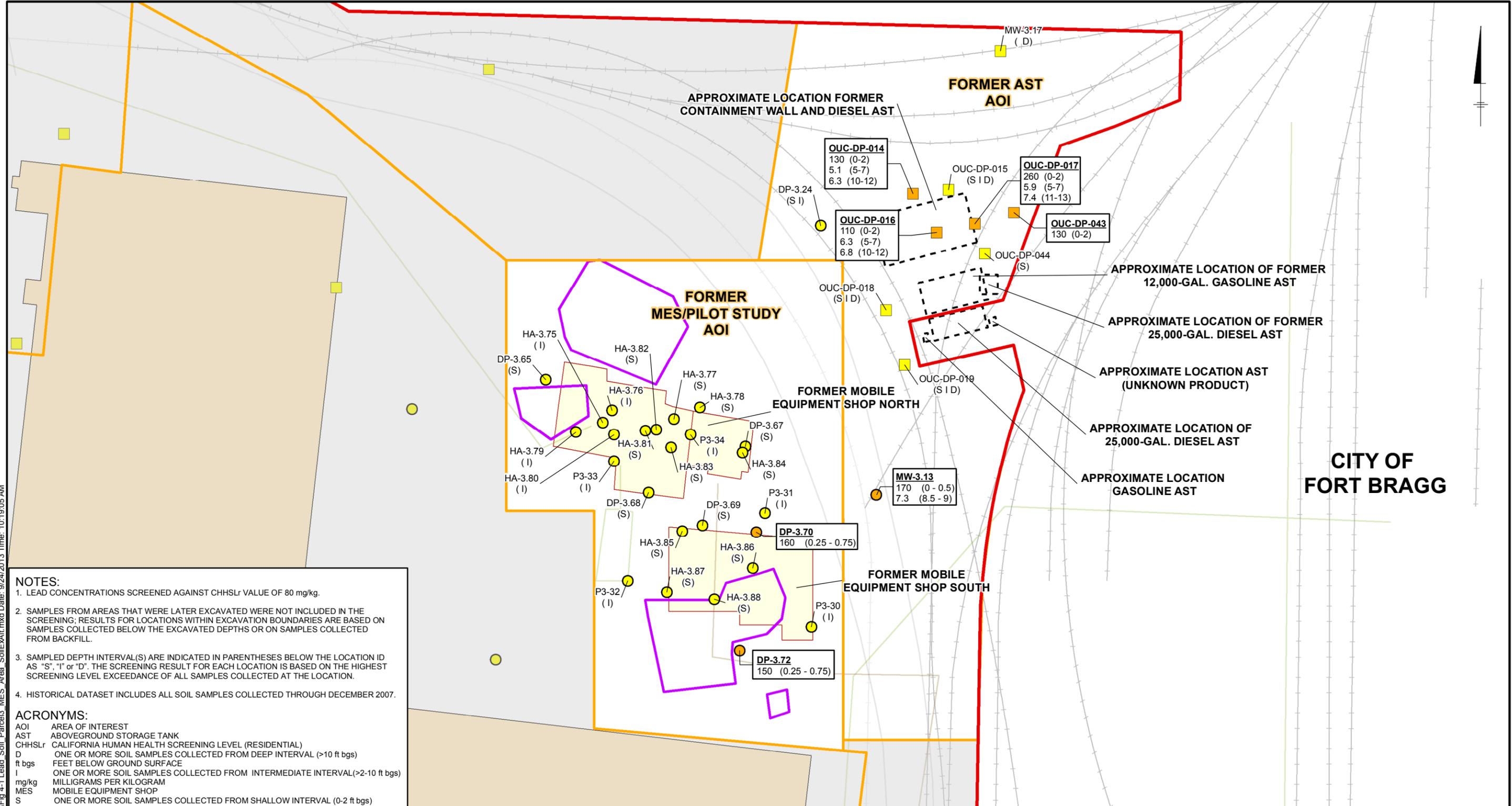
| Exposure Media | Exposure Route | Potential Ecological Receptors | | | |
|---------------------------|----------------------|--------------------------------|---------------|-------|---------|
| | | Plants | Invertebrates | Birds | Mammals |
| Surface Soil | Direct Contact | • | • | 0 | 0 |
| | Incidental Ingestion | NA | NA | • | • |
| | Contaminated Biota | NA | NA | • | • |
| Subsurface Soil | Direct Contact | • ¹ | NA | NA | 0 |
| | Incidental Ingestion | NA | NA | NA | • |
| | Inhalation | NA | NA | NA | • |
| | Contaminated Biota | NA | NA | NA | NA |
| Groundwater Seeps/Springs | Direct Contact | — | — | 0 | 0 |
| Stream Sediment | Direct Contact | • | • | 0 | 0 |
| | Incidental Ingestion | NA | NA | • | • |
| | Contaminated Biota | NA | NA | • | • |
| Stream Surface Water | Direct Contact | 0 | 0 | 0 | 0 |
| | Incidental Ingestion | NA | 0 | 0 | 0 |
| | Contaminated Biota | NA | NA | 0 | 0 |

Notes:

- Pathway potentially complete, but considered insignificant; associated sources will be evaluated separately
- Potentially complete and significant exposure pathway
- Incomplete pathway
- NA = Not applicable
- OU = Operable Unit
- ¹ = Only areas with sufficient tree vegetation

| | |
|---|-----------------------|
| FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY FORT BRAGG, CALIFORNIA OPERABLE UNITS C AND D REMEDIAL ACTION PLAN | |
| ECOLOGICAL CONCEPTUAL SITE MODEL FOR OPERATING UNIT D | |
|  | FIGURE 2-19 |

CITY: Highlands Ranch DIV/IGROUP: AIT GIS DB/BCCG Path: I:\FortBragg\MXD\OUC_CUD_RAP\092413\Fig 4-1 Lead Soil_Parcels3_MES_Area_SoilExAlt.mxd Date: 9/24/2013 Time: 10:19:05 AM



NOTES:

- LEAD CONCENTRATIONS SCREENED AGAINST CHHSLr VALUE OF 80 mg/kg.
- SAMPLES FROM AREAS THAT WERE LATER EXCAVATED WERE NOT INCLUDED IN THE SCREENING; RESULTS FOR LOCATIONS WITHIN EXCAVATION BOUNDARIES ARE BASED ON SAMPLES COLLECTED BELOW THE EXCAVATED DEPTHS OR ON SAMPLES COLLECTED FROM BACKFILL.
- SAMPLED DEPTH INTERVAL(S) ARE INDICATED IN PARENTHESES BELOW THE LOCATION ID AS "S", "I" or "D". THE SCREENING RESULT FOR EACH LOCATION IS BASED ON THE HIGHEST SCREENING LEVEL EXCEEDANCE OF ALL SAMPLES COLLECTED AT THE LOCATION.
- HISTORICAL DATASET INCLUDES ALL SOIL SAMPLES COLLECTED THROUGH DECEMBER 2007.

ACRONYMS:

| | |
|--------|--|
| AOI | AREA OF INTEREST |
| AST | ABOVEGROUND STORAGE TANK |
| CHHSLr | CALIFORNIA HUMAN HEALTH SCREENING LEVEL (RESIDENTIAL) |
| D | ONE OR MORE SOIL SAMPLES COLLECTED FROM DEEP INTERVAL (>10 ft bgs) |
| 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 |
| MES | MOBILE EQUIPMENT SHOP |
| S | ONE OR MORE SOIL SAMPLES COLLECTED FROM SHALLOW INTERVAL (0-2 ft bgs) |

| | | |
|-----------------------------------|------------------------------------|---|
| LEGEND: | | <p>— PAVED ROADWAY</p> <p>- - - UNPAVED ROADWAY</p> <p>+ + + FORMER RAIL LINE</p> <p>+ RAIL LINE</p> <p>— PLANT DRAIN SYSTEM LINE</p> <p>— SANITARY SEWER LINE</p> |
| LOCATION TYPE | SCREENING RESULT | |
| ○ HISTORICAL SOIL SAMPLE LOCATION | ■ NOT DETECTED | <p>— SITE BOUNDARY</p> <p>— AOI BOUNDARY</p> <p>— OTHER OPERABLE UNITS/AOIs</p> <p>— FORMER STRUCTURE</p> <p>— EXCAVATION BOUNDARY</p> <p>- - - (FORMER) INDUSTRIAL USE</p> |
| □ 2008/2009 SOIL SAMPLE LOCATION | ■ DETECTED ≤ BELOW SCREENING LEVEL | |
| | ■ DETECTED > SCREENING LEVEL | |
| | ■ DETECTED > 10 X SCREENING LEVEL | |

Sample ID

MW-3.13
170 (0 - 0.5)
7.3 (8.5 - 9)

Depth (ft bgs)

Lead Concentration (mg/kg)

0 50 100 Feet

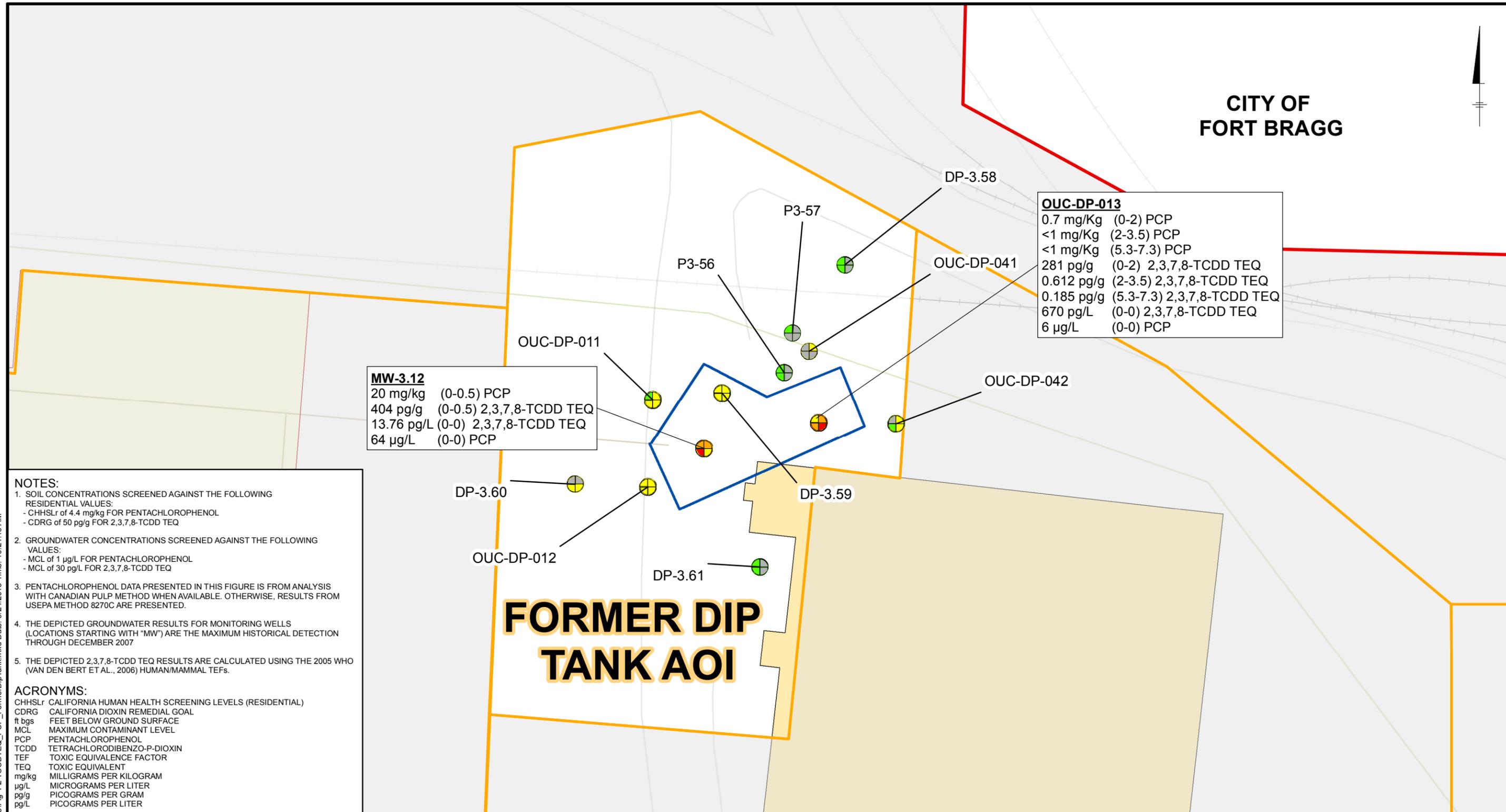
GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA
OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

**LEAD CONCENTRATIONS IN SOIL AT
FORMER AST AND FORMER MES/PILOT
STUDY AOIs**

ARCADIS

FIGURE
4-1



MW-3.12
 20 mg/kg (0-0.5) PCP
 404 pg/g (0-0.5) 2,3,7,8-TCDD TEQ
 13.76 pg/L (0-0) 2,3,7,8-TCDD TEQ
 64 µg/L (0-0) PCP

