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STAFF RECOMMENDATION ON CONSISTENCY DETERMINATION

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Consistency Determination No.	**CD-047-11**
Staff:	TL-SF
File Date:	September 26, 2011
60th Day:	November 25, 2011
75th Day:	December 10, 2011
Commission Meeting:	December 9, 2011

FEDERAL AGENCY: **U.S. Army Corps of Engineers**

PROJECT LOCATION: Santa Rosa State Beach, Shamel County Park, Cambria State Marine Park, and Monterey Bay National Marine Sanctuary, in and near Cambria, San Luis Obispo County.

PROJECT DESCRIPTION: Geotechnical and hydrogeologic feasibility study for proposed desalination facility intake wells.

SUBSTANTIVE FILE DOCUMENTS: See Appendix A

STAFF RECOMMENDATION: Conditional Concurrence. The Motion is on page 16 and Conditions are on pages 17.

EXHIBITS:

- Exhibit 1 – Map of Area
- Exhibit 2 – Proposed Location of Project Activities
- Exhibit 3 – Project Equipment
- Exhibit 4 – Jurisdictional Boundaries
- Exhibit 5 – Area of Groundwater Model
- Exhibit 6 – Cited Provisions of Corps Safety and Health Manual #EM 355-1-1

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers (Corps) has submitted a consistency determination (CD) for a proposed geotechnical and hydrogeologic study at Santa Rosa State Beach, Shamel County Park, Cambria Marine Park, and Monterey Bay National Marine Sanctuary in Cambria, San Luis Obispo County. The study is to assess whether the site may be suitable for a subsurface intake well and/or discharge for a future proposed desalination facility to be designed and constructed by the Corps for the Cambria Community Services District (CCSD). This site was selected for study based on the likely presence of submerged "paleochannels", which are buried former stream channels that often contain gravel and sand deposits suitable for siting intake wells. When properly sited and designed, these wells can pull in seawater from below the ocean floor without disturbing marine life.

> ***Note:*** The currently proposed activities are for data collection only and do not include proposed structures associated with a potential future desalination facility. The Findings herein address just the currently proposed data collection activities. However, as described in Section 1.E below, the data expected from these activities, even when combined with existing information about the site, will not be adequate to determine the site's feasibility for this future potential use. Because several site constraints limit the ability of the Corps or CCSD to collect the necessary data, it is not likely the proposed activities will be sufficient to support a determination that the site is a suitable location for these structures. Additionally, the current schedule for completing the project-level EIS/EIR and design for the future proposed desalination facility does not include any additional data collection activities. Nonetheless, the Corps has submitted a consistency determination and the Commission must evaluate the proposed activities within 75 days of submittal (i.e., December 10, 2011) or its concurrence is presumed.

The project site is immediately adjacent to the Pacific Ocean and the mouth of Santa Rosa Creek within Santa Rosa State Beach, the Cambria State Marine Park, Shamel County Park, and the Monterey Bay National Marine Sanctuary. The site includes an area of shoreline that provides relatively high quality habitat and supports numerous wildlife species. Protected species known to occur at or near the site include numerous marine birds and marine mammals, as well as several species listed as threatened or endangered, including the tidewater goby, the California Red-legged frog, and the Central Coast steelhead. Based on sediment and water samples taken nearby, the project site also includes concentrations of mercury that may have been carried downstream from naturally-occurring surface and subsurface deposits in the upper watershed of Santa Rosa Creek. Some of the mercury may have been transformed into methylmercury. Both contaminants are highly toxic to organisms and both are classified as persistent bioaccumulative toxins (PBTs).

Key project activities include conducting geophysical surveys using hydrophones and conducting geophysical surveys using a cone penetrometer test (CPT) rig and a rotosonic drill rig. Most project activities on the beach would occur below the Mean High Tide Line (MHTL), which results in increased risk of environmental damage due to spills or equipment upset. The Corps has included in the project a number of measures meant to avoid and minimize potential adverse impacts to coastal resources. These include conducting biological surveys before project

activities begin to identify areas to avoid during the project, using a drill rig that does not require the use of drilling muds, minimizing the project footprint on the beach, conducting water quality sampling, and others.

As noted above, this is a request for concurrence with a consistency determination rather than a coastal development permit. As such, the Commission's standard of review is that the proposed activity must be "consistent to the maximum extent practicable" with applicable provisions of the California Coastal Management Program (CCMP). The Corps has stated its proposed project meets this standard; however, staff is recommending the Commission **conditionally concur** with the Corps determination through the inclusion of several conditions whose requirements include:

- completing a survey to delineate protected areas at the project site;
- conducting environmental training and monitoring;
- limiting the timing and location of project activities;
- defining beach conditions under which project activities may occur;
- conducting water and sediment quality sampling and testing;
- preparing plans to identify measures that will limit adverse effects of the project's lighting, noise, and potential spill response; and
- identifying measures to ensure continued public access.

With those conditions, and with agreement by the Corps to implement them, staff believes the project would be consistent to the maximum extent practicable with the CCMP.

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1. STAFF SUMMARY

A. PROJECT PURPOSE

The U.S. Army Corps of Engineers (Corps) has submitted a Consistency Determination (CD) request for a proposed geotechnical and hydrogeologic study at Santa Rosa Beach, which is within Hearst San Simeon State Park and Shamel County Park, in Cambria, San Luis Obispo County (see Exhibit 1 – Map of Area). The purpose of the study is to characterize subterranean material and deposits at various locations on the beach (see Exhibit 2 – Proposed Location of Project Activities). Data collected is meant to characterize the thickness, depth, and permeability of subterranean deposits near "paleochannels" that have been identified beneath the beach.[1] Data will be used to assess whether the site is suitable for subsurface intake wells and/or discharge structures that would be part of a 1.07 million gallon per day (MGD) desalination facility the Corps is planning to design and build for use by the Cambria Community Services District (CCSD).

> ***Note:*** The currently proposed project includes only those geotechnical and geophysical activities described herein. Any development associated with future proposed intake or discharge structures or the desalination facility will be subject to additional Commission review and approval.
>
> Additionally, and for reasons described in Section 1.E below, staff has raised concerns that the Corps' currently proposed activities are not sufficient to meet the project purpose and that site characteristics may not be suitable for proposed water supply structures. Nonetheless, the Corps has submitted a CD for those currently proposed activities and the Findings herein evaluate those activities for consistency with the CCMP.

B. PROJECT BACKGROUND

The community of Cambria has had long-standing water supply problems. It is entirely reliant on local groundwater sources, and dry season shortages often limit the amount of water available. Its water supply was further diminished by the discovery in 1999 of contamination in some of the CCSD wells.

Cambria has looked previously to desalination to resolve some of these supply issues. In 1994, the CCSD certified an EIR and obtained permits for a proposed desalination facility about two miles north of Cambria that included subsurface structures at San Simeon State Beach.[2] During the CCSD's consideration of that proposed project, the California Department of Parks and

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[1] A "paleochannel" is a buried former channel of a coastal stream. They often contain permeable sand and gravel deposits that are suitable for siting subsurface intake wells to pull in seawater from below the seafloor without harming marine life in nearby open ocean waters.

[2] As a project alternative, this EIR also evaluated placing a subsurface intake at the mouth of Santa Rosa Creek, but concluded the site was infeasible due to significant concerns and impacts related to drainage, land use compatibility, aesthetics, transportation, and noise.

Recreation (State Parks) identified concerns about the proposal and noted that the San Simeon and Santa Rosa Creek estuaries, both of which are within San Simeon State Park, had been designated State Natural Preserves in 1990.[3] The State Parks letter stated that it would not support the CCSD's request to bore test wells on San Simeon State Park property. The CCSD later decided against moving forward with that project.

In 2006, the CCSD re-considered using desalination as a water supply option and again proposed conducting geophysical and geotechnical surveys at San Simeon State Beach in support of proposed subsurface structures at that location. The Coastal Commission denied the CDP for those proposed surveys due to their nonconformity to Coastal Act provisions related to public access, environmentally sensitive habitat areas, marine biological resources, spill prevention and response, placement of fill, and visual resources.

At about the same time, the CCSD signed a Project Agreement with the Corps to have the Corps design and build a desalination facility for use by the CCSD. In support of that Project Agreement, the CCSD in 2008 conducted seismic and ground-penetrating radar studies at Santa Rosa Beach.[4] Those studies provided preliminary evidence of three submerged "paleochannels" beneath the beach.[5] This 2008 study included a recommendation that these initial determinations be confirmed through additional sampling and testing.

In March 2010, the Corps submitted a CD for conducting proposed geophysical and geotechnical surveys and tests at Santa Rosa Beach to determine the site's feasibility for a desalination intake and/or outfall structures. This 2010 request included cone penetrometer testing (CPT) and rotosonic drilling similar to those proposed in the current request, though it also included conducting a pump test and installing monitoring wells, which were deemed necessary at the time to adequately characterize the site. All activities were to occur above the MHTL.

In May 2010, the Commission conditionally concurred with that CD. Agreed-upon conditions included restricting activities on the beach to September and October, providing results of water quality testing obtained during the pump test, and monitoring surface water levels in the nearby estuary during the pump test. After the Commission's concurrence, however, State Parks informed the Corps that areas of Santa Rosa Beach above the MHTL were within the protected Santa Rosa Creek Natural Preserve, where motor vehicles are not allowed and where some of the project activities were prohibited. As a result, the Corps scaled back its activities to include just three boreholes at the south end of the beach within Shamel County Park. The Corps did not conduct the CPT and rotosonic tests further north on the beach and did not conduct the pump test or install monitoring wells.

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[3] See April 28, 1994 comment letter from State Parks to CCSD.

[4] That work was conducted without necessary Coastal Development Permits or landowner approvals.

[5] Advanced Geoscience, Inc. *Summary Report: Subsurface Geophysical Investigation at Santa Rosa Creek Beach for Proposed Desalination System, Cambria, California*. July 2008.

C. PROPOSED PROJECT ACTIVITIES

The current proposed project includes some of the same activities proposed in the earlier CD, though they would occur largely below the MHTL. The Corps would conduct three types of geophysical and geotechnical investigations on the beach at Santa Rosa State Beach, Shamel County Park, Cambria Marine Park, and Monterey Bay National Marine Sanctuary.[6] The proposal includes staging and transporting equipment at two locations, and use of a public road to transport equipment between the two locations. Project activities would be conducted in conformity with the Corps' 2008 Safety and Health Requirements Manual #EM 355-1-1 (Safety Manual). Several of the conditions in these Findings are based on requirements contained in this manual. The main project activities and components are described below.

Staging and mobilizing equipment: The Corps would use the nearby CCSD water treatment facility for storing and staging equipment during nights, weekends, and holidays, and would use up to 10 of the 44 parking spaces at the Shamel County Park parking lot for staging during daytime project activities.[7] Equipment will be moved the approximately quarter-mile from the CCSD facility to the County Park along Heath Lane and Windsor Drive. To gain access to the beach, the Corps will move vehicles and equipment from the Shamel Park parking area along an emergency vehicle access road to a vehicle ramp that provides access to the beach (as shown on Exhibit 2). Once on the beach, the Corps proposes to operate both above and below the MHTL on the Shamel Park Beach and entirely below the MHTL on Santa Rosa State Beach. It would establish a 100-foot safety zone (50 feet on each side) around all project equipment.

> ***Note:*** The Corps' CD does not include any development that may be needed to repair or modify the access ramp or seawall at Shamel Park or the staging areas at Shamel Park and the CCSD facility. The Corps may need to submit a new CD request if repairs or modifications are needed.

Surveying the Mean High Tide Line: The Corps proposes to start each day of project activities on the beach by surveying the location of the MHTL and marking its location by placing stakes on the beach that will be removed at the end of each day's activities. As described in Section 1.D of these Findings, the MHTL serves as a jurisdictional boundary for the above-referenced agencies, and several of the Corp's proposed activities may be allowed or prohibited based on whether they are proposed to occur above or below the MHTL.

> ***Note:*** The Corps has not yet completed an MHTL survey and has not determined whether its proposed survey method has been accepted by the four agencies with land ownership or management jurisdiction over portions of the beach. The MHTL is based on a long-term average elevation of high tides at a given shoreline location, and it is not yet clear

[6] ***Note:*** The Corps has not yet obtained all necessary permits or landowner approvals to work in these areas. **Condition 1** requires the Corps to submit documentation that it has obtained the necessary approvals from these entities and from the State Lands Commission.

[7] ***Note:*** The Corps' and CCSD's Final Environmental Assessment/Mitigated Negative Declaration (EA/MND) states that the project will take up from three to five parking spaces at Shamel Park while the CD states it will take up to 10 of those spaces. Commission staff used the higher figure for purposes of evaluating the proposed project.

that the Corps' proposed survey method is appropriate for determining the MHTL or whether the proposed method is suitable for the highly dynamic beach at the project site. **Condition 2** requires that the Corps, prior to starting project activities on the beach, provide documentation to the Executive Director showing that it has completed an MHTL survey that meets the requirements of those agencies with jurisdiction.[8]

Conducting geophysical surveys: The Corps would conduct geophysical surveys above the MHTL on the beach within Shamel Park and below the MHTL on areas of the beach within Santa Rosa State Beach. These surveys would use a string of 30 to 40 hand-placed hydrophones about five to 10 feet apart, for a total length of from 200 to 400 feet. Once the hydrophones are placed, project personnel will strike a steel plate placed on the beach and the hydrophones will pick up the vibrations from that strike to identify subterranean features. The Corps expects these surveys to take from five to 10 days and would conduct them either during the day or at night.

Conducting geotechnical sampling and testing: The Corps would conduct two types of geotechnical investigations – cone penetrometer tests and rotosonic sampling – to characterize some of the subsurface features beneath the beach. During geotechnical sampling, the two rigs described below would be accompanied by a small bobcat and pickup truck to carry equipment and personnel.

- **Cone penetrometer tests (CPT):** The Corps would use a CPT rig, a vehicle approximately 23 feet long by 11 feet tall by nine feet wide weighing about 20 tons (see Exhibit 3 – Project Equipment). The CPT test consists of pushing an instrumented cone into the ground to identify underlying soil and sediment layers, and can also provide a one-inch by 18-inch grab sample of the underlying material. The rig produces about 89 decibels at a 70-foot distance.

- **Rotosonic sampling:** The Corps would use a rotosonic drill rig to bore from four to six test holes along the beach. The test holes are expected to range from 50 to 150 feet deep. The rig produces continuous core samples of four to six inches in diameter that would be analyzed to identify soil and sediment types beneath the beach. Core samples would be collected and bagged on the beach in three- to five-foot long segments, then taken offsite to be logged, photographed, and evaluated.

  The rotosonic drill rig is about 16 feet long and seven feet wide, weighs about nine tons (see Exhibit 3), and produces noise levels of up to about 85 decibels (dbA) at a 100-foot distance. It can move at up to four to six miles per hour. The rig would drill into the beach using a steel casing to maintain the test hole. Depending on the depth to bedrock, the steel casing may be left in place for up to three days until a test hole is complete.

[8] ***Note:*** Because this is a CD review, the Commission's standard of review does not include LCP provisions; however, the Commission may may use those provisions as background. Section 15.A.(3) of the LCP's *Land Use and Circulation Elements of the San Luis Obispo County General Plan – North Coast* requires all proposed development at this location to include as part of its CDP application the surveyed location of the MHTL by a licensed surveyor along with written consent of all underlying landowners, including the County, State Parks, and State Lands Commission.

The Corps proposes to conduct up to seven CPT tests, at a rate of one or two per day, over a period of two to three days. It expects the four to six rotosonic test holes to take a total of one to four days each, for a total of four to twenty-four work days. The CD proposes that this total of up to 27 work days take place between November 2011 and February 2012 and between September and November of 2012.

The Corps proposes to conduct these geotechnical investigations on the beach only during low and minus tides. The CD estimates that the long-term average beach slope of 6% (six feet vertical for every one hundred feet horizontal) would provide 17 feet of exposed beach below the MHTL for every foot of falling tide. The Corps proposes to start work when the falling tide is one foot below MHTL (i.e., providing the estimated 17 feet of exposed beach) and would stop work and remove equipment when the incoming tide is 2.4 feet below MHTL (i.e., providing about 41 feet of exposed beach). However, as described below in Section 5.A these measures do not provide adequate protection of coastal resources and do not ensure against spill or upset. These Findings therefore include several additional conditions meant to provide necessary coastal resource protection.

Groundwater sampling and testing: The Corps proposes to collect water quality samples during the CPT sampling and will test for the following:

- pH, temperature, and conductivity
- mercury (using EPA Method 245.1)
- methylmercury (using EPA Method 1630)
- dissolved metals (using EPA Method 200.7). These will include tests for twenty-three metals at four locations (two samples from paleochannel C and one each from paleochannel A and B), and tests for iron and manganese at the remaining locations.

D. SITE CHARACTERISTICS

The project site includes beach areas immediately adjacent to the Pacific Ocean within Shamel County Park and along Santa Rosa State Beach. Shamel Park is used for more active recreation, and includes a playground, playing fields, and a picnic area. Santa Rosa State Beach is known primarily for passive recreational opportunities and relatively high quality wildlife habitat. The project site also includes areas within Cambria – the CCSD wastewater treatment facility, which is to be used as a staging area, and Windsor Drive, which is provide vehicle and equipment access between the staging area and the study site at the beach.

Species and Habitat Types Present: Sampling and testing would occur between the estuarine waters of the Santa Rosa Creek Natural Preserve, which is part of the State Park, and the nearshore waters of the Cambria State Marine Park and Monterey Bay National Marine Sanctuary. Both areas provide rich habitat for numerous species.

- **Marine Birds:** Bird life is plentiful at and near the project site both in the estuary and in offshore waters. Species observed during a November 2009 site visit include various gulls, great egrets (*Casmerodius albus*), snowy egrets (*Egretta thula*), California brown pelicans

(*Pelecanus occidentalis*), killdeer (*Charadrius vociferous*) and peregrine falcon (*Falco peregrinus*). Shorebirds observed include whimbrels (*Numenius pheopus*), long-billed curlew (*N. americanus*), and marbled godwit (*Limosa fedoa*). The site may also be used as foraging habitat by the Western snowy plover (*Charadrius alexandrinus nivosus*), as there is nesting habitat about a mile north of the project site at San Simeon State Beach. However, the site does not support plover nesting, due in part to the relatively heavy public use.

- **Marine Mammals:** Several marine mammal species use areas at or near the project site. Southern sea otters (*Enhydra lutris nereis*), which are federally-listed as a threatened species, are present in the adjacent offshore waters. Harbor seals (*Phoca vitulina*) are also found in the area, and their pups may be present on the beach during pupping season from March through May of each year.

- **Fish:** The offshore waters are within designated Essential Fish Habitat under three Fishery Management Plans – Coastal Pelagics, Pacific Salmon, and Pacific Coast Groundfish. The nearby ocean waters include areas of kelp and rocky reefs, which provide habitat for a wide variety of species. The California grunion (*Leuresthes tenuis*) sometime spawns in the high intertidal portions of the site between March and August.

- **Estuarine Species:** The lagoon at the mouth of Santa Rosa Creek provides habitat for a wide variety of species, including at least three federally-listed species: the endangered tidewater goby (*Eucyclogobius newberryi*), the threatened California Red-legged frog (*Rana aurora draytonii*), and the threatened Central Coast steelhead (*Oncorhynchus mykiss*). The creek is designated as recovery habitat for the goby. It is also designated as critical habitat for the steelhead and has been identified as a high-priority stream for steelhead recovery. Steelhead runs generally occur when the creek mouth is open to the ocean between December and February-March each year.

- **Vegetation:** Areas of the beach below MHTL are essentially devoid of vegetation; however, the upper beach can be populated by species commonly found in a disturbed Central Foredune plant community, such as native beach-bur (*Ambrosia chamissonis*) and beach saltbush (*Atriplex leucophylla*), as well as non-native sea rocket (*Cakile maritima*), sea-fig (*Carpobrotus chilensis*), shortpod mustard (*Hirschfeldia incana*), dock (*Rumex conglomeratus*), and New Zealand spinach (*Tetragonia tetragonioides*). The CD notes that wave action during winter storms in January 2010 removed this vegetation from most of the upper beach. Upland areas of the project site in Shamel Park include vegetation along the access road consisting of landscape ornamentals that may require minor trimming to provide vehicle and equipment access.

The table below shows the relationship between the Corps' proposed work periods and the most critical times of year for the known or potential sensitive species on site. Shaded boxes illustrate periods of potential conflict between project activities and sensitive species.

