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Georgia-Pacific LLC

Mill Pond Dam Supplemental Site Investigation Work Plan

Former Georgia-Pacific Wood Products Facility
Fort Bragg, California

July 2014

ARCADIS

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Former Georgia-Pacific Wood Products Facility

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Date:

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Acronyms and Abbreviations

ARCADIS	ARCADIS U.S., Inc.
CPT	cone penetrometer test
DSOD	Division of Safety of Dams
Georgia-Pacific	Georgia-Pacific LLC
MCE	maximum credible earthquake
OU-E	Operable Unit E
Site	Former Georgia-Pacific Wood Products Facility

1. Introduction

This Site Investigation Work Plan was prepared by ARCADIS U.S., Inc. (ARCADIS) on behalf of Georgia Pacific LLC (Georgia Pacific) and describes field and laboratory testing work planned to collect data to support design of modifications to the Mill Pond Dam at the Former Georgia-Pacific Wood Products Facility (Site), located at 90 West Redwood Avenue, Fort Bragg, Mendocino County, California (Figure 1). The Mill Pond is a 7.3-acre pond that is impounded on its west and north sides by a crib wall/earth embankment, a concrete spillway/overflow structure, and an earth embankment.

When the site was originally developed around 1885, the Mill Pond was formed by constructing a dam along and on top of the rock that comprises the edge of the coastal bluff (Stetson Engineers Inc., 2005) and by directing the flow of Alder Creek to subterranean flow. Site documents indicate a depression was excavated into the terrace deposits behind the dam to increase the storage capacity of the pond. The pond is approximately 1,700 feet long and between 120 and 350 feet wide.

The western-most portion of the pond is located immediately adjacent to Soldier Bay and the dam in this area of the Site is about 500 feet long and includes the concrete spillway/overflow structure and the crib wall. Franciscan Formation bedrock forms the abutments and foundation of the concrete section of the dam. The crib wall section consists of redwood timbers that were backfilled with site soil and that span the former Alder Creek stream channel. Franciscan Formation bedrock forms some of the foundation and portions of the left and right abutments of the crib wall. The approximately 1,200 foot long northern section of the dam consists of an earth embankment variably founded on bedrock, native unconsolidated deposits, and possibly fill soils. Site studies (ARCADIS, 2009b) show that a considerable amount of sediment is present behind the dam.

2. Purpose and Scope of Work Plan

As described in more detail below, recent studies indicate some of the dam fill and the upper portion of the underlying terrace deposits may be susceptible to liquefaction and details of the design, construction, and current condition of unexposed portions of the crib wall section of the dam are unknown. Site data are limited (only four borings have been advanced to date through the dam) and there are a number of uncertainties and data gaps that must be addressed to further develop feasible mitigation measures. Accordingly, the objectives of the proposed field and laboratory testing work described in Work Plan are to:

1. Supplement existing material property information for the different geologic materials present in the area of the Mill Pond and Mill Pond Dam;

2. Further evaluate the distribution and properties of the fill and native materials that make up the dam;

3. Characterize the bedrock profile below the western section of the dam; and

4. Collect additional information for remedial design.

The scope of the proposed field investigation program includes geophysical exploration, cone penetration tests (CPTs), soil borings, installation of groundwater piezometers, completion of a borrow study, and laboratory testing. The work will be phased so that the results of earlier activities can be used to optimize the subsequent work. For example, the geophysical work will be performed first and the locations of the CPTs may be adjusted based on the geophysical data. The soil borings will be advanced following completion of the CPT work and their locations and depths may be adjusted based on the CPT data. As described in more detail below, data from the soil borings will be used to verify and/or calibrate the geotechnical properties inferred from the CPT results.

3. Background

3.1 Jurisdiction and Regulatory Concerns

The Mill Pond Dam falls under the jurisdiction of the State of California, Department of Water Resources Division of Safety of Dams (DSOD) and is identified as Dam Number 2381.[1] DSOD periodically inspects the dam and in 2005 expressed “some concerns about the condition and the stability of the dam” (Stetson, 2005). In 2007, DSOD re-inspected the dam and issued a report stating that repair is required. The inspection report also indicated that the spillway capacity of 585 cubic feet per

[1] A dam is considered jurisdictional if the height of the dam is greater than 25 feet and the capacity is greater than 15 acre-feet. Based on recent evaluations, the maximum height of Mill Pond Dam is about 30 feet from the crest of the spillway section to the toe at the downstream side of the spillway. The total capacity of the pond is about 55 to 60 acre-feet. However, recent sediment surveys (ARCADIS, 2009b) indicate a considerable amount of sediment is present behind the dam and the total amount of free water impounded by the dam is about 7.5 acre-feet..

second should be increased to 690 cubic feet per second to manage flow associated with the 1,000-year storm event (DSOD, 2007).

In 2009, DSOD identified several deficiencies associated with portions of the dam, including the crib wall, spillway, right embankment (i.e., the northern earth embankment), along with concerns regarding a lack of general maintenance of the dam (DSOD, 2009). In April 2010, the DSOD notified Georgia Pacific that the dam condition required corrective action to mitigate erosion at the toe of the concrete spillway and erosion of the crib wall backfill. DSOD also noted that seepage on the northern embankment could lead to piping and that the dam was more than 100 years old and was susceptible to damage from earthquakes (DSOD, 2010).

3.2 2010 Stability Assessment

ARCADIS completed a stability evaluation of the Mill Pond Dam in 2010 to address the DSOD inspection findings, results, and conclusions. The objectives of the 2010 stability assessment were to collect and evaluate relevant Site geotechnical data and to use this information to assess the overall stability of the dam, including the crib wall, spillway, and northern embankment. Work performed for this study included advancing four borings at the locations shown in Figure 2. Geologic units encountered in the borings included:

- **Very loose to loose silty sand fill:** The uppermost soil unit within the dam appeared to consist of approximately 12 to 17 feet of fill. The fill consisted predominantly of very loose to loose, silty sand with various amounts of gravel. Interbedded layers of silt and gravel were encountered in Boring OUE-GT-003. The fill also contains some debris including wood debris.

- **Loose to medium dense silty sand:** This soil unit was generally encountered below the fill and was believed to be part of the marine terrace deposits. The marine deposits encountered in the borings were about 5 to 13 feet thick with densities that appeared to increase with depth.

- **Hard silt:** This approximately 9 foot thick soil layer was only encountered in Boring OUE-GT-003 and consisted predominantly of hard, non-plastic silt with an interbedded and very dense sand layer.

- **Bedrock:** Bedrock of the Franciscan formation was encountered in each of the borings at depths ranging from 20 to 30 feet below ground surface. The bedrock generally consisted of sandstone, although a relatively thin layer of shale was encountered overlying the sandstone in one boring (OUE-GT-002). The sandstone was generally weathered and sometimes highly decomposed and highly fractured near the top of the formation. The quality of the rock generally improved with depth.

At the time of drilling, groundwater was encountered at depths ranging from 8 to 10 feet below ground surface (between approximate elevations 34.5 and 36.5 feet [NAVD88]). The water level in the pond was at elevation 39.4 feet (NAVD88) at the time of the survey (February 17, 2009).

The results of engineering evaluations indicated that portions of the dam are built on soils that are susceptible to liquefaction under ground shaking associated with a maximum credible earthquake (MCE) of magnitude 8.0 occurring on the San Andreas fault, which is located about 10 km from the Site. In the event of liquefaction, appreciable deformations of the dam structures and/or foundation are possible, which in turn, could lead to a release of water from the Mill Pond. The report further concluded that with the exceptions of the crib wall and spillway areas, little to no sediment would be released from the Mill Pond if liquefaction and deformation were to occur. Generalized geologic cross sections that show the zones of potentially liquefiable soil identified as part of the 2010 Stability Assessment are included in Appendix A.

3.3 2010 Maintenance Project

In response to DSOD requirements and the findings of the 2010 Stability Assessment, Georgia Pacific and ARCADIS completed maintenance activities between September 25, 2010 to October 20, 2010 that included filling crevices in the dam wall beneath the spillway and overflow structure with shotcrete, filling voids in the timber crib wall with flowable concrete fill, and installation of articulating block concrete mats and rip rap at the toe of the dam to minimize erosion and scour. A summary of the maintenance work is presented in the *Mill Pond Dam Maintenance Completion Report* (ARCADIS, 2010b). The dam is currently monitored monthly and a summary report of observations is submitted to DSOD following each inspection.

3.4 2012 Pond Sediment Investigation

In March 2012, ARCADIS conducted an additional investigation in the Mill Pond to better characterize the distribution and geotechnical properties of the pond sediment.

As part of this work, the thickness of sediment was measured at over 300 locations and sediment cores were collected at eight locations within the pond. Probes of the sediment in the pond indicate that the sediment is of variable thickness between approximately 6 and 9 feet thick near the west end, 10 and 12 feet thick at the narrow central area, and 13 and 24 feet near the northeast end. The sediment thins toward most of the edges of the pond but thickens towards most of the pond's northern edge.

The pond sediment is generally described as loose fine grain material with wood chips (the organic content of samples that were tested ranged between 20 and 50 percent). Vane shear tests at depths of 5 and 10 feet below the muck line indicates undrained shear strengths as low as 52 pounds per square foot (psf) to as high as 668 psf. The average shear strength at 5 feet was 131 psf and the average shear strength at 10 feet was 486 psf.

3.5 2013-2014 Geologic Characterization

Beginning in early 2013 additional work was performed to better characterize the geologic conditions affecting (or likely to affect) the long-term performance of the Mill Pond Dam. This work included: (i) a survey of rock outcroppings at the southern end of the dam from just north of the concrete spillway/overflow structure to just south of the crib wall; (ii) review of geologic information from site borings and monitoring wells in the vicinity of the pond; (iii) review of the 2010 Stability Assessment and 2012 Pond Sediment Investigation information; (iv) preparation of additional geologic cross sections through the dam; (v) development of conceptual mitigation measures to stabilize the different sections of the dam; and (vi) development of recommendations for additional field and laboratory testing to further develop and design mitigation measures for the dam structures.

The geologic cross sections and conceptual mitigation measures developed for different portions of the dam are included in Appendix A. As shown, conceptual mitigation measures depend on location and include:

- **Crib Wall and Spillway Section**. Mitigation for the crib wall section of the dam includes removing the existing crib wall and excavating the surrounding fill and unconsolidated terrace deposits to bedrock. The bedrock surface will be cleaned and a roller-compacted or reinforced concrete wall will be constructed. A new, appropriately sized spillway will be incorporated into the top of the concrete wall. As necessary, existing fill, water, and sediment on the eastern side of the excavation will be retained during construction with tiedback sheeting or similar temporary support. The existing spillway/overflow structure will no longer be required and will be abandoned.

- **Northern Embankment**. The northern earthen embankment will be stabilized by an earthfill buttress that will be keyed into competent subgrade on the downstream side of the embankment. Borrow soil for the buttress will be obtained from the existing log deck pad that is located adjacent to the southeast corner of the Mill Pond.

During the course of this work, two meetings were held with DSOD to discuss the updated geological characterization, the conceptual mitigation measures that had been developed, the uncertainties associated with the site data, and the general field investigation procedures that were being developed to support design. DSOD indicated general concurrence with the conceptual mitigation measures and the planned field work, although it was noted that submittal and approval of a Work Plan would be required before the field work could be implemented.

3.6 Data Gaps and Uncertainties

The available geologic and geotechnical data indicate portions of the dam fill and the upper portion of the underlying terrace deposits are susceptible to liquefaction, the crib wall section of the dam may be not meet modern criteria, and mitigation is necessary. Although the data and interpretation of geologic conditions further indicate that the conceptual mitigation measures should be feasible, the available data are limited and there are a number of uncertainties that must be addressed to better characterize the integrity of the dam and develop feasible mitigation measures. For example:

- The interpretation of geologic conditions along the alignment of the dam is based on a total of four soil borings and bedrock outcrop mapping along the face of the bluff in the vicinity of the spillway/overflow structure and crib wall. Because the data are limited, there is uncertainty regarding the distribution and characteristics of the fill soils that make up much of the dam, the distribution and characteristics of the native unconsolidated deposits that underlie portions of the dam, and the profile of the bedrock that forms the foundation and abutments for portions of the dam. This information is fundamental and important to the evaluation of liquefaction, stability of the existing dam structures, and to demonstrate the feasibility of the conceptual mitigation measures identified for the spillway/overflow and crib wall portion of the structure.

- Little data are available to evaluate subsurface conditions at the toe and immediately downstream of the northern earthen embankment. This information is necessary to confirm the feasibility of the conceptual stabilization buttress and to develop design recommendations for mitigation.

- No data are available to evaluate the properties of borrow soil that will be used for construction of a stabilization buttress;

- Groundwater levels in the native unconsolidated deposits below and downgradient of the dam are uncertain. This information is necessary for liquefaction and stability evaluations and to assess the feasibility and drainage requirements associated with mitigation; and

- The number and the significance of abandoned pipe penetrations through the existing earthen embankment are uncertain.

4. Field and Laboratory Testing

4.1 DSOD Alteration Application

DSOD requires an Alteration Application be filed and approved by the Department before performing geotechnical exploration. As a result, the application form and associated application fee will be submitted concurrently with the Work Plan. The Work Plan will be revised as necessary to address DSOD comments following its review of the document.

4.2 Pre-Field activities

Prior to initiating the field work, the site-specific Health and Safety Plan (ARCADIS, 2012) will be updated to address the planned activities. Soil boring permits will be obtained and underground utilities and other potential subsurface obstructions in the vicinity of the proposed drilling locations will be located and marked by a private utility locator. In addition, Underground Service Alert will be notified a minimum of 48 hours prior to the commencement of intrusive activities.