OUC-DP-013
 0.7 mg/Kg (0-2) PCP
 <1 mg/Kg (2-3.5) PCP
 <1 mg/Kg (5.3-7.3) PCP
 281 pg/g (0-2) 2,3,7,8-TCDD TEQ
 0.612 pg/g (2-3.5) 2,3,7,8-TCDD TEQ
 0.185 pg/g (5.3-7.3) 2,3,7,8-TCDD TEQ
 670 pg/L (0-0) 2,3,7,8-TCDD TEQ
 6 µg/L (0-0) PCP

NOTES:

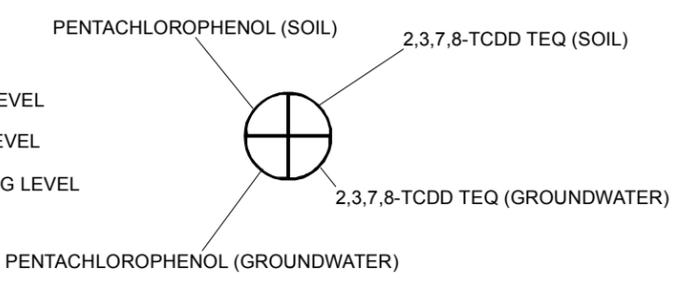
- SOIL CONCENTRATIONS SCREENED AGAINST THE FOLLOWING RESIDENTIAL VALUES:
 - CHHSLr of 4.4 mg/kg FOR PENTACHLOROPHENOL
 - CDRG of 50 pg/g FOR 2,3,7,8-TCDD TEQ
- GROUNDWATER CONCENTRATIONS SCREENED AGAINST THE FOLLOWING VALUES:
 - MCL of 1 µg/L FOR PENTACHLOROPHENOL
 - MCL of 30 pg/L FOR 2,3,7,8-TCDD TEQ
- PENTACHLOROPHENOL DATA PRESENTED IN THIS FIGURE IS FROM ANALYSIS WITH CANADIAN PULP METHOD WHEN AVAILABLE. OTHERWISE, RESULTS FROM USEPA METHOD 8270C ARE PRESENTED.
- THE DEPICTED GROUNDWATER RESULTS FOR MONITORING WELLS (LOCATIONS STARTING WITH "MW") ARE THE MAXIMUM HISTORICAL DETECTION THROUGH DECEMBER 2007
- THE DEPICTED 2,3,7,8-TCDD TEQ RESULTS ARE CALCULATED USING THE 2005 WHO (VAN DEN BERT ET AL., 2006) HUMAN/MAMMAL TEFS.

ACRONYMS:

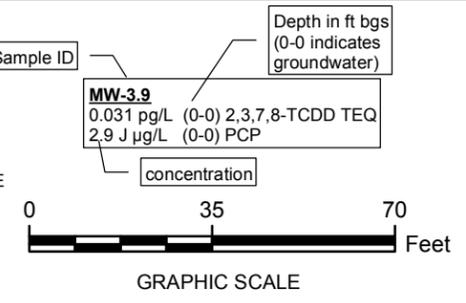
CHHSLr CALIFORNIA HUMAN HEALTH SCREENING LEVELS (RESIDENTIAL)
 CDRG CALIFORNIA DIOXIN REMEDIAL GOAL
 ft bgs FEET BELOW GROUND SURFACE
 MCL MAXIMUM CONTAMINANT LEVEL
 PCP PENTACHLOROPHENOL
 TCDD TETRACHLORODIBENZO-P-DIOXIN
 TEF TOXIC EQUIVALENCE FACTOR
 TEQ TOXIC EQUIVALENT
 mg/kg MILLIGRAMS PER KILOGRAM
 µg/L MICROGRAMS PER LITER
 pg/g PICOGRAMS PER GRAM
 pg/L PICOGRAMS PER LITER

FORMER DIP TANK AOI

- LEGEND:**
- NOT DETECTED
 - DETECTED BELOW SCREENING LEVEL
 - DETECTED ABOVE SCREENING LEVEL
 - DETECTED ABOVE 10X SCREENING LEVEL
 - NO DATA AVAILABLE



- ▭ SITE BOUNDARY
- ▭ AOI BOUNDARY
- ▭ OTHER OPERABLE UNITS/AOIs
- ▭ STRUCTURE
- ▭ FORMER STRUCTURE
- ▭ PENTACHLOROPHENOL PRESUMPTIVE REMEDY AREA
- PAVED ROADWAY
- - - UNPAVED ROADWAY
- + + + FORMER RAIL LINES
- RAIL LINES
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE

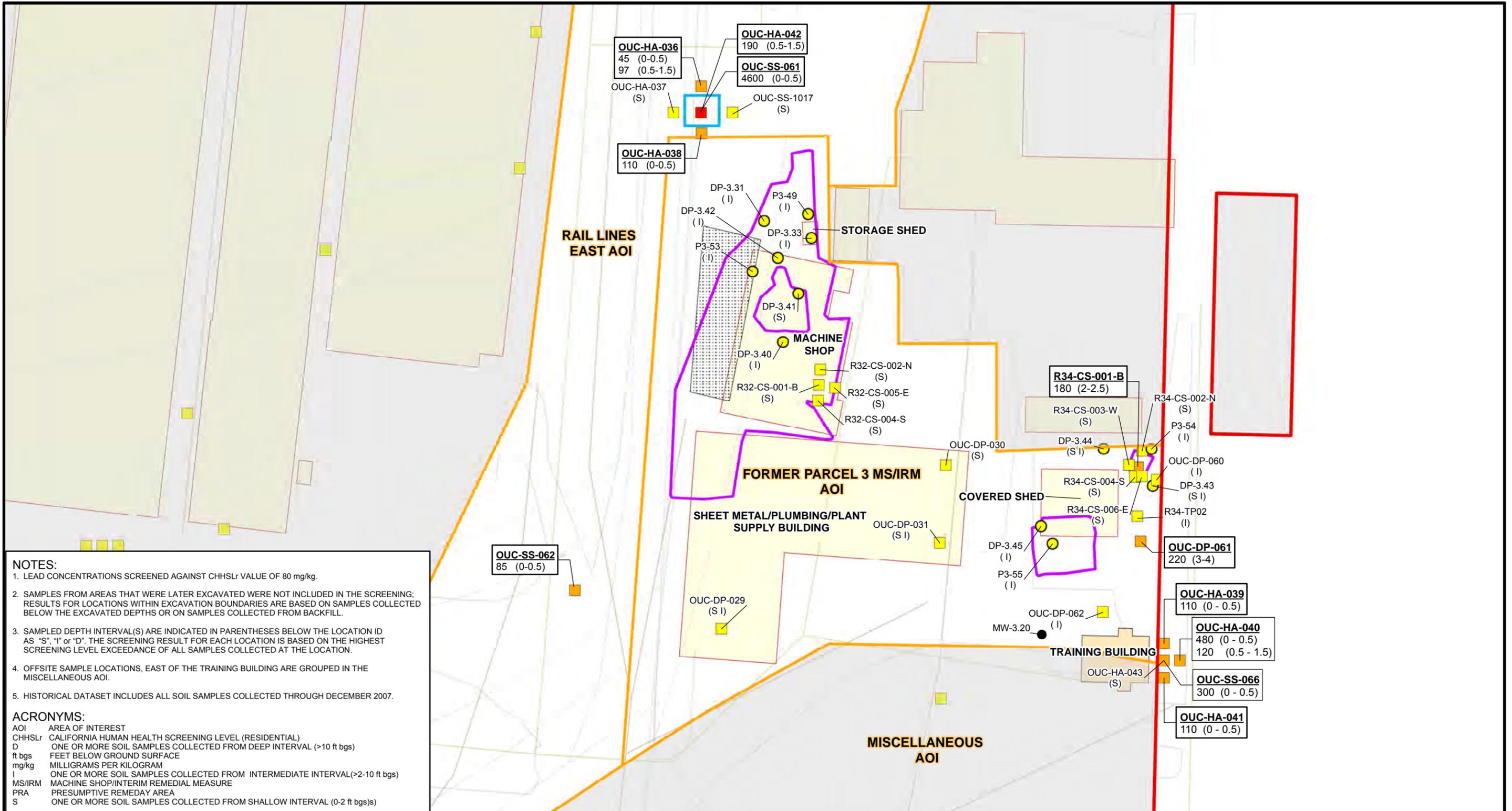


FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

PENTACHLOROPHENOL AND 2,3,7,8-TCDD TEQ CONCENTRATIONS IN SOIL AND GROUNDWATER AT THE FORMER DIP TANK AOI



CITY: Highlands Ranch DIV/GROUP: AIT GIS DB/BCG Path: I:\FortBragg\MXD\OUC_C_OUD_RAP\092413\Fig 4-2 TCDDTEQ_PCP_FormerDipTank.mxd Date: 9/24/2013 Time: 10:21:16 AM



NOTES:

- LEAD CONCENTRATIONS SCREENED AGAINST CHHSLr VALUE OF 80 mg/kg.
- SAMPLES FROM AREAS THAT WERE LATER EXCAVATED WERE NOT INCLUDED IN THE SCREENING; RESULTS FOR LOCATIONS WITHIN EXCAVATION BOUNDARIES ARE BASED ON SAMPLES COLLECTED BELOW THE EXCAVATED DEPTHS OR ON SAMPLES COLLECTED FROM BACKFILL.
- SAMPLED DEPTH INTERVAL(S) ARE INDICATED IN PARENTHESES BELOW THE LOCATION ID AS "S", "I" or "D". THE SCREENING RESULT FOR EACH LOCATION IS BASED ON THE HIGHEST SCREENING LEVEL EXCEEDANCE OF ALL SAMPLES COLLECTED AT THE LOCATION.
- OFFSITE SAMPLE LOCATIONS, EAST OF THE TRAINING BUILDING ARE GROUPED IN THE MISCELLANEOUS AOI.
- HISTORICAL DATASET INCLUDES ALL SOIL SAMPLES COLLECTED THROUGH DECEMBER 2007.

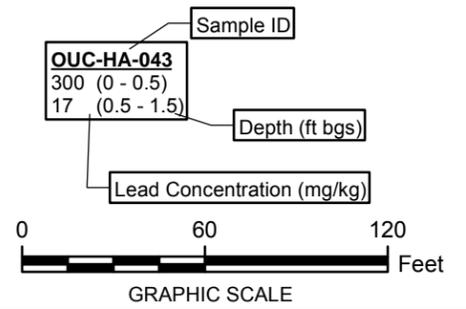
ACRONYMS:

AOI AREA OF INTEREST
 CHHSLr CALIFORNIA HUMAN HEALTH SCREENING LEVEL (RESIDENTIAL)
 D ONE OR MORE SOIL SAMPLES COLLECTED FROM DEEP INTERVAL (>10 ft bgs)
 ft bgs FEET BELOW GROUND SURFACE
 mg/kg MILLIGRAMS PER KILOGRAM
 I ONE OR MORE SOIL SAMPLES COLLECTED FROM INTERMEDIATE INTERVAL (>2-10 ft bgs)
 MS/IRM MACHINE SHOP/INTERIM REMEDIAL MEASURE
 PRA PRESUMPTIVE REMEDAY AREA
 S ONE OR MORE SOIL SAMPLES COLLECTED FROM SHALLOW INTERVAL (0-2 ft bgs)s

LEGEND:

| LOCATION TYPE | SCREENING RESULT |
|---------------------------------|----------------------------------|
| HISTORICAL SOIL SAMPLE LOCATION | NOT DETECTED |
| 2008/2009 SOIL SAMPLE LOCATION | DETECTED ≤ BELOW SCREENING LEVEL |
| MONITORING WELL | DETECTED > SCREENING LEVEL |
| | DETECTED > 10 X SCREENING LEVEL |