	J	F	M	A	M	J	J	A	S	O	N	D
Corps Proposed Work Period	**X**	**X**							**X**	**X**	**X**	**X**
Steelhead migration	X	X	X	X	X	X					X	X
Tidewater goby (year-round presence in estuary)	X	X	X	X	X	X	X	X	X	X	X	X
Harbor seal pups haulout			X	X	X							
Foraging by Western snowy plover during breeding and nesting season			X	X	X	X	X	X				
California grunion spawning			X	X	X	X	X	X				

Site Surface and Subsurface Characteristics: The beaches along the Northern San Luis Obispo coast exhibit strong seasonal characteristics, with several feet of elevation difference between summer and winter beach profiles and significant changes in beach width as large amounts of sand move on or off the beach. An additional key characteristic at the proposed site of sampling and testing is the opening and closing of the Santa Rosa Creek mouth and estuary due either to seasonal sand movement or to more immediate events such as heavy rains or high surf. The creek mouth and estuary are generally closed to the ocean during those parts of the year with low rainfall and calm surf; however, they can open to the sea during any time of year due to storms, changes in wave direction or energy, or other factors.

Beneath the beach deposits of the Santa Rosa Creek beach and estuary are a series of heterogeneous layers and lenses of sediment materials deposited over the past several thousand years due to movement of the stream channel and nearshore wave action. The heterogeneous nature of the subsurface strata was illustrated by the preliminary geotechnical work already completed at the beach in 2008 and 2010. For example, those studies identified three separate paleochannels at different depths and with different characteristics and found discontinuous sands and clays in boreholes that were relatively close together. This heterogeneity makes it difficult to adequately characterize the site's suitability for the proposed desalination structures and is one of the key reasons Commission staff has determined the currently proposed project is not adequate to meet the project purpose (see additional discussion in Section 1.E below).

Potential Site Contamination – Mercury and Methylmercury: The waters and sediments of Santa Rosa Creek contain concentrations of mercury and methylmercury. Most of the mercury originated from natural surface and subsurface mercury deposits in the upper watershed that were mined from the mid-1800s to the mid-1900s. The CD cites sediment samples from the project site of up to 5 parts per million of mercury, and surface sediment samples taken from the mouth of Santa Rosa Creek, upstream within Shamel Park, and about a mile upstream of the project site show a methylmercury concentration of 3 parts per billion and mercury concentrations ranging from 0.12 to 0.559 parts per million. All these levels are well above the

state's threshold for discharges to estuaries or ocean waters.[9] The proposed drilling activities could mobilize any of these contaminants that may be in the subsurface water or sediments below the beach.

Site Jurisdictional Characteristics and Constraints: The Corps has proposed that project activities occur on uplands within Shamel County Park, and on state tidelands within Shamel Park, Santa Rosa State Beach, Cambria State Marine Park, and the Monterey Bay National Marine Sanctuary. Work is also proposed immediately adjacent to, or possibly within, the Santa Rosa Natural Preserve, which is managed by the California Department of Parks and Recreation (State Parks). These areas have different purposes and allow or prohibit different activities. For example, motor vehicles are prohibited within the Natural Preserve and uses with the State Marine Park may be restricted if they would compromise habitat or species protection.[10]

These areas share a jurisdictional boundary demarcated on the beach by the Mean High Tide Line (MHTL).[11] The MHTL is an "ambulatory" elevation-based shoreline boundary that changes with long-term changes in the tidal cycle. Its particular location on the shoreline varies based on daily or seasonal changes in beach elevation, erosion, or accretion. For purposes of this project, the Corps must conduct an MHTL survey to determine whether the activities it has proposed at various locations on the beach are consistent with the requirements of the different jurisdictions.

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[9] The NPDES Low Threat Water Quality Criterion for mercury is 0.012 parts per billion for discharges to estuaries and 0.04 parts per billion for discharges to ocean waters, while the California Toxic Rule Criteria for Consumption of Water and Organisms is 0.05 parts per billion. The U.S. EPA limit for mercury in drinking water is 0.002 mg/L (or 2 parts per billion). There is no allowable limit for methymercury.

[10] P.R.C Section 5019.71 defines "natural preserves" as: "*distinct areas of outstanding natural or scientific significance established within the boundaries of other State Park System units.*

The purpose of Natural Preserves shall be to preserve such features as rare or endangered plant and animal species and their supporting ecosystems, representative examples of plant or animal communities existing in California prior to the impact of Euro-American modifications, geological features illustrative of geological processes, significant fossil occurrences or geological features of cultural or economic interest, or topographic features illustrative of representative or unique biogeographical patterns.

Natural Preserves shall be managed to allow natural dynamics of ecological interaction to continue without intereference, where possible. Habitat manipulation shall be permitted only in those areas found by scientific analysis to require manipulation to preserve the species or associations that constitute the basis for the establishment of the Natural Preserve. Motor vehicle use is prohibited in Natural Preserves."

[11] Title 14, Chapter 5.5., Section 13577(c) of the Commission's regulations defines the mean high tide line is defined as "*the statistical mean of all the high tides over the cyclical period of 18.6 years, and shall be determined by reference to the records and elevations of tidal benchmarks established by the National Ocean Survey. In areas where observations covering a period of 18.6 years are not available, a determination may be made based on observations covering a shorter period, provided they are corrected to a mean value by comparison with observations made at some suitably located control tide station.*"

E. ADEQUACY OF PROPOSED ACTIVITIES FOR DETERMINING SITE FEASIBILITY

As noted above, the project purpose is meant to provide information about whether the site is a feasible location for proposed intake and/or discharge structures. For reasons detailed below, the limited amount of data expected to be derived from project activities will not be sufficient to determine whether the site is suitable for this intended purpose, even when combined with information already known about the site. The Commission expects that it will need additional site information when it reviews the expected proposal for these structures; however, site characteristics do not allow for the additional data to be collected. These concerns are further exacerbated by the Corps' project schedule, which proposes no further data collection once it has completed those activities proposed in this CD. The Corps anticipates publication of a project-level EIS/EIR in 2012 with construction expected starting in 2013. Additionally, the expected future use of the site for these structures does not appear to be consistent with several relevant Local Coastal Program provisions. Nonetheless, the Corps has submitted a CD for these currently proposed data collection activities, and the Commission must, within 75 days, either concur, conditionally concur, or object to the CD, or its concurrence is presumed. The conditional concurrence herein includes only those conditions needed to ensure these currently proposed data collection activities are consistent with the CCMP.

EXISTING SITE DATA AND DATA EXPECTED FROM THE PROPOSED ACTIVITIES ARE NOT SUFFICIENT TO DETERMINE SITE FEASIBILITY

Existing data about the site and data expected from the proposed activities are not adequate to determine at least two key questions about the site's suitability for withdrawing or discharging desalination facility water – first, whether proposed water withdrawals from beneath the beach will affect surface water in the adjacent estuary; and, second, whether those withdrawals and discharges would mobilize or introduce mercury, methylmercury, or other contaminants into the nearshore environment.

- **Studies Provide Inadequate Information to Determine the Effects of Water Withdrawals on the Estuary:** The estuary's listed sensitive species and protected habitat would be harmed if water withdrawals from beneath the beach result in lower surface or subsurface water levels in the estuary or reduce the amount of time water is present in the estuary. The planned desalination facility would withdraw about two million gallons per day from beneath the beach, which exceeds the volume of water within the estuary during much of the year. A hydraulic connection between the estuary and the proposed desalination intake could substantially reduce the amount of surface (and subsurface) water available for the species and habitat types present in the estuary.

  The information needed to determine the presence and extent of a potential hydraulic connection is generally obtained by conducting pump tests and installing monitoring wells to determine how pumping affects nearby surface and groundwater levels. The Corps' previous CD (CD-002-10) included a pump test and monitoring wells, which both the Commission and the Corps considered necessary for adequately characterizing potential adverse effects on the estuary. However, the Corps is no longer proposing to conduct these activities, due

primarily to a determination made by State Parks after the Commission's concurrence with that previous CD that the estuary and portions of the beach inland of the MHTL are within the Santa Rosa State Natural Preserve (see Exhibit 4 – Jurisdictional Boundaries). Preserve regulations prohibit motor vehicles and allow only those types of activities that support the Preserve's protected features.[12] Conducting a pump test and installing monitoring wells would require the use of motor vehicles within the Preserve and the Corps is apparently unable to obtain permission from State Parks to implement those activities. Those activities would also be difficult to implement on areas of the beach below the MHTL – they would be logistically difficult in an area subject to daily tides and would be jurisdictionally difficult within the Cambria State Marine Park and the Monterey Bay National Marine Sanctuary, which have similar use limitations. The Corps has not yet obtained permission from the involved agencies, and, as noted above, has not yet conducted the MHTL survey needed to delineate the jurisdictional boundaries.

The current CD states that the Corps will address concerns associated with potential drawdown of the estuary in a subsequent project-level water supply EIS/EIR. Instead of conducting the pump test and installing monitoring wells as previously proposed, the CD states that the Corps expects to determine potential effects through "a combination of laboratory testing of the sampled material, cone penetrometer (CPT) test results, and geohydraulic computer modeling." For at least two reasons, however, this approach will not adequately identify potential effects on the estuary:

- ***Site characteristics do not lend themselves to the Corps' proposed modeling approach:*** The Corps proposes to conduct groundwater modeling for an area covering about 250 acres of nearshore and estuarine waters (see Exhibit 5 – Area of Groundwater Model). Data available to populate the model, however, will be from samples taken from beneath just a relatively narrow strip of beach. Data from these samples are not adequate to allow the model to adequately characterize the site because the area beneath the beach and estuary is a heterogeneous mix of sediments, with layers and lenses of sands, clays, silts, and other materials that do not necessarily match those that may be identified from samples taken along the beach. Typically, deposits beneath coastal estuaries are laid down over time as different materials are transported from within the watershed or from the sea. These deposits then become mixed or discontinuous due to events such as storms, changes in the river channel, breaching of the sandbar, etc. Data the Corps has

[12] P.R.C Section 5019.71 defines "natural preserves" as: "*distinct areas of outstanding natural or scientific significance established within the boundaries of other State Park System units.*

The purpose of Natural Preserves shall be to preserve such features as rare or endangered plant and animal species and their supporting ecosystems, representative examples of plant or animal communities existing in California prior to the impact of Euro-American modifications, geological features illustrative of geological processes, significant fossil occurrences or geological features of cultural or economic interest, or topographic features illustrative of representative or unique biogeographical patterns.

Natural Preserves shall be managed to allow natural dynamics of ecological interaction to continue without intereference, where possible. Habitat manipulation shall be permitted only in those areas found by scientific analysis to require manipulation to preserve the species or associations that constitute the basis for the establishment of the Natural Preserve. Motor vehicle use is prohibited in Natural Preserves."

already collected from Santa Rosa Beach exhibit this type of heterogeneity and discontinuity, as do data from previous studies.[13] Due to this heterogeneity, the Corps' current proposal to collect data from just a narrow strip of beach will not adequately characterize the subsurface conditions beneath the upper beach or within the much larger estuary. As a result, the data will not be adequate to identify whether there is a hydraulic connection between the estuary and the future proposed location for water withdrawal.

- ***The proposed modeling is not adequate to characterize the effects of the proposed drawdown on the estuary:*** To make up for the above-referenced site and data limitations, the Corps proposes to conduct its groundwater modeling using a number of assumptions. For example, the model will characterize the site as having three distinct layers of alluvium, although that assumption does not reflect the site's heterogeneity and does not mesh with data already collected from the beach showing different types and depths of alluvium from boreholes in relative proximity to each other. Other assumptions not necessarily reflecting site conditions include providing the model with inputs that assume the known location of groundwater flows and that assume the aquifer recharges occurs primarily from Santa Rosa Creek rather than the ocean. These model parameters are normally derived from data obtained through sampling and monitoring efforts such as pump tests and monitoring wells.

  The Corps recognizes that it will need to calibrate its model, though the data it proposes to use for calibration are likewise insufficient. The Corps has proposed to calibrate using two sources of data – groundwater levels identified in the 2008 boreholes and monitoring data from a well near Santa Rosa Creek. However, these two sources provide limited value for calibration. For example, the 2008 data are from static sampling events and do not represent the variation in groundwater levels at the site, and the monitoring well is outside the model boundary shown in Exhibit 5 at a location more than a quarter- mile inland on the opposite side of the estuary at a site subject to other groundwater influences.

- **Studies Provide Inadequate Information To Determine Whether Water Withdrawals or Discharges Will Mobilize Mercury or Methylmercury Into the Environment:** The presence of mercury and methylmercury in the sediments and water of the Santa Rosa Creek watershed complicates the analyses needed to determine whether the site is a feasible location for a drinking water intake or a facility discharge. Both mercury and methylmercury are highly toxic and are classified as persistent bioaccumulative toxins (PBTs). Humans and wildlife can be exposed to these contaminants through a number of pathways – e.g., ingestion, inhalation, etc. – and the availability of the contaminants varies based on factors such as bacterial action, changes in pH, or others. As noted in Section 1.D above, discharge limits for mercury range from two parts per billion to much lower levels, and there are no allowable discharge concentrations for methylmercury.

[13] For example, boreholes the Corps drilled in 2010 at the south end of the beach showed a range of bedrock depths from 23 to 65 feet and showed anywhere from no clay layer to a three-foot clay layer in the upper 15 feet. Boreholes drilled in 2008 at nearby locations showed no clay layers in the upper 15 feet. Transmissivity, which is the rate groundwater moves horizontally through a substrate, was measured in a 1998 USGS study of the area at a range of less than 1,000 square feet per day to more than 44,000 square feet per day.

The Corps' 2010 CD had proposed sediment and groundwater sampling and testing to determine whether more than 100 contaminants were present beneath the site. It also included testing water samples collected during the pump test to help determine whether contaminants could be mobilized during expected future water withdrawals. However, because the pump test was not conducted and because the three boreholes it drilled did not produce water that could be tested, the Corps did not conduct water quality sampling or testing. The Corps was able to test sediments from those boreholes for mercury, though those tests were not sensitive enough to detect concentrations considered harmful to human health or the environment.[14] There was no testing for methylmercury.

As part of determining the site's feasibility as a water supply source, the Corps will need to conduct additional site characterization to determine mercury and methylmercury concentrations beneath the site and will need to identify exposure and risk factors for possible releases to the environment and to drinking water. While the Commission's conditional concurrence for this current CD includes some of the needed contaminant sampling and testing, it appears that the Corps will not be able to conduct the pump test necessary to identify possible mobilization of contaminants that may be present.

POTENTIAL NONCONFORMITY WITH PROVISIONS OF LOCAL COASTAL PROGRAM (LCP)

In addition to the issues described above, the anticipated future proposal to develop this site raises concerns about potential nonconformity to several LCP provisions. Desalination structures at this site would be part of a water supply development serving the CCSD, and the LCP requires the CCSD to obtain a CDP for any such development. For these currently proposed data collection activities, the CCSD in April 2010 approved a resolution assigning sole responsibility to the Corps, and with the Corps' submittal of this CD request, the Commission's standard of review is limited to whether these activities are consistent, to the maximum extent practicable, with the CCMP. However, the expected future proposal to place water supply structures at this site would be subject to applicable LCP provisions, including several that either limit, or require additional information be collected about, proposed water withdrawals, development on the beach, and other project components.[15]

[14] Test results from the project's May 2011 lab report showed no detection of mercury in sediment samples from the three boreholes. For several reasons, however, these results are not conclusive – the tests were on sediments, but not water, and the methods used could not detect mercury at levels at or below the discharge limits cited above. For example, the tests were conducted using an x-ray fluorescence screening technique that had a detection limit of between 7-20 mg/kg (parts per million), and a testing method with a detection limit of 0.1 mg/kg, which are up to thousands of times higher than allowable discharge limits.

[15] For example, Sections 7.B.3 and 3.D.1 of the LCP's *Land Use and Circulation Elements of the San Luis Obispo County General Plan – North Coast*, limits water extractions to those that maintain the creek's ecological viability. Section 7.15.A.1 of that Plan requires all development on or adjacent to a beach to include an analysis of beach erosion, wave run-up, inundation, and flood hazards, as well as an analysis of whether the development would need a shoreline protective device. The Plan also designates the study area as a Flood Hazard area and as Open Space within the Cambria Urban Reserve boundary.

SUMMARY OF CONCERNS ABOUT INFORMATION ADEQUACY

Based on the above discussion and examples, it appears that the currently proposed activities will not provide sufficient information to determine whether the site is a feasible location for desalination intake and/or outfall structures. Even when combined with existing information or applied to the Corps' proposed modeling effort, the expected data will not adequately describe whether the Santa Rosa Creek estuary will be affected by water withdrawals or whether known or potential contaminants beneath Santa Rosa beach will be mobilized by construction or operation of those structures.

At the very least, an adequate site characterization will need additional data collection, including implementation of a pump test, installation of monitoring wells, and additional water and sediment quality sampling and testing. As noted above, the schedule for the expected proposed desalination facility does not include a proposal for further data collection, though it also appears that site constraints prohibit or severely limit the ability to collect that necessary data.

Nonetheless, the Corps has expressed a strong interest in carrying out its currently proposed data collection activities, and the Findings and conditions below are meant to ensure those immediate activities are implemented in a manner consistent, to the extent practicable, with enforceable provisions of the CCMP.

2. FEDERAL AGENCY'S CONSISTENCY DETERMINATION

The U.S. Army Corps of Engineers has determined the project consistent to the maximum extent practicable with the California Coastal Management Program.

3. STAFF RECOMMENDATION

The staff recommends that the Commission adopt the following motion:

A. MOTION

*I move that the Commission **conditionally concur** with the Corps of Engineer's consistency determination CD-047-11 that, as conditioned, the project described therein is fully consistent, and thus is consistent to the maximum extent practicable with the enforceable policies of the California Coastal Management Program.*

Staff Recommendation: Staff recommends a **YES** vote on the motion. Passage of this motion will result in an agreement with the determination and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

B. RESOLUTION

*The Commission hereby **conditionally concurs** with the consistency determination made by the Corps of Engineers for the proposed project on the grounds that, if modified as described in the Commission's conditional concurrence, the project would be consistent with the enforceable policies of the California Coastal Management Program, provided the Corps agrees to modify the project consistent with the conditions specified below, as provided for in 15 CFR § 930.4.*

C. CONDITIONS

1) **Site survey:** ***Prior to starting onsite project activities***, the Corps shall provide to the Executive Director results of a survey to identify the elevation of the Mean High Tide Line (MHTL). The submittal shall include documentation from the land-owning or land-managing agencies, including the State Lands Commission, the Department of Parks and Recreation, San Luis Obispo County, and the Monterey Bay National Marine Sanctuary regarding the adequacy of the survey for identifying their jurisdictional boundaries. As proposed by the Corps, activities on Santa Rosa State Beach shall occur only below the MHTL.

2) **Environmental Training and Monitoring:** ***Prior to starting on-site project activities***, the Corps shall submit, for Executive Director review and approval, documentation of the environmental training to be provided to all project personnel. The documentation shall describe the project's environmental requirements and constraints, shall identify sensitive species known to occur or potentially occurring at the site, and shall describe all measures that will be implemented to avoid and minimize impacts to those species. Training shall be provided by a qualified biologist. The Corps shall also keep records showing which personnel have received the training and shall make those records available upon the Executive Director's request.

Before starting daily activities at the project site, the Corps shall conduct mandatory meetings for all project personnel to cover any additional site constraints or characteristics that could affect the day's activities and result in adverse environmental effects.

3) **Timing of Project Activities:** Mechanized project activities on the beach, including the use of vehicles, rotosonic drilling rigs, cone penetrometer rigs, and motorized hand-held equipment shall occur consistent with the following:

a) Only between December 2011 and February 2012 and between September and November 2012;

b) Only during non-holiday weekdays;

c) Only during daylight hours – i.e., between one-half hour after sunrise until one-half hour before sunset, with the exception of the proposed use of hydrophones, which may occur on the beach after sunset; and,

d) Only when there are no marine mammals on the Santa Rosa or Shamel Park beaches.

4) **Beach Conditions and Project Activities:** Mechanized project activities on the beach, including use of vehicles, rotosonic drilling rigs, cone penetrometer rigs, and motorized hand-held equipment shall be consistent with all of the following:

a) **Beach slope:** ***Prior to starting each day's activities***, the Corps shall conduct a survey to determine the slope of beach areas to be used by project equipment and vehicles, including areas of the beach to be used for access to and from survey and test sites. The Corps shall not place or operate equipment or vehicles on the beach when any of those beach areas are at greater than 12% slope. During activities on the beach, the Corps shall continually monitor the beach slope, and if the beach slope increases to greater than 12% slope (e.g., due to wave action, breakthrough of the creek, etc.), the Corps shall remove equipment and vehicles immediately or as soon as it is safe to do so. The beach slope shall not be altered by grading or digging unless it is necessary to safely remove equipment or vehicles from the beach.

b) **Beach width:** Project equipment shall be on the beach only when there is a continuous stretch of dry sand at least 150 feet wide to provide a 100-foot safety zone around equipment and at least 50 feet for lateral public access. The beach width provided for lateral public access may be above the MHTL.