4.3 Geophysical Exploration

In concert with locating utilities, a geophysical survey will be conducted along the alignment of the dam with an EM-31 conductivity meter to identify buried pipes within the embankment that are not evident from surface observations. The EM-31 conductivity meter will be supplemented with a resistivity meter to additionally evaluate the potential extent of timber crib within the dam. Where features of interest such as pipes or other structures are partially exposed, other utility location measures such as induced electrical signals, metal detectors, and other means will be used to attempt to trace the location of such features. The level of accuracy achievable with these methods is uncertain and dependent on field conditions. Traced features and anomalies identified during the geophysical work will be surveyed using portable GPS equipment and marked on the map of the site. As necessary, the CPT and boring locations shown in Figure 3 will be relocated to avoid buried pipes or other potential obstructions identified during the survey.

4.4 Concrete Coring

The concrete along the crest of the spillway/overflow structure will be cored at select locations to evaluate concrete thickness and the nature and extent of foundation materials underlying the crest of this structure. Based on observations in the vicinity of the spillway, bedrock may be encountered directly beneath the concrete. If bedrock is not detected immediately beneath the spillway, an additional boring will be advanced in this area to characterize the underlying material.

4.5 Cone Penetrometer Tests

As shown in Figure 2, nine CPTs (CPT-12-1 through CPT-12-9) are proposed along the crest of the dam on approximately 100 foot centers to provide a centerline profile of the dam internal conditions, a profile of the dam foundation, and information regarding geologic conditions at the abutments. In addition, three CPTs (CPT-12-10 through CPT-12-12) will be advanced on approximately 250 foot centers along the downstream toe of the earth embankment to evaluate subsurface conditions in the area of the proposed stabilization buttress.

The CPT work will be performed in general accordance with ASTM D3441 procedures and will include measurements of cone tip resistance, sleeve friction, and pore water pressure. The CPTs will be advanced to estimated depths on the order of 40 feet below ground surface or upon encountering bedrock or other impenetrable material. In the event a CPT encounters impenetrable material within the dam section, the CPT location will be abandoned and the location will be shifted until the CPT can be completed through the dam. The CPT locations will be backfilled with cement-bentonite grout and their locations will be surveyed on completion. The CPT locations along the downstream toe of the existing berm will be completed as temporary piezometers to measure groundwater depth and fluctuation in this area.

Depending on conditions encountered in the field, at least one pore pressure dissipation test will be performed at each CPT location to provide an approximate measure of subsurface hydraulic properties. In addition, seismic velocities will be measured to provide a continuous profile of velocity with depth.

4.6 Soil Borings

Soil borings OUE-GT-001 through OUE-GT-004 were advanced during the 2010 Stability Assessment at the locations shown in Figure 2. A minimum of four new soil borings are proposed for the current investigation, including (see Figure 2):

- OUE-GT-005 will be advanced along the centerline of the dam near the center of the crib wall. This boring will be located between OUE-CPT-12-3 and OUE-CPT-12-4;

- OUE-GT-006 will be advanced along the centerline of dam near the northern end of the concrete spillway/overflow structure close to the location where the dam transitions to an earthen embankment. The boring will be located between OUE-CPT-12-4 and OUE-CPT-12-5;

- OUE-GT-007 will be advanced along the centerline of the dam near the middle of the earthen embankment. The boring will be located between OUE-CPT-12-7 and OUE-CPT-12-8; and

- OUE-GT-008 will be advanced along the centerline of the earth embankment and will be paired with OUE-CPT-12-8. The purpose of this boring will be to provide physical samples to confirm and/or calibrate the soil properties inferred from the CPT profiles.

Up to two additional borings may be advanced with this scope of work based on the results of the initial phases of CPT and soil borings. These will be used to improve resolution where adjacent locations indicate variable conditions or to better define regional geologic features and may be placed outside the footprint of the dam either up or down gradient of the pond. Locations of additional borings will be based on discussion between field staff, the engineer, Georgia-Pacific, and DSOD.

Based on the currently understood geologic framework of the site, the borings will be drilled through the dam and at least 20 feet into the underlying bedrock. The actual depth of the borings will be determined in the field based on the results of the CPTs and on conditions encountered during drilling. The drilling work will be observed by qualified personnel who will maintain a continuous log of the materials encountered in the borings in accordance with ASTM D2488 (visual-manual) procedures.

The borings will be advanced using rotary wash drilling techniques. Samples will be collected at a maximum of 5 feet intervals or changes in lithology/drilling conditions, whichever is less. At each sample depth, a disturbed soil sample will first be collected using Standard Penetration Test (SPT) methods in general accordance with ASTM D6066 procedures to evaluate the normalized penetration resistance of the subsurface sands for the purposes of liquefaction evaluation. Because the energy content of the SPT hammer can vary due to a number of factors, the field program will incorporate ASTM D6066 Method B to measure the hammer/drill rod energy in accordance with ASTM D4633 procedures. The energy measurement methods, configurations, and computations will be documented and included in the project summary report. This information will be used to correct the hammer blow counts as necessary and to calibrate the normalized blow counts inferred from the CPT data and used for the liquefaction analyses. Subsequent relatively undisturbed samples will then be collected using Shelby tube samplers. Because of the sandy nature of some of the site soils, it may not be possible to collect Shelby tube samples. In this event, samples will be collected in a Modified California sampler that incorporates a sand-catcher at the bottom. The sample tubes will be capped and sealed in the field to minimize the potential for damage, changes in volume, or changes in moisture content prior to laboratory testing.

On completion of the soil borings, 1.5-in diameter piezometers will be constructed in the boreholes for evaluation of groundwater occurrence and pore water pressure within the dam profile. The screened interval for each piezometer will be based on the conditions encountered during drilling. The piezometers will be developed by a combination of surging, bailing, and/or air lifting. The boring/piezometer locations, ground surface elevations, and top of casing elevations will be surveyed on completion.

4.7 Test Pits

The former log deck at the Site has been identified as a potential borrow source for stabilization buttress soil. Little data are currently available regarding the properties of the borrow material. As a result, a series of shallow test pits will be excavated at selected locations on the log deck and bulk samples of soil will be collected for laboratory analysis. The test pits will be backfilled on completion and their locations will be surveyed using GPS equipment.

4.8 Laboratory Testing

Selected samples taken from the borings and test pits will be submitted to the laboratory for the following suite of tests:

- Atterberg limits in accordance with ASTM D2487, procedures to characterize the samples with respect to the Unified Soil Classification System (USCS).

- Grain size in accordance with ASTM D422, methods to characterize the distribution of particle sizes. Distribution of particle sizes larger than 75 μm (No. 200 sieve) will be determined by sieving and distribution of particle sizes smaller than 75 μm will be determined by hydrometer. The percentage of fine-grained soil is particularly important for liquefaction analyses and samples will be selected to provide data to calibrate the percent fines content inferred from the CPT data.

- To the extent feasible, shear strength tests will be performed on relatively undisturbed samples of embankment fill soil and the underlying terrace deposits.[2] In the event suitable samples are obtained, consolidated-undrained triaxial (CUTX) tests will be performed in accordance with ASTM D4767 procedures to provide information regarding total and effective strengths of the materials tested. This information will be used to assess the stability of the dam and to support the design of a stabilization buttress for the earth embankment portion of the dam.

- Compaction tests will be performed on bulk samples recovered from the test pits in accordance with ASTM D1557 (Modified Proctor) procedures. This

[2] Previous site studies indicate the embankment fill soils are sandy and loose to very loose. As a result, collecting relatively undisturbed samples for laboratory testing may not be feasible. The upper portion of the marine terrace deposits appear to be similarly loose based on the available data. It may not be possible to collect samples suitable for testing from the deeper marine terrace deposits.

information will be used to support the design of a stabilization buttress for the earthen embankment portion of the dam.

- Consolidated-undrained triaxial tests (ASTM D4767) will be performed on selected bulk samples collected from the test pits and compacted to 90 percent relative compaction (Modified Proctor) at a moisture content ± 2 percent of optimum. Prior to shearing, the samples will consolidated to loads generally representative of the mitigation measures being considered and the test results will be used to support the design of a stabilization buttress for the earthen embankment portion of the dam. If necessary and warranted, based on the results of the triaxial tests, direct shear tests (ASTM D3080) tests will also be performed to provide information regarding possible strength anisotropy.

4.9 Data Analysis and Dam Stability Assessment

Following the completion of field work and on receipt of the laboratory analysis results, the new data will be combined with data from previous investigations and incorporated into existing models to refine assumptions related to site-specific soil characteristics. ARCADIS will review seismic hazards, ground motions, ground response, and liquefaction analysis previously conducted, and update components as required based on new subsurface information and analytical results. Following incorporation of new model parameters, ARCADIS will perform slope stability and deformation analyses to assess the static and post-earthquake performance of the Mill Pond Dam embankment. ARCADIS will identify and evaluate dam modifications required to address DSOD requirements.

5. Scheduling and Reporting

Site investigation activities will be initiated following DSOD approval of the Work Plan and the Alteration Application. A follow-up report summarizing the results will be submitted following the receipt of results from the analytical lab and completion of the analyses. The investigation and report are anticipated to occur within approximately 12 weeks following work plan approval.

6. References

ARCADIS, U.S., Inc. (ARCADIS). 2009a. Mill Pond Dam Repair. Former Georgia-Pacific Wood Products Facility. Prepared for Georgia-Pacific, LLC. July.

ARCADIS. 2009b. Data Summary Report - Operable Unit E Pond Sediment. Former Georgia-Pacific Wood Products Facility. Prepared for Georgia-Pacific, LLC. May.

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ARCADIS 2012. Health and Safety Plan, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California, Prepared for Georgia-Pacific, LLC. June.

DSOD. 2009. Letter from Mr. David A. Gutierrez dated June 23, 2009 and Inspection of Dam and Reservoir Certified in Status dated June 4, 2009.

DSOD. 2010. Letter from Mr. David A. Gutierrez, Chief, Division of Safety of Dams, to Ms. Julie B. Raming, Manager, Environmental Affairs, Georgia-Pacific LLC, re: Mill Pond Dam No. 2381, Mendocino County. August 11.

Stetson Engineers, Inc. 2005. Mill Pond Technical Study Technical Memorandum 1, January 14, 20

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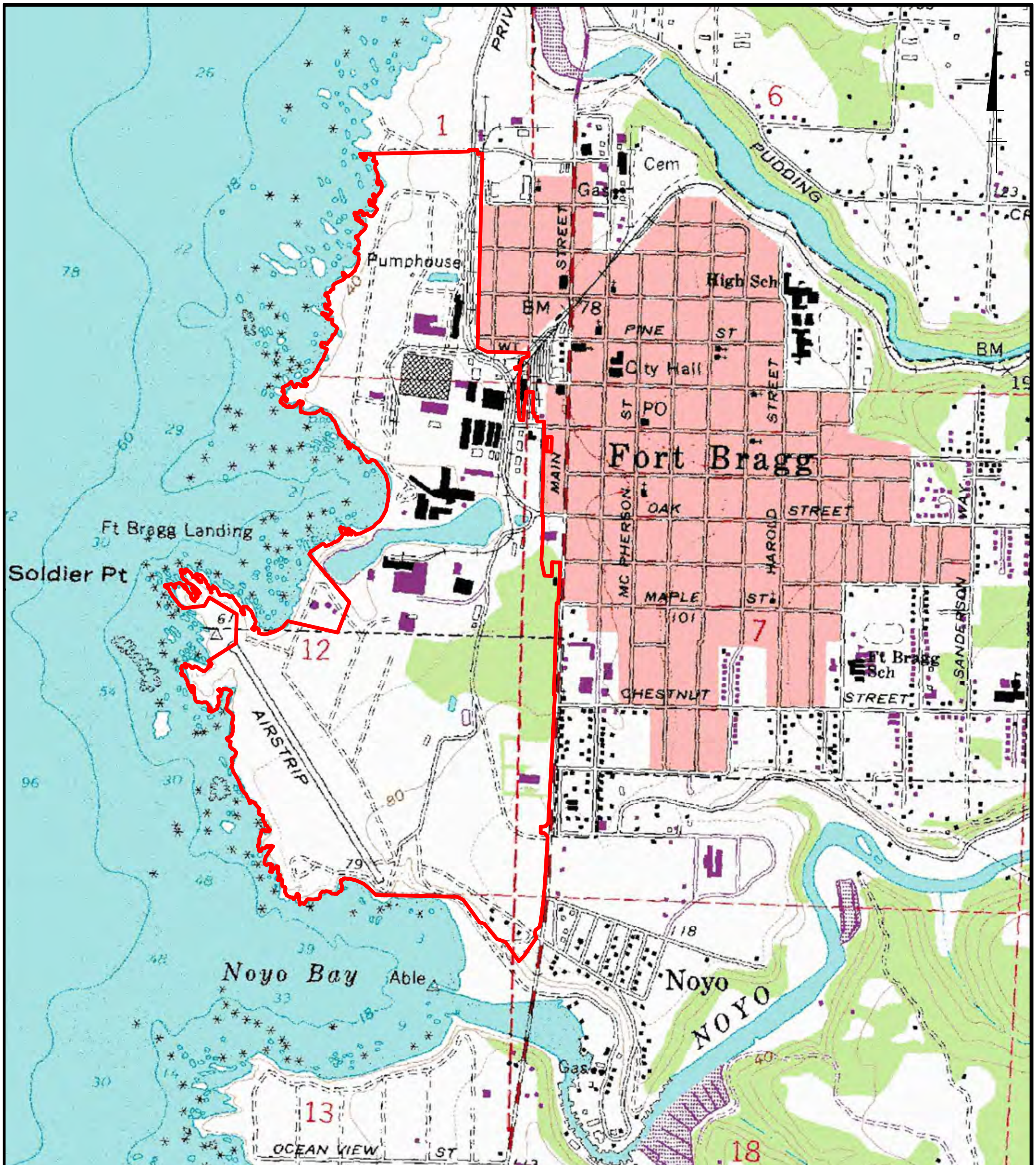
Figures