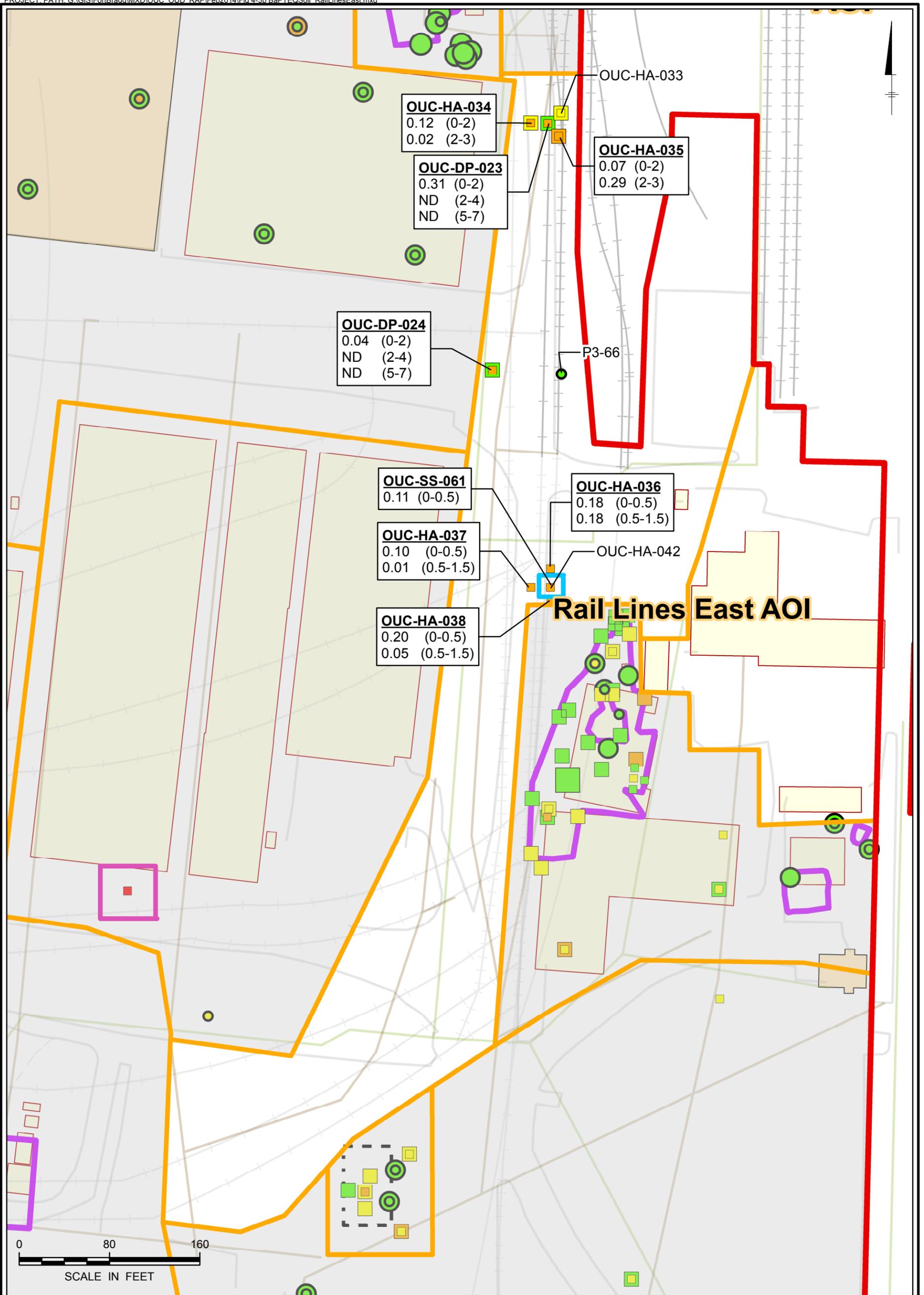
| | |
|------------------------------|------------------------------------|
| SITE BOUNDARY | PREVIOUS GEOPHYSICAL INVESTIGATION |
| AOI BOUNDARY | PAVED ROADWAY |
| OTHER OPERABLE UNITS/AOIs | UNPAVED ROADWAY |
| STRUCTURE | FORMER RAIL LINE |
| FORMER STRUCTURE | RAIL LINE |
| EXCAVATION BOUNDARY | PLANT DRAIN SYSTEM LINE |
| LEAD PRESUMPTIVE REMEDY AREA | SANITARY SEWER LINE |



FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA
 OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

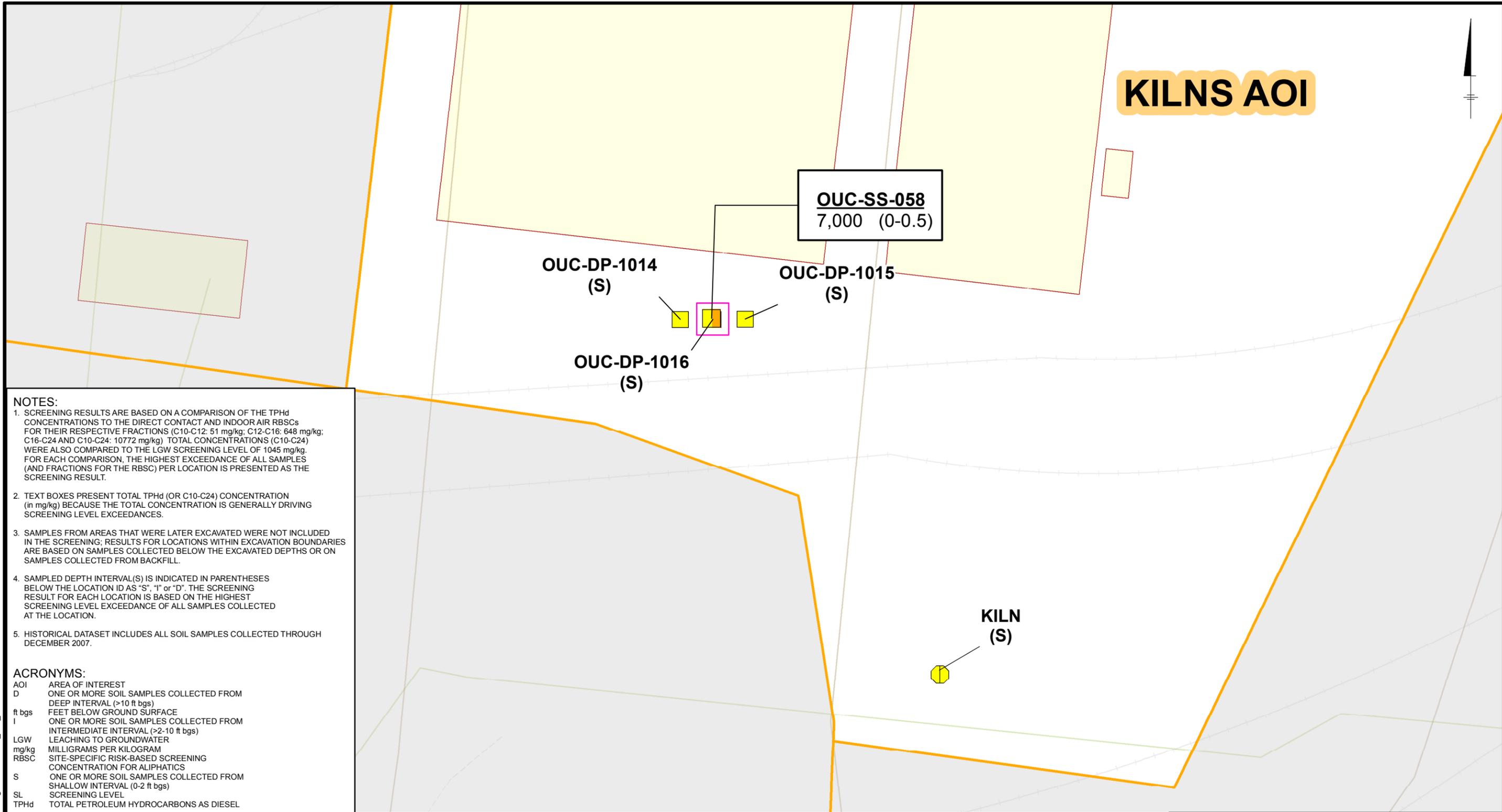
**LEAD CONCENTRATIONS IN SOIL AT
 FORMER PARCEL 3 MACHINE SHOP/IRM AOI
 AND RAIL LINES EAST PRA**

ARCADIS | **FIGURE 4-3a**



| | | | | | |
|---|--|--|--|---|--|
| LEGEND: LOCATION TYPE ○ HISTORICAL SOIL SAMPLE LOCATION □ 2008/2009 SOIL SAMPLE LOCATION SCREENING RESULT ■ NOT DETECTED ■ DETECTED ≤ BELOW SCREENING LEVEL ■ DETECTED > SCREENING LEVEL ■ DETECTED > 10 X SCREENING LEVEL | | ■ SITE BOUNDARY ■ AOI BOUNDARY ■ OTHER OPERABLE UNITS/AOIS ■ STRUCTURE ■ FORMER STRUCTURE ■ EXCAVATION BOUNDARY ■ (FORMER) INDUSTRIAL USE ■ TPH PRESUMPTIVE REMEDY AREA ■ LEAD PRESUMPTIVE REMEDY AREA | | — PAVED ROADWAY - - UNPAVED ROADWAY - - - FORMER RAIL LINE + + RAILROAD TRACK - - - PLANT DRAIN SYSTEM LINE - - - SANITARY SEWER LINE | |
| | | Sample ID OUC-SS-058 0.89 (0-0.5) Depth (ft bgs) B(a)P CONCENTRATION IN mg/kg | | FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY FORT BRAGG, CALIFORNIA OPERABLE UNITS C AND D REMEDIAL ACTION PLAN B(a)P TEQ IN SOIL AT RAIL LINES EAST AOI | |
| | | | | FIGURE 4-3b | |

KILNS AOI



NOTES:

- SCREENING RESULTS ARE BASED ON A COMPARISON OF THE TPHd CONCENTRATIONS TO THE DIRECT CONTACT AND INDOOR AIR RBSCs FOR THEIR RESPECTIVE FRACTIONS (C10-C12: 51 mg/kg; C12-C16: 648 mg/kg; C16-C24 AND C10-C24: 10772 mg/kg). TOTAL CONCENTRATIONS (C10-C24) WERE ALSO COMPARED TO THE LGW SCREENING LEVEL OF 1045 mg/kg. FOR EACH COMPARISON, THE HIGHEST EXCEEDANCE OF ALL SAMPLES (AND FRACTIONS FOR THE RBSC) PER LOCATION IS PRESENTED AS THE SCREENING RESULT.
- TEXT BOXES PRESENT TOTAL TPHd (OR C10-C24) CONCENTRATION (in mg/kg) BECAUSE THE TOTAL CONCENTRATION IS GENERALLY DRIVING SCREENING LEVEL EXCEEDANCES.
- SAMPLES FROM AREAS THAT WERE LATER EXCAVATED WERE NOT INCLUDED IN THE SCREENING; RESULTS FOR LOCATIONS WITHIN EXCAVATION BOUNDARIES ARE BASED ON SAMPLES COLLECTED BELOW THE EXCAVATED DEPTHS OR ON SAMPLES COLLECTED FROM BACKFILL.
- SAMPLED DEPTH INTERVAL(S) IS INDICATED IN PARENTHESES BELOW THE LOCATION ID AS "S", "I" or "D". THE SCREENING RESULT FOR EACH LOCATION IS BASED ON THE HIGHEST SCREENING LEVEL EXCEEDANCE OF ALL SAMPLES COLLECTED AT THE LOCATION.
- HISTORICAL DATASET INCLUDES ALL SOIL SAMPLES COLLECTED THROUGH DECEMBER 2007.

ACRONYMS:

| | |
|--------|--|
| AOI | AREA OF INTEREST |
| D | ONE OR MORE SOIL SAMPLES COLLECTED FROM DEEP INTERVAL (>10 ft bgs) |
| ft bgs | FEET BELOW GROUND SURFACE |
| I | ONE OR MORE SOIL SAMPLES COLLECTED FROM INTERMEDIATE INTERVAL (>2-10 ft bgs) |
| LGW | LEACHING TO GROUNDWATER |
| mg/kg | MILLIGRAMS PER KILOGRAM |
| RBSC | SITE-SPECIFIC RISK-BASED SCREENING CONCENTRATION FOR ALIPHATICS |
| S | ONE OR MORE SOIL SAMPLES COLLECTED FROM SHALLOW INTERVAL (0-2 ft bgs) |
| SL | SCREENING LEVEL |
| TPHd | TOTAL PETROLEUM HYDROCARBONS AS DIESEL |

LEGEND:

LOCATION TYPE

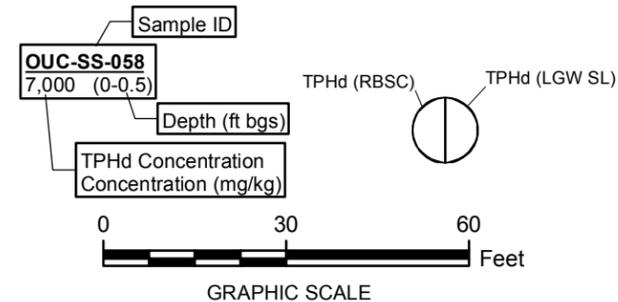
- HISTORICAL SOIL SAMPLE LOCATION
- 2008/2009 SOIL SAMPLE LOCATION

SCREENING RESULT

- NOT DETECTED
- DETECTED ≤ BELOW SCREENING LEVEL
- DETECTED > SCREENING LEVEL
- DETECTED > 10 X SCREENING LEVEL

- AOI BOUNDARY
- OTHER OPERABLE UNITS/AOIS
- STRUCTURE
- FORMER STRUCTURE
- (FORMER) INDUSTRIAL USE
- TPH PRESUMPTIVE REMEDY AREA

- PAVED ROADWAY
- UNPAVED ROADWAY
- FORMER RAIL LINE
- RAILROAD TRACK
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE

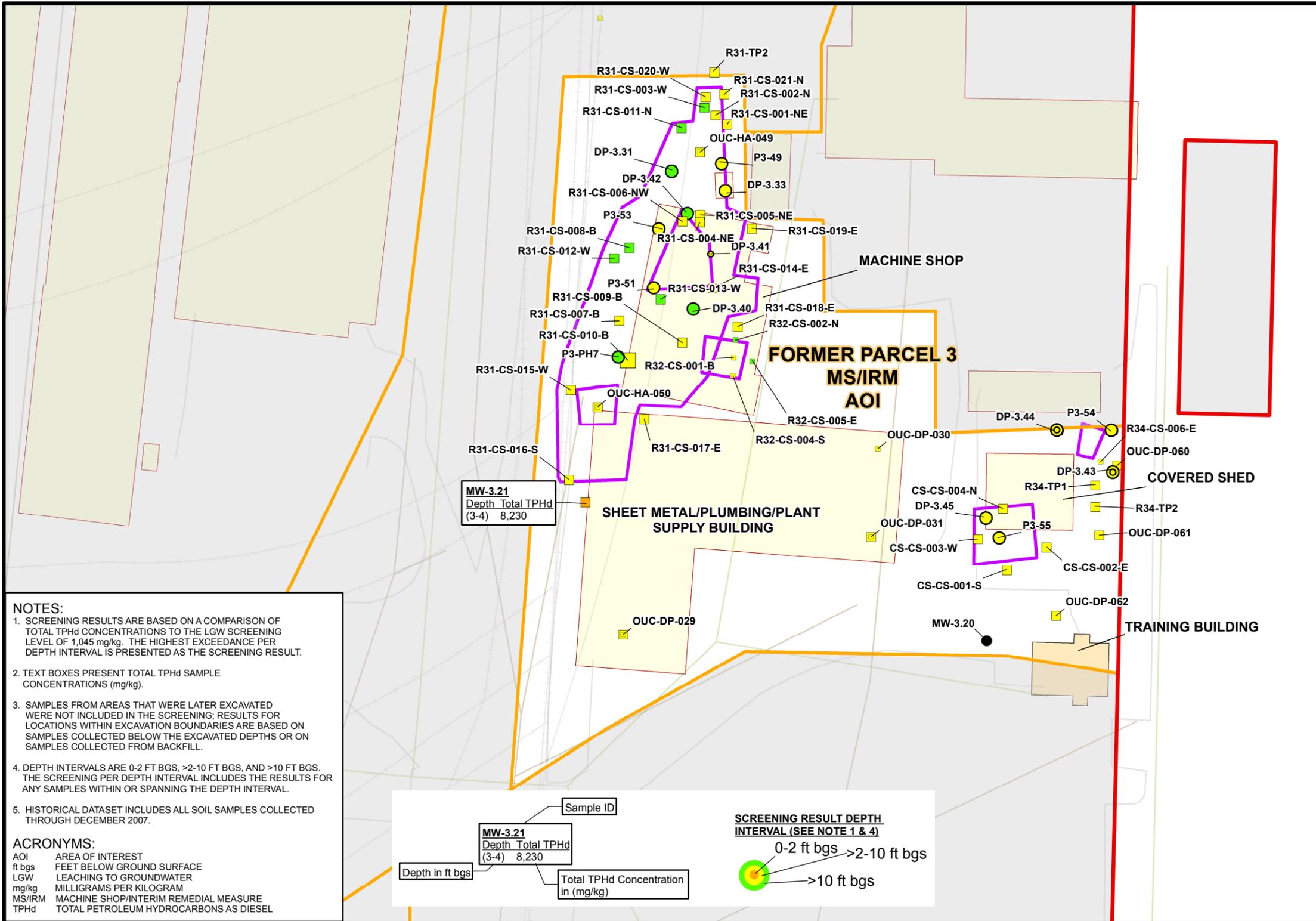


FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA
OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

TPHd CONCENTRATIONS IN SOIL AND PRA AT KILNS AOI



CITY: Highlands Ranch_DIV\GROUP: AIT GIS_DB\BCG Path: G:\GIS\FortBragg\MXD\OUC_OUD_RAP\Feb2014\Fig 4-5 TPHd_LGW_Soil_Parcel3_SoilExAlt.mxd Date: 2/28/2014 Time: 11:14:49 AM



CITY OF FORT BRAGG

NOTES:

- SCREENING RESULTS ARE BASED ON A COMPARISON OF TOTAL TPHd CONCENTRATIONS TO THE LGW SCREENING LEVEL OF 1,045 mg/kg. THE HIGHEST EXCEEDANCE PER DEPTH INTERVAL IS PRESENTED AS THE SCREENING RESULT.
- TEXT BOXES PRESENT TOTAL TPHd SAMPLE CONCENTRATIONS (mg/kg).
- SAMPLES FROM AREAS THAT WERE LATER EXCAVATED WERE NOT INCLUDED IN THE SCREENING; RESULTS FOR LOCATIONS WITHIN EXCAVATION BOUNDARIES ARE BASED ON SAMPLES COLLECTED BELOW THE EXCAVATED DEPTHS OR ON SAMPLES COLLECTED FROM BACKFILL.
- DEPTH INTERVALS ARE 0-2 FT BGS, >2-10 FT BGS, AND >10 FT BGS. THE SCREENING PER DEPTH INTERVAL INCLUDES THE RESULTS FOR ANY SAMPLES WITHIN OR SPANNING THE DEPTH INTERVAL.
- HISTORICAL DATASET INCLUDES ALL SOIL SAMPLES COLLECTED THROUGH DECEMBER 2007.

ACRONYMS:

| | |
|--------|--|
| AOI | AREA OF INTEREST |
| ft bgs | FEET BELOW GROUND SURFACE |
| LGW | LEACHING TO GROUNDWATER |
| mg/kg | MILLIGRAMS PER KILOGRAM |
| MS/IRM | MACHINE SHOP/INTERIM REMEDIAL MEASURE |
| TPHd | TOTAL PETROLEUM HYDROCARBONS AS DIESEL |

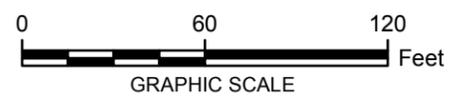
| | |
|-------------------------------------|------------------------------|
| Sample ID | MW-3.21 |
| Depth in ft bgs | Depth Total TPHd (3-4) 8,230 |
| Total TPHd Concentration in (mg/kg) | 8,230 |

SCREENING RESULT DEPTH INTERVAL (SEE NOTE 1 & 4)

- 0-2 ft bgs
- >2-10 ft bgs
- >10 ft bgs

LEGEND:

| | | | |
|-----------------------------------|------------------------------------|-----------------------|---------------------------|
| LOCATION TYPE | SCREENING RESULT | STRUCTURE | ROADWAY |
| ○ HISTORICAL SOIL SAMPLE LOCATION | ■ NOT DETECTED | ▭ STRUCTURE | — PAVED ROADWAY |
| □ 2008/2009 SOIL SAMPLE LOCATION | ■ DETECTED ≤ BELOW SCREENING LEVEL | ▭ FORMER STRUCTURE | - - - UNPAVED ROADWAY |
| ● MONITORING WELL | ■ DETECTED > SCREENING LEVEL | ▭ EXCAVATION BOUNDARY | — FORMER RAIL LINE |
| | ■ DETECTED > 10 X SCREENING LEVEL | | — RAIL LINE |
| | | | — PLANT DRAIN SYSTEM LINE |
| | | | — SANITARY SEWER LINE |



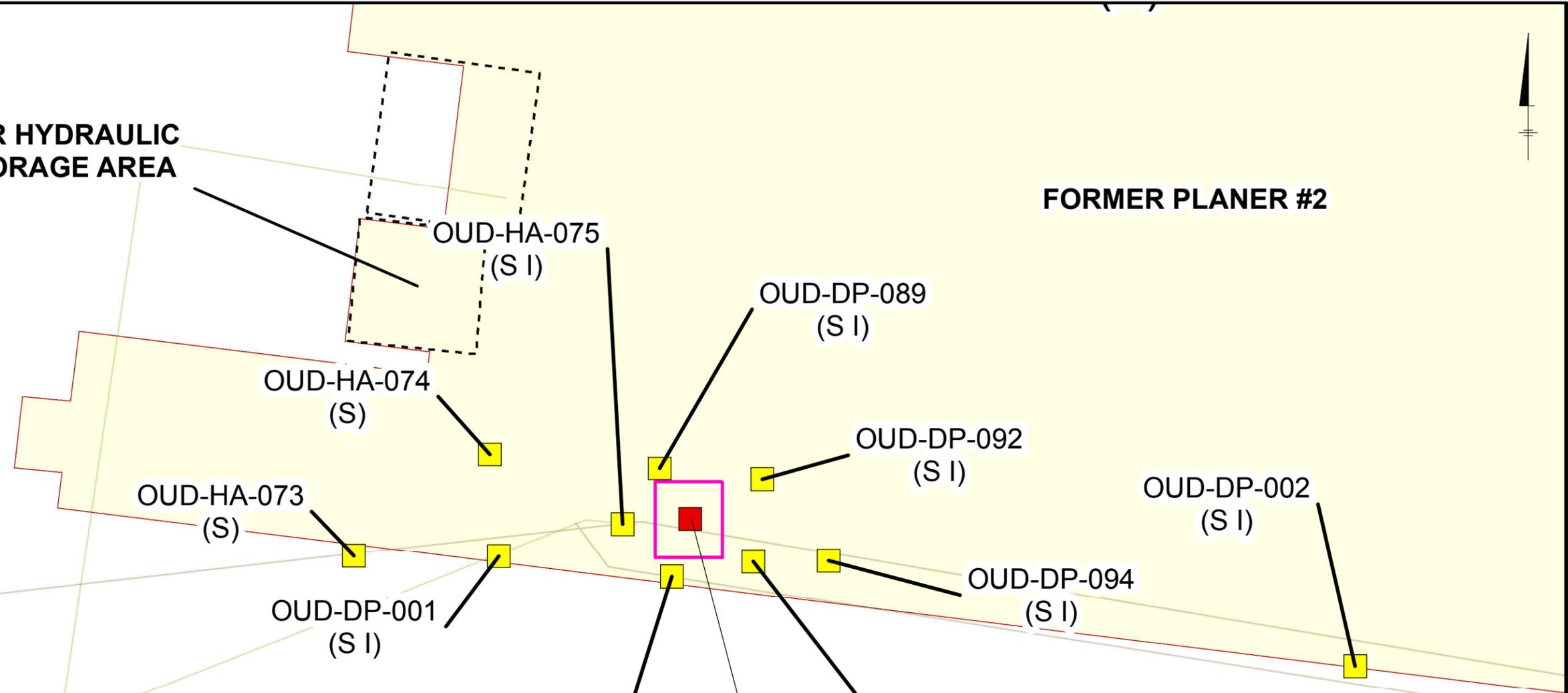
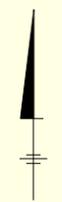
FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

**TPHd CONCENTRATIONS IN SOIL AT
FORMER PARCEL 3 MACHINE SHOP/IRM AOI -
LGW SCREENING LEVEL COMPARISON**

FORMER HYDRAULIC OIL STORAGE AREA

FORMER PLANER #2



NOTES:

1. TPHd CONCENTRATIONS SCREENED AGAINST HIGHEST EXCEEDENCE OF RBSCs (DIRECT CONTACT AND INDOOR AIR PATHWAY) FOR THEIR RESPECTIVE FRACTIONS: C10-C12: 51 mg/kg; C12-C16: 648 mg/kg; C16-C24 AND C10-C24: 10772 mg/kg; AND THE LGW CRITERIA FOR TOTAL TPHd (1045 mg/kg).
2. TEXT BOXES PRESENT C10-C12, C12-C16 AND C16-C24 SAMPLE CONCENTRATIONS (in mg/kg) BECAUSE VARIOUS FRACTIONS ARE DRIVING SCREENING LEVEL EXCEEDANCES. C10-C24 IS PRESENTED FOR HISTORICAL SAMPLES (DATA THROUGH DECEMBER 2007) WHERE FRACTION DATA WAS NOT AVAILABLE.
3. DATA FOR EXCAVATED SAMPLES ARE NOT PRESENTED.
4. SAMPLED DEPTH INTERVAL(S) IS INDICATED IN PARENTHESES BELOW THE LOCATION ID AS "S", "I" or "D". THE SCREENING RESULT FOR EACH LOCATION IS BASED ON THE HIGHEST SCREENING LEVEL EXCEEDANCE OF ALL SAMPLES COLLECTED AT THE LOCATION.