In addition, the Corps shall place or operate equipment and vehicles on the beach only when all areas of the beach to be used for project activities, including access to and from survey and test sites, provide a width of at least 50 feet between the surveyed MHTL and the line of high surf (i.e., wetted sand caused by immediate wave runup). During activities on the beach, the Corps shall continually monitor this beach width, and if the width decreases to less than 50 feet, the Corps shall remove equipment and vehicles immediately or as soon as it is safe to do so.

c) **Weather and surf conditions:** The Corps shall monitor local weather and surf forecasts and shall not schedule project activities during a National Weather Service "high surf advisory" or during periods of predicted rainfall.

d) **Beach locations for cone penetrometer (CPT) and rotosonic sampling:** After completion of the MHTL survey required by Condition 2 above, the Corps shall identify fixed GPS coordinates for CPT and rotosonic sampling that are at least 50 feet outside portions of the Santa Rosa Creek channel that cross the beach as identified in the MHTL survey.

e) Beach vegetation: Project activities shall not occur on vegetated areas of the beach.

f) Beach protection: The Corps shall place fiberglass mats under the cone penetrometer rig and rotosonic drill rig during movement of the rigs along the beach and during survey and testing activities.

5) Water and Sediment Quality Sampling, Testing, and Reporting: ***Prior to starting project activities***, the Corps shall submit for Executive Director review and concurrence a proposed Water Quality and Sediment Sampling and Analysis Plan that describes collection, sampling, and testing protocols that will be implemented to identify potential contaminants. In addition to the proposed sampling and testing described in the CD, the Plan shall include sediment sampling and testing for mercury and methylmercury and shall identify protocols that will be used to detect those contaminants in water and sediment samples at concentrations at or below allowable discharge limits (e.g., 0.012 parts per billion for mercury, pursuant to the NPDES Low Threat Water Quality Criterion). The Plan shall also describe chain of custody protocol the Corps will implement to ensure sampling and testing is consistent with the U.S. EPA protocols referenced in the CD. Upon receipt of the test results, the Corps shall provide a copy to the Executive Director.

6) Spill Prevention and Response Plan: ***Prior to starting on-site project activities***, and in addition to the Spill Prevention and Response Plan provided with the CD, the Corps shall submit for Executive Director review and concurrence modifications to that Plan that include the following:

a) Hazardous material inventory: Consistent with the requirements of Section 01.A of the Corps' September 15, 2008 Safety and Health Requirements Manual No. 385-1-1 (herein referred to as the Safety Manual), the Plan shall include an inventory of the hazardous materials to be used during the project, including their proposed use, the approximate quantities of each, and a site map showing the locations where they will be stored and used. The Plan shall also identify all specific handling, storage, and safety management methods to be used for these materials (pursuant to the requirements of the Safety Manual's Sections 06.B.01 – 06.B.04 – Hazardous or Toxic Agents).

b) Spill avoidance and minimization: The Plan shall identify measures needed to avoid and minimize potential hazards identified in all Activity Hazards Analyses (AHAs) produced for the project (pursuant to the Safety Manual's Section 01.A). The Plan shall include copies of all project AHAs, which shall include analyses for potential mercury and methylmercury hazards that may be present at the project site. The Plan shall also include the hazard evaluations required pursuant to the Safety Manual's Sections 06.A.02 (Hazard Evaluation) and 18.H (Drilling Equipment). The Plan shall also describe equipment retrieval methods that will be implemented if project equipment becomes stuck or stranded on the beach.

c) Inspections: The Plan shall identify the pre-project and daily inspection measures that will be used to help ensure safe operation of, and prevent spills from, the machinery and mechanized equipment to be used during the project. The measures shall be consistent with those required pursuant to the Safety Manual's Sections 18.G (Machinery and Mechanized Equipment) and 18.H (Drilling Equipment). Upon request, the Corps shall provide all records of inspection, maintenance, or repairs to the Executive Director.

d) Contact information: The Plan shall identify and provide contact information for the Corps' selected Site Safety and Health Officer (SSHO) and shall document the SSHO's credentials (pursuant to the Safety Manual's Section 01.A.17 – Site Safety and Health Officer).

7) Lighting: ***Prior to starting on-site project activities***, the Corps shall provide a Night Operations Lighting Plan that describes lighting methods to be used for any project activities that may occur at night – i.e., the geophysical survey and the security/safety measures associated with rotosonic drill casings that may remain in place overnight. The Plan shall incorporate measures to minimize the effects of project lighting on coastal biological resources and on public access, and shall conform to the requirements of the Safety Manual's Sections 07.A and 11.E.06.

8) Public Access and Safety Fencing: ***Prior to starting on-site project activities***, the Corps shall identify the type and location of safety fencing, warning signs, and other material to be used to demarcate the exclusion zone around project activities pursuant to the Safety Manual's Section 04.A.04. All materials used shall meet the minimum requirements of that section. If the GDA determines fencing is not required, the Corps shall provide the risk assessment associated with that determination pursuant to the Safety Manual's Section 04.A.04.d. Development proposed that is in addition to that described in the CD may require submittal by the Corps of an additional CD for Commission review.

9) Project-related Noise: ***Prior to starting project activities,*** the Corps shall provide for Executive Director review and concurrence documentation of sound attenuation measures to ensure noise generated during project activities does not exceed 75 decibels at 50 feet distance from those activities. The documentation shall describe the measures to be used and the effectiveness of those measures in maintaining noise levels at or below 75 decibels at 50 feet.

10) Public Access and Required Safety Measures: ***Prior to starting on-site project activities,*** the Corps shall provide for Executive Director review and approval documentation describing all measures that will be implemented pursuant to the visitor safety requirements of the Safety Manual's Section 01.B.04 (Visitors and Authorized Entrants). The document shall include a copy of the briefing required to be provided to all project site visitors and shall describe how the Corps will provide the required visitor escort and will ensure all visitors have the Personal Protective Equipment required by this section of the Safety Manual.

Upon the request of the Executive Director, the Corps shall provide a copy of the visitor sign-in/out logs required pursuant to the Safety Manual's Section 01.B.04. Those logs shall identify whether the visitors received the safety briefing.

11) Public Access and Traffic Control: ***Prior to starting on-site project activities,*** the Corps shall submit for Executive Director review and concurrence a Traffic Control Plan that is consistent with the requirements of the Safety Manual's Section 08.C. The Plan shall fully describe all anticipated road closures or restrictions and shall include proof of any approvals needed from local authorities for such closures or restrictions. The Plan shall also describe all measures proposed to maintain public access safety, including signage, barricades, and traffic control personnel to be used during project activities. Development proposed in this Plan that is in addition to that described in the CD may require submittal by the Corps of an additional CD for Commission review.

12) Public Access and Access Routes: ***Prior to starting on-site project activities,*** the Corps shall submit for Executive Director review and concurrence an Access/Haul Road Plan that is consistent with the requirements of the Safety Manual's Section 04.B. The Plan shall include the required descriptions of relevant access elements in the Safety Manual's Sections 04.B.01-15 (road layout and widths, maximum grades, drainage features, adjacent hazards, etc.). Any changes or improvements to the accessway that may be required due to Safety Manual provisions but are not described in the current CD may require the Corps to submit an additional CD for Commission review.

13) Posting Requirements: At least 72 hours before planned project activities on the beach or within Shamel Park, the Corps shall conspicuously post a notice at the Park describing the type, location, and duration of the planned activities. The notice shall also include the Corps' contact information for members of the public that would like additional information. ***Prior to starting project activities***, the Corps shall submit for Executive Director review and concurrence the proposed notice.

Note: Provisions of the Corps' Safety Manual cited in the above conditions are provided in Exhibit 6.

As provided in 15 CFR § 930.4(b), should the Corps of Engineers not agree with the Commission's conditions of concurrence, then all parties shall treat the conditional concurrence as an objection.

4. APPLICABLE LEGAL AUTHORITIES

Section 307 of the Coastal Zone Management Act (CZMA) provides, in part:

(c)(1)(A) Each federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs.

A. CONDITIONAL CONCURRENCE

15 CFR § 930.4 states, in relevant part, that:

> *(a) Federal agencies,… agencies should cooperate with State agencies to develop conditions that, if agreed to during the State agency's consistency review period and included in a Federal agency's final decision under Subpart C… would allow the State agency to concur with the federal action. If instead a State agency issues a conditional concurrence:*
>
> *(1) The State agency shall include in its concurrence letter the conditions which must be satisfied, an explanation of why the conditions are necessary to ensure consistency with specific enforceable policies of the management program, and an identification of the specific enforceable policies. The State agency's concurrence letter shall also inform the parties that if the requirements of paragraphs (a)(1) through (3) of the section are not met, then all parties shall treat the State agency's conditional concurrence letter as an objection pursuant to the applicable Subpart…*
>
> *(2) The Federal agency (for Subpart C)… shall modify the applicable plan [or] project proposal… pursuant to the State agency's conditions. The Federal agency… shall immediately notify the State agency if the State agency's conditions are not acceptable; and …*
>
> *(b) If the requirements of paragraphs (a)(1) through (3) of this section are not met, then all parties shall treat the State agency's conditional concurrence as an objection pursuant to the applicable Subpart.*

The Findings herein include the necessary explanations of why the conditions in Section 3.C above are needed to ensure consistency with specific enforceable policies of the CCMP. To ensure consistency between these conditions and the CD's description of proposed activities, several of the conditions reference commitments made by the Corps in the CD.

B. CONSISTENT TO THE MAXIMUM EXTENT PRACTICABLE

Section 930.32 of the federal consistency regulations provides, in part, that:

> *(a)(1) The term "consistent to the maximum extent practicable" means fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency.*

The Commission recognizes that the standard for approval of Federal projects is that the activity must be "consistent to the maximum extent practicable" (Coastal Zone Management Act Section 307(c)(1)). This standard allows a federal activity that is not fully consistent with the CCMP to proceed, if compliance with the CCMP is "*prohibited [by] existing Federal law applicable to the*

Federal agency's operations" (15 C.F.R. § 930.32). The Corps of Engineers did not provide documentation to support a maximum extent practicable argument in its consistency determination. Therefore, there is no basis to conclude that existing law applicable to the Federal agency prohibits full consistency.

C. OTHER REQUIRED PERMITS AND LANDOWNER APPROVAL

The project is also subject to permits or landowner approval from the following:

- **California State Lands Commission:** General Permit to Conduct Geophysical Surveys
- **California Department of Parks and Recreation:** Right-of-Entry approval for use of Santa Rosa State Beach.
- **Monterey Bay National Marine Sanctuary:** Authorization Permit
- **County of San Luis Obispo:** approval for entry and use of Shamel County Park.

5. FINDINGS AND DECLARATIONS

The Commission finds and declares as follows:

A. MARINE RESOURCES, WATER QUALITY, AND SPILL PREVENTION

CCMP Section 30230 states:

> *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

CCMP Section 30231 states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

CCMP Section 30232 states:

> *Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.*

The project site includes the highly dynamic beach and estuary of Santa Rosa Creek, along with portions of a County Park, public road, and wastewater treatment facility, all of which are on or near sensitive coastal waters. Those waters are within the boundaries of Santa Rosa State Beach, Santa Rosa Creek Natural Preserve, Cambria State Marine Park, Monterey Bay National Marine Sanctuary, and Shamel County Park. Santa Rosa Creek also serves as the southern boundary of the California Sea Otter Game Refuge. As noted in Section 1.D above, the project site provides habitat for a number of sensitive marine and estuarine species, including the tidewater goby (federally listed as endangered), and the Central Coast steelhead, California red-legged frog, and Southern sea otter (each federally listed as threatened). Harbor seals and their pups sometimes use the beach for hauling out. A number of protected bird species are also found at the site, and the California grunion sometimes spawns on the beach between March and August. The entire site below the MHTL is within designated Essential Fish Habitat under three separate Fishery Management Plans.

Proposed project activities could adversely affect water quality and marine biological resources in several ways. The project would use heavy machinery on the beach and near both ocean and estuarine waters, which could result in adverse effects due to noise, activity, or spills. Drilling activities could release mercury or methylmercury to the nearshore environment, and improper placement of well casings could result in marine mammals or other animals being killed or injured on the exposed casings.

The Corps has proposed a number of measures to avoid or reduce these and other potential impacts. Those measures, along with additional conditions needed to ensure consistency with the relevant CZMP policies, are described below.

PROJECT MITIGATION MEASURES

- **General:** As described in the CD, the Corps will contain all project-related trash and excess material on site and will remove it for disposal at the end of each work day. The Corps will take pre- and post-exploration photographs to document the return of each location to pre-project conditions. Additionally, the Corps' Safety Manual allows equipment to operate on surfaces with no greater than a 12% slope, so it is expected that project activities will not occur when the beach or other surfaces exceed that grade.

  To help ensure the project does not adversely affect areas designated for protection of biological resources, **Condition 1** requires the Corps to complete and submit a survey of the Mean High Tide Line that is acceptable by the agencies with jurisdiction at the project site.

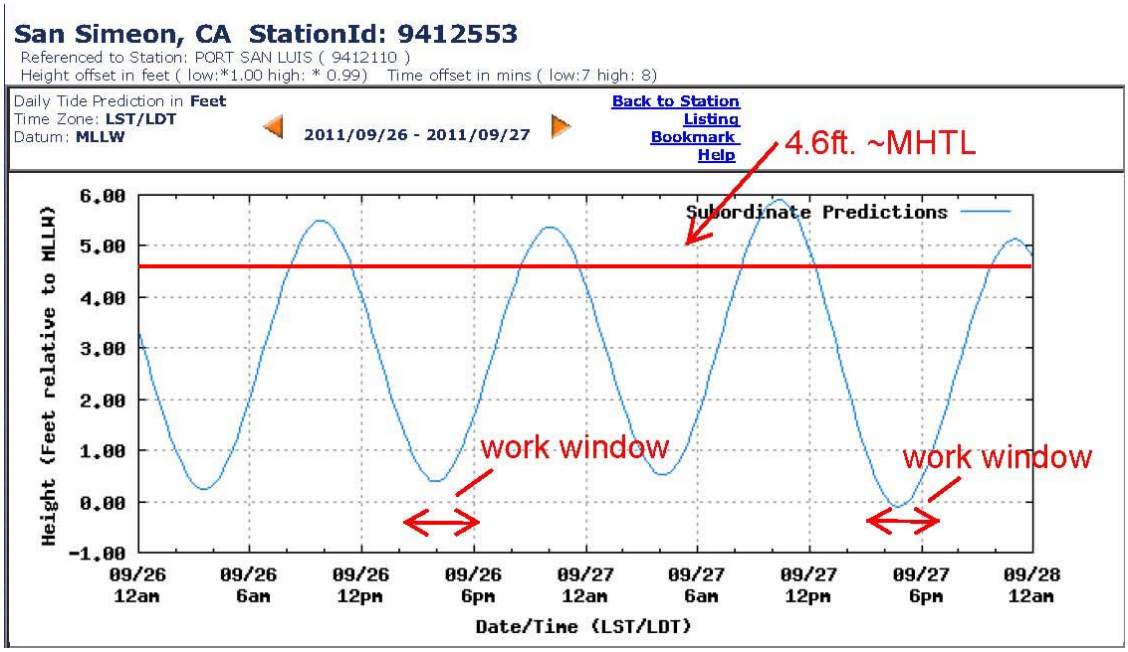
The Corps has also committed to have a qualified biologist conduct an employee education program for all employees and contractors that would work on the project site. To ensure this training is adequately descriptive and protective of the site's coastal resources, **Condition 2** requires the Corps to submit the proposed training documents for Executive Director review and concurrence. The training is to identify all sensitive species known to exist or that may potentially exist at the site and is to describe all measures and conditions meant to avoid or minimize harm to those species. To provide additional protection of sensitive species, the CD states that a qualified biologist familiar with snowy plover biology will be present during all activities on the beach. Although not used for nesting, Santa Rosa Beach provides foraging habitat for the plover. The CD also states that a Corps qualified biologist or their representative will conduct a pre-activity survey prior to project mobilization to determine presence/absence of plovers. If plovers are observed, project activities would not occur in areas where they are present. **Condition 3** additionally requires that project activities not occur on the beach when marine mammals are present.

- **Timing Constraints and Beach Conditions:** The beach is highly dynamic and subject to significant changes in profile and elevation due to wave uprush, heavy rains, or other events. Project-related risks to marine life would be greater during these events and during the winter storm season due to the higher potential for spills or equipment upsets. The Commission recognized these risks in its approval of the previous CD (CD-002-10) when it authorized project activities to occur on the beach only during September and October, which is generally a time of low rainfall and relatively calm surf, and is outside the critical periods for sensitive species at the site.[16] As noted previously, the beach and coastal waters at the project site provide important habitat for several species and provides critical functions for those species at various times of the year. For example, although the beach is not a pupping site, harbor seal pups may be present on the beach from March through May of any year. Steelhead runs can occur during the fall and winter when the creek mouth is open to the ocean, and the California grunion spawns in the upper intertidal portions of the beach at times between March and August.

  The current CD proposes that the Corps conduct tests and surveys on the beach between November 2011 – February 2012, and between September – November 2012, which would avoid critical times for most of the sensitive species, but would include the steelhead run and the period of peak winter storms. The Corps proposes to have its heavy equipment operate almost entirely below the MHTL, due to the prohibition on motor vehicles in the Natural Preserve above the MHTL. However, this increases the risk that those activities would cause adverse water quality or biological effects due to their increased proximity to the water and location on a less stable beach surface. It also puts the activities within the jurisdiction of the federal marine sanctuary, state marine park, and designated essential fish habitat under three separate fishery management plans. Two of the Corps' proposed drilling locations would result in heavy drill rigs operating within the portion of the Santa Rosa Creek channel that crosses the beach.

[16] That project included an additional measure of safety in that project activities would have occurred above the MHTL; however, it was later determined that the area above the MHTL was within the protected Natural Preserve where drill rig operations were prohibited.

The CD proposes that project activities below the MHTL occur only during daylight hours and only during low and minus tides within a tidal cycle "work window" when the outgoing tide is at least one foot below MHTL and the incoming tide is at least two feet below MHTL, as illustrated on the chart below from the CD.



The basis of the Corps' proposed work window is its assumption that the beach will be at or below its long-term average 6% slope during these periods.[17] This assumed 6% slope (or grade) would provide 17 feet of beach width for every one foot drop in the tide level; therefore the Corps' proposal presumes beach activities would start when there are 17 feet of beach between the MHTL and the outgoing surf and would end when there are 38 feet of beach between the MHTL and the incoming surf. The CD also states that the Corps would make a daily determination as to whether it was safe to operate on the beach during these work windows, though it does not provide the specific criteria that would be used to determine whether conditions were safe or unsafe.

The Corps' proposal to work on the beach only between November 2011 – February 2012 and September – November 2012 avoids critical times for some of the listed sensitive species, and **Condition 3** clarifies that project activities will occur on the beach only during those periods. However, additional conditions are necessary to provide adequate coastal resource protection and to ensure consistency with the above CCMP policies. As noted above, the Corps proposes to work on the beach during the winter storm season when storms, high surf, heavy rainfall, or creek breakout across the beach could result in steep, unstable, or actively eroding conditions unsuitable for equipment operations. Extensive photographic

[17] The CD states that the 6% slope is based on past bathymetry mapping identified in a 2003 California Department of Forestry and Fire report.

documentation of the beach includes photographs taken during times of year in the Corps' proposed work periods that show those types of conditions. Even if the beach provides the Corps' calculated 6% long-term average beach slope, the proposed work periods could have heavy equipment operating on the beach when there is as little as 17 feet of beach between the MHTL and the expected line of surf. This provides little margin of safety in this highly dynamic environment – for example, it would not provide enough turn-around space for the 23-foot long CPT rig. This proposed beach width would also be inconsistent with another of the project elements proposed by the Corps, that of establishing a 50-foot safety zone around each side of the equipment operating on the beach.