LEGEND:

SITE BOUNDARY

0 1,400 2,800 Feet

GRAPHIC SCALE

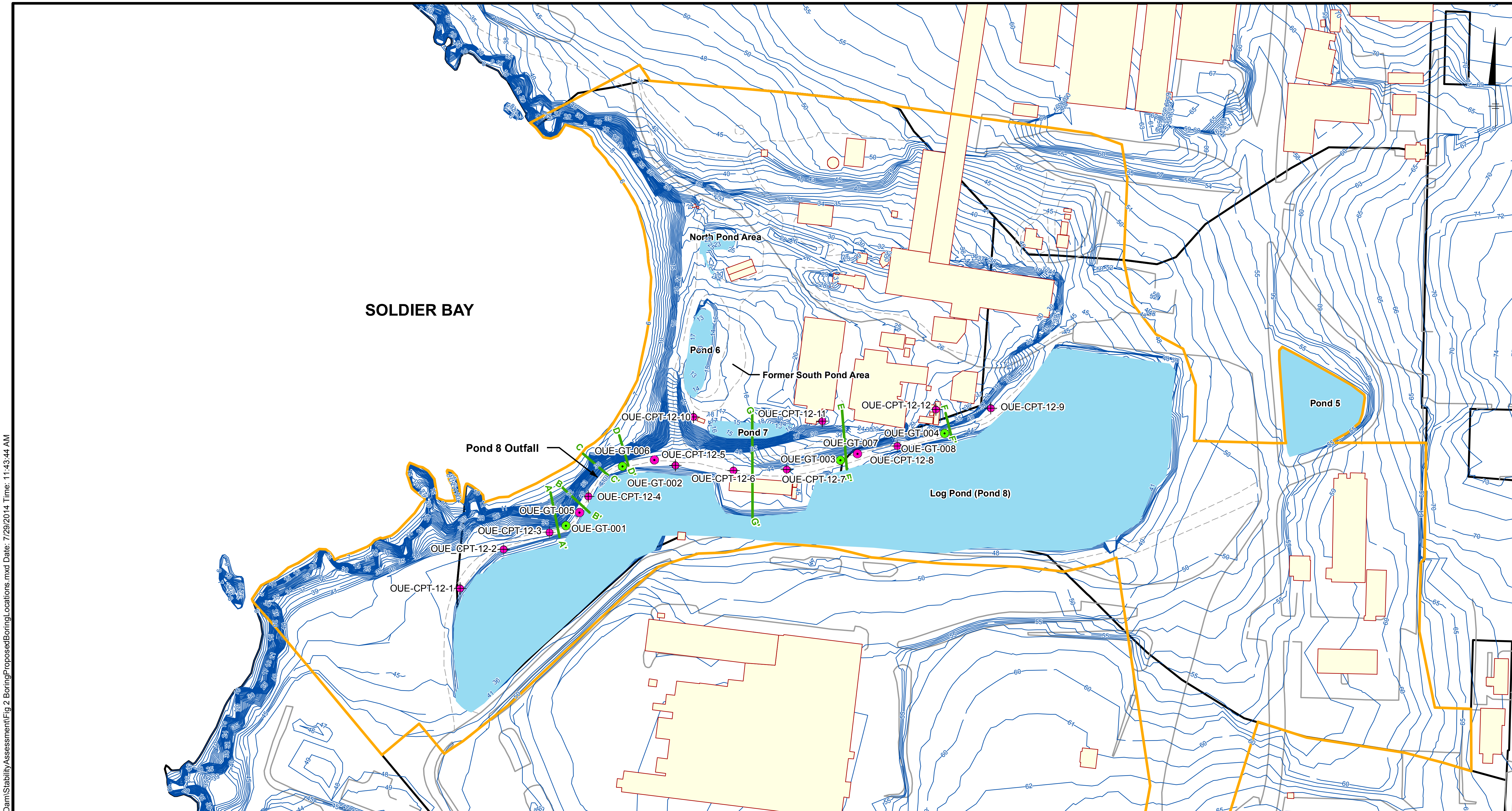
FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA

SITE LOCATION MAP

ARCADIS

FIGURE 1

CITY: Highlands Ranch DIV/GROUP: AIT GIS DB:Brianna Griffith
Project # B0066142.0003.00002
Path: I:\FortBragg\MXD\GWMR\3QTR12\Fig 1-1 SiteLocation.mxd Date: 11/20/2012 Time: 8:47:18 AM



LEGEND:

OUE-GT-002

- EXISTING BORING ID AND LOCATION
- PROPOSED SOIL BORING
- PROPOSED CPT
- OU-E BOUNDARY
- FACILITY PARCEL
- POND
- EXISTING STRUCTURE
- FORMER STRUCTURE
- CROSS-SECTION LINE
- CONTOURS
- UNPAVED ROADWAY
- PAVED ROADWAY

NOTES:

1. PROPOSED EXPLORATION LOCATIONS ARE APPROXIMATE AND MINOR ADJUSTMENTS MAY BE MADE TO ACCOMODATE CONDITIONS IN THE FIELD.
2. BORINGS OUE-GT-005, OUE-GT-006, AND OUE-GT-007 WILL BE COMPLETED AS PERMANENT PIEZOMETERS.
3. VERTICAL DATUM IS IN NAVD88.

0 200 400 Feet

GRAPHIC SCALE

FORMER GEORGIA-PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA
MILL POND DAM SUPPLEMENTAL SITE INVESTIGATION WORK PLAN

LOCATIONS OF EXISTING AND PROPOSED BORINGS AND CPTS

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FIGURE 2

Appendix A
PREVIOUS ANALYSIS RESULTS, GEOLOGIC CROSS SECTIONS, AND CONCEPTUAL MITIGATION MEASURES

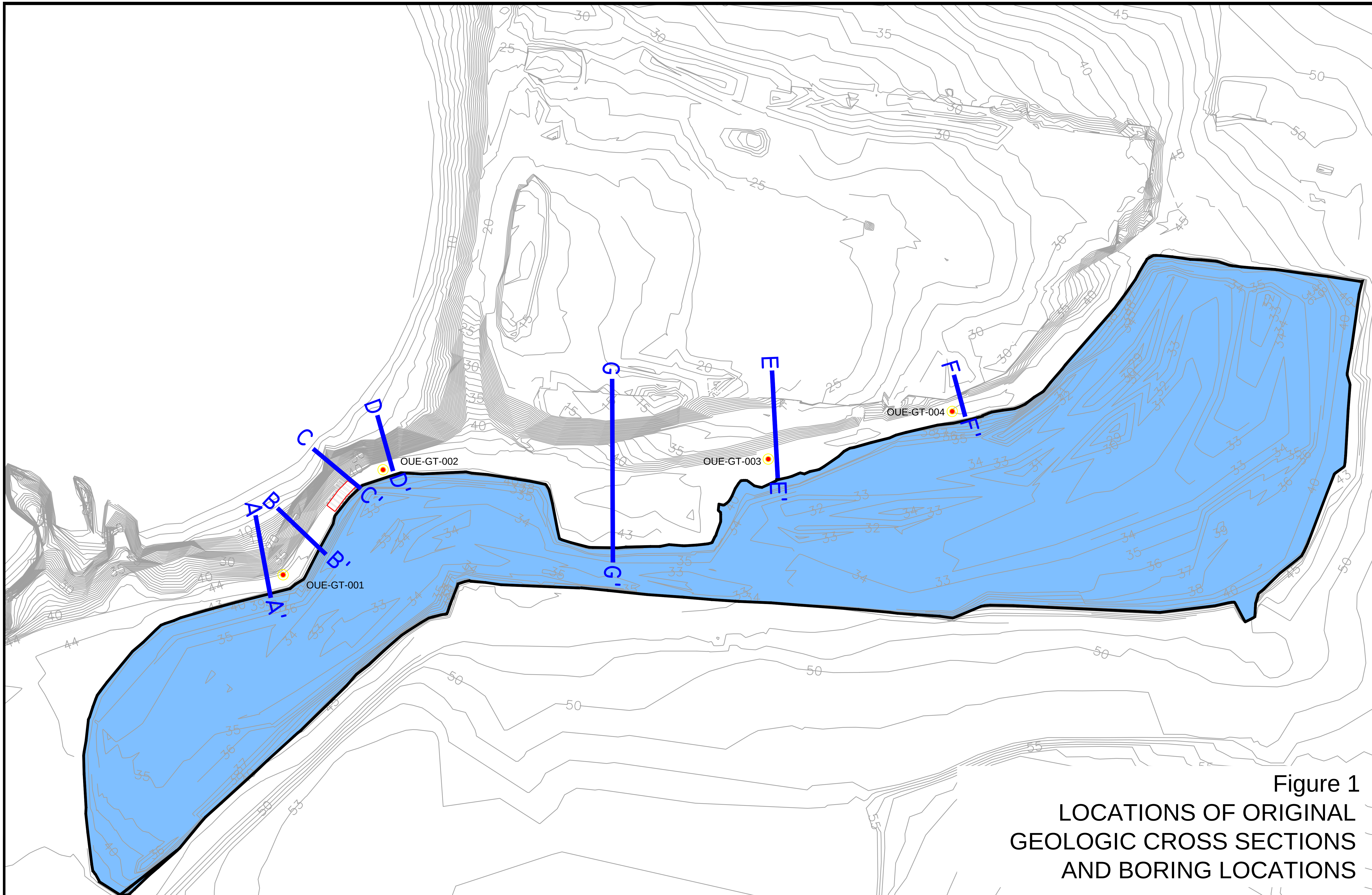
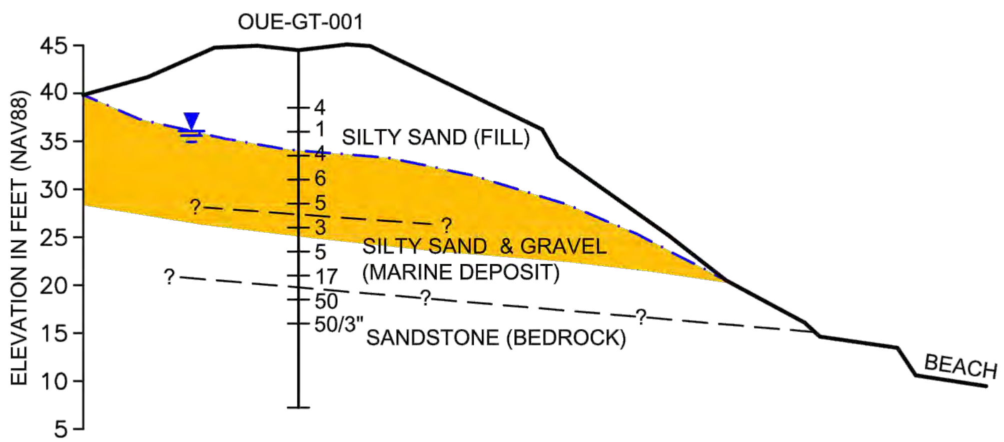
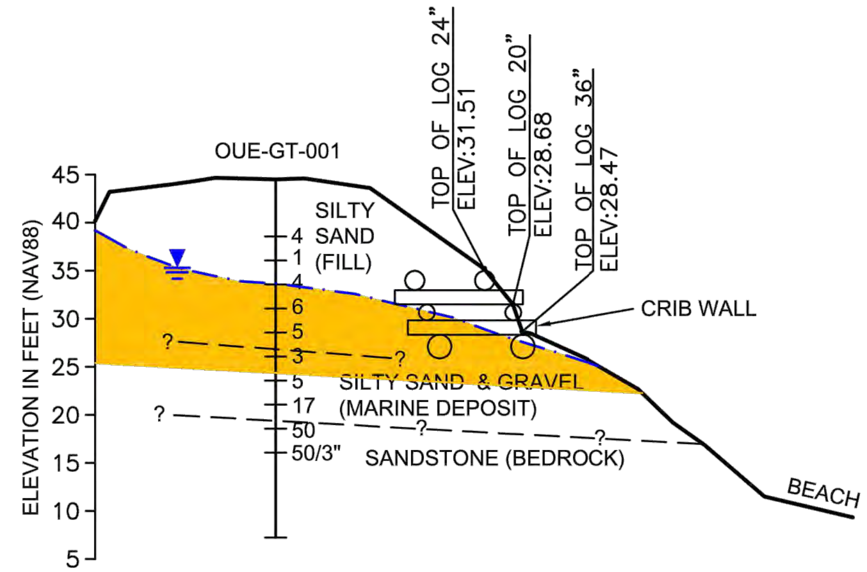


Figure 1
LOCATIONS OF ORIGINAL
GEOLOGIC CROSS SECTIONS
AND BORING LOCATIONS



SECTION A-A'