ACRONYMS:

AOI AREA OF INTEREST
D ONE OR MORE SOIL SAMPLES COLLECTED FROM DEEP INTERVAL (>10 ft bgs)
ft bgs FEET BELOW GROUND SURFACE
I ONE OR MORE SOIL SAMPLES COLLECTED FROM INTERMEDIATE INTERVAL (>2-10 ft bgs)
LGW LEACHING TO GROUNDWATER
mg/kg MILLIGRAMS PER KILOGRAM
RBSC SITE-SPECIFIC RISK-BASED SCREENING CONCENTRATION FOR ALIPHATICS
S ONE OR MORE SOIL SAMPLES COLLECTED FROM SHALLOW INTERVAL (0-2 ft bgs)
SL SCREENING LEVEL
TPHd TOTAL PETROLEUM HYDROCARBONS AS DIESEL

| OUD-DP-090 | | | |
|-------------------|---------|---------|---------|
| Depth | C10-C12 | C12-C16 | C16-C24 |
| (0-0.5) | 0.95 J | 3.4 | 10 |
| (0.5-1.5) | 0.49 J | 3.1 | 11 |
| (4-5) | 3300 | 11000 | 22000 |
| (5-6) | 0.50 J | 1.6 | 4.6 |

LEGEND:

LOCATION TYPE

- 2008/2009 SOIL SAMPLE LOCATION

SCREENING RESULT

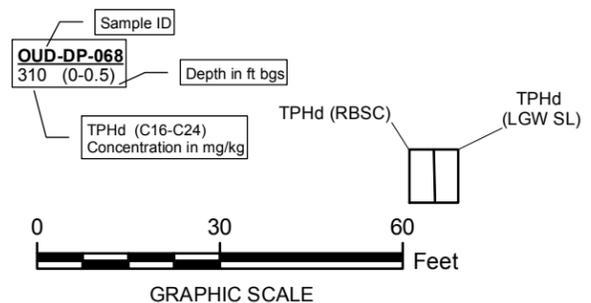
- NOT DETECTED
- DETECTED ≤ BELOW SCREENING LEVEL
- DETECTED > SCREENING LEVEL
- DETECTED > 10 X SCREENING LEVEL

AOI BOUNDARY

- AOI BOUNDARY
- OTHER OPERABLE UNITS/AOIs
- STRUCTURE
- FORMER STRUCTURE
- (FORMER) INDUSTRIAL USE
- TPH PRESUMPTIVE REMEDY AREA

PAVED ROADWAY

- PAVED ROADWAY
- UNPAVED ROADWAY
- FORMER RAIL LINE
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE



FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

TPHd CONCENTRATIONS IN SOIL AND PRA AT PLANER #2 AOI

FIGURE 4-6

CITY: Highlands Ranch DIV/GROUP: AIT GIS DB:BCG Path: I:\FortBragg\MXD\OUC_OUD_PRA\Fig 4-6 TPHd_PRA_Plane#2.mxd Date: 7/8/2013 Time: 3:42:37 PM

DP-6.22

| Depth | C10-C12 | C12-C16 | C16-C24 |
|---------|---------|---------|---------|
| (0-0.5) | <1 | 4.9 | 34 |
| (4-4.5) | 77 | 560 | 930 |

OU-DP-018

| Depth | C10-C12 | C12-C16 | C16-C24 |
|-----------|---------|---------|---------|
| (0.5-1.5) | 2.9 | 50 | 300 |
| (1.5-2.5) | 1.9 | 49 | 280 |
| (5-6) | 0.37 | 2.1 | 8.8 |
| (9-10) | 690 | 3900 | 4500 |

PIT SOIL

| Depth | C10-C12 | C12-C16 | C16-C24 |
|---------|---------|---------|---------|
| (5-5.5) | 560 | 2100 | 2000 |

P6-14

| Depth | C10-C24 |
|---------|---------|
| (0.5-1) | 1100 |

P6-12

| Depth | C10-C24 |
|---------|---------|
| (0-0.5) | 1200 HY |
| (2.5-3) | 4 HYb |

NOTES:

1. TPHd CONCENTRATIONS SCREENED AGAINST HIGHEST EXCEEDENCE OF RBSCs (DIRECT CONTACT AND INDOOR AIR PATHWAY) FOR THEIR RESPECTIVE FRACTIONS: C10-C12: 51 mg/kg; C12-C16: 648 mg/kg; C16-C24 AND C10-C24: 10772 mg/kg; AND THE LGW CRITERIA FOR TOTAL TPHd (1045 mg/kg).
2. TEXT BOXES PRESENT C10-C12, C12-C16 AND C16-C24 SAMPLE CONCENTRATIONS (in mg/kg) BECAUSE VARIOUS FRACTIONS ARE DRIVING SCREENING LEVEL EXCEEDANCES. C10-C24 IS PRESENTED FOR HISTORICAL SAMPLES (DATA THROUGH DECEMBER 2007) WHERE FRACTION DATA WAS NOT AVAILABLE.
3. DATA FOR EXCAVATED SAMPLES ARE NOT PRESENTED.
4. SAMPLED DEPTH INTERVAL(S) IS INDICATED IN PARENTHESES BELOW THE LOCATION ID AS "S", "I" or "D". THE SCREENING RESULT FOR EACH LOCATION IS BASED ON THE HIGHEST SCREENING LEVEL EXCEEDANCE OF ALL SAMPLES COLLECTED AT THE LOCATION.

ACRONYMS:

AOI AREA OF INTEREST
 D ONE OR MORE SOIL SAMPLES COLLECTED FROM DEEP INTERVAL (>10 ft bgs)
 ft bgs FEET BELOW GROUND SURFACE
 I ONE OR MORE SOIL SAMPLES COLLECTED FROM INTERMEDIATE INTERVAL (>2-10 ft bgs)
 LGW LEACHING TO GROUNDWATER
 mg/kg MILLIGRAMS PER KILOGRAM
 RBSC SITE-SPECIFIC RISK-BASED SCREENING CONCENTRATION FOR ALIPHATICS
 S ONE OR MORE SOIL SAMPLES COLLECTED FROM SHALLOW INTERVAL (0-2 ft bgs)
 SL SCREENING LEVEL
 TPHd TOTAL PETROLEUM HYDROCARBONS AS DIESEL

LEGEND:

LOCATION TYPE

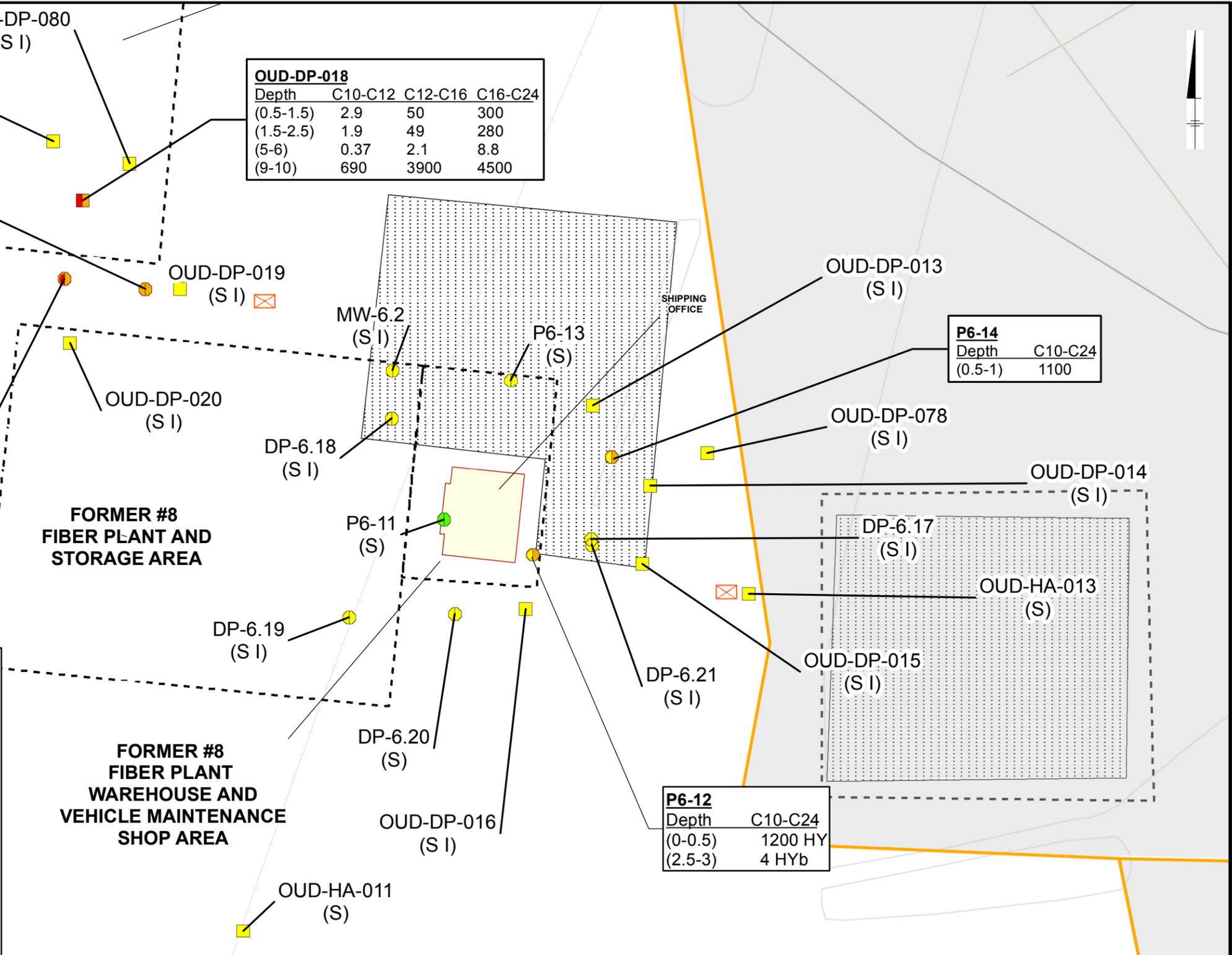
- HISTORICAL SOIL SAMPLE LOCATION
- 2008/2009 SOIL SAMPLE LOCATION

SCREENING RESULT

- NOT DETECTED
- DETECTED ≤ BELOW SCREENING LEVEL
- DETECTED > SCREENING LEVEL
- DETECTED > 10 X SCREENING LEVEL

OTHER SYMBOLS

- AOI BOUNDARY
- OTHER OPERABLE UNITS/AOIS
- STRUCTURE
- (FORMER) INDUSTRIAL USE
- PREVIOUS GEOPHYSICAL INVESTIGATION
- PAVED ROADWAY
- UNPAVED ROADWAY
- FORMER RAIL LINE
- PLANT DRAIN SYSTEM LINE
- SANITARY SEWER LINE
- FORMER TRANSFORMER LOCATION (APPROXIMATE)



FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
 FORT BRAGG, CALIFORNIA

OPERABLE UNITS C AND D REMEDIAL ACTION PLAN

**TPHd CONCENTRATIONS IN SOIL
 AT FORMER SHIPPING OFFICE/TRUCK SHOP AOI**

ARCADIS

FIGURE 4-7



Appendix A

Administrative Record List

**Appendix A
Administrative Record**

**Operable Units C and D Remedial Action Plan
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

| Date | Author | Receiver | Title of Document |
|-------------|---|--|--|
| 1962 | Union Lumber Company | -- | Miscellaneous Site Maps of the Fort Bragg Sawmill (only partial copies of originals were available) |
| 06/1982 | California Department of Water Resources | Public | Mendocino County Coastal Ground Water Study, June. |
| 10/1988 | United States Environmental Protection Agency | Public | Guidance for Conducting Remedial Investigations and Feasibility Studies (R/FS) under CERCLA. Report No. EPA/540/G-89/004. |
| 1995 | Department of Toxic Substances Control | Public | Remedial Action Plan Policy, DTSC Guidance Document No. EO-95-007-PP. |
| 02/1995 | Kennedy/Jenks Consultants | North Coast Regional Water Quality Control Board | Limited Soil and Groundwater Investigation Report. Prepared for Georgia-Pacific Sawmill Facility, Fort Bragg, California |
| 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 |
| 02/2003 | Hygenics Environmental Services | 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 |
| 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 |
| 06/2004 | BACE Geotechnical | North Coast Regional Water Quality Control Board | Engineering Geologic Reconnaissance Report, Planned Blufftop Access Trail, Georgia-Pacific Property, Fort Bragg, California |
| 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 |
| 11/03/2004 | TRC Companies Inc. | North Coast Regional Water Quality Control Board | Letter from Mr. Mohammad Bazargani, P.E., Senior Associate, and Mr. Steve Kemnitz, Project Scientist, to Mr. Craig Hunt, California Regional Water Quality Control Board, North Coast Region, re: Groundwater Monitoring Report, Third Quarter 2004, Georgia Pacific Former Sawmill Site, 90 West Redwood Avenue, Fort Bragg, California. Project No. 41-0419-13 |
| 01/2005 | California Environmental Protection Agency | Public | Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties. |
| 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 | Blackburn Consulting, Inc. | North Coast Regional Water Quality Control Board | Letter from Mr. Rick Sowers, PE, CEG, Senior Project Manager, and Mr. Tom Blackburn, GE, Principal, to Mr. John Matthey, 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 |
| 08/2006 | 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 |
| 09/2006 | Acton•Mickelson•Environmental, Inc. | North Coast Regional Water Quality Control Board | Soil and Water Sampling, Area Southwest of Planer #2, Former Georgia-Pacific California Wood Products Manufacturing Facility, Fort Bragg, California |
| 09/22/2006 | Department of Toxic Substances Control | Georgia-Pacific Corporation | Review of revised Shed Stockpile Characterization Data Memorandum |
| 09/25/2006 | Department of Toxic Substances Control | Georgia-Pacific Corporation | Receipt of Ash Pile Work Removal and Disposal Work Plan |