To provide additional risk reduction, **Condition 4** acknowledges that equipment may operate up to the maximum 12% slope allowed in the Corps' Safety Manual, but only when there is at least 100 feet of beach width between the MHTL and the highest point of wave uprush (and an additional 50-foot width for lateral public access, as described in Section 5.B below). This additional beach width provides a reasonable margin of safety, considering the actual beach conditions likely to be encountered and recognizing that the Corps might work on grades of up to 12% rather than the cited 6% average slope.[18] **Condition 4** also requires the Corps to remove equipment when the beach slope exceeds 12% or when the beach width between the MHTL and the highest point of wave uprush falls below 100 feet. It further prohibits activities on vegetated portions of the beach. Additionally, and similar to a measure included in the Commission's previous CD concurrence, **Condition 4** reduces potential disturbance of beach habitat by requiring the Corps to place weight-absorbing mats under the two drill rigs when they are moving or operating on the beach. **Condition 4** also requires the Corps to monitor weather and surf forecasts to ensure it does not conduct activities on the beach during periods of predicted rainfall or high surf. Finally, to ensure project equipment does not operate in the portion of the Santa Rosa Creek channel that crosses the beach, **Condition 4** requires the Corps to use the approved MHTL survey to identify fixed sampling locations that are at least 50 feet from that channel.

- **Avoiding Contaminated and Turbid Discharges to Coastal Waters:** The project involves mechanized activities on the beach that could lead to spills (addressed below) or contaminated sediment or groundwater discharges to the nearby ocean or estuarine waters. The CD states that the project will avoid some potential adverse effects by using drill rigs that do not use drilling muds to ensure no accidental releases of those fluids. The CD also states that the Corps will test groundwater samples collected during the CPT tests for mercury, methylmercury, and dissolved metals (twenty-three metals at four locations – two samples at Paleochannel C and one sample each at Paleochannels A and B – and tests for iron and manganese at the three remaining locations).

  As noted above, sediments or groundwater at the project site may include mercury or methylmercury contamination that could be mobilized during retrieval of core samples. During the October 2010 sampling, the Corps did not test for methylmercury but tested sediments for mercury, though it used testing methods that are not sensitive enough to detect

[18] While the 6% grade provides about 17 feet of beach for every one-foot drop in tidal level, a 12% grade provides only 8 feet of beach for every one-foot drop.

all levels considered harmful to the environment. To reduce the potential for contaminant releases, the CD states that the Corps will bag all borehole sediments and will dispose of them offsite. Sediments will undergo chemical screening – if testing indicates they are toxic, they will be disposed of at a hazardous waste facility; if nontoxic, they will be disposed of as non-hazardous waste. However, the CD does not specify what tests the Corps would conduct on the sediments. To determine whether the samples contain mercury or methylmercury at concentrations harmful to the environment, **Condition 5** requires the Corps to test both groundwater and sediments for mercury and methylmercury and to provide results of both those tests to the Executive Director. **Condition 5** additionally requires that testing be conducted using protocols adequate to detect groundwater and sediment contaminants at levels that may harm wildlife or exceed drinking water standards.

- **Spill Prevention:** The beach condition restrictions of **Conditions 3** and **4** are expected to provide some reduction of potential spill risks for project activities on the beach. Additionally, the Corps provided with its CD a Hazardous Spill Contingency Plan, which includes a number of measures meant to avoid spills or reduce adverse impacts in the event of spills. However, due to the proximity of project activities to highly sensitive coastal waters and marine life, **Condition 6** requires the Corps to provide a more detailed Plan for Executive Director review and concurrence that includes additional protective measures. These additional measures are based in part on requirements of the Corps' Safety Manual, which the CD references as applying to project activities. **Condition 6** requires that the Plan include a hazardous material inventory with specific measures to be used for each type of hazardous material used in the project, spill avoidance and minimization measures, a description of inspections to be implemented during the project, and necessary contact information, all to be consistent with its Safety Manual requirements. In recognition that the beach could present unstable surfaces for the equipment, **Condition 6** also requires the Plan to identify measures that would be used to retrieve any equipment that becomes stuck or stranded on the beach due to unanticipated sand or water movement.

- **Avoiding and Minimizing Effects of Well Casings on the Beach:** The project's rotosonic drilling could, during some of the drill operations, require that a single well casing remain exposed for up to two or three days on the beach below the MHTL. It could potentially kill or injure marine life or could become fouled with marine debris. If a casing is to remain overnight, the Corps proposes to cap it, mark it with a six-foot reflective marker, and place LED headlamps on the casing. The Corps would also place signs and barricades above the MHTL to warn beachgoers of the protruding casing and would station security personnel nearby to further alert beach users.

  To ensure these measures minimize the risk to marine life and do not cause additional adverse effects, **Conditions 7** and **8** require the Corps to submit for Executive Director review and concurrence a detailed description of the above measures that shows the proposed lighting, signage, and barricades are the minimum needed to secure the casing while not adversely affecting marine life.

- **Potential Effects of Project Noise on Marine Life:** Although the CD states that the Corps does not expect the project to adversely affect marine mammals, some elements of the project activities could cause adverse effects to those species. In addition to the requirement of **Condition 3** that project activities not take place when marine mammals are present on the beach, **Condition 9** requires the Corps to submit for Executive Director review and concurrence a proposed noise reduction measures to lessen the potential harm to marine mammals in nearby coastal waters.

  As noted previously, the Corps proposes to use a CPT rig that produces about 89 decibels at 70 feet distance and 83 decibels at a 140-foot distance. The rotosonic drill rig produces about 85 decibels at a 100-foot distance. These levels are somewhat higher than the approximately 60-75 decibels produced by the sound of surf along the project site. [19]

  The CD identifies the nearest sensitive noise receptors as the County Park, about 250 feet from the study site, and several residences that are about 580 feet from the study site. The Corps proposes to reduce potential noise-related impacts by limiting project activities to no more than about 27 days over a six-month period and by limiting noise-generating activities to daylight hours of non-holiday weekdays.

  Several conditions are needed to further reduce potential noise-related impacts to sensitive receptors that may be closer to the project site than described in the CD. For example, the Corps states that expected noise levels are not likely to disturb sea otters that may be present offshore, though it does not cite evidence for this assertion and does not evaluate the effects of project-related noise on other marine mammals or wildlife. As noted in U.S. Navy research, marine mammals may have a stronger response to loud noises in areas with a high ambient noise level, such as near a surf zone. The ambient noise may mask louder noises until the sound source is very close, which may elicit a "startle" response from any animals that may be present.[20] In its CD for the previous proposed project (CD-002-10), the Corps included sound attenuation measures meant to maintain noise levels at or below 75 decibels at a 50-foot distance; however, its current CD does not include this measure.

  To avoid and reduce potential noise-related impacts on nearby marine wildlife, **Condition 9** would require the Corps to meet that same standard – i.e., to maintain noise levels at or below 75 decibels at 50 feet distance from project activities – by using sound attenuation measures or devices. It also requires the Corps to submit those proposed measures for Executive Director review and concurrence to ensure the measures do not adversely affect other coastal resources (see Section 5.B – Public Access, Recreation, and Visual Resources for additional discussion).

[19] For comparison, 90 decibels is roughly equivalent to the sound of a motorcycle at 25 feet or a power lawn mower at three feet. The sound of the surf at 50 feet distance can range from about 60 to 75 decibels.

[20] See, for example, the U.S. Navy's May 2008 *Final EIS/OEIS for Hawaii Range Complex, Appendix G: Overview of Airborne and Underwater Acoustics*.

CONCLUSION

The Commission finds that for the project activities to be consistent with the applicable CCMP marine resource protection policies, the Corps needs to modify the project to implement the above-referenced conditions. The Commission concludes that, only as conditioned to include these measures, would proposed project activities be consistent with applicable CCMP marine resource protection policies (Sections 30230 – 30232). As provided in 15 CFR § 930.4(b), should the Corps not agree with the Commission's conditions of concurrence, then all parties shall treat this conditional concurrence as an objection.

B. PUBLIC ACCESS, RECREATION, AND VISUAL RESOURCES

CCMP Section 30210 states:

> *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*

CCMP Section 30211 states:

> *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

CCMP Section 30213 states, in relevant part:

> *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational; opportunities are preferred. . . .*

CCMP Section 30220 states:

> *Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.*

CCMP Section 30251 states:

> *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*

Project activities on the beach are proposed to take place within Santa Rosa State Beach, Cambria State Marine Park, Monterey Bay National Marine Sanctuary, and Shamel County Park. These areas are within a highly scenic coastal area and provide public access to the shoreline as well as several types of recreation, including swimming, surfing, kayaking, beachcombing, and passive recreation. The project site includes upland portions of Shamel County Park, which provides a swimming pool, children's playground, picnic areas, and public parking. Two staircases and a ramp at Shamel Park provide beach access. The Corps would use Windsor Drive, the public road that provides access to these areas, to move vehicles and equipment to and from the overnight and long-term staging area at the CCSD wastewater treatment facility. Activities would also occur adjacent to the Santa Rosa Creek Natural Preserve, which provides passive recreational opportunities. The Corps expects activities on these areas of the project site to take a total of up to about 37 days over a work window of up to about six months (December 2011 – February 2012 and September – November 2012), with the geophysical survey taking up to about 10 days, the CPT activities taking up to three days, and the rotosonic drilling taking up to 24 days. There may also be several periods of up to three days at a time when the Corps proposes to place lights and a barricade on or near a steel casing that remains on the beach overnight and for up to 72 hours.

Project activities, including vehicle and equipment access and the geophysical and geotechnical surveys and tests on the beach, would adversely affect public access, recreation, and visual resources by excluding or displacing beachgoers and by creating noise and visual disturbances. During those activities, the Corps proposes to establish a 50-foot safety zone on each side of equipment operating on the beach, which would additionally limit the area available for public use. The movement of equipment and vehicles to and from the beach would similarly create adverse effects on access and recreation on Windsor Drive and on nearby upland portions of Shamel Park. The Corps would use the Park's access road and ramp for beach access and would use up to 10 of the Park's 44 parking spaces for daytime staging of equipment and vehicles. The up to 27 days of vehicle and equipment movement along Windsor Drive would cause short-term disruption of public access.

The Corps' consistency determination request states that effects of project activities on public access and recreation will be negligible to minimal because they would occur during times of low beach use, would be of short duration, and would not restrict lateral access along the shoreline. The CD includes a number of mitigation measures to address these and other potential impacts. These measures, along with conditions needed to ensure consistency with relevant CZMP policies, are described below.

- **Project Timing:** The Corps proposes to conduct surveys and tests between September and February to avoid the higher public use of the beach during the summer. It will also conduct activities on non-holiday weekdays only to avoid interfering with public access and recreation during days with higher rates of use.

- **Ensuring Continued Lateral Access Along the Shoreline:** The Corps states that lateral access will be maintained because project activities will not occupy the full width of the beach, though the CD does not specify how this was determined. As noted in Section 1.D

above, the beach is highly dynamic and subject to substantial changes due to high surf, wave uprush, and other similar events. With the ongoing changes in beach width, and with the safety buffer the Corps will establish around project activities, additional measures are needed to ensure lateral access is maintained. **Condition 4** ensures continued lateral access by allowing project activities only when there is a continuous dry area of beach at least 150 feet wide, which provides a width of at least 50 feet for lateral public access in addition to the Corps' 100-foot safety zone around project equipment.

- **Addressing Other Access Limitations:** The project includes a number of measures that will adversely affect recreation and public access along the shoreline. For example, the Corps is required through its Safety Manual to demarcate the safety boundary around project activities with fencing and signs, and must ensure the safety of visitors to the project site by providing them a safety briefing, safety escort, and any necessary safety equipment, and to maintain a visitor sign-in/sign-out log. To ensure these aspects of the project do not cause substantial adverse effects, **Condition 8** requires the Corps to provide documentation of the proposed fencing and signage for Executive Director review and concurrence, and **Condition 10** requires the Corps to provide for Executive Director review and concurrence documentation of how it proposes to implement the safety briefing escort, equipment, and visitor log measures.

  Project activities away from the beach are also likely to adversely affect public access and recreation. The Corps Safety Manual requires a Traffic Control Plan and an Access/Haul Road Plan be developed identifying how vehicles and equipment will access the project site, and **Conditions 11** and **12** require the Corps submit these Plans for Executive Director review and concurrence to ensure potential impacts are minimized.

- **Effects of Project Noise on Public Access, Recreation, and Visual Resources:** Regarding the effects of project noise on public access and recreation, the CD asserted that project-related noise would not disturb the nearest sensitive receptors, though it defines those receptors as residences located 385 to 554 feet from the nearest rotosonic borehole. Other sensitive receptors that could be disturbed by project noise include marine life (as described in Section 5.A above) and members of the public that might use Santa Rosa State Beach or Shamel County Park during project activities. Without additional noise-reduction measures, beach users could be subject to noise levels of about 91 decibels at the edge of the 50-foot safety zone the Corps will establish around project equipment.[21]

  To minimize potential impacts, the Corps plans to conduct noise-producing activities only during non-weekend daylight hours, when public use of the beach is presumably reduced, and would not conduct activities during the higher summer use period. Additionally, the sound attenuation requirements needed to protect marine wildlife described above in **Condition 9** would also further minimize potential impacts to the public's use of the project area by limiting equipment noise to no more than 75 decibels at the edge of the safety zone.

[21] The CD notes that the rotosonic drill rig is expected to produce about 85 decibels at a 100-foot distance and the CPT rig is expected to produce about 89 decibels at a 70-foot distance. These expected levels equate to a range of about 88 to 92 decibels at the edge of the 50-foot safety zone.

Further, the posting requirements of **Condition 13** would alert the public of these activities, which could reduce potential conflicts between the project and use of the beach for access or recreation. During noise-generating activities, the equipment will likely be shielded to reduce noise levels, though the method selected for shielding may increase adverse visual effects – for example, the Corps' 2010 drilling activities included installing a 10-foot opaque barrier around the drill rig. To ensure adverse visual effects are minimized, **Condition 10** requires the Corps to submit its proposed noise-reduction measures for Executive Director review and concurrence prior to the start of project activities. The posting requirements of **Condition 14** would additionally allow park and beach users to choose other shoreline areas to avoid the anticipated adverse visual effects of the project.

CONCLUSION

The Commission finds that for the project activities to be consistent with the applicable CCMP public access, recreation, and visual resource policies, the Corps needs to modify the project to implement the above-referenced conditions. The Commission concludes that, only as conditioned to include these measures, would proposed project activities be consistent with applicable CCMP policies (Sections 30210 – 30224 and 30251). As provided in 15 CFR § 930.4(b), should the Corps not agree with the Commission's conditions of concurrence, then all parties shall treat this conditional concurrence as an objection.

C. ENVIRONMENTALLY SENSITIVE HABITAT AREAS (ESHA)

CCMP Section 30240 states:

> *a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*
> *b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

Project activities on the beach would be located adjacent to the Santa Rosa Creek Natural Preserve, which includes environmental sensitive habitat areas. As noted previously, several sensitive species rely on habitat within the estuary and Preserve. Beach areas above the MHTL at the project site are only sparsely vegetated, due to wave runup and breakout of the estuary across the beach, but can be populated with species generally found in a Central Foredune plant community. Portions of the project site along the Shamel Park access road include landscape ornamentals that may require minor trimming for vehicle and equipment access.

The Corps has proposed conducting its activities outside the Preserve and below the MHTL. To ensure this occurs, **Condition 2** requires the Corps conduct the survey necessary to identify the Preserve boundary to ensure its activities occur outside of areas that may be ESHA. To ensure project activities do not affect areas that may include sensitive vegetation, **Condition 5** prohibits project activities from occurring on vegetated areas of the beach.

CONCLUSION

The Commission finds that for the project activities to be consistent with the applicable CCMP policies regarding environmentally sensitive habitat areas, the Corps needs to modify the project to implement the above-referenced conditions. The Commission concludes that, only as conditioned to include these measures, would proposed project activities be consistent with applicable CCMP policies (Section 30240). As provided in 15 CFR § 930.4(b), should the Corps not agree with the Commission's conditions of concurrence, then all parties shall treat this conditional concurrence as an objection.

D. GEOLOGIC RISK

CCMP Section 30253 states, in relevant part:

> *New development shall do all of the following:*
> *(a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*

The consistency determination states that the project activities will not place life or property in areas of high geologic, flood, or fire hazard risk. However, the Final EA/MND for the project identifies the site as being in a seismically active region subject to ground shaking. Additionally, the CCSD's *Master Water Plan – Final Program Environmental Impact Report* (July 2008) notes that Santa Rosa Beach is within the Santa Rosa Creek floodplain, which is identified as having a very high potential for liquefaction during seismic events. Liquefaction occurs when unconsolidated and saturated soils are converted to a fluid state during strong seismic vibrations. Much of the project site is also subject to risks associated with other seismic events such as tsunami runup. A seismic event occurring during project activities could result in an accident, spill, or damage.

The CD states that risks related to these hazards are relatively low due to the short-term nature of the study and the low recurrence intervals of these types of events. The minimum beach widths and maximum beach slopes required by **Condition 5** will further reduce risks by providing an additional margin of safety should the Corps need to respond to geologic hazards during project activities. Additionally, requirements of **Condition 7** will further reduce potential risks through measures that limit spills that may occur during these events.

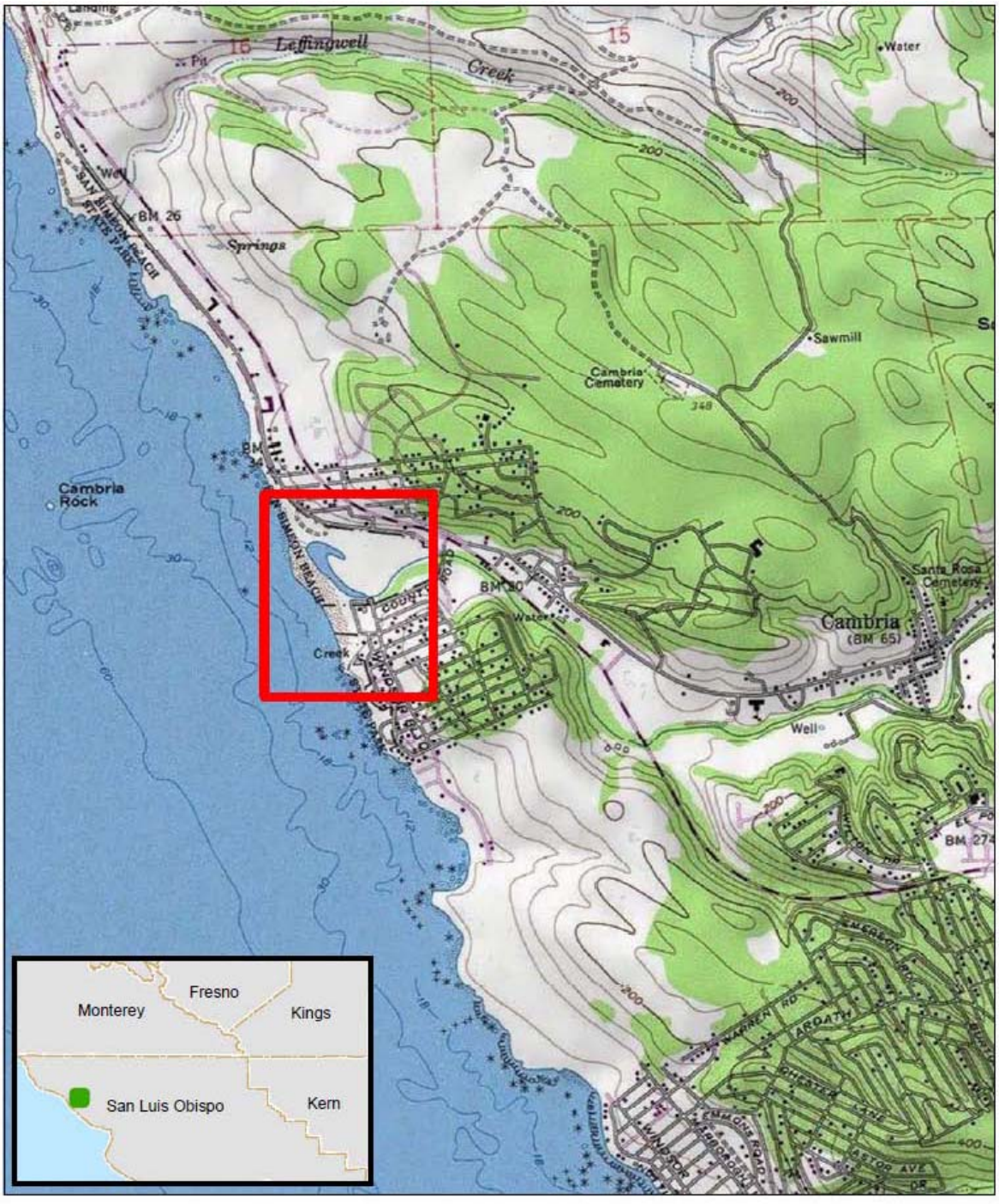
CONCLUSION

The Commission finds that for the project activities to be consistent with the applicable CCMP geologic risk policies, the Corps needs to modify the project to implement the above-referenced conditions. The Commission concludes that, only as conditioned to include these measures, would proposed project activities be consistent with applicable CCMP policies regarding geologic risk (Section 30253). As provided in 15 CFR § 930.4(b), should the Corps not agree with the Commission's conditions of concurrence, then all parties shall treat this conditional concurrence as an objection.