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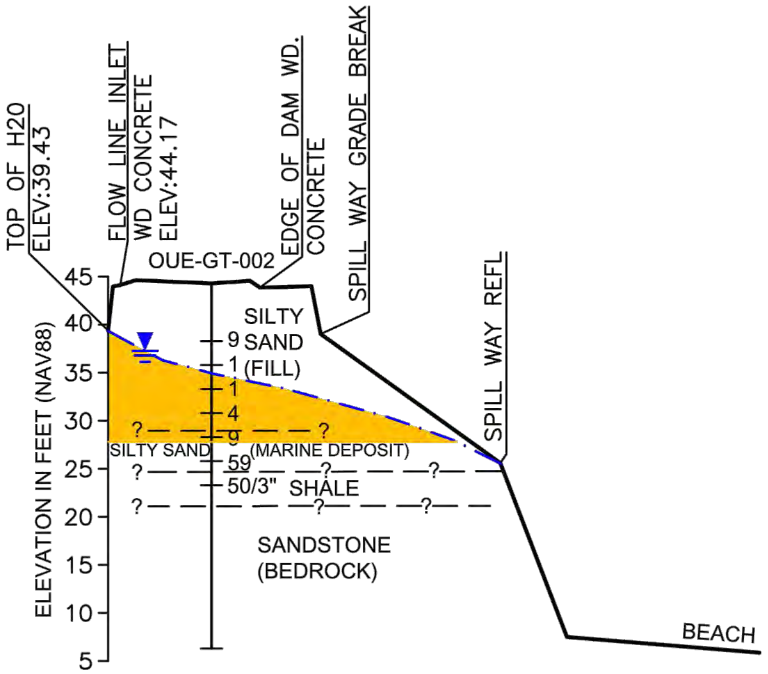

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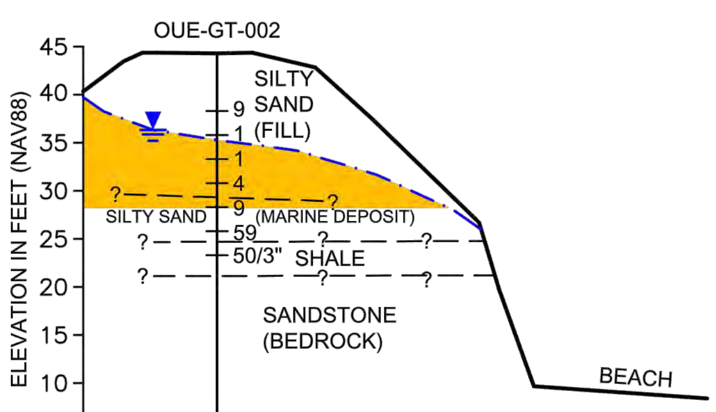

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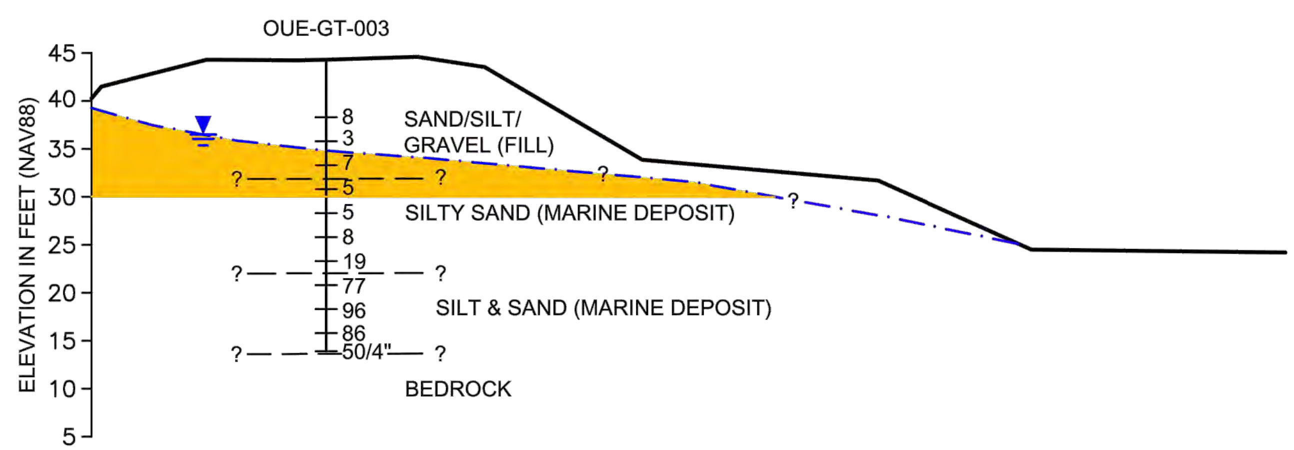
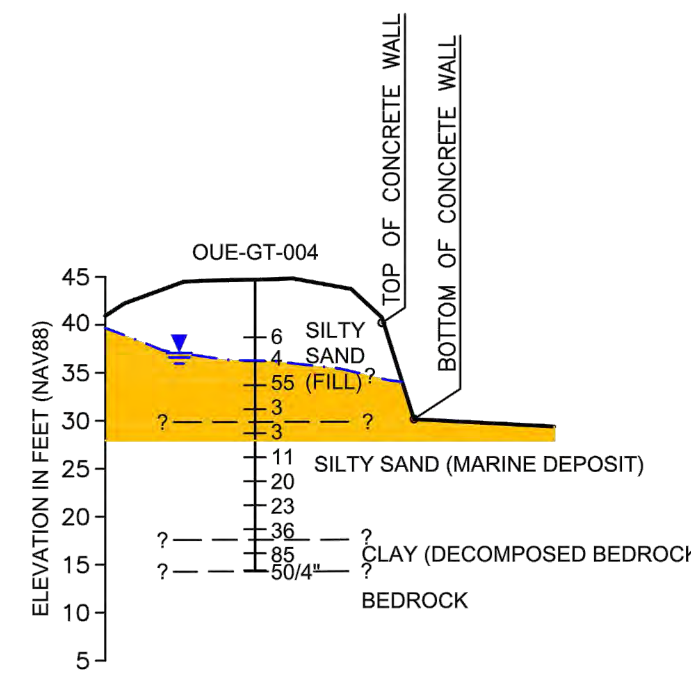


SECTION E-E'



SECTION F-F'

LEGEND:

- OUE-GT-001 ← BORING IDENTIFICATION
- GROUND SURFACE
- GROUNDWATER (APPROXIMATE)
- 3 ← SPT RESULTS (UNCORRECTED N-VALUES)
- ? — — ? ← GEOLOGIC CONTACT (APPROXIMATE)
- 5, 17, 50, 50/3"
- BOTTOM OF BORING
- ESTIMATED EXTENT OF SOIL LIQUIFICATION

NOTES:

1. CROSS SECTIONS WERE SURVEYED BY LACO ASSOCIATES OF EUREKA, CALIFORNIA ON FEBRUARY 17, 2009. THE VERTICAL DATUM IS NAVD88.
2. SPT = STANDARD PENETRATION TEST.
3. EXACT SIZE OF CRIB WALL IN SECTION B-B' IS UNKNOWN.

0 20' 40'
GRAPHIC SCALE

FORMER GEORGIA PACIFIC WOOD PRODUCTS FACILITY
FORT BRAGG, CALIFORNIA
SEISMIC STABILITY ASSESSMENT
LOG POND DAM

ESTIMATED EXTENT OF SOIL LIQUIFICATION DURING MCE

ARCADIS

FIGURE
2

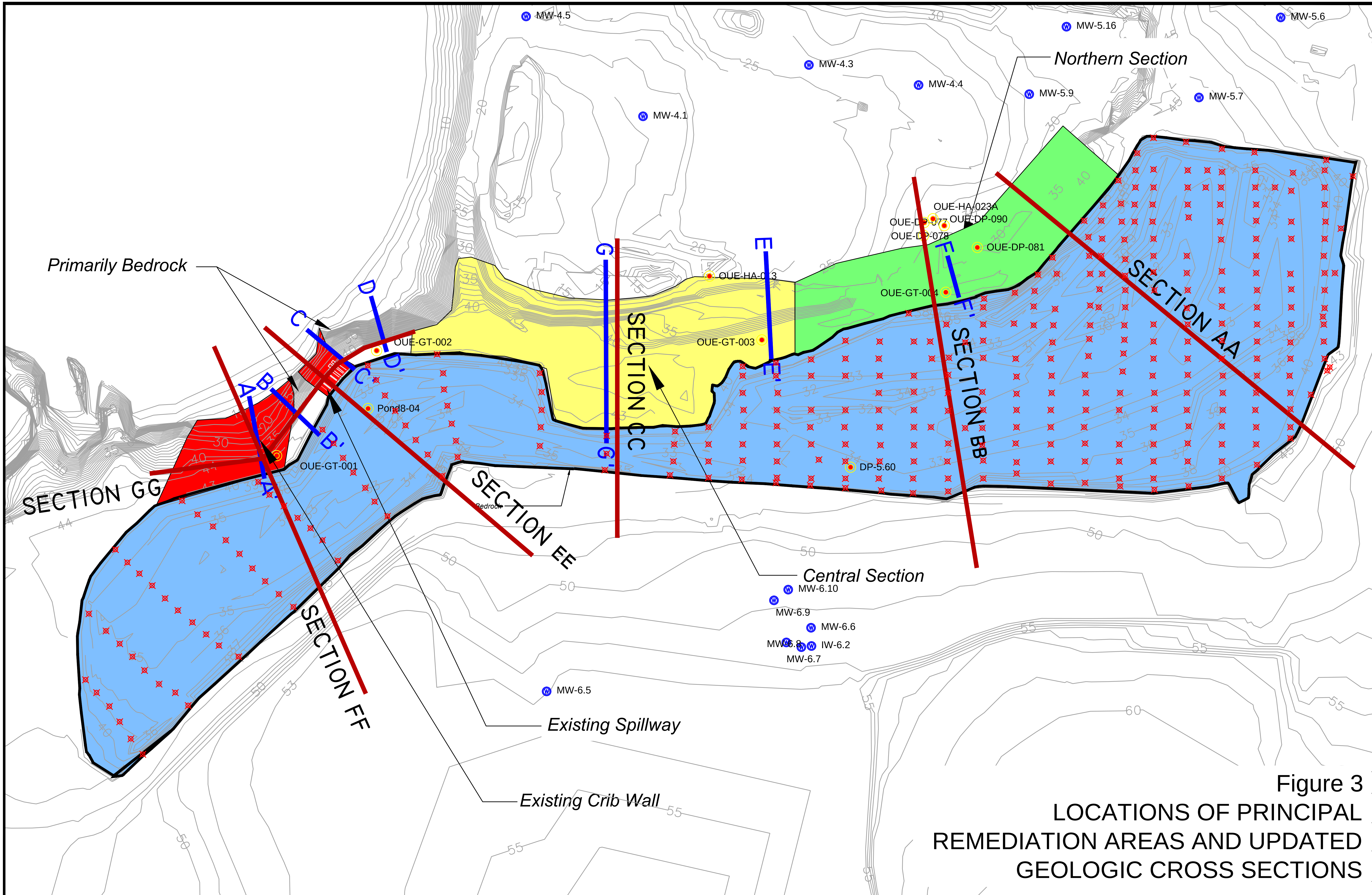
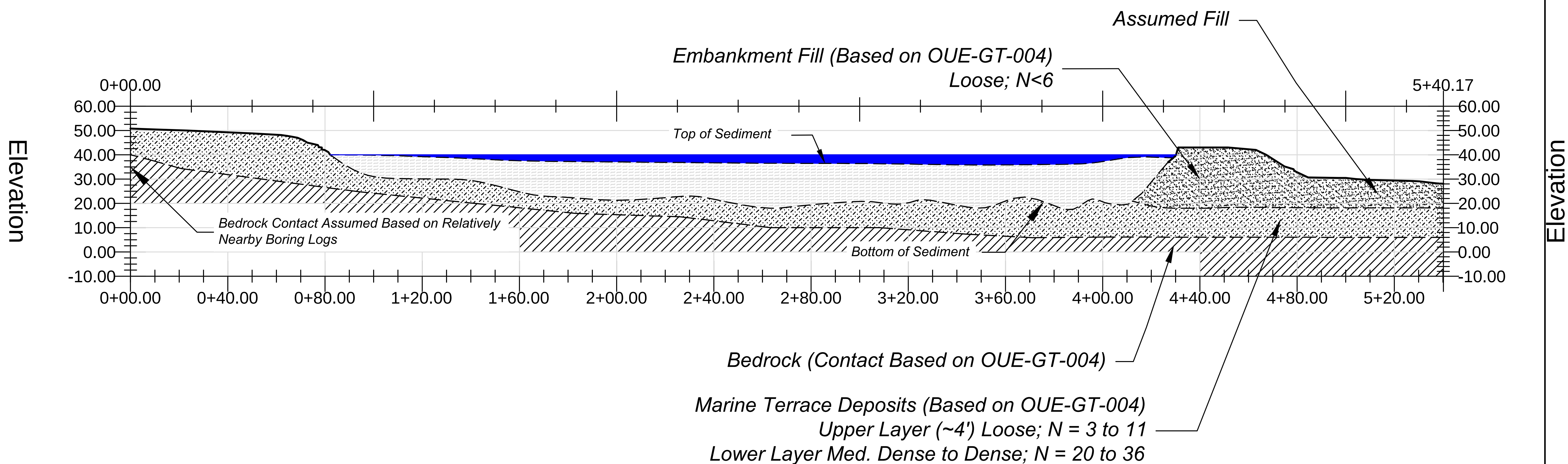