**Appendix A
Administrative Record**

**Operable Units C and D Remedial Action Plan
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

| Date | Author | Receiver | Title of Document |
|-----------------|--|---|---|
| 12/2006 | Blasland, Bouk & Lee, Inc. | Department of Toxic Substances Control | Current Conditions Report, Georgia-Pacific Wood Products Manufacturing Facility, Fort Bragg, California |
| 03/2007 | ARCADIS BBL | Department of Toxic Substances Control | Response to Agency Comments on the Current Conditions Report, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| 06/2007 | ARCADIS BBL | Department of Toxic Substances Control | Ex-Situ Bioremediation Pilot Study, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| 09/2007 | ARCADIS BBL | Department of Toxic Substances Control | Quality and Assurance Protection Plan, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| 01/2008-08/2008 | Johnson, P. and D. Heitmeyer | ARCADIS U.S., Inc. | Personal communications with Judith Nedoff, ARCADIS |
| 05/2008 | ARCADIS BBL | Department of Toxic Substances Control | Site-Wide Risk Assessment Work Plan, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| 06/2008 | ARCADIS U.S., Inc. | Department of Toxic Substances Control | Interim Action Remedial Action Plan, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| 01/2008 | Department of Toxic Substances Control | ARCADIS BBL | Review of Site Investigation Work Plan, Operable Unit D |
| 01/2009 | ARCADIS U.S., Inc. | Mendocino County Department of Environmental Health | Removal of Small Underground Storage Tank Near Planer #2 Building, Former Georgia-Pacific Wood Products Manufacturing Facility, Fort Bragg, California |
| 07/2009 | ARCADIS U.S., Inc. | Department of Toxic Substances Control | Site Investigation Work Plan, Operable Unit D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| 08/14/2009 | Stantec Consulting Corporation | Craig Hunt, California Regional Water Quality Control Board, North Coast Region | Letter from Craig Hunt, Senior Project Scientist, and Ed Simons, P. G., Senior Geologist, to Mr. Craig Hunt, California Regional Water Quality Control Board, North Coast Region re: Work Plan for Additional Groundwater Investigation and Well Installation, 76 Service Station No. 2211, 225 North Main Street, Fort Bragg, California |
| 09/08/2009 | Department of Toxic Substances Control | Georgia-Pacific Corporation | Georgia-Pacific, Site Investigation Work Plan, Operable Unit D, Dated July, 2009 |
| 01/2010 | ARCADIS U.S., Inc. | Department of Toxic Substances Control | Site Investigation Report Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| 04/2010 | ARCADIS U.S., Inc. | Department of Toxic Substances Control | Interim Action Completion Reports, Operable Units C & E, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| 2011 | City of Fort Bragg | Public | Mill Site Specific Plan. |
| 2011 | Environmental Resources Management | Department of Toxic Substances Control | RCRA Facility Investigation Work Plan – Skunk Train, Fort Bragg, CA |
| 01/2011 | Department of Toxic Substances Control | Georgia-Pacific Corporation | Completion of OU C and D Follow-on investigation field work. |
| 02/2011 | ARCADIS U.S., Inc. | Department of Toxic Substances Control | Remedial Investigation Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| 03/18/2011 | Department of Toxic Substances Control | Georgia-Pacific Corporation | Final In-Situ Chemical Oxidation Pilot Study Work Plan, Planer #2 Area of Interest (AOI), Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| 04/07/2011 | Department of Toxic Substances Control | Georgia-Pacific Corporation | Summary of Phase I Treatability Study, In-Situ Chemical Oxidation Pilot Study, Planer #2 Area of Interest, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California, Dated March 29, 2011 |
| 04/12/2011 | Department of Toxic Substances Control | Georgia-Pacific Corporation | Approval of Revised Remedial Investigation Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California, Dated February 2011 |
| 01/2012 | ARCADIS U.S., Inc. | Department of Toxic Substances Control | Feasibility Study Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| 02/17/2012 | Department of Toxic Substances Control | Georgia-Pacific Corporation | Final Feasibility Study, Operable Units C and D, Dated January, 2012, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| 11/2012 | ARCADIS U.S., Inc. | Department of Toxic Substances Control | Operable Units C/D Data Gaps Soil Investigation Results, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| 12/2012 | Department of Toxic Substances Control | Department of Toxic Substances Control | Georgia-Pacific OU-C/D data gaps investigation results |

**Appendix A
Administrative Record**

**Operable Units C and D Remedial Action Plan
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

| Date | Author | Receiver | Title of Document |
|-------------|--|--|--|
| 2013 | Environmental Resources Management | Department of Toxic Substances Control | RCRA Facility Investigation Results |
| 03/2013 | ARCADIS U.S., Inc. | Department of Toxic Substances Control | Monitored Natural Attenuation Technical Report, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| 04/17/2013 | Department of Toxic Substances Control | Georgia-Pacific Corporation | Monitored Natural Attenuation Technical Report, Dated March 7, 2013, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California |
| undated | TRC Companies Inc. | The City of Fort Bragg | Phase II Determination of Significance Standing Structures Georgia Pacific Lumber Mill Fort Bragg, California. Draft Report. |
| undated | TRC Companies Inc. | The City of Fort Bragg | Site Specific Treatment Plan for Cultural Resources. Draft Report. |



Appendix B

Risk Based Target Level (RBTL)
Development

Introduction

As described in Section 3.3 of the Operable Units C and D (OU-C and OU-D) Remedial Action Plan, risk-based target levels (RBTLs) for the protection of potential human exposures to soil were derived for the identified compounds of concern (COC). These chemical-specific remedial action goals will be used to evaluate remedial action effectiveness following implementation in OU-C and OU-D. Consistent with DTSC guidance for risk-based cleanups, chemical-specific remedial action goals will be applied based on a conservative estimate of the average concentration (e.g., 95% Upper Confidence Limit on the mean) of a COC across an exposure area. These remedial action goals are calculated using parameters specific to the receptors and conditions in these OU-C and OU-D AOIs.

Goals for soil include values for residential, commercial/industrial, construction, and utility workers for each COC within the OU-C AOIs. Recreational goals were also included for use in OU-D.

The approach for calculating site-specific RBTLs is provided below for human receptors. RBTLs were calculated for dioxins/furans (as tetrachlorodibenzo-*p*-dioxin toxic equivalents [TCDD TEQs]) and pentachlorophenol because both constituents were identified in presumptive remedy areas (PRAs). An RBTL was calculated for lead because a baseline risk due to lead exposure was identified in areas subject to planned land use controls (LUCs). Additionally, an RBTL was calculated for benzo(a)pyrene based on its presence above screening levels at individual locations in areas subject to LUCs.

RBTLs are reflective of overall site risk and should be compared to post-remedy exposure estimates (i.e. 95% Upper Confidence Limits) and not individual samples to evaluate whether post-remedy conditions are protective of human receptors.

Human Health

Receptors and Exposure Intervals

RBTLs were developed for the human health receptors identified in the Site-Wide Risk Assessment Work Plan (RAWP) (ARCADIS BBL 2008): resident (adult/child), construction worker, utility/trench worker, occasional (adult/child) recreator, and passive (adult) recreator. In addition, a commercial/industrial worker was included to reflect current site activities. Human receptors in terrestrial areas were assumed to be exposed to constituents of concern (COCs) via the dermal, ingestion, and dust inhalation exposure pathways. It was assumed that human receptors could potentially come into contact with soil located between 0 and 2 feet below grade. It was also assumed that during future subsurface work, construction workers and utility workers may also come into contact with soil located up to 10 feet below grade in terrestrial areas.

Exposure Parameters

Exposure parameters used to develop RBTLs are consistent with those presented in the approved Site-Wide RAWP (ARCADIS BBL 2008). Table 1 presents exposure parameters selected for each human receptor.

Toxicity Values

Toxicity values selected for use in the human health RBTL equations were selected in accordance with the hierarchy presented in the approved Site-Wide RAWP (ARCADIS BBL 2008). Table 2 presents toxicity values used to develop the human health RBTLs.

RBTL Calculation

Exposure parameters and toxicity values were used to back-calculate the soil concentration that would result in human health cancer risks equal to 1×10^{-6} , and noncancer cumulative hazard equal to 1. The estimated human health RBTLs for benzo(a)pyrene is based on potential cancer and non-cancer effects for the human receptors outlined above. The lower of the cancer and non-cancer endpoints for each COC was selected as the final RBTL for each chemical and receptor. The lowest RBTL was then selected as the primary human health RBTL, as this value is protective of each of the evaluated receptors. Consistent with methods outlined by United States Environmental Protection Agency (USEPA) (1991 and 2004) and in the Site-Wide RAWP (ARCADIS BBL 2008), Cancer-based RBTLs and non-cancer based RBTLs were estimated using the equations presented below. RBTLs are presented in Table 3.

$$C(\text{mg} / \text{kg}) = \frac{TR \times AT_c}{EF \left[\left(\frac{IFS \times CSF_o}{10^6 \text{ mg} / \text{kg}} \right) + \left(\frac{SFS \times ABS \times CSF_o}{10^6 \text{ mg} / \text{kg}} \right) + \left(\frac{InhF \times CSF_i}{PEF} \right) \right]}$$

Where:

C = Soil concentration (equivalent to the RBTL)

TR = Target lifetime excess cancer risk (1×10^{-6} unitless)

AT_c = Averaging time for carcinogens

EF = Exposure frequency

IFS = Soil ingestion factor: $\frac{ED \times IRS}{BW}$ (milligrams per year/kilograms per day [mg-yr/kg-day])

where ED = Exposure duration (years); IRS = Incidental soil ingestion rate (mg/day); and BW = Body weight (kg)

CSF_o = Oral cancer slope factor (milligrams per kilogram per day [mg/kg-day])⁻¹

SFS = Dermal exposure factor: $\frac{ED \times AF \times SA}{BW}$ (mg-yr/kg-day) where ED = Exposure duration (years); AF = Skin adherence factor (mg/cm²-day); SA = Exposed skin surface area (cm²); and BW = Body weight (kg)

ABS = Absorption factor (unitless)

InhF = Inhalation exposure factor: $\frac{ED \times IRA}{BW}$ (mg-yr/kg-day) where ED = Exposure duration (years); IRA = Air inhalation rate (m³/day); and BW = Body weight (kg)

CSF_i = Inhalation cancer slope factor (mg/kg-day)⁻¹

PEF = Particulate emission factor (m^3/kg).

Lead risks for soil were evaluated using the USEPA Adult Lead Methodology Spreadsheet (USEPA 2003 and 2007) for adult receptors and the California Environmental Protection Agency (CalEPA) DTSC LeadSpread 8 model (DTSC 2011) for child receptors (occasional recreator). Lead hazards were evaluated only for exposure units in which the maximum detected lead concentration exceeded the site-specific background concentration (ARCADIS 2011). In accordance with recent CalEPA guidance (CalEPA, 2009; DTSC 2010), the lead evaluation uses a threshold of an increase in blood-lead levels of 1 micrograms per deciliter ($\mu g/dL$) from baseline conditions. Lead health-based screening levels for soil are presented in Section 9.6 of the approved OU-C and OU-D Remedial Investigation Report (ARCADIS 2011). Lead RBTLs are presented in Table 3.

ARCADIS BBL. 2008. Site-Wide Risk Assessment Work Plan. Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. Revised June 2008.

ARCADIS U.S., Inc. 2011a. Remedial Investigation Report, Operable Units C and D, Former Georgia-Pacific Wood Products Facility, Fort Bragg California. Prepared for Georgia-Pacific LLC. ARCADIS U.S., Inc. April 2010. Revised March.

USEPA. 1991. Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals). Interim. Publication 9285.7-01B. EPA 540/R-92/003. U.S. Environmental Protection Agency. December.

USEPA. 2003. Adult Lead Methodology (ALM) Spreadsheet. U.S. Environmental Protection Agency, Technical Review Workgroup for Lead, Adult Lead Committee. Available online at: <http://www.epa.gov/superfund/programs/lead/products.htm>

USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. U.S. Environmental Protection Agency, Office of Emergency and Remedial Response.

USEPA. 2007. Ecological Screening Levels (Eco-SSLs). Updated. U.S. Environmental Protection Agency, Available at: <http://www.epa.gov/ecotox/ecossl/>.

**Table 1
Human Receptor Exposure Parameters
Risk-Based Target Level Development
Appendix B**

**Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California**

| Parameter | Symbol | Units | Residential | | Commercial / Industrial Worker | Construction Worker | Utility / Trench Worker | Recreational Visitor | | | |
|---------------------------------------|--------|-------------------------|-----------------------|-----------------------|--------------------------------------|------------------------|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | | | Child | Adult | | | | Passive Recreator | | Frequent User | |
| | | | RME | RME | RME | RME | RME | Child | Adult | Adult | |
| General Factors | | | | | | | | | | | |
| Averaging Time (cancer) | ATc | days | 25,550 ^{a,b} | 25,550 ^{a,b} | 25,550 ^{a,b} | 25,550 ^{a,b} | 25,550 ^{a,b} | 25,550 ^{a,b} | 25,550 ^{a,b} | 25,550 ^{a,c} | 25,550 ^{a,c} |
| Averaging Time (non-cancer) | ATnc | days | 2,190 ^{a,b} | 8,760 ^{a,b} | 9,125 ^{a,b} | 365 ^{a,b} | 2,555 ^{a,b} | 2,190 ^{a,c} | 8,760 ^{a,c} | 8,760 ^{a,c} | 8,760 ^{a,c} |
| Body Weight | BW | kg | 15 ^{b,d} | 70 ^{b,c,d} | 70 ^{b,c,g,h} | 70 ^{b,c,g,h} | 70 ^{b,c,g,h} | 15 ^{b,c,f} | 70 ^{c,d} | 70 ^{c,d} | 70 ^{c,d} |
| Exposure Frequency | EF | days/year | 350 ^{b,c,d} | 350 ^{b,c,d} | 250 ^{b,c,g,h} | 250 ^{g,h} | 20 ^{PJ} | 50 ^{PJ,6} | 50 ^{PJ,6} | 200 ^{PJ,7} | 200 ^{PJ,7} |
| Exposure Time | ET | hours/day | 24 ^{c,g} | 24 ^{c,g} | 8 ^c | 8 ^c | 8 ^c | 1 ^{PJ,7} | 1 ^{PJ,6} | 1 ^{PJ,6} | 1 ^{PJ,6} |
| Exposure Duration | ED | years | 6 ^{b,c,d} | 24 ^{b,c,d} | 25 ^{b,c,g,h} | 1 ^j | 7 ⁱ | 6 ^{PJ,6} | 24 ^{PJ,6} | 30 ^{PJ,6} | 30 ^{PJ,6} |
| Groundwater - Ingestion (Oral) | | | | | | | | | | | |
| Groundwater Ingestion Rate | IRgw | L/day | 1 ^{b,d} | 2 ^{b,c} | 2 ^j | -- | -- | -- | -- | -- | -- |
| Groundwater - Dermal Contact | | | | | | | | | | | |
| Exposed Skin Surface Area | SSAgw | cm ² | 6,600 ^d | 18,000 ^d | -- | 2,500 ^{d,1} | 2,500 ^{d,1} | -- | -- | -- | -- |
| Exposure Time | ETgw | hours/day | 1.0 ^d | 0.58 ^d | -- | 1 ^{PJ,2} | 1 ^{PJ,2} | -- | -- | -- | -- |
| Surface Water - Dermal Contact | | | | | | | | | | | |
| Exposed Skin Surface Area | SA | cm ² | -- | -- | -- | -- | -- | 750 ^{PJ,3} | 3,000 ^{PJ,3} | -- | -- |
| Soil - Ingestion (Oral) | | | | | | | | | | | |
| Incidental Soil Ingestion Rate | IRs | mg/day | 100 ^e | 50 ^g | 100 ^j | 330 ^f | 330 ^f | 50 ^{PJ,4} | 25 ^{PJ,4} | 25 ^{PJ,4} | 25 ^{PJ,4} |
| Soil - Dermal Contact | | | | | | | | | | | |
| Exposed Skin Surface Area | SA | cm ² | 2,800 ^d | 5,700 ^d | 3,300 ^{d,9} | 2,500 ^{d,1} | 2,500 ^{d,1} | 750 ^{PJ,3} | 3,000 ^{PJ,3} | 3,000 ^{PJ,3} | 3,000 ^{PJ,3} |
| Skin Adherence Factor | AF | mg/cm ² -day | 0.04 ^d | 0.01 ^d | 0.2 ^d | 0.8 ^j | 0.8 ^j | 0.2 ^f | 0.07 ^f | 0.2 ^{PJ,8} | 0.2 ^{PJ,8} |
| Soil - Inhalation of Dust | | | | | | | | | | | |
| Particulate Emission Factor | PEF | m ³ /kg | 1.32E+09 ^h | 1.32E+09 ^h | 1.32E+09 ^h | 1.00E+06 ^j | 1.00E+06 ^j | 1.32E+09 ^h | 1.32E+09 ^h | 1.32E+09 ^h | 1.32E+09 ^h |
| Breathing Rate | BR | m ³ /day | 8.3 ^e | 20 ^g | 13.6 | 20 | 20 | 1.2 | 1.6 | 3 | 3 |
| Breathing Rate per hour | BR | m ³ /hour | 0.35 | 0.83 | 1.7 ^{e,j} | 2.5 ^e | 2.5 ^e | 1.2 ^{e,6} | 1.6 ^{e,6} | 3 ^{PJ,8} | 3 ^{PJ,8} |

Notes:

- a. The averaging period for cancer risk is the expected lifespan of 70 years expressed in days. The averaging period for non-cancer risk is the
- b. USEPA (1989) Risk Assessment Guidance for Superfund.
- c. USEPA (1991b) Standard Default Exposure Factors.
- d. USEPA (2004c) Risk Assessment Guidance for Superfund, Vol I, Part E, Supplemental Guidance Dermal Risk Assessment.
- e. USEPA (1997a) Exposure Factors Handbook.
- f. USEPA (2002b) Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites.
- g. CalEPA (1992) Supplemental Guidance for Human Health Multimedia Risk Assessment of Hazardous Waste Sites and Permitted Facilities.
- h. USEPA (2004a) Region 9 Preliminary Remediation Goals 2004 Update (alternatively, site specific data may be used to modify this value).
- i. CalEPA (2000) Air Toxics Hot Spots Program Risk Assessment Guidelines, Part IV Technical Support Document for Exposure Assessment
- j. CalEPA (2005a) Note: Recommended Department of Toxic Substances Control (California) Default Exposure Factors for Use in Risk Assessment at California Military Facilities.

Table 1
Human Receptor Exposure Parameters
Risk-Based Target Level Development
Appendix B

Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

Notes (continued):

1. Based on sum of typically exposed body parts of workers: face, forearms, and hands (surface area values are the average between male and female [50th percentile] from USEPA, 2004a). For the CTE scenario, assume long sleeve shirts, therefore subtracting contribution from forearms.
2. Based on assumption that workers will exit excavation area for pit dewatering if groundwater collects in any abundance.
3. Based on the assumption of a jogger/walker scenario, the values for exposed skin surface area for adult and child were calculated using the average of two clothing scenarios recommended by USEPA (2004c): Central tendency mid range (only face and hands exposed [1306 cm²] and (head, hands, forearms, and lower legs [4849 cm²] (Exposure Factors Handbook [EFH] 1997a). Due to significant temperature changes seasonally, the jogger/walker is assumed to be wearing short-sleeve shirt and shorts during warmer seasons (spring and summer) and long-sleeve shirt and pants during cooler seasons (fall and winter). The child exposed skin surface area is based on the adult surface area.
4. The soil ingestion rate is based on 50% of the recommended USEPA (1997a) values for residential child and adult. Based on studies by Calabrese et al., (1989; as cited in USEPA 1997a) soil accounts for about 50% of the daily ingestion rate, while the other 50% is attributed to indoor house dust; therefore, for the recreational receptors, the ingestion rate was divided by half to account for only the outdoor exposure at the site. Furthermore, this value is considered conservative given that it is based on a 24-hour worker is onsite 5 days per week compared to the resident, which is 7 days per week, therefore using the residential ingestion rate is considered a conservative estimate for the worker receptor.
5. Frequent User (Adult joggers/walkers) are expected to visit the site 1 hour per day and up to 4 days per week for 30 years.
6. Department of Toxic Substances Control (California) recommended value per Comments dated September 14, 2007.
7. Frequent User (Adult joggers/walkers) are expected to visit the site 1 hour per day and up to 4 days per week for 30 years.
8. Department of Toxic Substances Control (California) recommended value per Comments dated September 14, 2007.
9. and forearms (average of male and female for 50 percentile from Table 6-2 and 6-3 of USEPA, 1997a). For the CTE scenario, long-sleeve shirts are assumed, therefore subtracting the contribution from forearms.
10. The CTE scenario assumes light activities for commercial/industrial worker and moderate activities for construction and trench/utility workers as presented in Table 5-23 (USEPA, 1997a).

Cal/EPA = California Environmental Protection
cm² = squared centimeter(s)
CTE = central tendency exposure
EFH = Exposure Factors Handbook
kg = kilogram(s)
L = liter
m³ = cubic meter(s)
mg = milligram(s)
PJ = professional judgment (see text)
RME = reasonable maximum exposure
USEPA = U.S. Environmental Protection Agency

Table 2
Human Receptor Exposure Parameters
Risk-Based Target Level Development
Appendix B

Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

| Constituent | | ABSd | | Oral CSF ^a | | Adjustment | | Dermal CSF | | Inhalation Unit Risk ^a | | Oral RfD (mg/kg/day) ^a | | | | Adjustment | | Dermal RfD (mg/kg/day) ^b | | Inhalation RfC (mg/m ³) ^a | | | |
|----------------------|---------|------------|---------|---------------------------|-------|---------------------|--------|---------------------------|-------|---|-------|-----------------------------------|-------|---------|-------|---------------------|--------|-------------------------------------|---------|--|-------|---------|-------|
| | | (unitless) | [ref] | (mg/kg/day) ⁻¹ | [ref] | Factor ^b | [ref] | (mg/kg/day) ⁻¹ | [ref] | (IUR) (mg/m ³) ⁻¹ | [ref] | Subchronic | [ref] | Chronic | [ref] | Factor ^b | [ref] | Subchronic | Chronic | Subchronic | [ref] | Chronic | [ref] |
| Lead | c | 0.01 | Cal/EPA | NA | CAL-1 | 1 | RAGS E | NA | CAL-1 | NA | | NA | | NA | | 1 | RAGS E | NA | NA | NA | | NA | |
| Pentachlorophenol | | 0.25 | Cal/EPA | 8.1E-02 | CAL-1 | 1 | RAGS E | 8.10E-02 | CAL-1 | 8.30E+01 | CAL-2 | 3.0E-02 | H | 5.0E-03 | I-RSL | 1 | RAGS E | 3.0E-02 | 5.0E-03 | NA | | NA | |
| Benzo(a)pyrene | d | 0.13 | RAGS-E | 7.3E+00 | I-RSL | 1 | RAGS E | 7.3E+00 | I-RSL | 1.10E+00 | CAL-2 | NA | | 3.0E-02 | I-RSL | 1 | RAGS E | NA | 3.0E-02 | NA | | NA | |
| Dioxin TEQ (Mammals) | v (9-8) | 0.03 | RAGS-E | 1.3E+05 | CAL-1 | 1 | RAGS E | 1.30E+05 | CAL-1 | 3.80E+04 | CAL-2 | 7.0E-10 | c | 7.0E-10 | I-RSL | 1 | RAGS E | 7.0E-10 | 7.0E-10 | 4.0E-08 | c | 4.0E-08 | CAL-3 |

Notes:

- ABSd = dermal absorption efficiency for dermal contact with constituents in soil
- CalEPA = California Environmental Protection Agency
- CSF = cancer slope factor
- IUR = Inhalation Unit Risk
- (mg/kg/day)⁻¹ = inverse milligrams per kilogram per day (risk per unit dose)
- (mg/kg/day) = milligrams per kilogram per day
- (mg/m³)⁻¹ = inverse milligrams per cubic meter
- mg/m³ = milligrams per cubic meter.
- NA = not available
- RfC = reference concentration (mg/m³)
- RfD = reference dose
- TEQ = toxic equivalent
- USEPA = U.S. Environmental Protection Agency

- a Priority order for selecting toxicity criteria: CalEPA, IRIS, PPRTV, NCEA, HEAST
- b The oral-to-dermal adjustment factor (oral absorption efficiency) was used to calculate the dermal CSF and RfD values:
 CSF (dermal) = CSF (oral)/Adjustment Factor (oral absorption efficiency).
 RfD (dermal) = RfD (oral) * Adjustment Factor (oral absorption efficiency).
- c Evaluated using blood lead modeling, as described in the text.
- d Pyrene value used as surrogate.

References [ref]:

- c chronic value used
- CAL -1 Cal/EPA (2009). Toxicity Criteria Database. July.
- CAL-2 Cal/EPA (2008). OEHHA Cancer Potency List.
- CAL-3 Cal/EPA (2008). OEHHA Chronic Reference Exposure Levels. December 2008.
- CalEPA CalEPA. 1994. Preliminary Endangerment Assessment Manual. Department of Toxic Substance Control. June 1999 version.
- C-RSL CalEPA; value taken from USEPA (2009) Regional Screening Levels Table. December 2009 revision.
- H USEPA (1997b) Health Effects Assessment Summary Tables [HEAST].
- I-RSL IRIS; value taken from USEPA (2013) Regional Screening Levels Table. November 2013 revision.
- USEPA. 2004. Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. Office of Emergency and Remedial Response, Washington, DC. EPA/540/R/99/005. OSWER 9852.7-02EP. PB99-963312. July.