APPENDIX A – SUBSTANTIVE FILE DOCUMENTS

- Advanced Geoscience, Inc. *Summary Report: Subsurface Geophysical Investigation At Santa Rosa Creek Beach For Proposed Desalination System, Cambria, California*, prepared for Cambria Community Services District, July 21, 2008.
- Cambria Community Services District. *Water Master Plan – Final Program Environmental Impact Report*. Prepared by RBF Consultants. July 2008.
- Corps of Engineers, Consistency Determination Request – initial submittal of September 26, 2011 and subsequent modification letter received October 6, 2011. Includes:
  - Chambers Group, *Final Environmental Assessment for Geotechnical/Geophysical Research Investigation Study at Cambria, San Luis Obispo County, California*, prepared for Corps of Engineers, September 2011. Includes *Appendix A: Initial Study/Mitigated Negative Determination*, by Cambria Community Services District.
- Corps of Engineers, *Manual No. 385-1-1 – Safety and Health Requirements*, September 15, 2008.
- Diaz-Yourman and Associates, *Initial Geotechnical Investigation and Compilation of Hydrogeologic Data – Cambria, California*, prepared for Corps of Engineers, May 4, 2011.
- State Water Resources Control Board, Division of Water Rights. *Permit for Diversion and Use of Water – Amended Permit #20387*. July 8, 2009
- Titus, R.G., D.C. Erman, and W.M. Snider. *History and status of steelhead in California coastal drainages south of San Francisco Bay*. *In preparation.*
- U.S. Fish and Wildlife Service, Pacific Region. *Recovery Plan for the Tidewater Goby (Eucyclogobius newberryi)*. December 7, 2005

EXHIBIT 1 – MAP OF AREA



Legend

Project Location

1:24,000

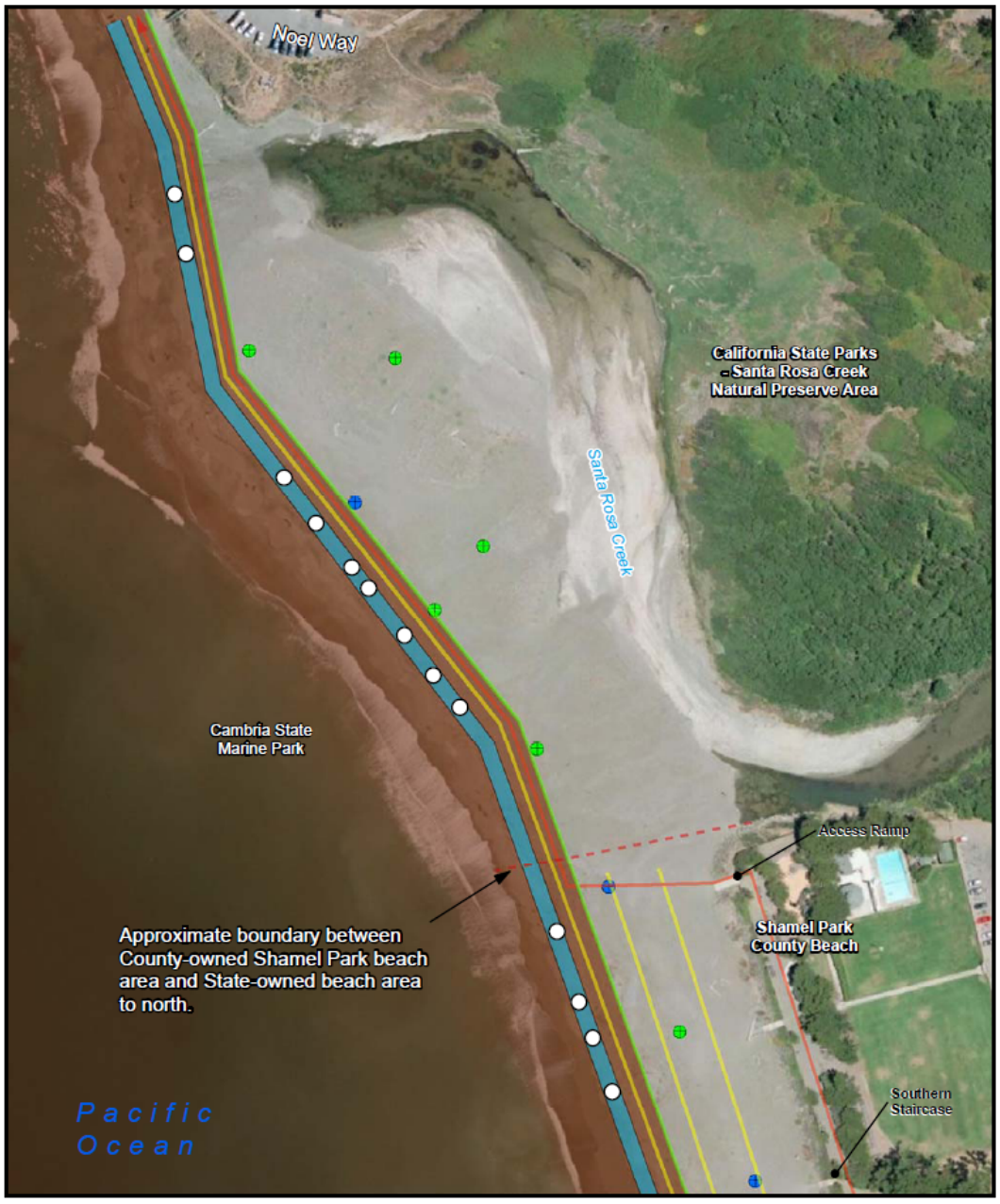
0 1,000 2,000 4,000

Feet

Figure 2
USACE Cambria Geotechnical
Project Area Map

Chambers Group Inc.

EXHIBIT 2 – PROPOSED LOCATION OF PROJECT ACTIVITIES



Legend

- Potential Rotosonic & CPT Activity Area
- Geophysical Profile Line
- Mean High Tide
- Travel Path
- Beach Boundary
- *Rotosonic and Cone Penetrometer Data Collection Areas (spot locations may be adjusted based on geophysical findings)*
- Cambria State Marine Park

1:2,000 0 50 100 Feet

N W E S

Chambers Group Inc.

Figure 3
USACE Cambria Geotechnical
Project Location Map

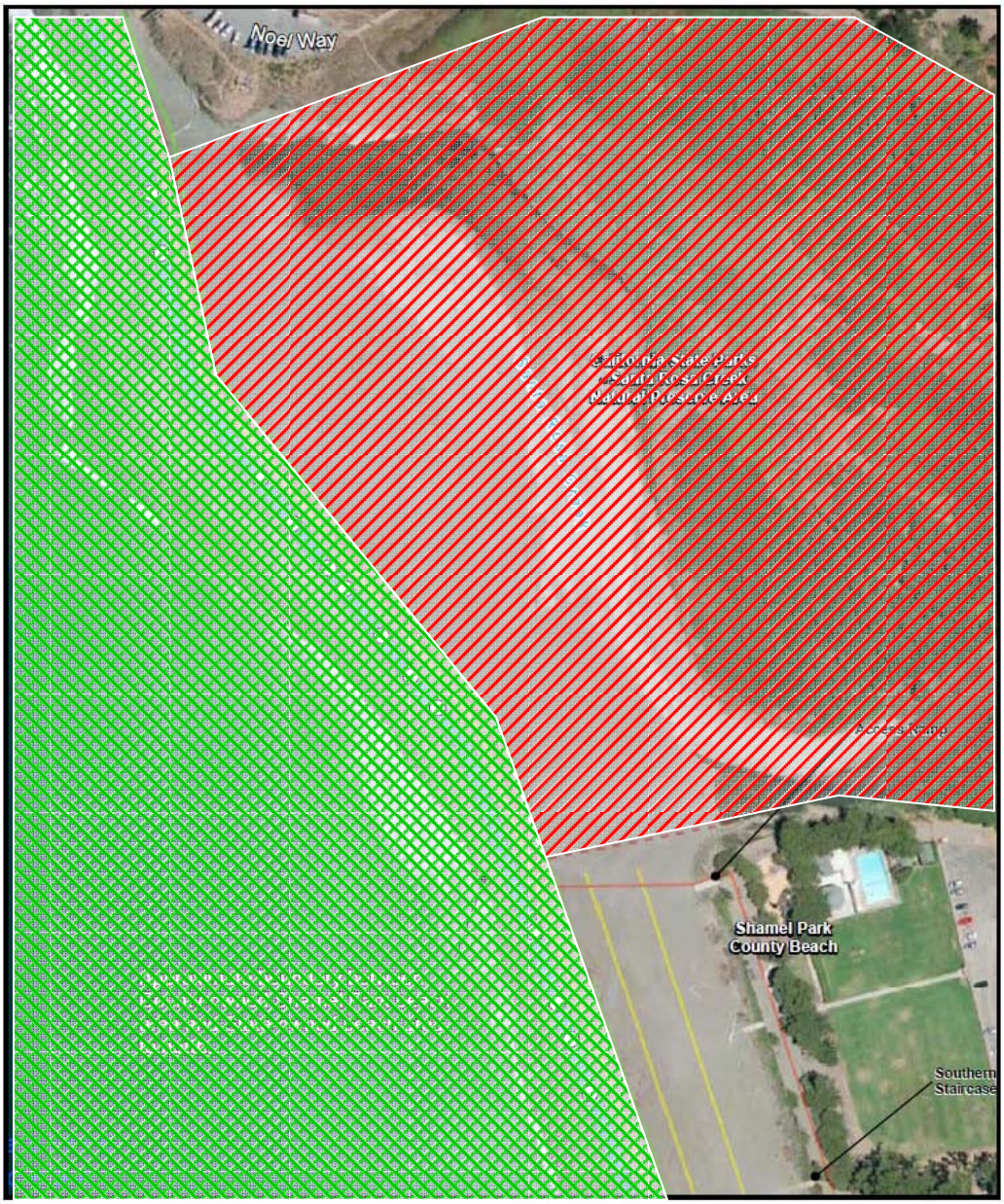
*Image Sourge: Terraserver, July 2007

EXHIBIT 3 – PROJECT EQUIPMENT

Cone penetrometer (CPT) rig:

Rotosonic drill rig:

EXHIBIT 4 – AREA OF GROUNDWATER MODEL



Legend

- Potential Rotosonic & CPT Activity Area
- Geophysical Profile Line
- Mean High Tide
- Travel Path
- Beach Boundary

Rotosonic and Cone Penetrometer Data Collection Areas (spot locations may be adjusted based on geophysical findings)

1:2,000

0 50 100
Feet

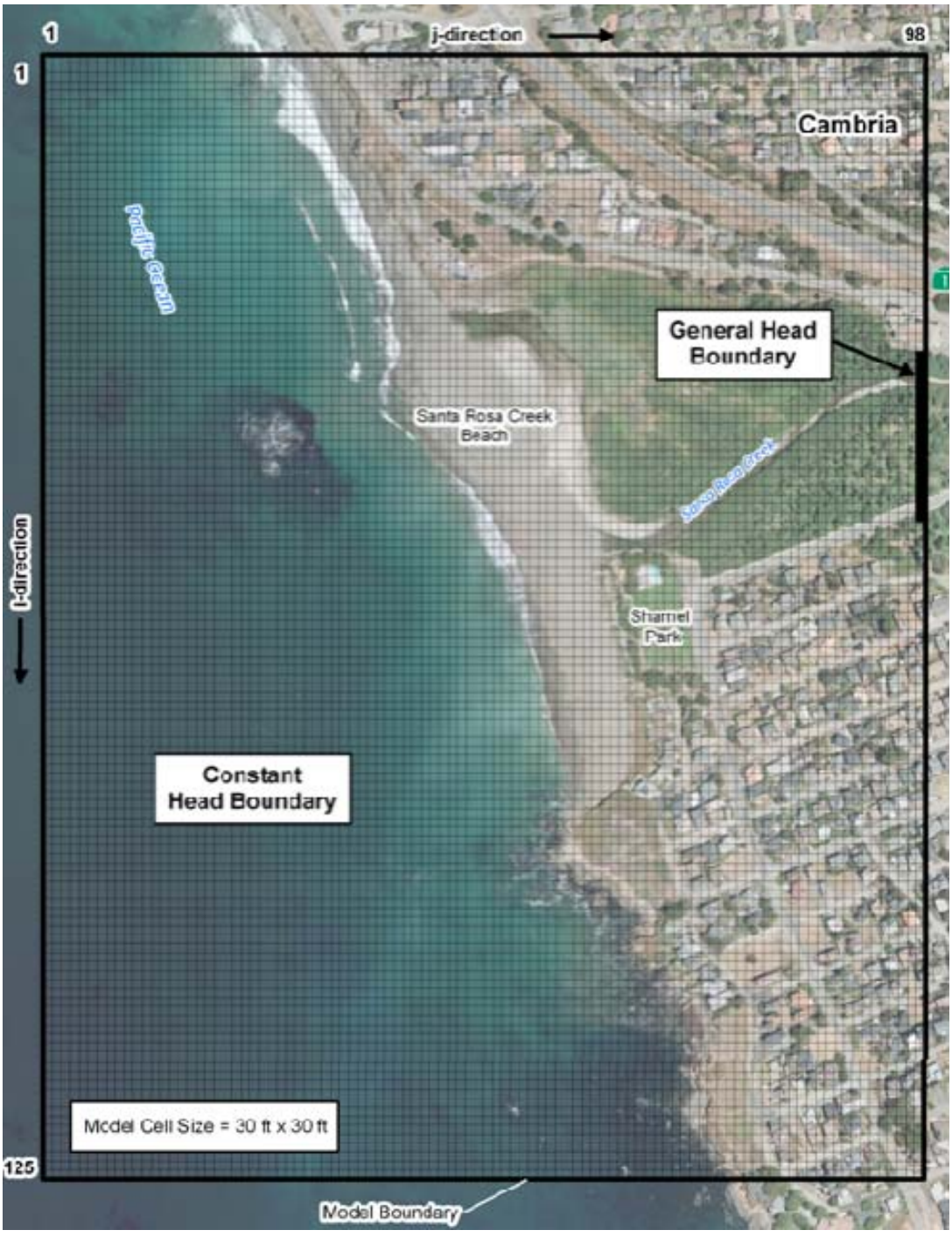
Figure 3
USACE Cambria Geotechnical
Project Location Map

Chambers Group Inc.

The white line is the Corps' assumed MHTL.

With that assumed location, the area beneath the red crosshatch is Santa Rosa Natural Preserve, and the area beneath the green crosshatch is Cambria Marine Park, Monterey Bay National Marine Sanctuary, and state tidelands

EXHIBIT 5 – AREA OF GROUNDWATER MODEL



Note: model covers approximately 250 acres.

EXHIBIT 6 – CITED PROVISIONS OF CORPS' SEPTEMBER 15, 2008 SAFETY AND HEALTH REQUIREMENTS MANUAL NO. 385-1-1

DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
Washington, D.C. 20314-1000

EM 385-1-1

CESO-ZA

Manual
No. 385-1-1

15 September 2008

Safety

SAFETY AND HEALTH REQUIREMENTS

1. Purpose. This manual prescribes the safety and health requirements for all Corps of Engineers activities and operations.

2. Applicability. This manual applies to Headquarters, US Army Corps of Engineers (HQUSACE) elements, major subordinate commands, districts, centers, laboratories, and field operating activities (FOA), as well as USACE contracts and those administered on behalf of USACE. Applicability extends to occupational exposure for missions under the command of the Chief of Engineers, whether accomplished by military, civilian, or contractor personnel.

3. References.

a. 29 Code of Federal Regulation (CFR) 1910

b. 29 CFR 1926

c. 29 CFR 1960

d. Executive Order (EO) 12196

e. Federal Acquisition Regulation (FAR) Clause 52.236-13

This manual supersedes EM 385-1-1, 3 November 2003

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f. Department of Defense Instruction (DODI) 6055.1

g. Army Regulation (AR) 40-5

h. AR 385-10.

4. General.

a. The provisions of this manual implement and supplement the safety and health standards and requirements referenced above. Where more stringent safety and occupational health standards are set forth in these requirements and regulations, the more stringent standards shall apply.

b. Mission applicability introduced in paragraph 2 above shall include the following:

(1) Construction contract work under the provisions of FAR Clause 52.236-13. Contractors shall comply with the latest version of EM 385-1-1 (including interim changes) that is in effect on the date of solicitation. Prior to making an offer, bidders should check the HQUSACE Safety and Occupational Health web site (see paragraph c) for the latest changes. No separate payment will be made for compliance with this paragraph or for compliance with other safety and health requirements of this contract. Note: Existing contracts will continue to apply the provisions of the previous edition of this manual until contract completion.

(2) Service, supply, and research and development contracting actions. Compliance with this manual shall be a contract requirement for such activities unless technical representatives (in coordination with safety and health professionals) advise that special precautions are not appropriate due to extremely limited scope of services or similar. However, it is understood that this manual in its entirety may be too complex for the type of work being performed under these contracts. These contractors may reference Appendix A, paragraph 11 for limited scope Accident Prevention Plan (APP).

(3) Contracting actions for hazardous, toxic, and radioactive waste site investigation, design, or remediation activities. Compliance with this manual shall be a contract requirement.

c. Changes. All interim changes (changes made between publication of new editions) to this manual, and the effective date of change, will be posted on the Safety and Occupational Health Office web site: http://www.usace.army.mil/CESO/Pages/Home.aspx and in USACE Electronic bid Sets. Hard copies of this manual are available from the local contracting official.

d. Interpretations. Within the Corps of Engineers, interpretations to the requirements contained within this manual shall be executed in accordance with the process contained in Appendix M. Interpretations will apply only to the specific situation in question and may not be used as a precedent to determine the meaning of a requirement as it may apply to another circumstance.

e. Variances and Waivers. Within the Corps of Engineers, variances and waivers to provisions of this manual require the approval of the Chief of Safety and Occupational Health, HQUSACE. Variances or waivers shall provide an equal or greater level of protection, shall be substantiated with a hazard analysis of the activity and shall be documented and forwarded through channels to Chief of Safety and Occupational Health, HQUSACE. The process for requesting variances or waivers is contained in Appendix N.

f. Activities performed OCONUS. Some of the technical requirements of this manual may not be applicable to overseas activities due to conflicting circumstances, practices, and laws or regulations of the locality or the unavailability of equipment. In such instances, means other than the ones specified in this manual may be used to achieve the required protection. In such instances, a hazard analysis must be developed to document that the required protection will be achieved by the alternate means.

h. The use of underlining in this manual indicates new or changed text from the 2003 version.

i. Supplementation of this manual is not authorized except as published by the Safety and Occupational Health Office, HQUSACE.

(1) Local USACE organizations may develop Standard Operating Procedures (SOPs) to implement the provisions contained within this manual, but may not implement new requirements without the specific approval of HQUSACE.

(2) Locally developed Safety and Health Requirements will not be included in contract requirements without the approval of HQUSACE.

FOR THE COMMANDER:

STEPHEN L. HILL
Colonel, Corps of Engineers
Chief of Staff

SECTION 1

PROGRAM MANAGEMENT

01.A GENERAL

01.A.01 No person shall be required or instructed to work in surroundings or under conditions that are unsafe or dangerous to his or her health.

01.A.02 The employer is responsible for initiating and maintaining a safety and health program that complies with the US Army Corps of Engineers (USACE) safety and health requirements.

01.A.03 Each employee is responsible for complying with applicable safety and occupational health requirements, wearing prescribed safety and health equipment, reporting unsafe conditions/activities, preventing avoidable accidents, and working in a safe manner.

01.A.04 Safety and health programs, documents, signs, and tags shall be communicated to employees in a language that they understand.

01.A.05 Worksites with non-English speaking workers shall have a person(s), fluent in the language(s) spoken as well as English, on site when work is being performed, to interpret and translate as needed.