Figure 3
LOCATIONS OF PRINCIPAL
REMEDIATION AREAS AND UPDATED
GEOLOGIC CROSS SECTIONS

Profile View of Section AA



Profile View of Section BB

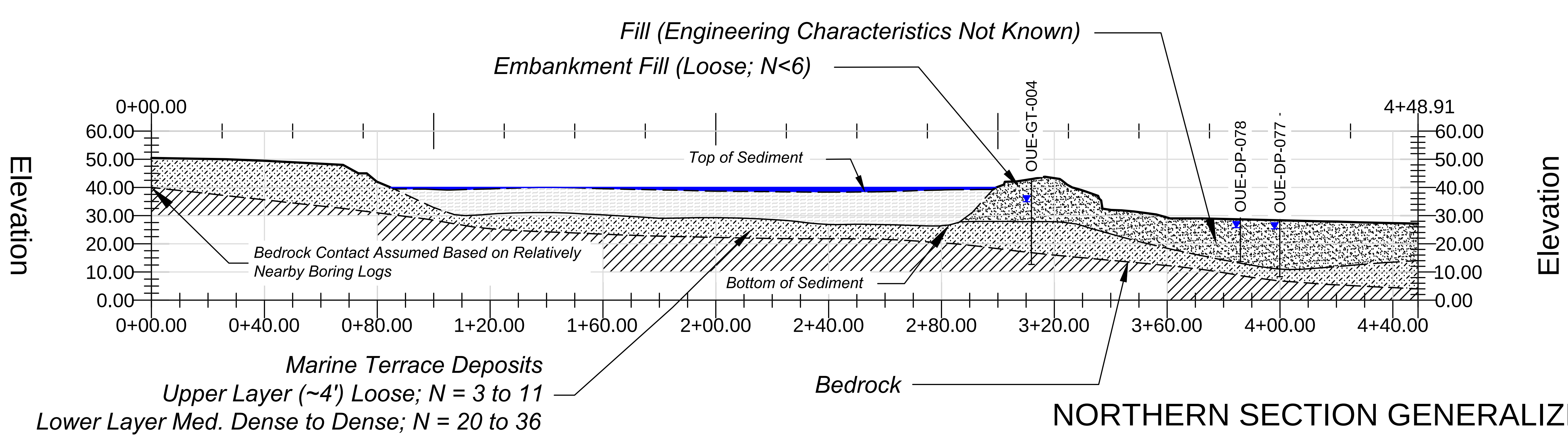


Figure 4
NORTHERN SECTION GENERALIZED GEOLOGY

Profile View of Section CC

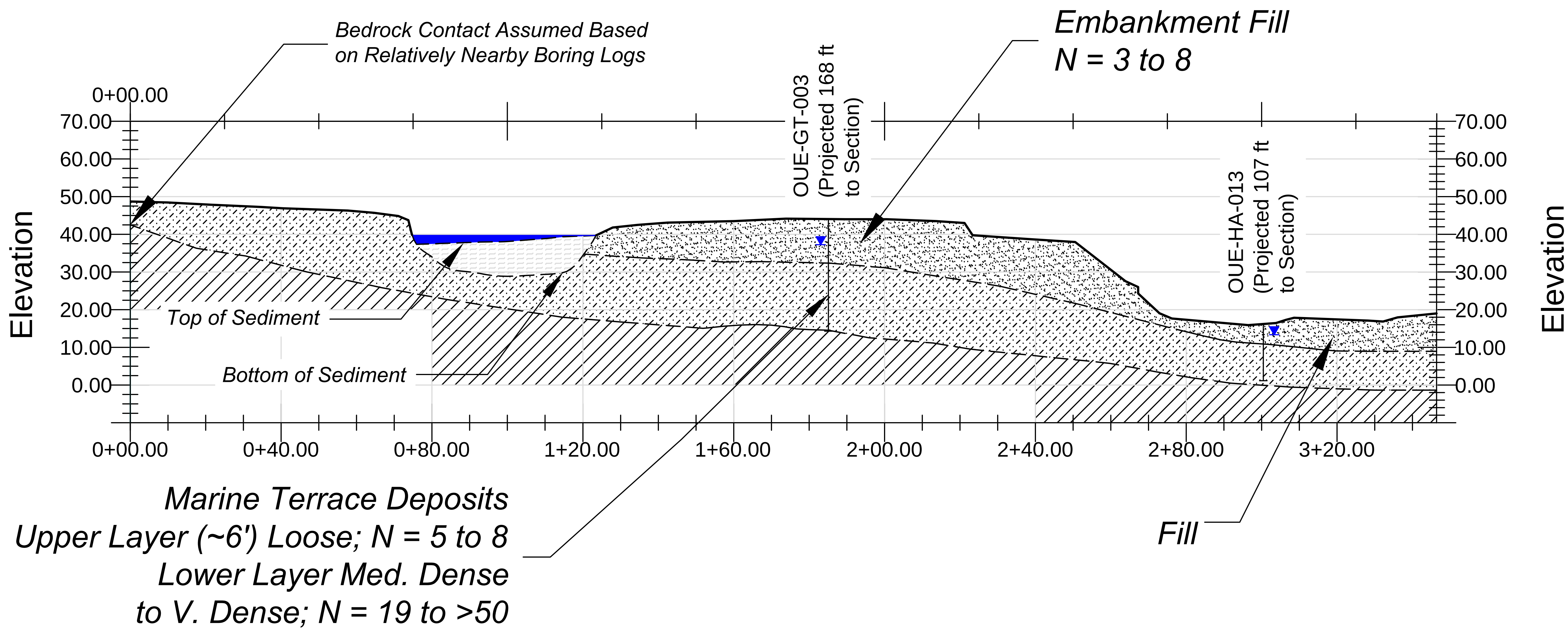
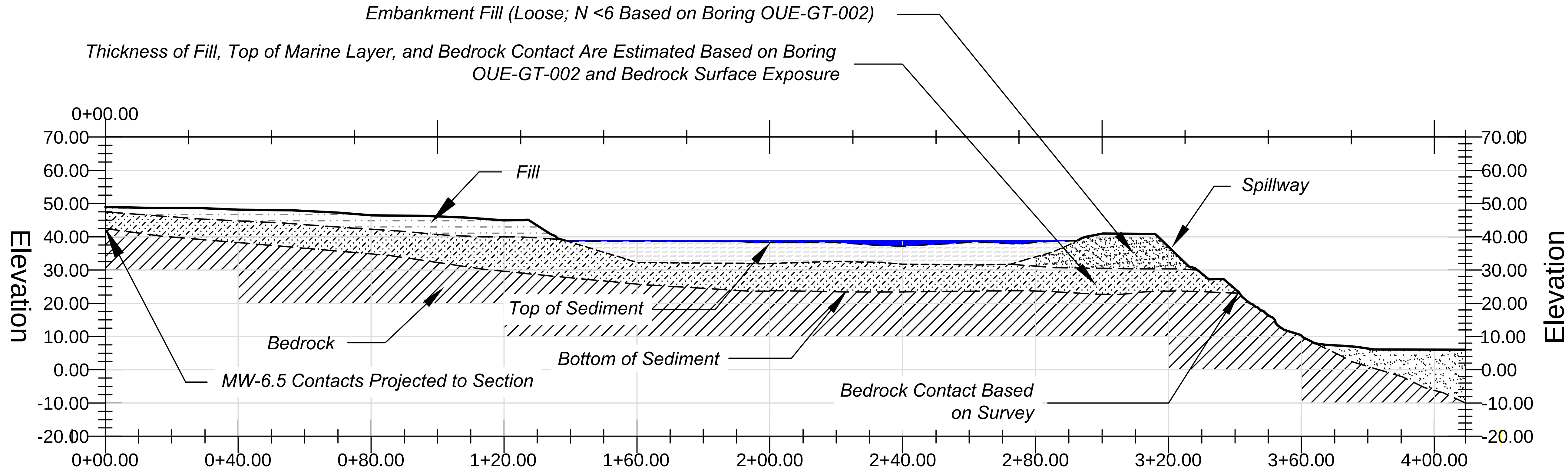
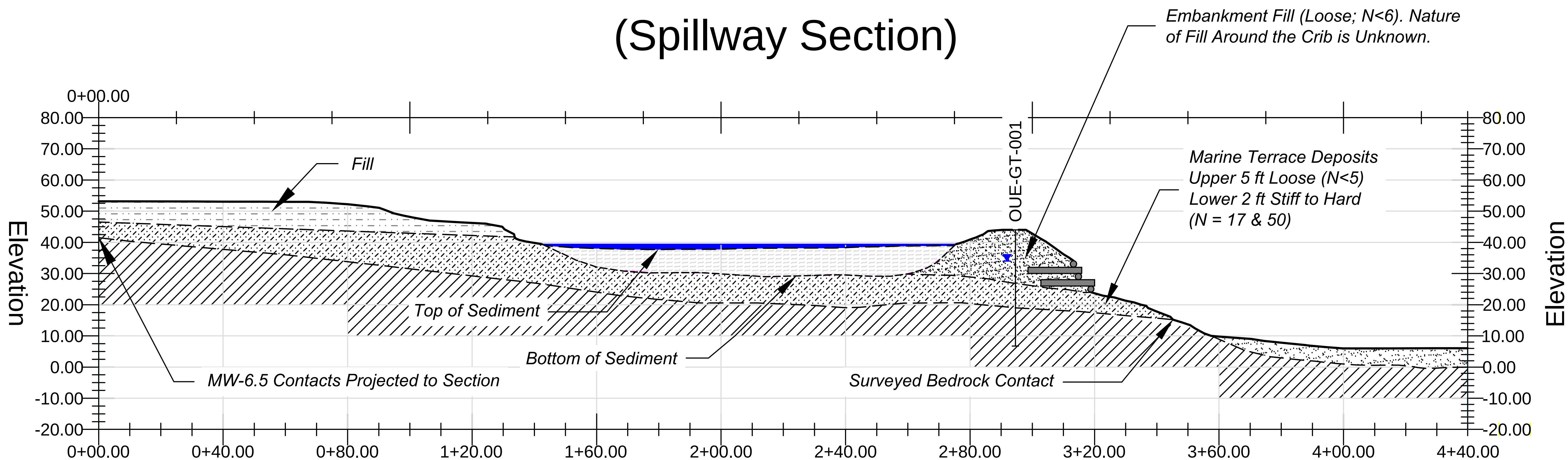


Figure 5
CENTRAL SECTION GENERALIZED GEOLOGY



Profile View of Section EE
(Spillway Section)



Profile View of Section FF
(Crib Wall Section)

Figure 6
SOUTHERN SECTION GENERALIZED GEOLOGY

Profile View of Section GG
(Looking Back at the Site From the Bay)