Table 3
Human Receptor Exposure Parameters
Risk-Based Target Level Development
Appendix B

Remedial Action Plan Operable Units C and D
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

| COC | Units | Risk Based Target Level (RBTL) | | | | | |
|----------------------|-------|--------------------------------|----------------------|------------------------|-------------------|----------------------|--------------------------|
| | | Resident (Adult/Child) | Commercial Worker | Construction Worker | Utility Worker | Passive Recreator | Occassional Recreator |
| Lead | mg/kg | 1.02E+02 | 3.95E+02 | 1.85E+02 | 1.85E+02 | NA | NA |
| Dioxin TEQ (mammals) | mg/kg | 5.00E-05 | 2.00E-04 | 1.41E-03 | 2.52E-03 | NA | NA |
| Pentachlorophenol | mg/kg | 9.34E+00 | 1.25E+01 | 3.57E+00 | 6.38E+00 | NA | NA |
| Benzo(a)pyrene | mg/kg | 1.53E-01 | 2.11E-01 | 1.66E+00 | 2.97E+00 | 1.53E+00 | 3.96E-01 |

Notes:

The passive and occassional recreator exposure scenarios were not calculated for OU-C COCs because they were not applicable to the projected future use of that area of the site.

COC = constituent of concern

mg/kg = milligram per kilogram

NA = not applicable

OU = operable unit

TEQ = toxicity equivalence units



Appendix C

TPHd Leaching to Groundwater
Remedial Goals Calculation

Appendix C
TPHd Leaching to Groundwater Remedial Goal Calculation

Operable Units C and D Remedial Action Plane
Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

| Sample ID | Sample Depth (ft bgs) | Sample Date | Total Diesel - Soil (mg/kg) | Total Diesel - Leachate (mg/L) | AOI | Chromatograph Type | Notes |
|-------------|-----------------------|-------------|-----------------------------|--------------------------------|-----------------------|--------------------|--|
| OU-DP-090 | 4 to 5 ft | 10/27/2009 | 36,300 | 0.018 | Planer 2 | D/MO | Break point. Leachate concentrations above are typically above reporting limit; below are estimated values <----- below reporting limit |
| OU-DP-018 | 9 to 10 ft | 6/26/2009 | 9,090 | 0.746 | Shipping & Truck Shop | Diesel | |
| MW-3.21-3-4 | 3 to 4 ft | 10/30/2009 | 8,230 | ND | Parcel 3/MS IRM | D/MO | |
| MESW-CS-005 | 9 to 9.5 ft | 7/6/2009 | 7,990 | 0.788 | West of IRM | Diesel | |
| OU-DP-074 | 6 to 7 ft | 7/1/2009 | 3,330 | 0.301 | West of IRM | Diesel | |
| OU-DP-063 | 10 to 11 ft | 6/29/2009 | 2,730 | 0.069 | West of IRM | D/MO | <----- Remedial Goal Selection |
| MESW-CS-007 | 9 to 9.5 ft | 7/6/2009 | 1,480 | 0.091 | West of IRM | Diesel | <-----Screening Level Selection |
| OU-DP-071 | 10.5 to 11.5 ft | 6/30/2009 | 1,045 | 0.0098 | West of IRM | Diesel | |
| MESW-CS-001 | 9 to 9.5 ft | 7/6/2009 | 512 | ND | West of IRM | D/MO | |
| OU-HA-075 | 3 to 4 ft | 6/23/2009 | 479 | 0.027 | Planer 2 | Lub Oil | |
| OU-DP-056 | 0 to 1 ft | 6/22/2009 | 444 | 0.0292 | Planer 2 | Lub Oil | <-----This value drives 99% Leachate Concentration for all values below 2,730 soil concentration |
| OU-DP-018 | 0.5 to 1.5 ft | 6/26/2009 | 352.9 | 0.032 | Shipping & Truck Shop | Hydraulic | |
| OU-HA-088 | 0.5 to 1.5 ft | 7/13/2009 | 333 | ND | Sewer Line | Lub Oil | |
| OU-DP-068 | 0 to 0.5 ft | 6/24/2009 | 323.8 | 0.019 | Haz Waste | Hydraulic | |
| OU-HA-088 | 0 to 0.5 ft | 7/13/2009 | 295.7 | 0.11 | Sewer Line | Lub Oil | |
| OU-HA-010 | 0.5 to 0.5 ft | 6/22/2009 | 265 | 0.014 | Shipping & Truck Shop | D/MO | |
| OU-DP-054 | 0 to 0.5 ft | 6/22/2009 | 149.9 | 0.013 | UST | Diesel | |

Notes:

AOI = area of interest

bgs = below ground surface

D/MO = diesel/motor oil

ft = feet

mg/kg = milligram(s) per kilogram

mg/L = milligram(s) per liter

ND = not detected above laboratory reporting limits

Values in green have chromatographs like diesel or diesel/motor oil mixtures and are several feet bgs, typically in smear zone and have concentrations similar to AST AOI

Values in yellow have chromatographs unlike diesel or are shallow surface samples and have concentrations lower than AST AOI



Appendix D

California Environmental Quality Act,
Initial Study and Negative Declaration

Pacific Ocean

Fort Bragg Landing

Planer #2 Area
LUC Area: 1.0 acre

LUC Area: 0.9 a

Former AST
LUC Area: 0.

Rail Lines
Lead Soil
Area: 540
Depth: 2 ft
Volume: 4

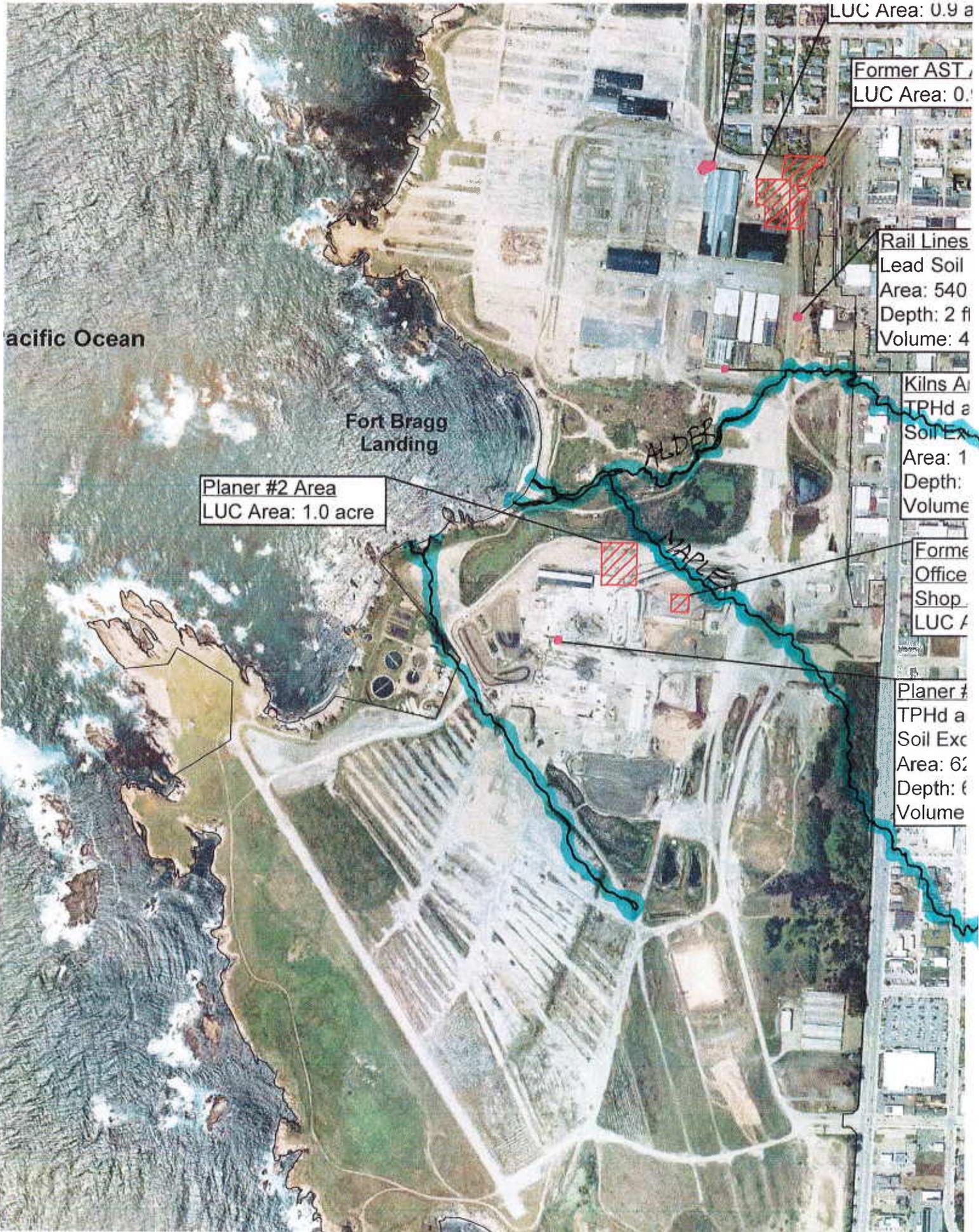
Kilns Ar
TPHd a
Soil Ex
Area: 1
Depth:
Volume

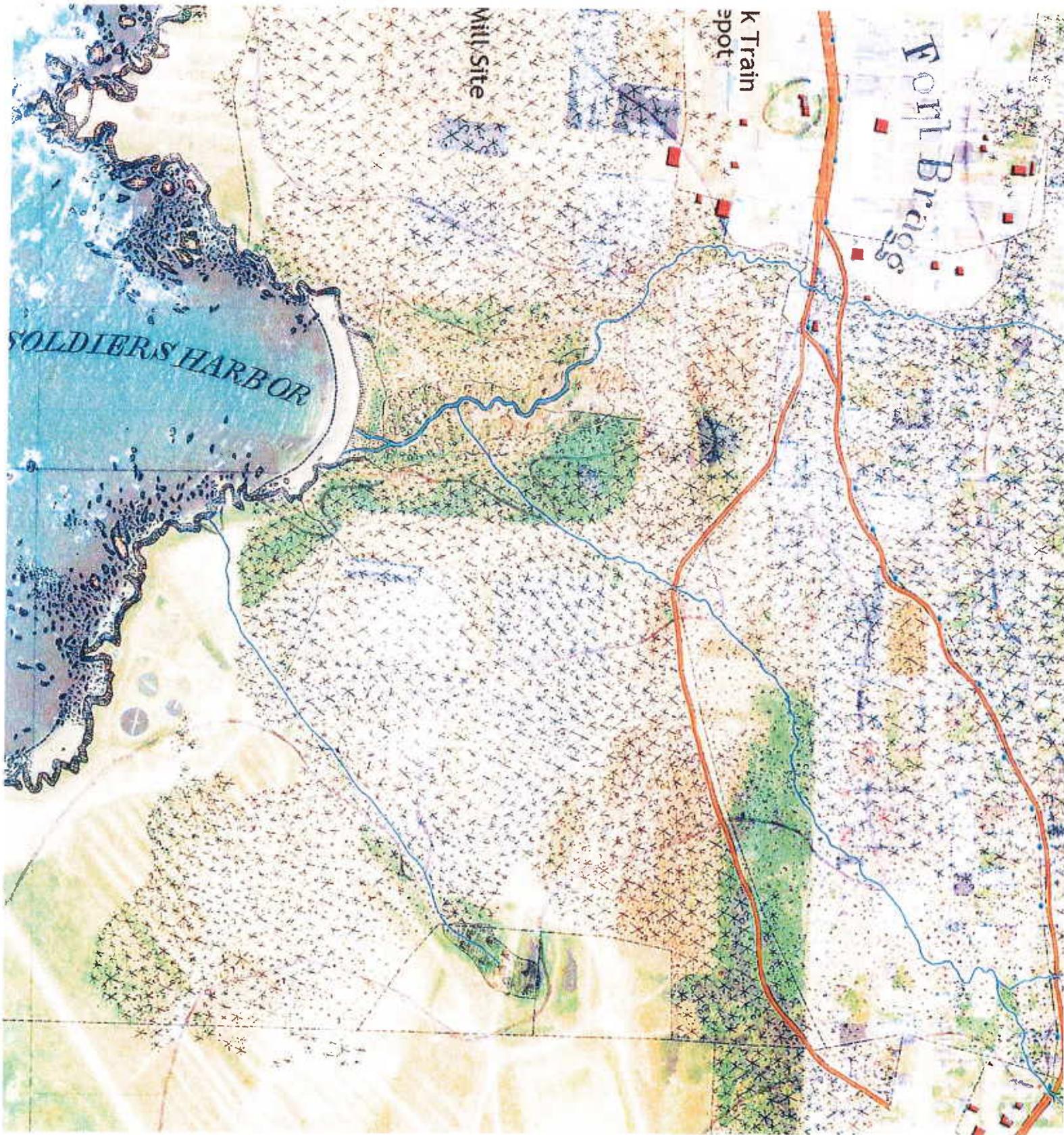
Forme
Office
Shop
LUC A

Planer #
TPHd a
Soil Exc
Area: 62
Depth: 6
Volume

ALDER

MAPLE





Fort Bragg

K Train spot

Mill Site

SOLDIERS HARBOR