01.A.06 The Contractor shall erect and maintain a safety and health bulletin board in a commonly accessed area in clear view of the on-site workers. The bulletin board shall be continually maintained and updated and placed in a location that is protected against the elements and unauthorized removal. It shall contain, at minimum, the following safety and health information:

a. A map denoting the route to the nearest emergency care facility;

b. Emergency phone numbers;

c. A copy of the most up-to-date Accident Prevention Plan (APP) shall be mounted on or adjacent to the bulletin board, or a notice on the bulletin board shall state the location of the APP. The location of the APP shall be accessible on the site by all workers;

d. A copy of the current Activity Hazard Analysis/analyses (AHA) shall be mounted on or adjacent to the bulletin board, or a notice on the bulletin board should state the location of the AHAs. The location of the AHAs shall be accessible on the site by all workers;

e. The Occupational Safety and Health Administration (OSHA) Form 300A, Summary of Work Related Injuries and Illnesses, shall be posted, in accordance with OSHA requirements, from February 1 to April 30 of the year following the issuance of this form. It shall be mounted on or adjacent to the bulletin board, which shall be accessible on the site by all workers;

f. A copy of the Safety and Occupational Health deficiency tracking log shall be mounted on or be adjacent to the bulletin board or a notice on the bulletin board shall state the location where it may be accessed by all workers upon request; ***> See 01.A.12.d.***

g. Safety and Health promotional posters;

h. Date of last lost workday injury;

i. OSHA Safety and Health Poster;

j. A copy of the hazardous material inventory, identification of use, approximate quantities and site map detailing location as required by and IAW 06.B.01.a (2)-(4).

01.A.07 USACE Project Managers (PMs), in accordance with the Safety and Occupational Health Reference Document contained in the USACE Business Manual, shall ensure that a safety and occupational health plan is developed for funded projects and incorporated into each Project Management Plan (PMP)/Program Management Plan (PrgMP). The PM shall collaborate with the customer on project safety goals and objectives and subsequently communicate these through the PMP/PrgMP safety and occupational health plan and Project Delivery Team (PDT) meetings.

01.A.08 USACE PDT shall develop the safety and occupational health plan to be incorporated in the PMP and is responsible for assuring that safety and occupational health requirements are properly addressed and executed throughout the life cycle of each project.

a. The PDT shall ensure that identified hazards, control mechanisms, and risk acceptance are formally communicated to all project stakeholders.

b. Unified Facilities Guide Specification (UFGS) for Safety and Health (currently 01 35 26) shall be used in all USACE contract work and those contracts administered on behalf of the USACE under the provisions of FAR Clause 52.236-13.

c. Military Construction (MILCON) Transformation contracts will include the Federal Acquisition Regulation (FAR) Clause 52.236-13 as well as the Model Request for Proposal (RFP).

01.A.09 For USACE activities where USACE employees are engaged in functions other than routine office or administrative duties, a project safety and health plan shall be developed, implemented, and updated as necessary.

a. Such activities include operations and maintenance; recreational resource management; in-house conducted environmental restoration (investigation, design, and remediation); surveying, inspection, and testing; construction

management; warehousing; transportation; research and development; and other activities when the Government Designated Authority (GDA) and the command's local Safety and Occupational Health Office (SOHO) agree on the benefit of such a program for accident prevention.

b. The project safety and health plan shall address applicable items listed in Appendix A in addition to the USACE Command's safety and occupational health program requirements.

c. For Hazardous Waste Operations and Emergency Response (HAZWOPER) sites, refer to Section 28 for Site Safety and Health Plan (SSHP) guidance.

01.A.10 A position hazard analysis (PHA) shall be prepared, updated as necessary, documented by the supervisor, and reviewed by the command's SOHO for each USACE position as warranted by the hazards associated with the position's tasks. A generic PHA may be used for groups of employees performing repetitive office/administrative tasks where the primary hazards result from ergonomic challenges, lighting conditions, light lifting and carrying tasks, and indoor air quality. ***> See Figure 1-1 for an outline of a PHA. An electronic version of a PHA may be found on the HQUSACE Safety Office Website.***

a. The GDA, using the advice of the SOHO, shall determine the need for analysis of each position within his or her area of responsibility.

b. In developing the analysis for a particular position, supervisors should draw upon the knowledge and experience of employees in that position in addition to the SOHO.

c. A complete PHA document shall indicate that the hazards, control mechanisms, Personal Protective Equipment (PPE) and training required for the position were discussed with the employee, and the PHA shall be signed by the supervisor and employee. A PHA shall contain a copy of the employee's training certificate of completion for all required training.

d. Supervisors shall review the contents of PHAs with employees upon initial assignment to a position, and at least annually or whenever there is a significant change in hazards.

01.A.11 Before initiation of work at the job site, an APP shall be reviewed and found acceptable by the GDA.

a. The APP shall contain appropriate appendices (for example, a SSHP for hazardous waste site cleanup operations, a Lead Compliance Plan when working with lead, or an Asbestos Hazard Abatement Plan when working with asbestos).

b. The APP shall be written in English by the Prime Contractor and shall articulate the specific work and hazards pertaining to the contract. The APP shall also implement in detail the pertinent requirements of this manual.

c. APPs shall be developed and submitted by the Contractor in the format provided in Appendix A of this manual. The Contractor shall address each of the elements/sub-elements in the outline contained in Appendix A in the order that they are provided in the manual. If an item is not applicable because of the nature of the work to be performed, the Contractor shall state this exception and provide a justification. ***> See Appendix A.***

d. For limited scope supply, service and R&D contracts, the Contracting Officer and local SOHO may authorize an abbreviated APP. ***> See Appendix A, paragraph 11 for details.***

e. The APP shall be developed by Qualified personnel and then signed in accordance with Appendix A, paragraph 1. The Contractor shall be responsible for documenting the Qualified person's credentials.

f. For contract operations, the Contractor's APP shall be job-specific and should include work to be performed by subcontractors. In addition, the APP should state measures to

be taken by the Contractor to control hazards associated with materials, services, or equipment provided by suppliers.

g. Updates to the APP shall be reviewed and approved by the GDA.

FIGURE 1-1

POSITION HAZARD ANALYSIS (PHA)

POSITION HAZARD ANALYSIS (PHA) FOR USACE EMPLOYEE	
NAME: (Print - Last, First, MI): JOB SERIES:_____ JOB TITLE:_____ JOB NUMBER (SF52):_____	Prepared by: (Print Name – Last, First, MI): _____ Reviewed by (SSHO):_____ Date (mo) _ _ (day) _ _ (year) _ __ _
COMMAND NAME & ORGANIZATION CODE:_____ PRIMARY DUTY LOCATION:_____	
Clearances Required EM OPS Team ☐ First Aid/CPR ☐ Respirator ☐ CDL ☐ Crane Operator ☐ Diver ☐ HTRW ☐ Other ☐	

POSITION TASKS	SAFETY AND/OR OCCUPATIONAL HEALTH HAZARDS*	RECOMMENDED CONTROLS
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.
5.	5.	5.
6.	6.	6.
7.	7.	7.

*Note - Examples of potential hazards are as follows:

Safety: trenching, electrical, slips, trips, fall hazards, etc.	Physical Agent: Exposure to heat/cold, noise, stress, vibration, radiation, etc.	Chemical: Exposure to solvents, cadmium, paints, welding fumes, pesticides, etc.	Biological: Exposure to bloodborne pathogens, poison ivy, insects, fungi, etc.

FIGURE 1-1 (Continued)

POSITION HAZARD ANALYSIS (PHA)

EQUIPMENT, MATERIALS, CHEMICALS TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
List for each task [include Material Safety Data Sheets(MSDSs)]	List inspection requirements for each work task	List safety/health training requirements
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.
5.	5.	5.
6.	6.	6.
7.	7.	7.
8.	8.	8.
9.	9.	9.
10.	10.	10.

This analysis serves as the hazard assessment required by Sections 01, 05, and 06 of EM 385-1-1, U.S. Army Corps of Engineers Safety and Health Requirements Manual. The employee covered by this analysis has been instructed in the tasks to be performed, the hazards to be encountered, the potential adverse effects of exposure to such hazards and the controls to be used. He/she has received adequate training specifically related to safe work practices, administrative and engineering controls and personal protective equipment (PPE) to be used in order to ensure assigned work tasks are conducted in a safe and healthful manner. He/she has demonstrated an understanding of the safety and health equipment and PPE to be used to include its limitations, useful shelf-life, how to properly don, doff, adjust, and wear required PPE, and how to properly care for, inspect, maintain, store, and dispose of such equipment. Attached is documentation of the training received, dates of such training, and the subject matter taught.

Supervisor Signature_____ Employee Signature_____

Date __ __/__ __/__ __ __ __ Date __ __/__ __/__ __ __ __

01.A.12 Inspections.

a. The APP or the USACE project safety and health plan shall provide for frequent safety inspections/audits, conducted by a Competent Person, of the work sites, material, and equipment to ensure compliance with the plan and this manual. These inspections/audits shall be documented in writing and available upon request to the GDA. They shall include the name of the inspector, date, and all findings.

b. In addition, Contractor Quality Control (QC) personnel - as part of their QC responsibilities - shall conduct and document daily safety and occupational health inspections in their daily QC logs.

c. Identified safety and health issues and deficiencies, and the actions, timetable, and responsibility for correcting the deficiencies, shall be recorded in inspection reports. Follow-up inspections to ensure correction of any identified deficiencies must also be conducted and documented in inspection reports.

d. The Contractor shall establish a safety and occupational health deficiency tracking system that lists and monitors the status of safety and health deficiencies in chronological order. The list shall be posted on the project safety bulletin board, be updated daily, and should provide the following information:

(1) Date deficiency identified;

(2) Description of deficiency;

(3) Name of person responsible for correcting deficiency;

(4) Projected resolution date;

(5) Date actually resolved.

e. The Contractor shall immediately notify the GDA of any OSHA or other regulatory agency inspection and provide GDA an opportunity to accompany the Contractor on the inspection. (The inspection will not be delayed due to non-availability of the GDA.) The Contractor shall provide the GDA with a copy of any citations or reports issued by the inspector and any corrective action responses to the citation(s) or report(s).

01.A.13 Contractor-Required AHA. Before beginning each work activity involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or sub-contractor is to perform the work, the Contractor(s) performing that work activity shall prepare an AHA. In addition, all operations, materials, and equipment shall be evaluated to determine the presence of hazardous environments or if hazardous or toxic agents could be released into the work environment. If this is the case, reference paragraph 06.A.01. ***> See Figure 1-2 for an outline of an AHA. An electronic version AHA may be found on the HQUSACE Safety Office Website.***

a. AHAs shall define the activities being performed and identify the work sequences, the specific anticipated hazards, site conditions, equipment, materials, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level of risk.

b. Work shall not begin until the AHA for the work activity has been accepted by the GDA and discussed with all engaged in the activity, including the Contractor, subcontractor(s), and Government on-site representatives at preparatory and initial control phase meetings.

c. The names of the Competent/Qualified Person(s) required for a particular activity (for example, excavations, scaffolding, fall protection, other activities as specified by OSHA and this manual) shall be identified and included in the AHA. Proof of their competency/qualification shall be submitted to the GDA for acceptance prior to the start of that work activity.

d. The AHA shall be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified person(s).

(1) If more than one Competent/Qualified Person is used on the AHA activity, a list of names shall be submitted as an attachment to the AHA. Those listed must be Competent/Qualified for the type of work involved in the AHA and familiar with current site safety issues.

(2) If a new Competent/Qualified Person (not on the original list) is added, the list shall be updated (an administrative action not requiring an updated AHA). T he new person shall acknowledge in writing that he or she has reviewed the AHA and is familiar with current site safety issues.

FIGURE 1-2

ACTIVITY HAZARD ANALYSIS (AHA)

Date Prepared: _____

Project Location: _____

Prepared By: _____

Job/Task: _____

Reviewed By: _____

JOB STEPS	HAZARDS	CONTROLS	RAC
Identify the principal steps involved and the sequence of work activities.	Analyze each principal step for potential hazards.	Develop specific controls for potential hazards.	Assign Appropriate Risk Assessment Code (RAC) per AR 385-10.
EQUIPMENT	TRAINING	INSPECTIONS	
List equipment to be used in the work activity.	List training requirements.	List inspection requirements.	

01.A.14 USACE-Required AHAs. An AHA shall be prepared and documented for each USACE activity as warranted by the hazards associated with the activity. Generally, an AHA should be prepared for all field operations.

a. The supervisor, utilizing the recommendations of the SOHO, should determine the need for an AHA for each activity within his or her area of responsibility.

b. In developing the AHA for a particular activity, USACE supervisors should draw upon the knowledge and experience of employees in that activity as well as the SOHO.

c. The Government uses this process to assess and manage the risks associated with the project.

01.A.15 To ensure compliance with this manual, the Contractor may be required to prepare for review specific safety and occupational health submittal items. These submittal items may be specifically required by this manual or may be identified in the contract or by the Contracting Officer's Representative (COR). All safety and occupational health submittal items shall be written in English and provided by the Contractor to the GDA.

01.A.16 When an employee is deemed to be in imminent danger of serious injury or illness, or loss of life, the COR or a designated representative shall immediately stop the work or activity posing the hazard. These hazards include those created by the work as well as those from any previously unidentified toxic agent or hazard with the potential to pose health, fire, or explosion risk to the workers or surrounding community. ***> See Federal Acquisition Regulation (FAR) Clause 52.236-13(d).***

01.A.17 Site Safety and Health Officer (SSHO). The Contractor shall employ a minimum of one Competent Person at each project site to function as the SSHO, depending on job complexity, size and any other pertinent factors.

a. The SSHO shall be a full-time responsibility unless specified differently in the contract. The SSHO shall report to a senior project (or corporate) official.

b. The SSHO(s), as a minimum, must have completed the 30-hour OSHA Construction safety class or as an equivalent, 30 hours of formal construction safety and health training covering the subjects of the OSHA 30-hour course (see Appendix A, paragraph 4.b) applicable to the work to be performed and given by qualified instructors. ***> The SSHO is also required to have five (5) years of construction industry safety experience or three (3) years if he possesses a Certified Safety Professional (CSP) or safety and health degree.***

c. An SSHO (or a Designated Representative, as identified in the APP/AHA and as deemed appropriate/equivalent to SSHO by the GDA) shall be on-site at all times when work is being performed.

d. The SSHO shall be responsible for managing, implementing and enforcing the Contractor's Safety and Health Program in accordance with the accepted APP.

e. SSHOs shall maintain this competency through 24 hours of formal safety and health related coursework every four (4) years.

> For limited service contracts, for example, mowing (only), park attendants, rest room cleaning, the Contracting Officer and Safety Office may modify SSHO requirements and waive the more stringent elements of this section.
> See Appendix A, paragraphs 4 and 11.

> For complex or high hazard projects, the SSHO shall have a minimum of ten (10) years of safety-related work with at least five (5) years experience on similar type projects.

01.A.18 The Prime Contractor is responsible for ensuring subcontractor compliance with the safety and occupational health requirements contained in this manual.

01.A.19 Collateral Duty Safety Personnel. USACE organizations may be augmented by Collateral Duty (Army civilian) safety personnel. Collateral duty safety personnel shall:

a. Be appointed through written orders;

b. Have met the requirements of 29 CFR 1960.58, training of collateral duty safety and health personnel and committee members, before reporting to duty;

c. Give their safety duties proper priority;

d. Report directly to their unit manager concerning safety–related matters;

e. Coordinate activities with their supporting SOHO.

01.B INDOCTRINATION AND TRAINING

01.B.01 A Qualified Person(s) shall conduct all training required by this manual. All training shall correspond to American National Standards Institute (ANSI) regulation Z490.1.

01.B.02 Employees shall be provided with safety and health indoctrination prior to the start of work as well as continuous safety and health training to enable them to perform their work in a safe manner. All training, meetings and indoctrinations shall be documented in writing by date, name, content and trainer.

01.B.03 Indoctrination and training should be based upon the existing safety and health program of the Contractor or Government agency, as applicable, and shall include but not be limited to:

a. Requirements and responsibilities for accident prevention and the maintenance of safe and healthful work environments;

b. General safety and health policies and procedures and pertinent provisions of this manual;

c. Employee and supervisor responsibilities for reporting all accidents;

d. Provisions for medical facilities and emergency response and procedures for obtaining medical treatment or emergency assistance;

e. Procedures for reporting and correcting unsafe conditions or practices;

f. Job hazards and the means to control/eliminate those hazards, including applicable PHAs and/or AHAs;

g. Specific training as required by this manual.

01.B.04 Visitors and Authorized Entrants.

a. A visitor is anyone coming to the site for short-term action (e.g., inspection, meetings, deliveries, etc.). An authorized entrant is anyone entering the site that is assigned to the site but is not a site worker (e.g., security forces, other military forces, etc.). Signs shall be posted at all site entrances requiring anyone entering the site to report to the project office for a safety briefing.

b. All visitors and authorized entrants to USACE Government- or Contractor-controlled sites presenting hazardous conditions shall be briefed by a Qualified Person on the hazards to be expected on the site and the safety and health controls required (e.g., hard hat, foot protection, etc.

c. The site manager shall ensure that all visitors entering the site are properly protected and are wearing or provided the appropriate PPE.

d. Site personnel should maintain a stock of common PPE, such as hard hats, eye protection, ear plugs, and reflective vests, for use by visitors

e. The site manager shall provide an escort for all visitors while on site.

f. A visitor sign-in/out log shall be maintained on site. The site manager shall maintain a roster of all authorized entrants that enter the site.

01.B.05 Safety meetings shall be conducted to review past activities, plan for new or changed operations, review pertinent aspects of appropriate AHA (by trade), establish safe working procedures for anticipated hazards, and provide pertinent safety and health training and motivation.

a. Meetings shall be conducted at least once a month for all supervisors on the project location and at least once a week for all workers by supervisors or foremen.

b. Meetings shall be documented, including the date, persons in attendance, subjects discussed, and names of individual(s) who conducted the meeting. Documentation shall be maintained and copies furnished to the GDA on request.

c. The GDA shall be informed of all scheduled meetings in advance and be invited to attend.

01.B.06 Emergency situations.

a. The employer shall provide training in handling emergency situations that may arise from project activities or equipment operation.

b. All persons who may have occasion to use emergency and rescue or lifesaving equipment shall be familiarized with the equipment location, trained in its proper use, be instructed in its capabilities and limitations, and medically qualified for its use.

SECTION 4

TEMPORARY FACILITIES

04.A GENERAL

04.A.01 Plans for the layout of temporary construction buildings, facilities, fencing, and access routes and anchoring systems for temporary structures shall be submitted to and approved by the GDA. ***> See 09.A.19 for temporary building spacing requirements; Section 11 for temporary power distribution approval requirements; and Section 24 for temporary ramp, trestle, scaffold, and platform approval requirements.***

04.A.02 The design and construction of temporary structures shall consider the following loadings (Reference American Society of Civil Engineers (ASCE) 7-98):

a. Dead and live loads;

b. Soil and hydrostatic pressures;

c. Wind loads;

d. Rain and snow loads;

e. Flood and ice loads; and

f. Seismic forces.

04.A.03 Trailers and other temporary structures used as field offices, as personnel housing, or for storage shall be anchored with rods and cables or by steel straps to ground anchors. The anchor system shall be designed to withstand winds and must meet applicable state or local standards for anchoring mobile trailer homes.

04.A.04 Fencing and warning signs.

a. Temporary project fencing (or a substitute acceptable to the GDA and delineated in the APP) shall be provided on all projects located in areas of active use by members of the public, including those areas in close proximity to family housing areas and/or school facilities.

b. Fencing shall extend from grade to a minimum of 48 in (1.2 m) above grade and shall have a maximum mesh size of 2 in (50 mm). Fencing shall remain rigid/taut with a minimum of 200 lbs (.9 kN) of force exerted on it from any direction with less than 4 in (100 mm) of deflection.

c. Signs warning of the presence of construction hazards and requiring unauthorized persons to keep out of the construction area shall be posted on the fencing. At minimum, signs shall be posted every 150 ft (45.7 m). Fenced sides of projects that are less than 150 ft (45.7 m) shall, at minimum, have at least one warning sign. ***> See also Section 8.***

d. Depending upon the nature and location of the project site, the GDA may determine that fencing is not required. This will be based on a risk analysis of public exposure and other project specific considerations, and will be included in the applicable AHA. In those locations where the GDA has determined fencing is not required, signs, warning of construction hazards, shall be conspicuously posted.