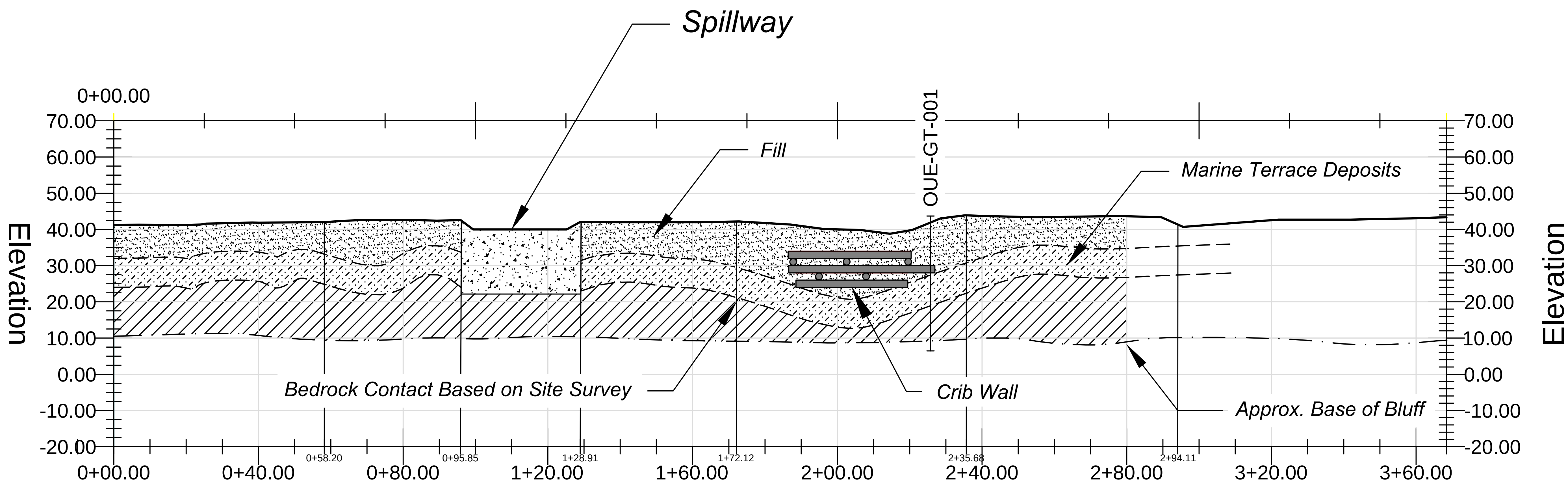


Figure 7
SOUTHERN SECTION GENERALIZED GEOLOGY

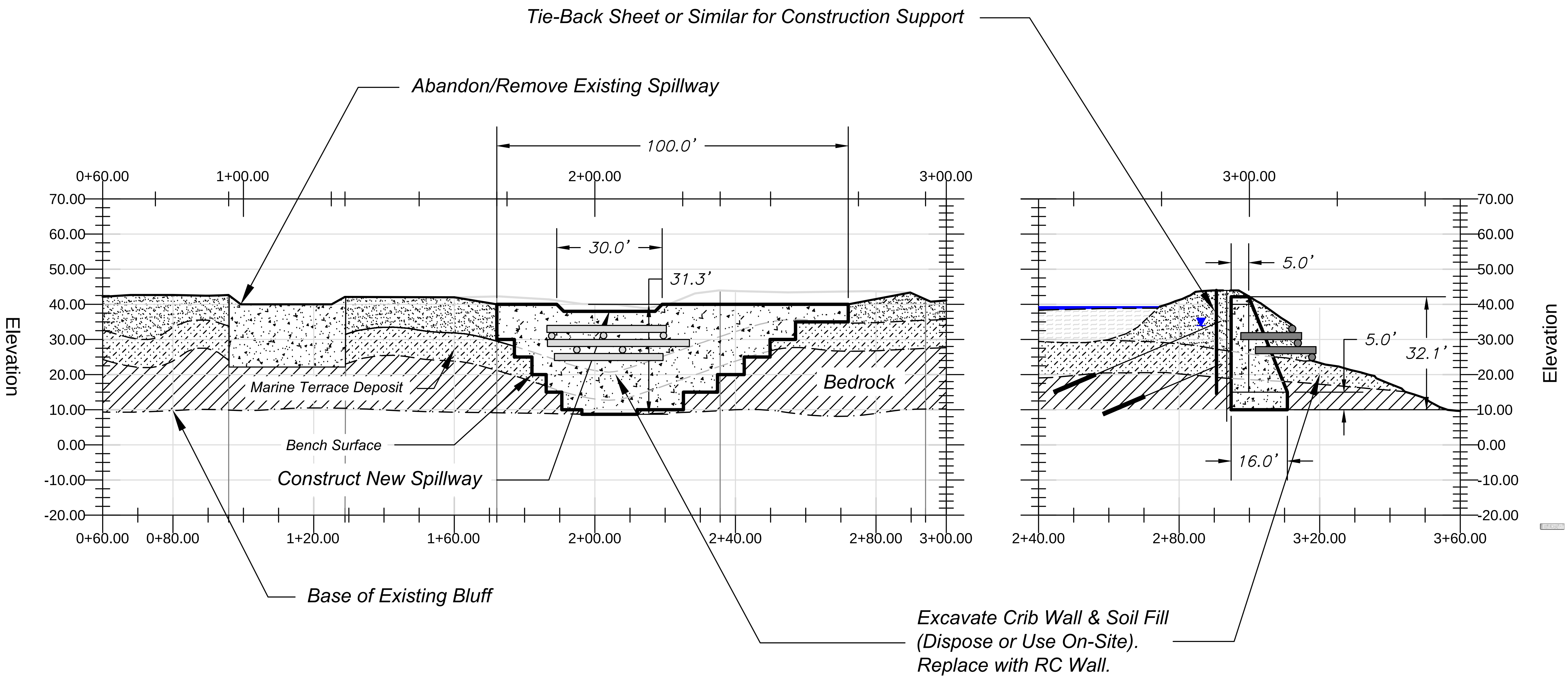


Figure 8
CRIB WALL CONCEPTUAL
REMEDIATION

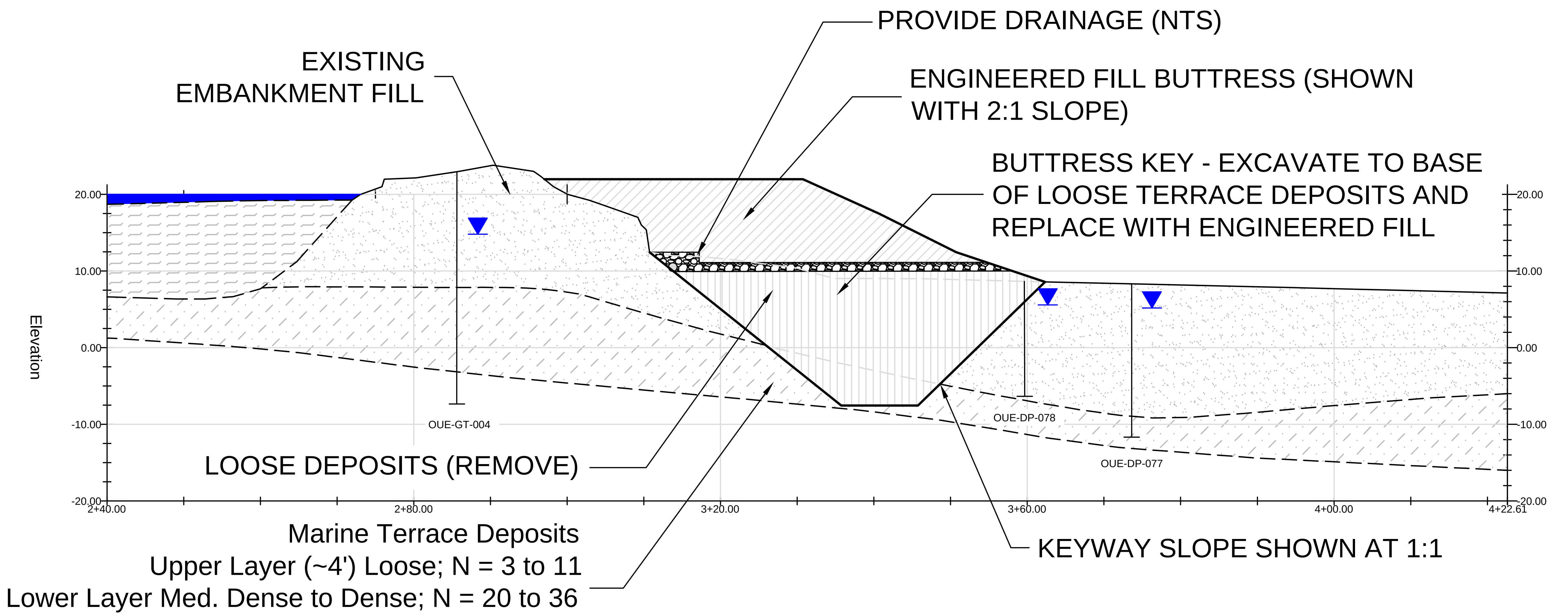


Figure ϕ
NORTHERN EMBANKMENT SECTION
CONCEPTUAL MITIGATION AND COSTS

Table 1
SUMMARY OF MILL POND SURVEY POINTS, ELEVATIONS, WATER COLUMN THICKNESS, AND SEDIMENT THICKNESS
Georgia Pacific Mill Pond
Fort Bragg, California

SURVEY POINT	NORTHING	EASTING	ELEVATION	POINT ID	DEPTH OF WATER (ft)	SEDIMENT THICKNESS (ft)
A-17_12039	2291705.4	6050140.5	39.4	A-17	0.0	10.7
A-18_12039	2291690.0	6050139.9	38.6	A-18	0.2	12.4
A-19_12039	2291670.4	6050138.6	38.3	A-19	0.3	10.2
A-20_12039	2291654.1	6050135.0	38.9	A-20	0.8	5.1
AA-03_12048	2291997.7	6050659.4	39.5	AA-03	0.2	6.0
AA-04_12048	2291971.1	6050662.2	38.8	AA-04	0.3	14.0
AA-05_12048	2291949.9	6050662.9	40.5	AA-05	0.2	24.8
AA-06_12048	2291929.3	6050665.8	39.0	AA-06	0.6	17.1
AA-07_12048	2291905.9	6050667.0	39.3	AA-07	3.2	11.2
AA-08_12048	2291887.1	6050667.3	39.4	AA-08	3.8	20.2
AA-09_12048	2291870.3	6050666.8	39.4	AA-09	3.6	12.4
AA-10_12048	2291850.2	6050666.5	39.4	AA-10	3.8	19.7
AA-11_12048	2291829.1	6050666.0	39.3	AA-11	1.7	11.8
AA-12_12048	2291811.8	6050665.8	39.4	AA-12	2.5	10.3
AA-13_12048	2291795.8	6050665.2	39.4	AA-13	2.5	8.5
AA-14_12048	2291774.5	6050664.4	39.6	AA-14	2.0	9.5
AA-15_12050	2291750.2	6050660.7	38.6	AA-15	0.5	11.5
AA-16_12050	2291730.2	6050659.8	39.2	AA-16	0.3	7.8
AA-18_12050	2291690.4	6050660.3	39.2	AA-18	0.1	6.0
AA-19_12050	2291670.3	6050659.9	39.1	AA-19	0.0	6.0
AA-20_12050	2291649.7	6050660.0	39.9	AA-20	0.0	8.9
AA-21_12050	2291641.1	6050660.9	39.8	AA-21	0.0	7.2
BB-01_12051	2292030.1	6050680.6	39.4	BB-01	0.0	13.0
BB-02_12051	2292009.9	6050679.1	39.0	BB-02	0.3	13.5
BB-03_12051	2291989.7	6050679.1	38.8	BB-03	0.3	10.6
BB-04_12051	2291970.0	6050677.8	37.8	BB-04	0.4	13.2
BB-05_12051	2291950.4	6050678.1	38.8	BB-05	0.2	25.0
C-17_12039	2291710.3	6050180.0	39.7	C-17	0.0	7.0
C-18_12039	2291690.2	6050180.0	38.9	C-18	0.4	9.2
C-19_12039	2291670.3	6050179.7	39.0	C-19	0.6	8.6
C-20_12039	2291650.7	6050179.5	39.1	C-20	1.4	6.5
CC-01_12048	2292048.2	6050700.4	39.7	CC-01	0.0	16.0
CC-02_12048	2292010.9	6050700.4	39.4	CC-02	0.3	19.2
CC-03_12048	2291990.2	6050699.5	40.1	CC-03	0.6	18.0
CC-04_12048	2291970.1	6050698.6	39.4	CC-04	0.3	13.7
CC-05_12048	2291950.4	6050699.1	39.3	CC-05	4.3	11.7
CC-06_12048	2291930.2	6050699.6	39.3	CC-06	3.9	15.6
CC-07_12048	2291910.1	6050700.1	39.3	CC-07	3.7	13.1
CC-08_12048	2291891.0	6050700.1	39.3	CC-08	4.0	20.0
CC-09_12048	2291869.8	6050700.8	39.1	CC-09	2.7	15.8
CC-11_12048	2291830.1	6050700.3	39.3	CC-11	2.2	15.2
CC-12_12048	2291810.0	6050700.1	39.2	CC-12	2.1	10.0
CC-13_12048	2291790.0	6050700.0	39.4	CC-13	2.1	13.1
CC-14_12048	2291770.2	6050699.3	39.4	CC-14	0.4	11.6
CC-15_12050	2291749.9	6050701.2	38.3	CC-15	0.7	13.8
CC-16_12050	2291730.5	6050700.9	38.9	CC-16	0.4	8.5
CC-17_12050	2291710.1	6050700.1	38.9	CC-17	0.1	9.9

Table 1
SUMMARY OF MILL POND SURVEY POINTS, ELEVATIONS, WATER COLUMN THICKNESS, AND SEDIMENT THICKNESS
Georgia Pacific Mill Pond
Fort Bragg, California

SURVEY POINT	NORTHING	EASTING	ELEVATION	POINT ID	DEPTH OF WATER (ft)	SEDIMENT THICKNESS (ft)
CC-18_12050	2291690.2	6050699.9	39.3	CC-18	0.0	6.8
CC-19_12050	2291670.1	6050699.9	39.3	CC-19	0.0	6.0
CC-20_12050	2291650.4	6050700.1	39.8	CC-20	0.0	7.5
CC-21_12050	2291637.4	6050701.1	40.1	CC-21	0.0	8.0
E-13_12039	2291781.3	6050220.2	39.5	E-13	0.0	4.0
E-14_12039	2291770.1	6050220.2	38.8	E-14	0.2	8.5
E-15_12039	2291749.5	6050219.7	39.0	E-15	0.4	8.2
E-16_12039	2291729.7	6050220.7	38.9	E-16	0.7	7.1
E-17_12039	2291710.5	6050220.5	39.2	E-17	0.5	10.5
E-18_12039	2291690.3	6050220.0	39.1	E-18	0.6	9.3
E-19_12039	2291670.5	6050220.3	38.6	E-19	0.8	11.4
E-20_12039	2291648.6	6050219.2	39.0	E-20	0.7	6.4
Edge-of-Pond-000_12049	2291747.5	6050883.7	40.4	Edge-of-Pond-000	0.0	3.0
Edge-of-Pond-001_12049	2291780.2	6050905.7	39.8	Edge-of-Pond-001	0.0	3.0
Edge-of-Pond-003_12049	2291839.0	6050897.6	40.6	Edge-of-Pond-003	0.0	7.0
Edge-of-Pond-005_12049	2291889.5	6050912.4	40.3	Edge-of-Pond-005	0.0	5.0
Edge-of-Pond-007_12049	2291942.1	6050919.1	39.7	Edge-of-Pond-007	0.0	7.0
Edge-of-Pond-009_12049	2292003.4	6050932.7	41.7	Edge-of-Pond-009	0.0	2.0
EE-01_12040	2292043.4	6050737.5	40.4	EE-01	0.0	11.6
EE-02_12040	2292010.1	6050739.9	39.4	EE-02	0.8	27.0
EE-03_12040	2291989.8	6050739.8	39.0	EE-03	0.6	26.2
EE-04_12040	2291969.7	6050739.9	39.3	EE-04	5.7	18.0
EE-05_12040	2291954.9	6050740.9	39.3	EE-05	6.1	18.8
EE-07_12047	2291909.9	6050738.9	39.4	EE-07	3.2	18.2
EE-08_12047	2291889.9	6050739.1	39.6	EE-08	2.9	16.1
EE-09_12047	2291870.1	6050739.6	39.5	EE-09	3.3	15.3
EE-10_12047	2291849.2	6050739.4	39.4	EE-10	3.2	19.3
EE-11_12047	2291830.3	6050739.7	39.7	EE-11	3.5	20.0
EE-12_12047	2291810.0	6050739.8	39.3	EE-12	2.6	12.7
EE-13_12047	2291790.4	6050740.1	39.5	EE-13	2.0	14.0
EE-14_12047	2291770.6	6050740.3	39.5	EE-14	1.6	11.3
EE-15_12047	2291750.2	6050739.3	39.5	EE-15	1.4	15.8
EE-16_12047	2291729.9	6050739.4	39.7	EE-16	0.2	16.1
EE-17_12050	2291711.3	6050740.6	38.7	EE-17	0.3	12.5
EE-18_12050	2291690.8	6050740.0	39.2	EE-18	0.1	6.9
EE-19_12050	2291669.8	6050739.9	40.3	EE-19	0.0	7.5
EE-20_12050	2291641.1	6050740.9	40.2	EE-20	0.0	5.0
FF-02_12051	2292009.8	6050763.3	38.8	FF-02	0.7	14.0
FF-03_12051	2291990.4	6050761.2	39.2	FF-03	0.5	17.5
G-13_12045	2291785.4	6050259.3	39.9	G-13	0.0	10.0
G-14_12045	2291770.0	6050259.4	39.0	G-14	0.5	10.5
G-15_12045	2291749.9	6050260.6	38.6	G-15	0.9	8.1
G-16_12045	2291730.4	6050260.3	39.0	G-16	1.2	6.6
G-17_12045	2291710.5	6050259.6	39.4	G-17	1.0	8.2
G-18_12045	2291690.2	6050260.3	39.3	G-18	0.9	8.5
G-19_12045	2291670.4	6050260.3	39.1	G-19	0.9	8.4
G-20_12045	2291650.8	6050259.8	39.1	G-20	0.7	6.1

Table 1
SUMMARY OF MILL POND SURVEY POINTS, ELEVATIONS, WATER COLUMN THICKNESS, AND SEDIMENT THICKNESS
Georgia Pacific Mill Pond
Fort Bragg, California

SURVEY POINT	NORTHING	EASTING	ELEVATION	POINT ID	DEPTH OF WATER (ft)	SEDIMENT THICKNESS (ft)
G-21_12045	2291645.0	6050258.5	39.2	G-21	0.7	6.0
GG-01_12048	2292034.6	6050780.1	39.1	GG-01	0.0	14.5
GG-02_12048	2292008.0	6050779.8	39.2	GG-02	0.5	12.5
GG-03_12048	2291989.8	6050778.8	39.1	GG-03	1.1	15.6
GG-04_12048	2291969.8	6050778.3	39.0	GG-04	0.7	17.3
GG-05_12048	2291949.6	6050777.9	39.3	GG-05	3.1	13.1
GG-06_12048	2291929.1	6050778.7	39.3	GG-06	3.5	14.4
GG-08_12048	2291891.6	6050779.7	39.4	GG-08	3.4	11.1
GG-09_12048	2291869.9	6050779.6	39.5	GG-09	2.6	8.0
GG-10_12048	2291850.8	6050780.2	39.2	GG-10	3.0	6.0
GG-11_12048	2291830.6	6050780.1	39.6	GG-11	2.8	11.7
GG-12_12048	2291810.7	6050780.1	39.4	GG-12	2.7	14.7
GG-13_12048	2291790.4	6050780.4	39.5	GG-13	2.2	16.7
GG-14_12048	2291769.9	6050780.9	39.4	GG-14	2.5	18.2
GG-15_12048	2291750.2	6050781.1	39.1	GG-15	1.8	16.0
GG-16_12048	2291730.4	6050780.6	39.2	GG-16	1.5	15.0
GG-17_12048	2291710.7	6050779.7	39.3	GG-17	0.1	17.7
GG-18_12047	2291690.0	6050779.7	40.3	GG-18	0.0	8.0
GG-19_12047	2291670.0	6050779.6	40.7	GG-19	0.0	7.5
GG-20_12047	2291649.7	6050780.0	41.3	GG-20	0.0	11.5
I-13_12045	2291789.4	6050299.7	39.1	I-13	0.2	9.3
I-14_12045	2291769.9	6050299.7	39.1	I-14	0.5	8.5
I-16_12045	2291730.2	6050299.5	39.3	I-16	1.1	8.9
I-17_12045	2291709.7	6050299.4	38.6	I-17	0.9	8.1
I-18_12045	2291690.2	6050300.1	38.9	I-18	1.0	7.4
I-19_12045	2291671.9	6050309.0	39.2	I-19	3.0	5.5
I-20_12045	2291649.8	6050299.5	39.5	I-20	0.6	6.9
I-21_12045	2291642.4	6050298.8	38.8	I-21	0.7	7.8
II-01_12048	2292030.8	6050818.0	39.4	II-01	2.2	9.3
II-02_12048	2292010.1	6050819.2	39.6	II-02	0.6	14.9
II-03_12048	2291989.7	6050819.3	39.5	II-03	0.3	12.7
II-04_12048	2291970.0	6050819.9	39.6	II-04	0.9	18.6
II-05_12048	2291950.5	6050819.7	39.4	II-05	2.4	10.4
II-06_12048	2291930.0	6050820.3	39.4	II-06	3.2	8.3
II-07_12048	2291910.2	6050820.1	39.5	II-07	3.4	12.1
II-08_12048	2291890.2	6050820.3	39.5	II-08	3.4	10.0
II-09_12048	2291869.8	6050820.8	39.4	II-09	2.8	13.7
II-10_12048	2291850.0	6050820.5	39.4	II-10	3.4	12.0
II-11_12048	2291830.3	6050820.5	39.4	II-11	2.8	10.1
II-12_12048	2291810.1	6050820.6	39.4	II-12	2.6	10.4
II-13_12048	2291790.0	6050820.5	39.4	II-13	2.4	7.0
II-14_12048	2291769.6	6050820.6	39.4	II-14	2.0	11.8
II-15_12048	2291749.6	6050820.3	39.2	II-15	0.8	8.7
II-16_12047	2291730.1	6050819.3	39.0	II-16	0.1	10.0
II-17_12047	2291710.4	6050820.0	39.7	II-17	0.0	11.1
II-18_12047	2291690.1	6050820.1	39.9	II-18	0.0	10.0
II-19_12047	2291666.2	6050820.7	41.4	II-19	0.0	9.0

Table 1
SUMMARY OF MILL POND SURVEY POINTS, ELEVATIONS, WATER COLUMN THICKNESS, AND SEDIMENT THICKNESS
Georgia Pacific Mill Pond
Fort Bragg, California

SURVEY POINT	NORTHING	EASTING	ELEVATION	POINT ID	DEPTH OF WATER (ft)	SEDIMENT THICKNESS (ft)
JJ-03_12051	2291990.1	6050841.9	39.1	JJ-03	2.5	9.1
K-12_12045	2291811.0	6050340.0	39.3	K-12	0.1	10.9
K-13_12045	2291790.2	6050340.2	39.1	K-13	0.7	11.3
K-14_12045	2291770.3	6050340.1	39.0	K-14	1.1	11.9
K-16_12045	2291729.5	6050339.8	38.7	K-16	0.8	7.0
K-17_12045	2291710.1	6050339.4	38.7	K-17	0.9	7.6
K-18_12045	2291689.9	6050339.8	38.6	K-18	0.7	9.0
K-19_12045	2291670.2	6050340.4	38.4	K-19	1.0	9.0
K-20_12045	2291650.3	6050340.1	40.0	K-20	0.5	7.8
K-21_12045	2291638.8	6050340.2	39.3	K-21	0.5	6.5
KK-03_12049	2292006.8	6050862.6	39.5	KK-03	0.1	12.0
KK-04_12049	2291985.5	6050861.3	39.4	KK-04	3.5	14.0
KK-05_12047	2291949.5	6050860.6	38.4	KK-05	1.0	12.0
KK-06_12047	2291929.9	6050860.6	38.6	KK-06	0.1	15.9
KK-08_12047	2291889.3	6050860.4	39.0	KK-08	0.2	15.8
KK-09_12047	2291870.5	6050860.8	38.6	KK-09	0.4	10.4
KK-10_12047	2291850.0	6050860.8	38.8	KK-10	1.0	13.0
KK-11_12047	2291830.1	6050860.6	39.0	KK-11	0.7	9.8
KK-12_12047	2291809.1	6050860.0	39.1	KK-12	0.8	8.7
KK-13_12047	2291790.0	6050859.7	40.2	KK-13	1.2	12.6
KK-14_12047	2291769.9	6050859.3	38.7	KK-14	0.5	9.9
KK-15_12047	2291750.1	6050860.0	39.5	KK-15	0.0	8.4
KK-16_12047	2291730.6	6050860.4	39.9	KK-16	0.0	9.5
KK-17_12047	2291710.0	6050860.4	40.0	KK-17	0.0	5.5
KK-18_12047	2291696.8	6050859.9	40.0	KK-18	0.0	5.5
M-12_12045	2291810.0	6050380.2	38.4	M-12	0.3	8.7
M-13_12045	2291789.6	6050379.1	39.2	M-13	0.3	9.5
M-14_12045	2291769.7	6050379.5	40.1	M-14	0.5	7.5
M-15_12045	2291749.5	6050379.3	40.2	M-15	0.4	7.1
M-16_12045	2291730.2	6050379.2	39.1	M-16	0.5	7.7
M-17_12045	2291709.5	6050380.1	39.2	M-17	0.7	8.8
M-18_12045	2291688.6	6050380.8	38.6	M-18	1.1	8.7
M-19_12045	2291669.8	6050380.0	38.9	M-19	0.7	10.8
M-20_12045	2291649.8	6050379.3	38.7	M-20	0.3	12.1
M-21_12045	2291635.5	6050382.2	38.4	M-21	0.4	7.6
MM-01_12047	2292022.3	6050901.5	40.5	MM-01	0.0	3.0
MM-02_12047	2292010.0	6050899.8	40.1	MM-02	0.0	12.0
MM-03_12047	2291989.6	6050899.9	39.7	MM-03	0.0	7.5
MM-04_12047	2291970.1	6050900.3	39.7	MM-04	0.0	7.0
MM-05_12047	2291949.6	6050900.5	39.0	MM-05	0.5	15.0
MM-06_12047	2291929.7	6050900.2	40.4	MM-06	0.7	8.0
MM-07_12047	2291909.9	6050899.1	39.5	MM-07	0.2	10.0
MM-08_12047	2291889.6	6050899.6	39.9	MM-08	0.0	5.0
MM-09_12047	2291869.9	6050900.3	39.9	MM-09	0.0	9.0
MM-10_12047	2291849.4	6050900.0	40.2	MM-10	0.0	8.0
MM-11_12047	2291829.6	6050899.3	40.4	MM-11	0.0	5.0
MM-12_12047	2291809.6	6050899.4	40.1	MM-12	0.0	7.0

Table 1
SUMMARY OF MILL POND SURVEY POINTS, ELEVATIONS, WATER COLUMN THICKNESS, AND SEDIMENT THICKNESS
Georgia Pacific Mill Pond
Fort Bragg, California

SURVEY POINT	NORTHING	EASTING	ELEVATION	POINT ID	DEPTH OF WATER (ft)	SEDIMENT THICKNESS (ft)
MM-13_12047	2291790.2	6050900.3	40.6	MM-13	0.0	6.0
MM-14_12047	2291775.7	6050903.4	40.4	MM-14	0.0	5.0
O-11_12045	2291843.1	6050414.1	39.4	O-11	0.3	8.2
O-12_12045	2291810.3	6050420.0	39.3	O-12	0.2	9.8
O-14_12045	2291769.6	6050420.4	39.1	O-14	0.6	8.4
O-15_12045	2291750.5	6050420.0	39.1	O-15	0.5	11.5
O-16_12045	2291730.2	6050419.8	38.9	O-16	0.4	9.1
O-17_12045	2291709.5	6050420.0	38.8	O-17	0.7	7.7
O-18_12045	2291689.4	6050419.8	38.9	O-18	0.4	8.9
O-19_12045	2291670.3	6050420.2	39.6	O-19	0.3	8.3
O-20_12045	2291649.6	6050419.3	39.2	O-20	0.2	10.8
O-21_12045	2291632.7	6050418.6	39.2	O-21	0.3	7.2
P-12_12049	2291809.5	6050439.3	38.7	P-12	0.5	9.3
P-13_12049	2291790.2	6050440.6	39.0	P-13	0.7	10.3
P-17_12049	2291710.1	6050440.3	39.0	P-17	0.5	9.5
Q-11_12045	2291829.7	6050457.8	39.5	Q-11	0.3	15.0
Q-13_12045	2291790.8	6050460.7	38.7	Q-13	0.4	12.6
Q-14_12045	2291770.7	6050459.7	39.1	Q-14	0.7	9.8
Q-15_12045	2291749.9	6050459.6	39.1	Q-15	0.4	9.1
Q-16_12045	2291729.4	6050459.8	39.2	Q-16	0.3	9.7
Q-18_12045	2291690.8	6050459.6	40.6	Q-18	0.2	9.0
Q-19_12045	2291669.9	6050459.3	40.0	Q-19	0.2	8.7
Q-20_12045	2291650.1	6050460.1	39.3	Q-20	0.0	8.9
Q-21_12045	2291634.6	6050460.3	39.4	Q-21	0.0	7.0
R-12_12049	2291809.2	6050479.5	39.6	R-12	0.3	11.3
R-17_12049	2291708.8	6050480.3	39.7	R-17	0.2	9.0
S-09_12050	2291859.7	6050502.2	39.6	S-09	0.0	6.5
S-10_12050	2291849.7	6050500.6	39.3	S-10	0.2	8.7
S-11_12050	2291829.9	6050500.9	38.8	S-11	0.7	7.3
S-12_12050	2291810.5	6050501.0	39.1	S-12	0.7	9.7
S-13_12050	2291790.5	6050501.1	38.8	S-13	1.0	11.5
S-15_12050	2291750.7	6050500.3	38.5	S-15	1.2	12.1
S-16_12050	2291730.2	6050501.1	38.8	S-16	1.2	7.3
S-17_12050	2291709.1	6050499.5	39.1	S-17	0.5	8.1
S-18_12050	2291689.2	6050500.1	39.2	S-18	0.2	8.7
S-19_12050	2291670.5	6050500.8	38.8	S-19	0.2	10.3
S-20_12050	2291649.5	6050500.6	39.6	S-20	0.0	8.2
U-10_12050	2291867.1	6050538.0	39.5	U-10	0.0	3.8
U-11_12050	2291830.8	6050536.6	38.8	U-11	0.8	5.0
U-13_12050	2291790.4	6050538.8	38.9	U-13	1.0	12.5
U-14_12050	2291769.2	6050539.5	39.0	U-14	1.2	13.0
U-15_12050	2291749.3	6050539.5	39.2	U-15	0.7	11.8
U-16_12050	2291729.9	6050539.5	39.1	U-16	0.5	12.2
U-17_12050	2291710.1	6050540.0	39.2	U-17	0.4	6.4
U-18_12050	2291690.5	6050539.4	39.1	U-18	0.3	7.1
U-19_12050	2291669.4	6050540.4	39.3	U-19	0.0	9.3
U-20_12050	2291656.1	6050540.4	39.5	U-20	0.0	9.9

Table 1
SUMMARY OF MILL POND SURVEY POINTS, ELEVATIONS, WATER COLUMN THICKNESS, AND SEDIMENT THICKNESS
Georgia Pacific Mill Pond
Fort Bragg, California

SURVEY POINT	NORTHING	EASTING	ELEVATION	POINT ID	DEPTH OF WATER (ft)	SEDIMENT THICKNESS (ft)
V-08_12051	2291887.6	6050564.8	38.6	V-08	0.2	12.0
V-09_12051	2291869.4	6050561.3	39.2	V-09	0.2	13.2
V-10_12051	2291850.5	6050560.1	39.2	V-10	0.7	9.2
V-11_12051	2291829.4	6050559.7	39.3	V-11	0.7	9.0
W-07_12049	2291908.3	6050582.3	39.3	W-07	0.0	10.1
W-08_12049	2291888.8	6050586.9	39.3	W-08	0.7	19.8
W-10_12049	2291847.7	6050584.9	39.3	W-10	0.2	12.8
W-11_12049	2291829.3	6050583.3	39.4	W-11	0.2	13.6
W-12_12049	2291809.3	6050582.3	39.4	W-12	0.4	11.4
W-13_12050	2291789.9	6050580.2	38.9	W-13	0.2	11.7
W-14_12050	2291770.1	6050581.3	39.0	W-14	0.7	11.0
W-15_12050	2291749.9	6050580.8	38.8	W-15	0.5	10.5
W-16_12050	2291730.2	6050580.1	39.3	W-16	0.4	9.6
W-17_12050	2291709.6	6050579.6	39.3	W-17	0.1	9.1
W-18_12050	2291690.0	6050580.1	39.4	W-18	0.0	7.7
W-19_12050	2291670.3	6050580.1	39.3	W-19	0.0	5.2
W-20_12050	2291643.5	6050580.2	39.4	W-20	0.0	2.4
WT-1-01_12051	2291699.8	6050061.3	39.5	WT1-01	0.0	9.0
WT-1-02_12051	2291679.1	6050060.9	38.4	WT1-02	0.5	8.7
WT-1-03_12051	2291659.8	6050058.6	38.1	WT1-03	1.0	6.5
WT-2.5-01-BOB_12052	2291794.6	6049862.8	39.2	WT2.5-01	0.0	8.0
WT-2.5-02_12052	2291773.2	6049870.4	38.1	WT2.5-02	0.2	7.7
WT-2.5-03_12052	2291754.2	6049870.9	38.8	WT2.5-03	0.5	7.0
WT-2.5-04_12052	2291735.4	6049875.3	38.7	WT2.5-04	0.8	6.2
WT-2.5-05_12052	2291714.2	6049880.2	38.8	WT2.5-05	1.6	5.1
WT-2.5-06_12052	2291694.3	6049885.4	38.7	WT2.5-06	0.3	7.7
WT-2.5-07BOB_12052	2291674.8	6049887.1	38.7	WT2.5-07	0.0	7.0
WT-2-01_12051	2291772.9	6049983.1	39.6	WT2-01	0.0	6.0
WT-2-02_12051	2291750.6	6049984.7	39.1	WT2-02	0.0	6.6
WT-2-03_12051	2291729.8	6049985.4	38.9	WT2-03	0.0	7.0
WT-2-04_12051	2291709.6	6049983.6	38.7	WT2-04	0.1	8.9
WT-2-05_12051	2291688.2	6049982.6	38.8	WT2-05	1.2	10.1
WT-3-01BOB_12052	2291782.2	6049781.7	38.9	WT3-01	0.0	6.0
WT-3-02_12052	2291764.6	6049791.5	38.5	WT3-02	1.6	8.2
WT-3-03_12052	2291747.3	6049801.8	38.8	WT3-03	0.6	6.1
WT-3-04_12052	2291729.2	6049814.0	38.8	WT3-04	1.9	4.6
WT-3-05_12052	2291711.6	6049825.7	38.8	WT3-05	0.3	5.9
WT-3-06_12052	2291695.1	6049838.2	38.9	WT3-06	0.4	6.6
WT-3-07_12052	2291677.9	6049851.5	38.9	WT3-07	0.3	6.7
WT-3-08-BOB_12052	2291653.3	6049869.4	38.7	WT3-08	0.0	6.0
WT-4-01_12052	2291707.1	6049729.1	38.9	WT4-01	0.0	8.1
WT-4-02_12052	2291691.4	6049741.7	38.2	WT4-02	0.5	7.2
WT-4-03_12052	2291673.6	6049752.8	38.6	WT4-03	0.3	5.9
WT-4-04_12052	2291656.5	6049765.4	38.8	WT4-04	1.3	5.9
WT-4-05_12052	2291639.1	6049778.7	38.9	WT4-05	0.3	5.8
WT-4-06_12052	2291622.7	6049790.3	38.8	WT4-06	0.3	5.2
WT-4-07-BOB_12052	2291605.8	6049804.8	39.2	WT4-07	0.0	4.0

Table 1
SUMMARY OF MILL POND SURVEY POINTS, ELEVATIONS, WATER COLUMN THICKNESS, AND SEDIMENT THICKNESS
Georgia Pacific Mill Pond
Fort Bragg, California

SURVEY POINT	NORTHING	EASTING	ELEVATION	POINT ID	DEPTH OF WATER (ft)	SEDIMENT THICKNESS (ft)
WT-5-01-BOB_12052	2291645.6	6049653.5	39.6	WT5-01	0.0	8.0
WT-5-02_12052	2291630.8	6049667.4	38.9	WT5-02	0.0	10.0
WT-5-03_12052	2291617.9	6049683.8	38.6	WT5-03	0.3	8.7
WT-5-04_12052	2291604.2	6049700.0	38.5	WT5-04	0.3	9.5
WT-5-05_12052	2291591.6	6049714.5	38.3	WT5-05	0.5	7.9
WT-5-06_12052	2291577.5	6049728.8	38.4	WT5-06	0.5	8.4
WT-5-07-EOWALL_12052	2291554.2	6049747.1	39.0	WT5-07EOWALL	0.0	5.0
WT-6-01-EOWALL_12052	2291499.5	6049694.7	39.5	WT6-01	0.0	5.2
WT-6-02_12052	2291514.6	6049677.6	38.8	WT6-02	1.3	4.2
WT-6-03_12052	2291530.2	6049661.9	38.8	WT6-03	1.5	5.5
WT-6-04_12052	2291545.4	6049647.3	39.0	WT6-04	1.4	6.6
WT-6-05_12052	2291562.0	6049631.6	39.0	WT6-05	1.4	6.6
WT-6-06_12052	2291578.0	6049616.4	38.9	WT6-06	1.1	5.4
WT-6-07_12052	2291593.9	6049600.8	38.4	WT6-07	0.2	7.3
WT-6-08_12052	2291608.2	6049582.8	38.6	WT6-08	0.4	6.4
WT-6-09-BOB_12052	2291624.3	6049564.7	39.3	WT6-09	0.0	6.5
WT-7-01-BOB_12052	2291566.9	6049486.7	39.0	WT7-01	0.0	5.5
WT-7-02_12052	2291551.8	6049500.7	39.0	WT7-02	0.0	6.5
WT-7-03_12052	2291538.6	6049514.9	38.9	WT7-03	0.2	6.5
WT-7-04_12052	2291525.1	6049530.0	39.0	WT7-04	0.6	5.9
WT-7-05_12052	2291510.4	6049544.8	38.9	WT7-05	1.7	4.8
WT-7-06_12052	2291496.0	6049560.2	38.9	WT7-06	1.5	5.5
WT-7-07_12052	2291481.8	6049577.4	38.9	WT7-07	0.3	5.7
WT-7-08_12052	2291467.9	6049593.2	38.9	WT7-08	0.1	5.4
WT-7-09_12052	2291454.7	6049608.0	39.0	WT7-09	0.2	4.7
WT-7-10-BOB_12052	2291441.7	6049631.0	39.9	WT7-10	0.0	4.0
WT-8-01-BOB_12052	2291385.3	6049572.0	39.9	WT8-01	0.0	7.0
WT-8-02_12052	2291399.6	6049556.5	39.6	WT8-02	0.1	8.9
WT-8-03_12052	2291410.2	6049537.6	39.6	WT8-03	0.0	6.0
WT-8-04_12052	2291425.6	6049520.8	39.0	WT8-04	0.1	6.0
WT-8-05_12052	2291441.5	6049507.1	38.2	WT8-05	0.2	6.2
WT-8-06_12052	2291456.6	6049491.9	38.7	WT8-06	0.2	5.8
WT-8-07_12052	2291472.1	6049476.2	38.6	WT8-07	0.2	6.4
WT-8-08-BOB_12052	2291492.0	6049455.6	39.2	WT8-08	0.0	5.5
WT-9-01-BOB_12052	2291415.2	6049451.5	39.8	WT9-01BOB	0.0	7.0
WT-9-02_12052	2291400.0	6049465.0	39.5	WT9-02	0.0	5.5
WT-9-03_12052	2291384.4	6049480.1	39.6	WT9-03	0.0	6.0
WT-9-04_12052	2291366.0	6049491.7	40.2	WT9-04	0.0	6.5
WT-9-05_12052	2291346.1	6049504.7	40.3	WT9-05	0.0	5.0
WT-9-06-EOWALL_12052	2291328.3	6049518.5	39.9	WT9-06	0.0	6.2
Y-05_12048	2291950.8	6050619.1	39.1	Y-05	0.5	11.7
Y-06_12048	2291931.6	6050623.6	39.9	Y-06	0.1	25.1
Y-07_12048	2291909.9	6050625.4	39.4	Y-07	3.3	14.1
Y-08_12048	2291888.5	6050625.9	39.4	Y-08	3.0	12.2
Y-10_12048	2291852.1	6050625.6	39.4	Y-10	3.0	8.9
Y-11_12048	2291829.0	6050625.7	39.3	Y-11	2.8	15.2
Y-12_12048	2291812.6	6050624.7	39.4	Y-12	2.1	10.6

Table 1
SUMMARY OF MILL POND SURVEY POINTS, ELEVATIONS, WATER COLUMN THICKNESS, AND SEDIMENT THICKNESS
Georgia Pacific Mill Pond
Fort Bragg, California

SURVEY POINT	NORTHING	EASTING	ELEVATION	POINT ID	DEPTH OF WATER (ft)	SEDIMENT THICKNESS (ft)
Y-13_12048	2291792.6	6050624.1	39.6	Y-13	1.4	8.2
Y-14_12050	2291770.9	6050620.4	39.1	Y-14	0.2	10.7
Y-15_12050	2291750.2	6050620.8	39.3	Y-15	0.1	11.9
Y-16_12050	2291729.9	6050620.5	39.0	Y-16	0.4	9.6
Y-17_12050	2291710.4	6050619.4	39.3	Y-17	0.0	7.5
Y-18_12050	2291690.6	6050619.9	39.2	Y-18	0.1	8.2
Y-19_12050	2291670.1	6050619.5	39.5	Y-19	0.1	7.8
Y-20_12050	2291644.6	6050619.5	39.4	Y-20	0.0	4.8
Z-04_12051	2291969.1	6050640.6	39.4	Z-04	0.2	9.6
Z-05_12051	2291950.5	6050639.3	39.6	Z-05	0.5	13.0
Z-06_12051	2291930.2	6050639.9	39.3	Z-06	1.0	10.1
Z-07_12051	2291910.1	6050639.0	39.3	Z-07	3.2	21.2
Z-08_12051	2291889.2	6050640.1	39.2	Z-08	3.4	10.2
Z-09_12051	2291870.8	6050637.1	39.4	Z-09	3.2	21.1
Z-10_12051	2291849.6	6050635.6	39.4	Z-10	3.6	15.4
				Average	0.9	10.0
				Maximum	6.1	27.0
				Standard Deviation	1.1	4.1

Note: Edge of Pond values not included in average, maximum, or standard deviation calculations