04.A.05 Temporary Work Camps (Floating plants excluded).

a. All sites used for temporary work camps shall be adequately drained. They shall not be subject to periodic flooding nor located within 200 ft (61 m) of swamps, pools, sink holes, or other surface collections of water unless adequate mosquito control methods have been implemented. The sites shall be graded, ditched, and rendered free from depressions in which water may become a nuisance.

b. Sites shall be sized to prevent overcrowding of necessary structures.

c. The grounds and open areas surrounding the shelters shall be maintained free of rubbish, debris, waste paper, garbage, or other refuse.

d. Shelters will provide protection from the elements, and each room used for sleeping purposes shall contain at least 50 ft^2 (4.6 m^2) of floor space for each occupant and at least 7 ft-6 in (2.3 m) ceilings.

e. Beds, cots, or bunks, and suitable storage facilities (such as wall lockers for clothing and personal articles) shall be provided in every room used for sleeping purposes. Beds shall be spaced not closer than 36 in (91.4 cm) both laterally and end-to-end and shall be elevated at least 12 in (30.4 cm) from the floor. Double-decked bunk beds shall be spaced not fewer than 48 in (121.9 cm) both laterally and end-to-end with a minimum space of not fewer than 27 in (68.5 cm) between the upper and lower bunk. Triple deck bunks are prohibited.

f. Floors shall be constructed of wood, asphalt, or concrete. Wooden floors shall be of smooth and tight construction. Floors shall be kept in good repair.

g. All wooden floors shall be elevated not less than 1.5 ft (0.45 m) above the ground level at all points to prevent dampness and permit free circulation of air beneath, and for easier and safer maintenance.

h. Living quarters shall be provided with windows that may be opened for purposes of ventilation.

i. All exterior openings shall be effectively screened with 16-mesh material and screen doors shall be equipped with self-closing devices.

j. Temporary sleeping quarters shall be heated, cooled, ventilated, lighted, and maintained in a clean and safe condition.

k. Sleeping quarters must comply with applicable provisions of the National Fire Protection Agency (NFPA) 101 - Life Safety Code.

04.A.06 Unless otherwise indicated, throughout this manual, lumber dimensions are given in nominal sizes.

04.B ACCESS/HAUL ROADS

04.B.01 Access/haul roads shall be designed in accordance with current engineering criteria. Prior to construction, the Contractor shall provide the GDA with a copy of the Access/Haul Road plan for review and acceptance. Work on the haul road shall not commence until the GDA has accepted the plan. The plan shall address the following items:

a. Equipment usage, traffic density, and hours of operation;

b. Road layout and widths, horizontal and vertical curve data, and sight distances;

c. Sign and signalperson requirements, road markings, and traffic control devices;

d. Drainage controls;

e. Points of contact between vehicles and the public, and safety controls at these points of contact;

f. Maintenance requirements, including roadway hardness and smoothness and dust control; and

g. Hazards adjacent to the road, such as bodies of water, steep embankments, etc.

04.B.02 No employer shall move, or cause to be moved, any equipment or vehicle upon an access or haul road unless the roadway is constructed and maintained to safely accommodate the movement of the equipment or vehicle involved.

04.B.03 When road levels are above working levels, berms, barricades, or curbs shall be constructed to prevent vehicles overrunning the edge or end of embankment. Berms/curbs shall be constructed to one-half the diameter of the tires of the largest piece of equipment using the roadway.

04.B.04 Roadways shall have a crown and ditches for drainage. Water shall be intercepted before reaching a switch back or large fill and be led off.

04.B.05 Haul roads shall be constructed to widths suitable for safe operation of the equipment at the travel speeds proposed by the Contractor and accepted by the GDA.

04.B.06 All roads, including haul roads, shall be posted with maximum speed limits.

04.B.07 An adequate number of turn-outs shall be provided on single lane roads with two-way traffic. When turn-outs are not practical, the Contractor shall provide a traffic control system to prevent accidents.

04.B.08 Whenever possible, use a right-hand traffic pattern on two-way haul roads.

04.B.09 Curves.

a. All curves shall have open sight lines and as great a radius as practical.

b. Vehicle speed shall be limited on curves so that vehicles can be stopped within one-half the visible distance of the roadway.

c. The design of horizontal curves shall consider vehicle speed, roadway width and surfacing, and super elevation.

04.B.10 Grades.

a. When necessary, based on grade and machine and load weight, machines shall be equipped with retarders to assist in controlling downgrade descent.

b. Truck haul roads should be kept to less than a 10% grade. There should be no more than 400 ft (121.9 m) of grade exceeding 10%.

c. The maximum allowable grade shall not exceed 12%.

04.B.11 Lighting shall be provided as necessary.

04.B.12 Traffic control lights, barricades, road markings, signs, and signalpersons for the safe movement of traffic shall be provided in accordance with the DOT Federal Highway Administration's "*Manual on Uniform Traffic Control Devices*" and this Section.

04.B.13 Roadway hardness, smoothness, and dust control shall be used to maintain the safety of the roadway.

04.B.14 All roads shall be maintained in a safe condition and eliminate or control dust, ice, and similar hazards.

04.B.15 The deposition of mud and or other debris on public roads shall be minimized to the extent possible and in accordance with local requirements.

SECTION 6

HAZARDOUS OR TOXIC AGENTS AND ENVIRONMENTS

06.A GENERAL

06.A.01 Exposure standards.

a. Exposure, through inhalation, ingestion, skin absorption, or physical contact, to any chemical, biological, or physical agent in excess of the acceptable limits specified in the most recently published ACGIH guideline, "*Threshold Limit Values and Biological Exposure Indices,*" or by OSHA, whichever is more stringent, shall be prohibited. For the purpose of this document, the most stringent standard is the Occupational Exposure Limit (OEL).

b. In case of conflicts between ACGIH and other standards or regulations referenced in this manual, the more stringent shall prevail.

c. The employer shall comply with all applicable standards and regulations to reduce contaminant concentration levels As Low As is Reasonably Achievable (ALARA).

d. Activities where occupational exposure to a chemical or biological agent is possible shall comply with current Department of Army (DA) safety and occupational health requirements for chemical and biological agents.

06.A.02 Hazard evaluation.

a. Jobsite operations, materials, and equipment involving potential exposure to hazardous or toxic agents or environments shall be evaluated by a qualified industrial hygienist, or other competent person, to formulate a hazard control program. A description of the methods to be used must be accepted by the

GDA before the start of the specific operation. ***> This evaluation shall be performed at least annually for USACE operations.***

b. AHA and/or PHA shall be used to document the evaluation. The hazard evaluation shall identify all substances, agents, and environments that present a health, explosive or fire hazard to workers or visitors and recommend hazard control measures. Engineering and administrative controls shall be used to control hazards; in cases where engineering or administrative controls are not feasible, PPE may be used.

c. The hazard evaluation shall identify: the nature of the evaluation (air, biological or radiological samples, etc.); that it serves as certification of hazard evaluation; the workplace and activity evaluated; the name, position and credentials of the person certifying that the evaluation has been performed; and the date of the evaluation.

06.A.03 Testing and monitoring.

a. Approved and calibrated testing devices shall be provided to measure hazardous or toxic agents, and environments. Devices shall be labeled with calibration information (name of individual performing the calibration and date of current calibration). Calibration results shall be logged.

b. Individuals performing testing and monitoring shall be trained in hazards and testing and monitoring procedures. Testing devices shall be used, inspected, and maintained in accordance with the manufacturer's instructions, a copy of which shall be maintained with the devices.

c. NIOSH or OSHA sampling and analytical methods or other approved sampling and analytical methods shall be used. Laboratories used for analysis shall be accredited by nationally recognized bodies, such as the American Industrial Hygiene Association (AIHA), for the type of analysis performed.

d. Determinations of the concentrations of, and hazards from, hazardous or toxic agents and environments shall be made by a qualified industrial hygienist or other competent person during initial startup and as frequently as necessary to ensure the safety and health of the work environment.

e. Records of testing/monitoring shall be maintained on site and shall be available to the GDA upon request.

06.A.04 The following methods shall be utilized for the control of exposure to hazardous or toxic agents and environments:

a. Substitution, if the substitute process or product is determined to provide the same outcome and to be less of a hazard;

b. Engineering controls (such as local/general ventilation), to limit exposure to hazardous or toxic agents and environments within acceptable limits;

c. Work practice controls, when engineering controls are not feasible or are not sufficient to limit exposure to hazardous or toxic agents and environments within acceptable limits, ;

d. Appropriate PPE (i.e., respirators, gloves, etc.) and associated programs shall be instituted when engineering, work practice controls or material substitution are not feasible or are not sufficient to limit exposure to hazardous or toxic agents.

06.B HAZARDOUS OR TOXIC AGENTS

06. B.01 Chemical Hazard Communication. A written hazard communication program shall be developed when the use of hazardous or toxic agents (any chemical which is a physical/health hazard) are already present or are procured, stored or used at a project site (per 29 CFR 1910.1200). The written hazard communication (hazcom) program shall address the following in project- specific detail:

a. Hazardous or Toxic Agent Inventory. A list of the hazardous or toxic agents with the following information:

(1) Explanation of how the agents are to be used at the project.

(2) For emergency response purposes, approximate quantities (e.g., liters, kilograms, gallons, pounds) that are onsite or will be on site at any given time shall be provided for each material.

(3) A site map will be attached to the inventory showing where inventoried substances are stored.

(4) The inventory and site map will be updated as frequently as necessary to insure it is current and accurately reflects those materials on site.

b. Hazardous or Toxic Agent Labeling. Procedures for assuring that containers used to store and transport hazardous or toxic agents around the project site are appropriately labeled to communicate the physical and health hazards associated with the agents in the containers.

c. Material Safety Data Sheet (MSDS) Management. Procedures to ensure MSDSs are maintained at project site for each agent.

(1) Employees shall review MSDSs for specific safety and health protection procedures.

(2) Applicable information contained in the MSDS shall be incorporated in the AHA/PHAs or MSDS can be attached to the AHA/PHA for activities in which material will be used.

(3) The information will be followed in the use, storage, and disposal of material and selection of hazard control and emergency response measures.

d. Employee Information and Training. Procedures to ensure employees are trained initially and periodically when use of hazardous or toxic agents is altered or modified to accommodate changing on-site work procedures. Training shall cover the following topics:

(1) Requirements and use of the hazcom program on the project;

(2) The location of all hazardous or toxic agents at the project;

(3) Identification and recognition of hazardous or toxic agents on the project;

(4) Physical and health hazards of the hazardous or toxic agents pertinent to project activities;

(5) Protective measures employees can implement when working with project-specific hazardous or toxic agents.

06.B.02 When engineering and work practice controls or substitution are either infeasible or insufficient, appropriate PPE and chemical hygiene facilities shall be provided and used for the transportation, use, and storage of hazardous or toxic agents.

a. When irritants or hazardous substances may contact skin or clothing, chemical hygiene facilities and PPE shall be provided. PPE may include suitable gloves, face/eye protection and chemical protective suits.

(1) The qualified industrial hygienist or other competent personnel shall determine the scope and type of protective equipment.

(2) Special attention shall be given to selecting proper chemical protection when working with materials designated with a "skin" notation by OEL. Such materials may produce systemic toxic effects through absorption through unbroken skin. ***> See Section 5.***

b. When eyes or body of any person may be exposed to hazardous or toxic agents, suitable facilities for quick drenching or flushing of the eyes and body shall be provided in the work area for immediate emergency use and shall be no more than ten (10) seconds from the hazardous material. ***> See ANSI Z358.1.***

(1) Emergency eyewash equipment must be provided where there is the potential for an employee's eyes to be exposed to corrosives, strong irritants, or toxic chemicals.

(2) The emergency eyewash equipment must irrigate and flush both eyes simultaneously while the operator holds the eyes open.

(3) The emergency eyewash equipment must deliver at least 0.4 gal (1.5 L) of water per minute for fifteen (15) minutes or more (minimum 6 gallons (22.7 L) water).

(4) Personal eyewash equipment may be used to supplement emergency washing facilities. They must not be used as a substitute. Personal eyewash fluids shall be visually inspected monthly to ensure they remain sanitary with no visible sediments.

(5) All plumbed emergency eyewash facilities and hand-held drench hoses shall be activated weekly and inspected annually to ensure that they function correctly and that the quality and quantity of water is satisfactory for emergency washing purposes.

06.B.03 Storage prior to transportation of hazardous chemicals, materials, substances and wastes shall be under the supervision of a qualified person.

a. Transportation, use, and storage of hazardous or toxic agents shall be planned and controlled to prevent contamination

of people, animals, food, water, equipment, materials, and environment.

b. All storage of hazardous or toxic agents shall be in accordance with the recommendations of the manufacturer, OSHA and NFPA requirements and accessible only to authorized personnel.

c. Disposal of surplus or excess hazardous or toxic agents shall occur in a manner that will not contaminate or pollute any water supply, ground water, or streams; and will comply with Federal, State, and local regulations and guidelines.

d. Containers used to hold hazardous or toxic agents should not be used to hold other materials unless they have been managed or cleaned under hazardous waste and Department of Transportation (DOT) regulatory requirements.

e. Every hazardous or toxic agent being transported for disposal shall be transported with a copy of the substance's MSDS whenever applicable.

f. Persons who prepare shipments of hazardous chemicals, materials, substances and/or wastes that are defined as hazardous material under DOT regulations are required to be DOT trained, certified and issued an appointment letter in accordance with Defense Transportation Regulation 4500.9-R, Chapter 204.

06.B.04 A Process safety management program of highly hazardous chemicals shall be employed in accordance with 29 CFR 1910.119 or 29 CFR 1926.64 whenever a work activity involves:

a. A process that involves a chemical at or above the threshold quantities listed in Appendix A of the above-cited CFRs; or

b. A process that involves a flammable liquid or gas on site in one location in a quantity of 10,000 lb (4,535.9 kg) or more as defined in 29 CFR 1926.59(c), except:

(1) Hydrocarbon fuels used solely for workplace consumption as a fuel if such fuels are not part of a process containing another highly hazardous chemical covered by the standards cited above; or

(2) Flammable liquids stored in atmospheric tanks or transferred that are kept below their normal boiling point without benefit of chilling or refrigeration.

06.B.05 Lead and Asbestos Hazard Control Activities.

a. General. All projects will be evaluated for the potential to contact asbestos-containing material (ACM) and lead-based paint (LBP).

(1) If the evaluation shows the potential for activities to generate unacceptable occupational exposure to LBP, a written lead compliance plan shall be written. The lead compliance plan shall be in accordance with 29 CFR 1910.1025 and 29 CRF 1926.62.

(2) If the evaluation shows the potential for activities to disturb ACM, an asbestos abatement plan shall be developed. The asbestos abatement plan shall be in accordance with 29 CFR 1910.1001; 29 CFR 1926.1101; and 40 CFR 61, Subpart M.

(3) These plan(s) shall be developed as an appendix to the contract APP or, for USACE operations, the Project Safety Plan. The written plan(s) shall be submitted for acceptance by the GDA before beginning work.

b. Lead Compliance Plan. A lead compliance plan shall describe the procedures to be followed to protect employees from lead hazards while performing lead hazard control activities. The Plan shall address the following:

SECTION 7

LIGHTING

07.A GENERAL

07.A.01 While work is in progress, offices, facilities, accessways, working areas, construction roads, etc., shall be lighted by at least the minimum light intensities specified in Table 7-1. If lighting provided is questionable as to intensity, light monitoring shall be performed to insure proper light intensities are provided.

07.A.02 Office lighting shall be in accordance with ANSI/ Illuminating Engineering Society of North America (IESNA) RP-1.

07.A.03 Roadway lighting shall be in accordance with ANSI/IESNA RP-8.

07.A.04 Marine lighting shall be in accordance with ANSI/IESNA RP-12.

07.A.05 Means of egress.

a. Means of egress shall be illuminated, with emergency and non-emergency lighting, to provide a minimum of 1 footcandle (fc), [1 lumen per square foot (lm/ft^2)], (11 lux (lx), measured at the floor. ***> Reference NFPA 101.***

b. The illumination shall be arranged so that the failure of any single lighting unit, including the burning out of an electric bulb, will not leave any area in total darkness, impeding the means of egress.

07.A.06 Lamps and fixtures will be guarded and secured to preclude injury to personnel. Open fluorescent fixtures will be provided with wire guards, lenses, tube guards and locks, or safety sockets that require force in the horizontal axis to remove the lamp.

07.A.07 Lamps for general illumination shall be protected from accidental contact or breakage. Protection shall be provided by elevation of at least 7 ft (2.1 m) from normal working surface, suitable fixture or lamp holder with a guard. Additionally, fixtures may be no closer than 18 in (0.5 m) to overhead sprinkler systems, if the building is so equipped, per NFPA Standards.

07.A.08 If work is to be performed at night, a night operations lighting plan shall be developed to ensure that all activities, areas and operations are adequately illuminated to perform work safely.

07.A.09 For temporary lighting, see Section 11.E.06.

TABLE 7-1

MINIMUM LIGHTING REQUIREMENTS

Facility or function	Illuminance – lx (lm/ft^2)
Accessways	
- general indoor	55 (5)
- general outdoor	33 (3)
- exitways, walkways, ladders, stairs	110 (10)
Administrative areas (offices, drafting and meeting rooms, etc.)	540 (50)
Chemical laboratories	540 (50)
Construction areas	
- general indoor	55 (5)
- general outdoor	33 (3)
- tunnels and general underground work areas (minimum 110 lx required at tunnel and shaft heading during drilling, mucking, and scaling)	55 (5)
Conveyor routes	110 (10)
Docks and loading platforms	33 (3)
Elevators, freight and passenger	215 (20)
First-aid stations and infirmaries	325 (30)
Maintenance/operating areas/shops	
- vehicle maintenance shop	325 (30)
- carpentry shop	110 (10)
- outdoors field maintenance area	55 (5)
- refueling area, outdoors	55 (5)
- shops, fine detail work	540 (50)
- shops, medium detail work	325 (30)
- welding shop	325 (30)
Mechanical/electrical equipment rooms	110 (10)
Parking areas	33 (3)
Toilets, wash, and dressing rooms	110 (10)
Visitor areas	215 (20)
Warehouses and storage rooms/areas	
- indoor stockroom, active/bulk storage	110 (10)
- indoor stockroom, inactive	55 (5)
- indoor rack storage	270 (25)
- outdoor storage	33 (3)
Work areas – general (not listed above)	325 (30)

08.B.05 A flag person or other controls shall be provided when operations or equipment on or next to a highway create a traffic hazard. An exception shall be made only when an adequate mechanical signaling or control device is provided for safe direction of the operation.

08.B.06 Where manual (hand) signals are used, only one person shall be designated to give signals to the operator. This signal person shall be located to see the load and be clearly visible to the operator at all times.

08.B.07 Flag signaling shall be accomplished by use of red flags at least 18 in (45.7 cm) square or sign paddles. In periods of darkness, red lights shall be used.

08.B.08 High visibility apparel shall be worn by flag and signal persons. ***> See Section 05.F.***

08.B.09 Signal systems shall be protected against unauthorized use, breakage, weather, or interference; any malfunction shall be cause to stop all work.

08.B.10 Only persons who are competent and qualified by experience and/or training with the operations being directed shall be used as signal persons.

08.B.11 Signal persons shall back one vehicle at a time. While under control of a signal person, the driver shall not back or maneuver until directed and the driver shall stop when visual contact with the signal person is lost.

08.B.12 The signal person shall have a warning device of clear range and penetrating sound to warn persons when the load is coming in so they have time to get in the clear.

08.C TRAFFIC CONTROL

08.C.01 Traffic control shall be accomplished in accordance with DOT Federal Highway Administration's MUTCD.

08.C.02 The Contractor shall conduct his operations in such a manner as to offer the least possible obstruction to the safe and satisfactory movement of traffic over the existing roads during the life of the contract.

08.C.03 The Contractor shall be responsible for providing, erecting, maintaining, and removing all traffic signs, barricades, and other traffic control devices necessary for maintenance of traffic.

08.C.04 All barricades, warning signs, lights, temporary signals, other devices, flagmen, and signaling devices shall meet or exceed the minimum requirements of the local DOT requirements.

08.C.05 Prior to the commencement of contract operations, the Contractor shall submit for acceptance the complete details of the proposed traffic control plan for the maintenance of traffic and access through the contract work area.

08.C.06 The Contractor shall coordinate with the GDA and obtain approval from local authorities prior to closing or restricting any roads.

08.C.07 Barricades, danger, warning and detour signs, as required, shall be erected before any roads are closed.

a. When roads are temporarily closed to public access, barricades or gates shall be used that are highly visible in day or night conditions. At a minimum, barriers shall be coated with reflective paint or be applied with highly reflective tape on both sides, and be signed with R11-2, 'ROAD CLOSED'.

b. Affected roads shall also be posted with appropriate warning signs a minimum of 100 ft (30.5 m) before the barrier by W20-3, DNG-11, WRN-24, or other appropriate signs from the MUTCD or EP 310-6-1a. Size and placement of signs depends on viewing distance and speed limit of roadway.

Appendix D is acceptable in lieu of GFCIs if the exception is documented on an AHA and contains the following:

(1) The conditions, or need, for the exception; and

(2) Implementation of the requirements of the AEGCP;

(3) The request for the exception, the AHA, and the AEGCP must be submitted and accepted by the GDA prior to implementing the program.

11.E TEMPORARY WIRING AND LIGHTING

11.E.01 A sketch of proposed temporary power distribution systems shall be submitted to the GDA and accepted for use before temporary power is installed. The sketch shall indicate the location, voltages, and means of protection of all circuits, including receptacles, disconnecting means, grounding, GFCIs, and lighting circuits.

11.E.02 Testing.

a. Temporary electrical distribution systems and devices shall be checked and found acceptable for polarity, ground continuity, and ground resistance before initial use and before use after modification. GFCI shall be tested monthly.

b. Ground resistance and circuits shall be measured at the time of installation and shall comply with 11.D.02 and 11.D.04. The measurement shall be recorded and a copy furnished to the GDA.

11.E.03 The vertical clearance of temporary wiring for circuits carrying 600 volts or less shall be:

a. 10 ft (3 m) above finished grade, sidewalks, or from any platform;

b. 12 ft (3.8 m) over areas other than public streets, alleys, roads and driveways, subject to vehicular traffic other than truck traffic;

c. 15 ft (4.5 m) over areas other than public streets, alleys, roads and driveways, subject to truck traffic;

d. 18 ft (5.5 m) over public streets, alleys, roads, and driveways.

11.E.04 Wet Locations.

a. USACE personnel and contractors are prohibited from placing electric sump pumps into USACE project bodies of water (lakes, etc.) to support periodic maintenance and/or construction activities. These pumps are not designed to be submerged in locations where people could be present in the water (i.e., recreating, swimming, wading, etc.) and doing so can create an electrical hazard that could result in serious injury or electrocution.

b. Where a receptacle is used in a wet location, it shall be contained in a weatherproof enclosure, the integrity of which is not affected when an attachment plug is inserted.

c. All temporary lighting strings in outdoor or wet locations (such as tunnels, culverts, valve pits, floating plant, etc.) shall consist of lamp sockets and connection plugs permanently molded to the hard service cord insulation.

11.E.05 Wires shall be insulated from their supports.

11.E.06 Temporary lighting.

a. Bulbs attached to temporary lighting strings and extension cords shall be protected by guards unless the bulbs are deeply recessed in a reflector.

b. Unless designed for suspension, temporary lights shall not be suspended by their electric wire.

c. Exposed empty light sockets and broken bulbs shall be replaced immediately.

d. Portable electric lighting used in wet and/or other conductive locations (e.g., drums, tanks, and vessels) shall be operated at 12 volts or less. ***> See also 11.H.***

11.E.07 When temporary wiring is used in tanks or other confined spaces, an approved switch, identified and marked, shall be provided at or near the entrance to such spaces for cutting off the current in emergencies.

11.E.08 Non-metallic sheathed cable may be used as allowed by the NEC and as follows:

a. Along studs, joists, or similar supports closely following the building finish or running boards when 7 ft 8 in (2.3 m) or more above the floor;

b. When firmly attached to each cabinet, box fitting, or fixture by means of a cable clamp. ***> Non-metallic sheathed cable may not be used where precluded by the NEC nor as portable extension cords, lying on the ground subject to any type of traffic, where subject to frequent flexing, or as service entrance cable.***

11.E.09 Temporary lighting circuits shall be separate from electric tool circuits. Receptacle circuits shall be dedicated to either temporary lighting or electric tools and shall be labeled "**LIGHTS ONLY**" or "**TOOLS ONLY**," as applicable.

11.F OPERATIONS ADJACENT TO OVERHEAD LINES

11.F.01 Overhead transmission and distribution lines shall be carried on towers and poles that provide safe clearances over roadways and structures.

c. At least one 2A:10B:C fire extinguisher (at least two properly rated fire extinguishers are required for flammable cargoes).

18.E.05 All rubber-tired motor vehicles shall be equipped with fenders, and tires shall not extend beyond fenders. Mud flaps may be used in lieu of fenders whenever motor vehicle equipment is not designed for fenders.

18.F TRAILERS.

18.F.01 All towing devices used on any combinations of vehicles shall be structurally adequate for the weight drawn and shall be properly mounted.

18.F.02 A locking device or double safety system shall be provided on every fifth wheel mechanism and tow bar arrangement to prevent the accidental separation of towed and towing vehicles.

18.F.03 Every trailer shall be coupled with safety chains or cables to the towing vehicle. Such chain or cable shall prevent the separation of the vehicles in case of tow bar failure.

18.F.04 Trailers equipped with power brakes shall be equipped with a breakaway device that effectively locks-up the brakes in the event the trailer separates from the towing vehicle.

18.G MACHINERY AND MECHANIZED EQUIPMENT

18.G.01 For the purposes of the section, machinery and mechanized equipment is defined as equipment intended for use on construction sites or industrial sites and not intended for operations on public highways. Equipment such as dump trucks, cargo trucks, and other vehicles that may also travel on public roadways must also meet the requirements of 18.E above.

18.G.02 Before any machinery or mechanized equipment is placed in use, it shall be inspected and tested in accordance with the

manufacturer's recommendations and requirements of this manual and shall be certified in writing by a competent person to meet the manufacturer's recommendations and requirements of this manual.

a. The Contractor shall keep records of tests and inspections. These records shall be made available in a timely manner upon request of the GDA and, when submitted, shall become part of the official project file.

b. All safety deficiencies noted during the inspection shall be corrected prior to the equipment being placed in service at the project.

c. Re-inspection. Subsequent re-inspections will be conducted at least annually thereafter. Anytime the machinery or mechanized equipment is removed and subsequently returned to the project (other than equipment removed for routine off-site operations as part of the project), it shall be re-inspected and recertified prior to use.

d. The Contractor shall provide the GDA ample notice in advance of any equipment entering the site so that he/she may observe the Contractor's inspection process and so that spot checks may be conducted.

18.G.03 No modifications or additions that affect the capacity or safe operation of machinery or equipment shall be made without the manufacturer's written approval.

a. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly.

b. In no case shall the original safety factor of the equipment be reduced.

18.G.04 Daily/shift inspections and tests.

a. All machinery and equipment shall be inspected daily (when in use) to ensure safe operating conditions. The employer shall designate competent persons to conduct the daily inspections and tests.

b. Tests shall be made at the beginning of each shift during which the equipment is to be used to determine that the brakes and operating systems are in proper working condition and that all required safety devices are in place and functional.

18.G.05 Whenever any machinery or equipment is found to be unsafe, or whenever a deficiency that affects the safe operation of equipment is observed, the equipment shall be immediately taken out of service and its use prohibited until unsafe conditions have been corrected.

a. A tag indicating that the equipment shall not be operated, and that the tag shall not be removed, shall be placed in a conspicuous location on the equipment. ***> See Section 8.*** Where required, lockout procedures shall be used. ***> See Section 12***.

b. The tag shall remain in its attached location until it is demonstrated to the individual deadlining the equipment that it is safe to operate.

c. When corrections are complete, the machinery or equipment shall be retested and re-inspected before being returned to service.

18.G.06 Machinery and mechanized equipment shall be operated only by designated qualified personnel.

a. Machinery or equipment shall not be operated in a manner that will endanger persons or property nor shall the safe operating speeds or loads be exceeded.

b. Getting off or on any equipment while it is in motion is prohibited.

c. Machinery and equipment shall be operated in accordance with the manufacturer's instructions and recommendations.

d. The use of headphones for entertainment purposes (e.g., AM/FM radio or cassette) while operating equipment is prohibited.

e. USACE in-house equipment licensing examiners must be qualified to operate the equipment on which they are qualifying others (bulldozers, tractors, backhoes, etc.).

(1) These examiners may not license themselves, but instead, must be licensed by another qualified examiner.

(2) All licensing/qualification of equipment operators by examiners must include, at a minimum, requirements of this section, the manufacturer's instructions and recommendations as well as observation of a practical operating examination on the equipment.

18.G.07 When the manufacturer's instructions or recommendations are more stringent than the requirements of this manual, the manufacturer's instructions or recommendations shall apply.

18.G.08 Inspections or determinations of road and shoulder conditions and structures shall be made in advance to assure that clearances and load capacities are safe for the passage or placing of any machinery or equipment.

18.G.09 Equipment requirements.

a. An operable fuel gage;

b. An operable audible warning device (horn);

c. Adequate rearview mirror or mirrors;

d. Non-slip surfaces on steps;

e. A power-operated starting device;

f. Seats or equal protection must be provided for each person required to ride on equipment;

g. Whenever visibility conditions warrant additional light, all vehicles, or combinations of vehicles, in use shall be equipped with at least two headlights and two taillights in operable condition;

h. All equipment with windshields shall be equipped with powered wipers. Vehicles that operate under conditions that cause fogging or frosting of windshields shall be equipped with operable defogging or defrosting devices. Glass in windshields, windows, and doors shall be safety glass. Cracked or broken glass shall be replaced;

i. Mobile equipment, operating within an off-highway job site not open to public traffic, shall have a service brake system and a parking brake system capable of stopping and holding the equipment while fully loaded on the grade of operation. In addition, it is recommended that heavy-duty hauling equipment have an emergency brake system that will automatically stop the equipment upon failure of the service brake system. This emergency brake system should be manually operable from the driver's position.

18.G.10 Mechanized equipment shall be shut down before and during fueling operations. Closed systems, with an automatic shut-off that will prevent spillage if connections are broken, may be used to fuel diesel powered equipment left running.

18.G.11 Bulldozer and scraper blades, end-loader buckets, dump bodies, and similar equipment shall be either fully lowered or

blocked when being repaired or when not in use. All controls shall be in a neutral position, with the engines stopped and brakes set, unless work being performed on the machine requires otherwise.

18.G.12 Stationary machinery and equipment shall be placed on a firm foundation and secured before being operated.

18.G.13 All mobile equipment and the areas in which they are operated shall be adequately illuminated while work is in progress.

18.G.14 Equipment powered by an internal combustion engine will not be operated in or near an enclosed area unless adequate ventilation is provided to ensure the equipment does not generate a hazardous atmosphere.

18.G.15 All vehicles that will be parked or are moving slower than normal traffic on haul roads shall have a yellow flashing light or four-way flashers visible from all directions.

18.G.16 No one shall be permitted in the truck cab during loading operations except the driver, and then only if the truck has a cab protector. ***> See also 18.C.16.a.***

18.G.17 All machinery or equipment operating on rails, tracks, or trolleys (except railroad equipment) shall be provided with substantial track scrapers or track clearers (effective in both directions) on each wheel or set of wheels.

18.G.18 Steering or spinner knobs shall not be attached to the steering wheel unless the steering mechanism prevents road reactions from causing the steering handwheel to spin. When permitted, the steering knob shall be mounted within the periphery of the wheel.

18.G.19 Safeguards, i.e., bumpers, railings, tracks, etc., shall be provided to prevent machinery and equipment operating on a floating plant from going into the water.

18.G.20 The controls of loaders, excavators, or similar equipment with folding booms or lift arms shall not be operated from a ground position unless so designed.

18.G.21 Personnel shall not work in, pass under, or ride in the buckets or booms of loaders in operation.

18.G.22 Tire service vehicles shall be operated so that the operator will be clear of tires and rims when hoisting operations are being performed. Tires large enough to require hoisting equipment will be secured from movement by continued support of the hoisting equipment unless bolted to the vehicle hub or otherwise restrained. ***> Also see 18.B.07.***

18.G.23 Each bulldozer, scraper, dragline, crane, motor grader, front-end loader, mechanical shovel, backhoe, and other similar equipment shall be equipped with at least one dry chemical or CO_2 fire extinguisher with a minimum rating of 10-B:C.

18.G.24 Fill hatches on water haul vehicles shall be secured or the opening reduced to a maximum of 8 in (20.3 cm).

18.G.25 Maintenance and repairs.

a. Maintenance, including preventive maintenance, and repairs shall be in accordance with the manufacturer's recommendations and shall be documented. Records of maintenance and repairs conducted during the life of a contract shall be made available upon request of the GDA.

b. All machinery or equipment shall be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done. Equipment designed to be serviced while running are exempt from this requirement.

c. All repairs on machinery or equipment shall be made at a location that will protect repair personnel from traffic.

d. Heavy machinery, equipment, or parts thereof that are suspended or held apart by slings, hoist, or jacks also shall be substantially blocked or cribbed before personnel are permitted to work underneath or between them.

18.G.26 Dump trucks.

a. All dump trucks shall be equipped with a physical holding device to prevent accidental lowering of the body while maintenance or inspection work is being done.

b. All hoist levers shall be secured to prevent accidental starting or tripping of the mechanism.

c. All off-highway end-dump trucks shall be equipped with a means (plainly visible from the operator's position while looking ahead) to determine whether the dump box is lowered.

d. Trip handles for tailgates on all dump trucks shall be arranged to keep the operator in the clear.

18.G.27 Parking.

a. Whenever equipment is parked, the parking brake shall be set.

b. Equipment parked on an incline shall have the wheels chocked or track mechanisms blocked and the parking brake set.

c. All equipment left unattended at night, adjacent to a highway in normal use or adjacent to construction areas where work is in progress, shall have lights or reflectors, or barricades equipped with lights or reflectors, to identify the location of the equipment.

18.G.28 Towing.

a. All towing devices used on any combination of equipment shall be structurally adequate for the weight drawn and securely mounted.

b. Persons shall not be permitted to get between a towing vehicle and the piece of towed equipment until both have been completely stopped with all brakes set and wheels chocked on both vehicle and equipment.

18.G.29 Powered Industrial Trucks (PITs)/Forklifts and Telehandlers. All PITs and telehandlers shall meet the requirements of design, construction, stability, inspection, testing, maintenance, and operation (as defined in ANSI/ASME B56.1).

> NOTE: When PITs or Telehandlers are configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load, refer to Sections 16.A.01 > Exemptions and 16.V.

a. All PITs, lift trucks, stackers, and similar equipment shall have the rated capacity posted on the vehicle so as to be clearly visible to the operator. When the manufacturer provides auxiliary removable counterweights, corresponding alternate rated capacities also shall be clearly shown on the vehicle. The ratings shall not be exceeded.

b. Only trained and authorized operators shall be permitted to operate a PIT.

(1) Training must be both classroom and practical operation and in accordance with OSHA Standard 29 CFR 1910.178. It must be on the same type of truck the student uses on the job.

(2) The employer must certify that the operator has been trained and evaluated as required by the standard. The certification shall include the name of the operator, the date of the training, the date of the evaluation, and the identity of the

person(s) performing the training or evaluation. Refresher training shall be provided as indicated by the standard.

c. When a PIT is left unattended, load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes shall be set. Wheels shall be blocked if the truck is parked on an incline.

d. An overhead guard shall be used as protection against falling objects. It should be noted that an overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application, but not to withstand the impact of a falling capacity load.

e. Dock board or bridge plates shall be properly secured before they are driven over. Dock board or bridge plates shall be driven over carefully and slowly and their rated capacity shall never be exceeded.

f. Under all travel conditions the PIT shall be operated at a speed that will permit it to be brought to a stop in a safe manner.

g. On all grades the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface.

h. When ascending or descending grades in excess of 10%, loaded PITs shall be driven with the load upgrade.

18.H DRILLING EQUIPMENT

18.H.01 Applicability. The requirements of this section are in addition to other requirements identified in Section 18 and are applicable to rock, soil, and concrete drilling operations.

18.H.02 Drilling equipment shall be operated only by qualified (by training and experience) personnel who are authorized by their respective employer to operate subject equipment. The drilling equipment shall be operated, inspected, and maintained as specified in the manufacturer's operating manual. A copy of the manual will be available at the job site.

18.H.03 Prior to bringing earth drilling equipment on the job site, a survey shall be conducted to identify overhead electrical hazards and potential ground hazards, such as contact with unexploded ordnance, hazardous agents in the soil, or underground utilities.

a. The location of any overhead or ground hazards shall be identified on a site layout plan.

b. The findings of this survey and the controls for all potential hazards shall become a part of the AHA.

18.H.04 The AHA for an earth drilling activity will not be accepted unless:

a. It contains a copy of the MSDS for the drilling fluids, if required;

b. It meets the requirements of 01.A.13; and

c. It indicates that the site layout plan specified in 18.H.03 will become a part of the analysis, and will be covered at the preparatory inspection (pre-activity safety briefing), when the plan has been completed.

18.H.05 Training.

a. Members of drilling crews shall be trained in:

(1) The operation, inspection, and maintenance of the equipment;

(2) The safety features and procedures to be used during operation, inspection, and maintenance of the equipment; and

(3) Overhead electrical line and underground hazards.

b. This training will be based on the equipment operating manual and the AHA.

18.H.06 Drilling equipment shall be equipped with two easily accessible emergency shutdown devices, one for the operator and one for the helper.

18.H.07 Clearance from electrical sources shall be as specified in Table 11-1

a. Drilling equipment shall be posted with signs warning the operator of electrical hazards.

b. The equipment operator shall assure proper clearance before moving equipment. Clearance shall be monitored by a spotter or by an electrical proximity warning device.

18.H.08 Moving equipment.

a. Before drilling equipment is moved, the travel route shall be surveyed for overhead and terrain hazards, particularly overhead electrical hazards.

b. Earth drilling equipment shall not be transported with the mast up. The exception is movement of the equipment required in drilling a series of holes, such as in blasting, if the following conditions are satisfied:

(1) Movement is over level, smooth terrain;

(2) The path of travel has been inspected for stability and the absence of holes, other ground hazards, and electrical hazards;

(3) The travel distance is limited to short, safe distances; and

(4) Travel with mast up may only be performed according to manufacturer's recommendations and/or specification.

18.H.09 Equipment set-up.

a. Equipment shall be set-up on stable ground and maintained level. Cribbing shall be used when necessary.

b. Outriggers shall be extended per the manufacturer's specifications.

c. When drilling equipment is operated in areas with the potential for classification as a confined space, the requirements of 34.A shall be followed.

18.H.10 When drilling equipment is parked or disabled on a highway or the adjacent shoulder, yellow flashing lights and other traffic warning devices (cones, flags, signs, etc) per 49 CFR 571.5 shall be used during the daytime and reflector, flares, electric lights or other effective means of identification shall be displayed at night.

18.H.11 Equipment operation.

a. Weather conditions shall be monitored. Operations shall cease during electrical storms or when electrical storms are imminent. ***> See 06.I.01.***

b. Drill crewmembers shall not wear loose clothing, jewelry, or equipment that might become caught in moving machinery.

c. Auger guides shall be used on hard surfaces. (If impractical due to type of drill rig being used (fullsize and/or crane-mount), a risk assessment shall be performed by a qualified person, and documented in the AHA as to why this requirement is not practical. Identification of additional precautions and/or controls

shall be identified to insure an equal level of safety is being accomplished).

d. The operator shall verbally alert employees and visually ensure employees are clear from dangerous parts of equipment before starting or engaging equipment.

e. The discharge of drilling fluids shall be channeled away from the work area to prevent the ponding of water.

f. Hoists shall be used only for their designed intent and shall not be loaded beyond their rated capacity. Steps shall be taken to prevent two-blocking of hoists.

g. The equipment manufacturer's procedures shall be followed if rope becomes caught in, or objects get pulled into, a cathead.

h. Drill rods shall not be run or rotated through rod slipping devices. No more than 1 ft (0.3 m) of drill rod column shall be hoisted above the top of the drill mast. Drill rod tool joints shall not be made up, tightened, or loosened while the rod column is supported by a rod-slipping device.

i. Dust shall be controlled. When there is potential for silica exposure, the requirements contained in Section 06.M shall be implemented.

j. Augers shall be cleaned only when the rotating mechanism is in neutral and the auger stopped. Long-handled shovels shall be used to move cutting from the auger.

k. Open boreholes shall be capped and flagged. Open excavations shall be barricaded.

l. Means (e.g., guard around the auger; barricade around the perimeter of the auger; electronic brake activated by a presence-sensing device) shall be provided to guard against employee contact with the auger.

m. The use of side-feed swivel collars on drill rods are restricted to those collars that are retained by either a manufacturer-designed stabilizer or a stabilizer approved by a professional engineer.

18.I ALL TERRAIN VEHICLES (ATVS)

18.I.01 ATVs are vehicles intended for off-road use that travel on four low pressure tires with a seat designed to be straddled by the operator.

> Utility Vehicles are designed to perform off-road utility tasks such as passenger and cargo transportation and are described separately in Section 18.J. (e.g., Rangers, Rhino, M-Gators, Gators, and Mules).

18.I.02 Every ATV operator shall have completed a nationally-recognized accredited ATV training course (such as provided by the Specialty Vehicles Institute of America or by in-house resources that have been certified as trainers by an accredited organization) prior to operation of the vehicle.

a. The operator must pass an operating skills test prior to being allowed to operate an ATV. Proof of completion of this training shall be made available to the GDA upon request.

b. The in-house trainer, certified by an accredited organization, must perform at least 1 training session every 3 years to maintain certification. If the accrediting agency requires the trainer to return for refresher training to maintain certification, this shall be in addition to the 1 training session taught every 3 years.

18.I.03 All ATVs shall be equipped with: