

# **Cultural Resources Monitoring Report and Recommendations Humboldt Bay Power Plant Decommissioning Humboldt County, California**

Prepared for  
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Humboldt Bay Power Plant  
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August 2013

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National Archaeological Database (NADB)  
*Type of Study:* Disturbance Study, Testing, and Monitoring  
*Sites Recorded/Updated:* 1; *Isolates Recorded:* 0  
*USGS Quadrangles:* Eureka South, California, Acreage: 2.07 acres  
*Level of Investigation:* CEQA  
*Key Words:* Humboldt County, Pacific Gas and Electric,  
California Coastal Commission, CEQA

# Executive Summary

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Pacific Gas and Electric (PG&E) is in the process of decommissioning and terminating the Nuclear Regulatory Commission license of its Humboldt Bay Power Plant (HBPP). In 2006, the PG&E Humboldt Bay facility included two operating natural gas units (Units 1 and 2), an inoperable nuclear unit (Unit 3), two diesel-fired combustion turbine Mobile Emergency Power Plants (MEPP 2 and MEPP 3), and related appurtenances. These facilities were situated on the PG&E Campus, adjacent to an additional PG&E facility, the Humboldt Bay Generating Station (HBGS). Together the two facilities occupied the 5.4 acre Campus within a 143-acre parcel on Buhne Point in the town of King Salmon, Humboldt County, California.

Provisions for the protection of cultural resources were enacted in accordance with the California Environmental Quality Act (CEQA), a Coastal Development Permit (CDP E-09-010, 12/10/2009) issued by the California Coastal Commission (CCC), and a Humboldt Bay Harbor, Recreation, and Conservation District Permit (HBHRCD A-2010-06, 10/14/2010). Special Condition 4 of CDP E-09-010 required that an Archeological Resources Protection Plan (ARPP) (included in Appendix A), be prepared that included a worker training program which includes the identification and protection of cultural resources, cultural resources monitoring protocols, and procedures for halting construction and evaluating resources should they be discovered. This AARP was completed by Strachan Consulting, LLC in consultation with CH2MHill archaeologist Clint Helton. In accordance with Special Condition 4, CH2M HILL contracted with DZC Consulting to provide a Cultural Resource Specialist (CRS) to monitor decommissioning activities at HBPP in accordance with CEQA, and professional standards and guidelines as set forth by the State Historic Preservation Office (SHPO). The ARPP specified that cultural monitoring would occur in areas which are undisturbed or undeveloped.

DZC Consulting conducted cultural resources monitoring at HBPP during targeted activities from August 2010 through July 2013. There was one previously recorded archaeological resource identified within the HBPP decommissioning project area. Additional prehistoric and historic resources were present in the HBGS project area, immediately adjacent to the HBPP project area.

In January of 2011, a Prior Disturbance & Archaeological Sensitivity Study was conducted by DZC Consulting to determine specific locations within the HBPP project area that were previously undisturbed or undeveloped, which may indicate a higher likelihood of discovering cultural resources. The CRS, Dimitra Zalarvis-Chase, was in a unique position to conduct this study as she had served as the Cultural Resource Monitor (CRM) for CH2M HILL during the construction of the adjacent HBGS from 2008 through 2010. As a result of this work, she was knowledgeable of the historic sub-surface disturbances and the complicated depositional context of the location. During the extensive subsurface activities at HBGS a culturally sensitive soil horizon, Horizon A, had been clearly identified and documented throughout the HBGS work area. In conjunction with this prior monitoring information, the sensitivity study also examined previous reports, soils and geology



maps, historic aerial photographs, historic photographs taken during the construction of the HBPP, and topographic maps to determine where Buhne Point had been modified and where Horizon A was likely undisturbed and intact.

As part of the Prior Disturbance and Archaeological Sensitivity Study a Cultural Resource Monitoring & Sensitivity Map (CRMSM) was prepared which has been utilized to determine the need for cultural resource monitoring within the project area during decommissioning activities. Locations identified as previously undisturbed and undeveloped, retaining a high potential for intact Horizon A, and therefore potential cultural resources, have been monitored during subsurface disturbances. The CRMSM constituted a testing program, with the results showing that Horizon A was present in ten of the twelve locations predicted on the CRMSM. Cultural resources were only present in two locations, resulting in three separate discoveries. Due to their close proximity, they were combined into one record, (HBPP-IF-1), which consists of a burnt historic trash deposit and an unimproved road remnant. DZC Consulting has recommended this discovery is Not Eligible for listing on the National Register of Historic Places (NRHP), nor for listing in the California Register of Historical Resources (CRHR). Under CEQA, it requires no further mitigation measures for this project.

In November 2012, DZC Consulting determined that subsurface testing to determine the presence of cultural resources at the HBPP Campus was complete. All areas identified as having a high potential for cultural resources had been exhausted. The remaining decommissioning activities involve building demolition in highly disturbed areas, or as in the case of nuclear Unit 3, demolition at such depth as there is no possibility of encountering cultural resources. In addition, for canal remediation and site restoration, there are no cultural resource concerns due to extensive prior disturbance.

Therefore, DZC Consulting recommends no further testing or monitoring for cultural resources by Cultural Resources Monitors or the Cultural Resources Specialist during the remaining decommissioning activities given the low probability of their occurrence. This recommendation is a modification to the ARPP, which recommended cultural monitoring in undisturbed or undeveloped areas of the HBPP site. However, DZC Consulting recommends that workers continue receiving the required worker training and that workers halt construction if potential cultural resources are found. The CRS would remain on call in the unlikely event potential cultural resources are discovered.

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# Acronyms and Abbreviations

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ARPP	Archaeological Resources Protection Plan
AMSL	Above Mean Sea Level
CCC	California Coastal Commission
CDP	Coastal Development Permit
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
CRHR	California Register of Historic Resources
CRM	Cultural Resources Monitor
CRMSM	Cultural Resource Monitoring and Sensitivity Map
CRS	Cultural Resources Specialist
DPR	Department of Parks and Recreation
HBGS	Humboldt Bay Generating Station
ISFSI	Independent Spent Fuel Storage Installation
LFO	Liquid Fuel Oil
MEPP	Mobile Emergency Power Plant
NRHP	National Register of Historic Places
OHP	Office of Historic Preservation
PA	Project Area
PG&E	Pacific Gas and Electric Company
PRC	Public Resources Code
SHPO	State Historic Preservation Office
WEAP	Worker Environmental Awareness Program

## 1.0 Introduction

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### 1.1 Project Description and Location

The project owner, PG&E, is in the process of full decommissioning and license termination for its Humboldt Bay Power Plant (HBPP). The project area (PA) is located at 1000 King Salmon Ave, Humboldt County, California on 5.4 acres within a 143-acre parcel (Figure 1). HBPP occupies a landform known locally as Buhne Point and historically as Red Bluff. In 2006, the PG&E Humboldt Bay facility included two operating natural gas units (Units 1 and 2), an inoperable nuclear unit (Unit 3) that has been shut down since 1976, two diesel-fired combustion turbine Mobile Emergency Power Plants (MEPP 2 and MEPP 3), and related appurtenances. Decommissioning for the HBPP required a Coastal Development Permit (CDP E-09-010). As a result, CEQA required the identification and protection of cultural resources (CEQA Guidelines, Title 14, CA Code of Regulations §15064.5 and Title 14, CA Code of Regulations §4850 et seq.). No federal land or permits were involved with this phase of the project.

The HBPP decommissioning has been a multi-phase, multi-year endeavor by PG&E. From 2006 to 2018, three successive projects have been scheduled for completion within the 5.4 acre footprint of the HBPP. Project 1 was the construction of the Independent Spent Fuel Storage Installation (ISFSI). Project 2 was the construction of HBGS and wetlands restoration within the PG&E footprint. These projects were completed between 2008 and 2011. Project 3 consists of the final decommissioning of HBPP, including the removal of all generation components from the older natural gas units (Units 1 and 2), the inoperable nuclear unit (Unit 3), both MEPPs, and associated appurtenances (Figure 2). Project 3 is expected to conclude in 2018.



Figure 1. Project Location

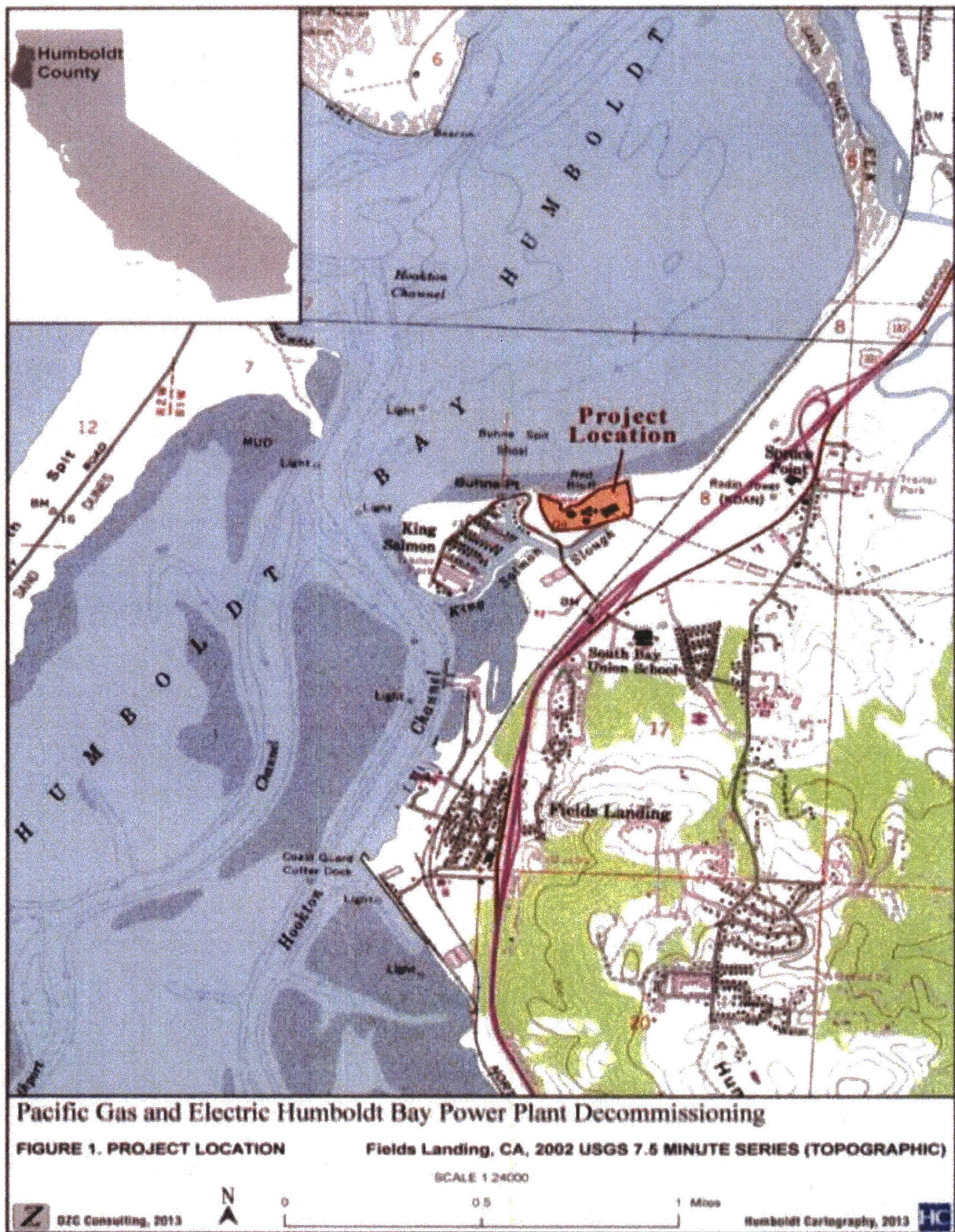
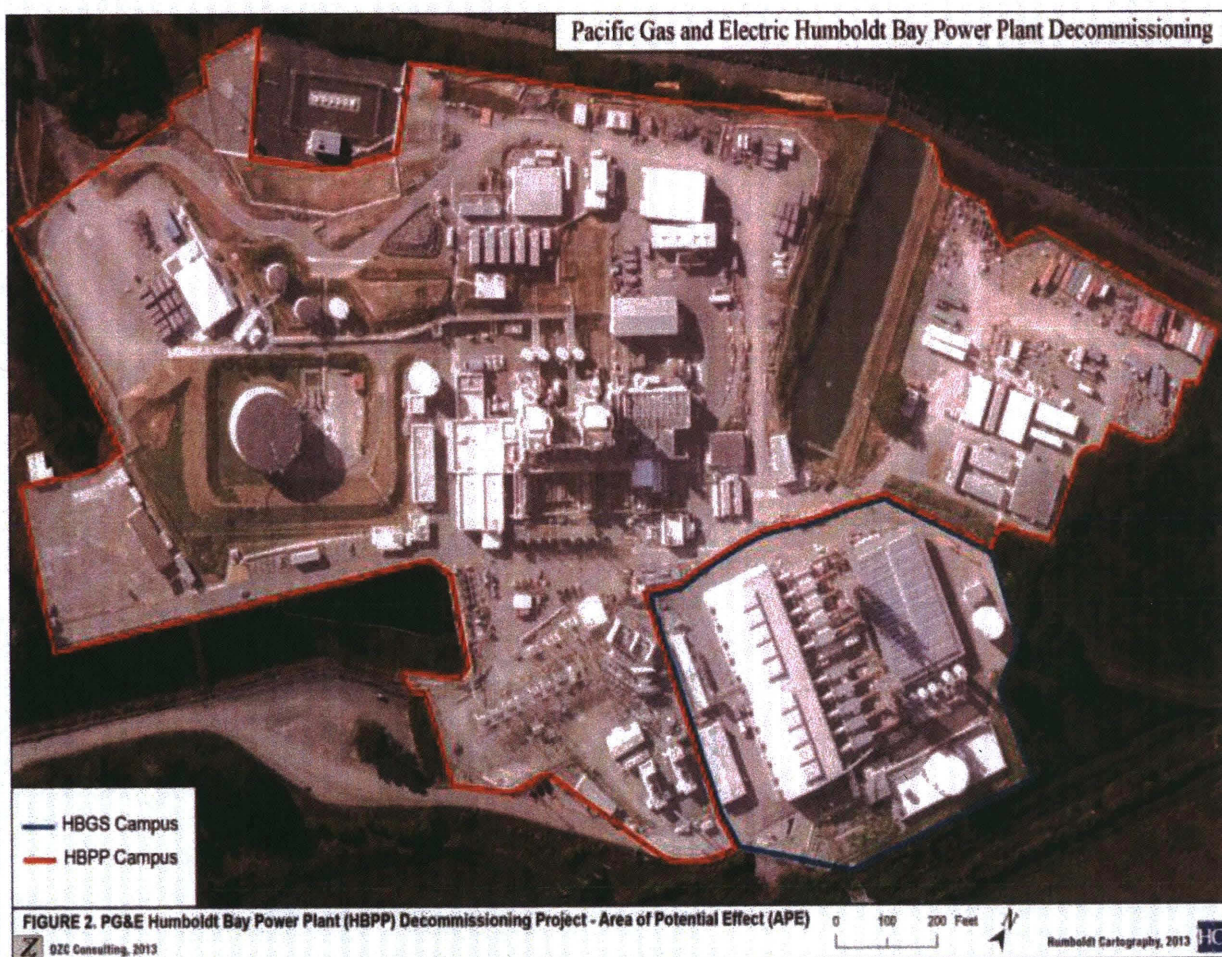




Figure 2. Project Area





## 2.0 Regulatory Setting

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### 2.1 Local and State Policies

The management of historical resources is provided for in local and state policies. This project has been completed in accordance with all applicable regulations provided in the Humboldt County General Plan (as drafted at the beginning of the project), the cultural resources provisions of the CEQA of 1970 Public Resources Code (PRC) §§ 21000–21177), and terms outlines in the CDP issued by the CCC. Per these regulations, impacts to cultural resources associated with this project must be taken into consideration. These regulations are described below.

#### 2.1.1 Humboldt County General Plan

The Humboldt County General Plan guides the conservation, development and utilization of the County's resources and acknowledges that resources may be impacted by development. Cultural Resources are addressed in Chapter 10 of the Conservation and Open Space Element which concerns the protection of scenic, historic, and cultural assets, including Native American cultural resources. With the goal of protecting and enhancing these resources, Cultural Resources Subsection 10.6 outlines policies for Identification and Protection, Native American Consultation, Degradation, and Mitigation. Section 10.6.4 addresses Standards for Cultural Resources, Confidentiality, evaluation, and reporting.

#### 2.1.2 Public Resources Code and California Environmental Quality Act (CEQA)

CEQA requires that the Lead Agency must identify and examine the significant adverse environmental effects which may result from that project. This cultural resources analysis has been prepared to meet the requirements of the California Environmental Quality Act (CEQA) (*California Public Resources Code* [PRC] §21083.2 and §21084.1).

According to the State CEQA Guidelines, “[a] project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment” (14 *California Code of Regulations* [CCR] §15064.5[b]). Substantial adverse change is defined as “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired” (14 CCR §15064.5[b] [1]).

CEQA has established statutory requirements for the formal review and analysis of projects that fall under its jurisdiction. CEQA maintains that any property listed in, determined, or found eligible for listing in the California Register of Historic Resources (CRHR) is considered to be a “historical resource” and shall be considered historically significant. The CRHR is an authoritative guide to California's significant historical and archaeological resources to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate



which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change. The CRHR is maintained by the OHP's State Historic Preservation Officer (SHPO). In addition, CEQA has additional provisions regarding "unique" resources as they pertain to archaeological resources.

### ***Prehistoric Archaeological and Historic Resources***

CEQA requires a Lead Agency to determine whether a project may have a significant effect on one or more historical resources. A "historical resource" is defined as a resource listed in or determined to be eligible for listing in the CRHR (PRC §21084.1); a resource included in a local register of historical resources (14 CCR §15064.5[a] [2]); or any object, building, structure, site, area, place, record, or manuscript that a Lead Agency determines to be historically significant (14 CCR §15064.5[a] [3]).

Section 5024.1 of the *Public Resources Code* requires evaluation of historical resources to determine their eligibility for listing in the CRHR. The purposes of the register are to maintain listings of the State's historical resources and to indicate which properties are to be protected from substantial adverse change. The criteria for listing resources in the CRHR were expressly developed to be in accordance with previously established criteria developed for listing on the NRHP.

Section 15064.5(a)(3) of the State CEQA Guidelines states that:

"[g]enerally, a resource shall be considered by the Lead Agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" (PRC §5024.1; 14 CCR §4852), including if the resource:

- A. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
- B. Is associated with lives of persons important to our past
- C. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- D. Has yielded, or may be likely to yield, information important in prehistory or history.

The Lead Agency shall concurrently determine whether a project will cause damage to a unique archaeological resource (as defined in PRC §21083.2[b]) and, if so, must make reasonable efforts to permit the resources to be preserved in place or left undisturbed.

Section 21083.2(g) of CEQA defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be demonstrated that without merely adding to the existing body of archaeological knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

To the extent that unique archaeological resources are not preserved in place, mitigation measures shall be required (PRC §21083.2[c]).

Using the information outlined above, the first level of evaluation is to determine whether a resource on a site is a historical resource and/or a unique archaeological resource that would be considered eligible for the CRHR and, therefore, significant.

Impacts to significant cultural resources that affect those characteristics of the resource that qualify it for the CRHR or adversely alter the significance of a resource listed in or eligible for listing in the CRHR are considered a significant effect on the environment. Impacts to cultural resources are considered significant if a project

- (1) physically destroys or damages all or part of a resource;
- (2) changes the character of the use of the resource or physical feature within the setting of the resource that contributes to its significance; and/or
- (3) introduces visual, atmospheric, or audible elements that diminish the integrity of significant features of the resource. Therefore, an archaeological resource must be determined to be “unique” or “historic” for an impact to the resource to be considered significant.

### **2.1.3 California Coastal Act**

The California Coastal Act of 1976 (*California Public Resources Code* §§30000 et seq.) establishes policies guiding development and conservation along the California coast. Consistent with Section 30001 and the basic goals of Section 30001.5, and except as may be otherwise specifically noted in the California Coastal Act (Coastal Act), the policies of Section 30200 of the Coastal Act constitute the standards by which the adequacy of local coastal programs and the permissibility of proposed developments subject to the requirement to obtain a coastal development permit are determined.



## **3.0 Monitoring Methods**

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### **3.1 Pre-Decommission Assessment**

#### **3.1.1 Monitoring Personnel**

The designated CRS for the HBPP project was Dimitra Zalarvis-Chase. Ms. Zalarvis-Chase has an M.A. degree in Environment & Community with an emphasis on Cultural Resources and Geographic Information Systems. She has 8 years of experience in archaeology and cultural resources management and is a Registered Professional Archaeologist (RPA). Ms. Zalarvis-Chase has served as a CRM on a number of energy projects throughout California, and is the Owner/Principal Investigator of DZC Consulting. Ms. Zalarvis-Chase was responsible for the implementation of all cultural resources monitoring and reporting under the CDP for HBPP.

Dr. Zachary Hruby, Ph.D., R.P.A., and Mr. Mathew Steele, B.A. Anthropology, were alternate CRMs for this project. Both meet the U.S. Secretary of Interior's Professional Qualifications Standards for Archaeology as published in the Code of Federal Regulations, 36 CFR2.1

#### **3.1.2 Literature Review**

The multi-phase, multi-year decommissioning process at the HBPP Campus has involved numerous agencies and permits. Subsequently, the permitting required multiple cultural resources studies of the PG&E parcel, and lengthy monitoring to be conducted at the adjacent HBGS project site. The resulting documentation, compiled from 2005 to 2010, represents the most pertinent, up to date body of work for the HBPP Campus. The reports provide a thorough characterization of the prehistoric past, historic settlement, the historic significance of the HBPP Campus, a current cultural context, a depositional context for the stratigraphy found at the project location, and all recently discovered cultural resources associated with the Campus (CH2M Hill 2006, 2008, 2010; JRP 2009; PAR Environmental 2006; PG&E 2006; Pacific Legacy 2003)

Of central importance to this project was the latest Cultural Resource Monitoring Report for the adjacent HBGS (CH2M HILL, 2010), which firmly established the stratigraphic and depositional context of the HBPP Campus and provided firm evidence for the likelihood of cultural resources within a specific soil matrix (Horizon A) at HBPP. These documents, in conjunction with additional historic photographs and topographic maps, were analyzed with the aim of characterizing the cultural resources sensitivity of the HBPP project area and assessing the overall need for cultural resources monitoring during decommissioning activities.

#### **3.1.3 Geomorphology and Disturbance Study**

The Archaeological Resources Protection Plan (AARP) prepared for the HBPP stated that cultural



resource monitoring would occur in areas that were “determined to be previously undisturbed and undeveloped”. Given this, it was necessary to delineate which areas within the project boundary met this definition, and therefore implied a higher likelihood of encountering cultural resources based on known past activities or geological age.

By analyzing the geoarchaeological context, use impacts, and recent depositional information from cultural resource monitoring at HBGS (immediately adjacent to the project area) it was possible to delineate historic, terrestrial modifications to Buhne Point and determine areas of least disturbance.

### *Geomorphology and Soils*

The PA is located in the Northern Coastal Range geomorphic province. This north-west trending portion of the range is comprised chiefly of Mesozoic and Cenozoic non-marine sediments and is overlain by Quaternary alluvium (Qal) and Quaternary terraces (Qt) composed of alluvium and river terrace deposits. The Qal strata exhibit older bay deposits, young and old fan deposits, lenses from channeling and ponding episodes, and active channel deposition. The Qt stratum exhibits primarily marine deposits and older bay deposits. The overall soil composition is derived primarily from the Kerr Ranch, Franciscan, Carlotta, Yager, Wildcat, and Hookton formations, which occupy the floodplain, basin, and alluvial plain of the Elk River drainage.

The geologic profile for the uppermost western elevation of Buhne Point is the Hookton Formation (Qh). Qh consists of unconsolidated marine and non-marine sand, silt and gravel, often exhibiting warped strata. It is the oldest formation in the Project area, is considered fossiliferous, and contains occasional thin beds of volcanic ash. At this location it has been severely uplifted in proportion to the immediate surrounding terrain and retains little of the alluvial deposition common to the adjacent soil profiles. It is noted as Horizon C for this project area. However, it has been stable long enough for pedogenic processes to develop an A Horizon to a depth sufficient for grass farming.

### *Previous Documentation of Current Conditions*

Buhne Point was historically a high bluff, opposite the entrance of Humboldt Bay. The west was a sheer bluff face that gradually sloped north and eastward. The southern face was not sheer, but sloped abruptly. All but the west side ended in tidal salt marsh. Based on the stratigraphy observed during the building of the adjacent HBGS and the additional historic documents, it was determined that three layers of strata were commonly found at Buhne Point, noted as Horizons A, B, and C. Horizon A, the culturally sensitive layer, is characterized by a dark black-brown, humus soil, and was the uppermost layer exposed during prehistoric times. A discussion of this topography was written by D. Zalarvis-Chase for the HBGS Cultural Resource Monitoring Report (CH2M HILL, 2010):

“An aerial view of an intact salt marsh reveals a mosaic of sloughs and small channel fingers that create an irregular puzzle of high and low elevations within the marsh complex. A side profile of a Humboldt Bay salt marsh from the top down illustrates a shock of plant matter atop an organic, dark brown layer (Horizon A) of previously exposed topsoil. This organic, rich, dark layer rests above the blue/gray bay mud (Horizon B) where marine based deposition has occurred. Beneath this is a deep base layer of tan/yellow clay (Horizon C) formed during the Holocene period and known here as the

Carlotta formation. Throughout the HBGS project area, Horizon A was consistently topped by native but disturbed fill from Horizon C. This is the result of the removal of the top of Buhne Point, which contained predominantly Horizon C, and the subsequent dumping of the soil to form a base foundation for the power plant and bring the elevation of the plant site to 12 feet above mean sea level. Additionally, this tan/ yellow layer was often topped by 6-inches to 24-inches of grey sandy soil and crushed base rock during the construction of the Humboldt Bay Power Plant.

The Horizon A was not observed throughout the project area during the HBGS monitoring; rather it appears to have been graded away completely in some areas. Two dominant sidewall patterns were repeatedly observed during the monitoring phase. The dominant profile exhibited a clean scrape above the bay mud layer (Horizon B) topped with native yellow fill (Horizon C), indicating grading by bulldozer followed by deposition and compaction of native but disturbed soils. The fill also contained large inclusions of bay mud, up to 0.25 meter (m) in diameter, which likely tumbled into the fill during compaction and grading activities. A less common but still discernible profile exhibited the high and low peaks of marsh that had been simply filled in without grading. In this formation, only occasionally, a thin layer (approximately 10 centimeters [cm]) of Horizon A could be discerned. This was determined to be a potentially sensitive layer below the native disturbed fill yet above the bay mud. This was most evident around the general bio swale area. The thickness of Horizon A varied from 10 cm to 1 m. The thickness for Horizon B varied from 30 cm to 2 m and Horizon C, in its natural formation, ranged from 50 cm to an unknown depth. Finally, marine shell was observed in some areas, related to the dredging of the bay and subsequent dumping (CH2M HILL, 2010)."

From these extensive subsurface observances at HBGS, an initial sensitivity map was created and submitted to the California Energy Commission for Phase 2 of the HBGS project. The CEC accepted that map as a guidance document for further monitoring of active construction areas within HBGS. Culturally sensitive strata, consisting of Horizon A, are intact near the surface in several areas of HBPP. These areas are delineated on the CRMSM (Confidential Appendix B.) Research indicated that Horizon A would be located within one foot of the surface on the east side of Units 1, 2, and 3, and along the upper west side of the bluff, from the ISFSI trending north. The access road on the north side of Unit 3 also appeared to have been minimally modified, following a natural contour. Comparing historic and present elevations, it appeared Horizon A was also close to grade at the Liquid Fuel Oil Tank #1 and #2, and at the transformer yard. Lastly, prehistoric items were discovered in Horizon A near the east side of the MEPPs during HBGS site prep. This area in particular was to be considered very sensitive as it was nearest to Buhne Slough.

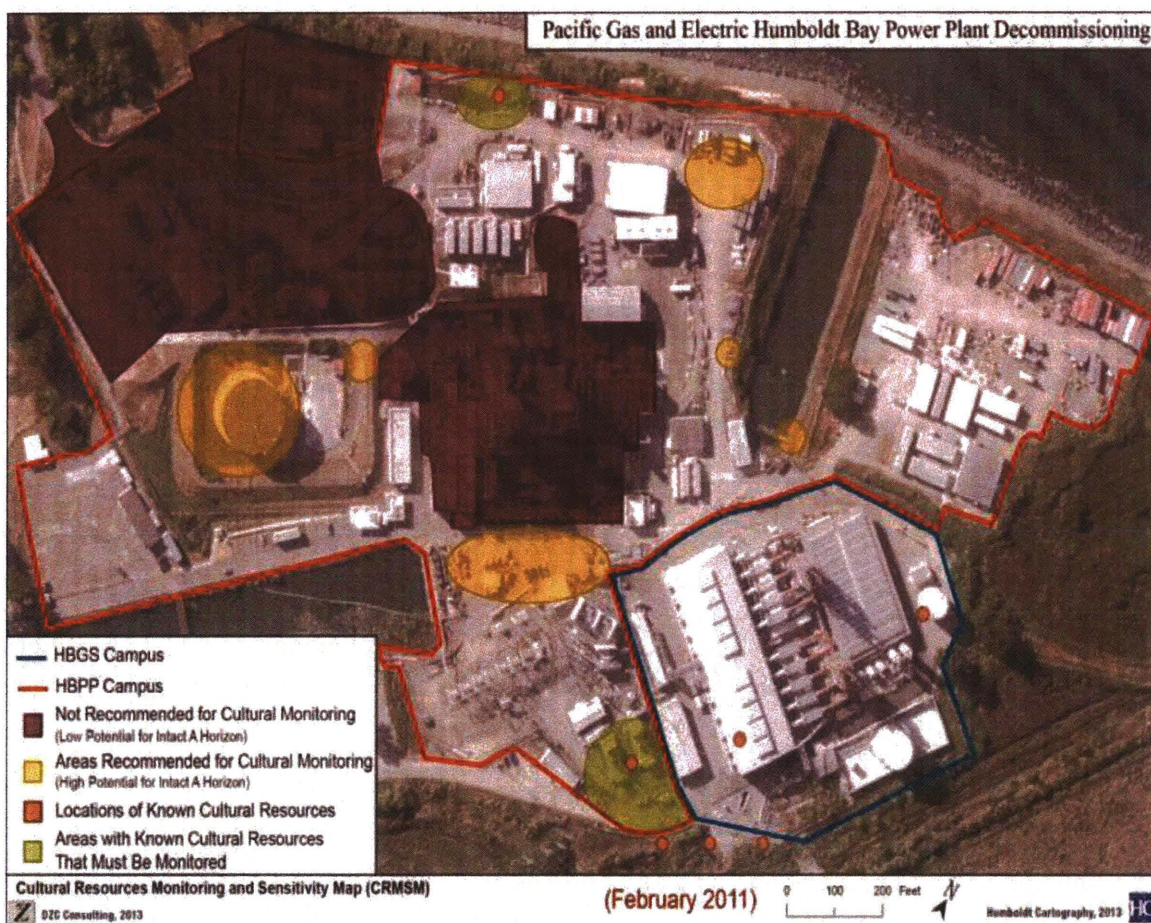
In summary, high sensitivity areas were based on the likely presence of Horizon A which is known to be culturally sensitive on the HBPP Campus, as opposed to Horizons B and C, which are not sensitive for cultural resources. The result of this study was the Cultural Resources Monitoring and Sensitivity Map (February 2011) (Figure 3).

### **3.1.4 Cultural Resource Monitoring Sensitivity Map (CRMSM)**

The result of this analysis was the CRMSM which guided monitoring efforts at HBPP. The CRMSM was integrated into PG&E's on-site permitting process, ensuring that cultural resources were considered within the scope of all subsurface activities at HBPP. It provided a solid mechanism for the monitoring requirement and proved highly accurate in predicting the location of the sensitive Horizon A, as observed during subsurface disturbance.



Figure 3. Original CRMSM (February 2011)





The CRMSM indicated where monitoring would need to occur within the HBPP Campus, designating areas where there was a likelihood to encounter cultural resources due to the high potential for the presence of undisturbed, native topsoil. Monitoring was also required in areas having a close proximity to known cultural resources. Monitoring at these locations was prudent and aided in the testing and further characterization of the site.

The CRMSM also indicated where monitoring would not need to occur. These areas consist of land immediately west of Units 1, 2, and 3, the contractors parking lot (previously monitored during HBGS), and the areas housing Fuel Oil Service Tank #1, Fuel Oil Service Tank #2, and the Diesel Storage Tank. Research showed that these areas had been radically altered from their geologic natural formations. Surface investigations during the HBGS construction (Project 2) revealed these areas now consisted of either Horizon C, or a mix of Horizons B and C and were unlikely to contain culturally sensitive stratigraphy.

## SECTION 4

# 4.0 Monitoring Results

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This section provides details about cultural resources monitoring activities at HBPP to date, and a summary of the three discoveries that occurred during decommissioning activities.

## 4.1 Monitoring Overview

Cultural resources monitoring for the HBPP Campus was initiated on August 26, 2010, and continued at varying levels of intensity until November 29, 2012 when excavations in previously undeveloped or undisturbed areas were completed. The primary monitor was Dimitra Zalarvis-Chase. The Alternate Qualified CRM's participated as needed.

In accordance with the Special Condition 4 of CDP E-09-010 and the application of the CRMSM, a Cultural Resources Monitor (CRM) under the direct supervision of the CRS has been present at all times during grading, excavation, trenching, and/or auguring in areas specified as previously undisturbed or undeveloped. Monitoring was conducted by an archaeologist with appropriate regional experience to ensure that both prehistoric and historic cultural materials were preserved and to ascertain whether or not construction may continue after the unexpected discovery of any cultural materials.

The CRM observed ground disturbance including grading, scraping, trenching, and auguring for activities including potholing; the installation of utilities, ground grids, and storm-water drains; contaminated soil testing remediation; and the removal of utilities. The floors and sidewalls of excavations, along with back-dirt spoils, were inspected frequently during heavy equipment operations. A ¼ inch screen and trowel were used to sift through the back dirt and test areas of stratigraphy that appeared potentially sensitive. The degree of soil screening varied depending on the scale of excavation. Monitoring was intensive at all locations. All work locations are noted in Figure 4.

Recordation and reports followed contemporary professional archaeological standards and the guidelines of the SHPO. All discoveries were recorded on State of California Department of Parks and Recreation (DPR) Form 523 and attachments. Upon final completion of decommissioning activities and HBPP, these site forms will be submitted to the California OHP for inclusion in the California Historical Resources Information System (CHRIS). DZC Consulting provided the PG&E Environmental Permitting Officer with monthly reports and maintained daily logs and field notes as a method of record keeping for this project.

## **4.2 Ground Disturbance Activities**

### **4.2.1 Ground Grid Installation**

As part of standard plant safety maintenance, an 18" wide trench was excavated to install a length of copper ground grid wire between two electrical points on the upper west side of Buhne Point, west of the Access Road in August of 2010. The trenching discovered a small, burnt historic trash scatter, HBPP Decom IF-1. Horizon A was present at the work surface and was approximately three 3-inches thick. The presence of Horizon A at this location was consistent with the study for the CRMSM. This work location is depicted in Figure 4.

### **4.2.2 Road Widening at West Entrance**

Grading to widen the west gate access road near the guard shack was conducted by PG&E personnel in February of 2011. A back-hoe was used to remove approximately 12" of soil alongside the existing roadway for as preparation for road widening and improvements. Small traces of Horizon A were present at this location, and no cultural resources were observed. This work location is depicted in Figure 4.

### **4.2.3 Water Table Testing**

A deep excavation to test for water table levels occurred at the head of the Discharge Canal in February of 2011. The trench measured 7' x 3' x 8' (l x w x d) and was used to measure water level infiltration during tidal occurrences over a period of several days. Horizon A was observed at this location which was consistent with the study for the CRMSM. No cultural resources were observed. This work location is depicted in Figure 4.

### **4.2.4 Installation of Storm Water Drainage System**

Excavation and installation of the storm-water drainage system by North Coast Fabricators occurred in February, and again in June, 2011. The drain system begins on the upper west side of the bluff, proceeds north on the road, then east down the access road alongside the discharge canal. Excavations resulted in the observance of intact, native soils, as well as native and imported fill. Horizons A, B, & C, were observed in these excavations, which was consistent with expectations on the CRM Sensitivity Map. Two excavations (SD1 and SD2, Figure 4) revealed fill consisting of Horizon C to a depth of approximately 6 feet Above Mean Sea Level (AMSL) (NOAA, 2010) overlaying intact native soils consisting of black silty clay and light gray brown silty clays. The third excavation (SD3, Figure 4) exhibited native but disturbed soils in conjunction with a modern road installed by PG&E. Within the native but disturbed soil, several items were observed including unidentifiable bits of iron slag, irregular chunks of redwood, a copper wire, and one green olive glass fragment. These fragments were near HBPP Decom IF-1 and were incorporated into the DPR 532 form for that discovery. These work locations are depicted in Figure 4.

### **4.2.5 Liquid Fuel Oil Pad Utility Removal**

Excavations to remove an old utility from the Liquid Fuel Oil (LFO) Tank pad were conducted by



Silverado during June of 2011. Grading occurred across the LFO tank pad to a depth of 18-inches. A pit measuring 6' x 4' x 3' (l x w x d) was mechanically excavated adjacent to a cement box that was full of water and located in the middle of the pad. Excavation was stopped due to the presence of oily-water, which would require testing before removal. The pit allowed subsurface examinations in which only the Horizon C was observed. Based on the CRMSM, Horizon A was expected to be visible during this activity. However, it appears that the installation of the LFO tank pad had removed any previous topsoil and no culturally sensitive strata or artifacts were observed during this excavation. This work location is depicted in Figure 4.

#### **4.2.6 Grading for Office Trailer Placement**

Grading to level a pad for an office trailer occurred in June 2011 on the upper east side of Buhne Point with North Coast Fabricators. The majority of the matrix consisted of imported gravel and fill. No Horizon A or cultural resources were observed which was consistent with expectations on the CRMSM. This work location is depicted in Figure 4.

#### **4.2.7 Utility Removal**

Approximately 115 feet of utility lines were removed from the area around the diesel fuel storage tanks in July of 2011. The area previously housed large cylindrical gas tanks. At this location only Horizon C was observed, which was consistent with the CRMSM. Horizon A had likely been impacted and removed during construction of the gas tanks in the 1950's. This work location is depicted in Figure 4.

#### **4.2.8 Contaminated Soil Sampling and Removal**

Contaminated soil removal occurred on the upper west side of Buhne Point during August 2011. The CRM was expecting to find additional debris related to HBPP Decom IF-1, as the work was immediately adjacent to the ground grid trench excavated in August of 2010. In anticipation, Cruz Brothers surveyed the area with instruments that could detect metal and utility lines and determined the area where metal debris may be encountered. A total of 8 soil borings occurred over an area of approximately 10' x 30', with indeterminate metal debris occurring in 3 of the borings. For each of the borings where debris was encountered, the driller placed the soil/debris from the boring on a plastic sheet for inspection by the CRM. The remnants observed in the cores consisted of indeterminate rusted metal fragments and burned wood fragments, which were clearly associated with HBPP Decom IF-1. None of the material observed was temporally diagnostic. After recordation of the find, the soil and accompanying debris were re-packaged for disposal in accordance with contaminated soil procedures. The presence of Horizon A at this location was consistent with the study for the CRMSM. These work locations are depicted in Figure 4.

#### **4.2.9 60KV Yard Contaminated Soil Sampling**

Seven soil samples were taken from the 60 KV yard in September 2011 using a hand auger, air-knife, dry vacuum, and a mobile drill. This yard is near a known prehistoric find and therefore was monitored for cultural resources. The presence of Horizon A at this location was consistent with the study for the CRMSM. However, no cultural resources were observed. These work locations are

depicted in Figure 4.

#### **4.2.10 Truck Turn Around Grading**

In September 2011, grading occurred at the upper north-west corner of Buhne Point to create an area large enough for industrial trucks to enter from the access road, turn around, and return down the same road. During the grading, a distinct soil change with a linear shape was observed within the scraped surface. The surrounding soil matrix was Horizon C (tan-yellow clay) while the linear feature was Horizon A (dark brown humus soil). A number of access roads for this vicinity for both the dairy farm and the PG&E plant are visible in aerial photos from the Shuster Collection. Actual function or length of use is indeterminate. Due to the proximity of this feature to HBPP Decom IF-1 (approximately 20 meters), this feature will be included in the DPR 523 for HBPP Decom IF-1. This work location is depicted in Figure 4.

#### **4.2.11 Soil Testing East of Unit 1 and Unit 2**

Five auger samples were taken east of Units 1 and 2 in January of 2012 to test for contaminated soils. Horizon A was present, but only in minute amounts, indicating a redeposited context. This was consistent with expectations of Horizon A on the CRMSM. No cultural resources were observed. These work locations are depicted in Figure 4.

#### **4.2.12 MEPPs Contaminated Soil Testing**

Contaminated soil testing was conducted in the area south of the MEPPs in June 2012. Twenty-two augers boring, ranging in depth from 3' to 8', were sampled. The diameter of the borings ranged from 8" to 12". The areas tested included the 60KV switchyard, the area adjacent to the switchyard and Decom Road near the former Units 1 & 2. The sensitive Horizon A was observed at a number of places. The presence of Horizon A at this location was consistent with the study for the CRMSM. However, no cultural resources were observed in the auger tailings. These work locations are depicted in Figure 4.

### **4.3 Cultural Resource Monitoring Sensitivity Map Use Results**

The CRMSM was designed to alert PG&E planners and project subcontractors of the need for cultural resource monitoring. A sensitivity map is not appropriate for all projects, but for this project it was a prudent and useful guidance tool for PG&E planners.

A total of eight locations in the HBPP Campus were initially selected for monitoring based on their likelihood to contain Horizon A, and spaced to provide a stratigraphic continuum across the site. Monitoring locations would be added as needed, based on observations or the presence of cultural resources. Four additional locations were selected in areas not suspected to contain Horizon A, thereby further testing the efficacy of the CRMSM. In all, a total of twelve locations were tested.



Figure 4. Cultural Resources Monitoring Locations & Activities

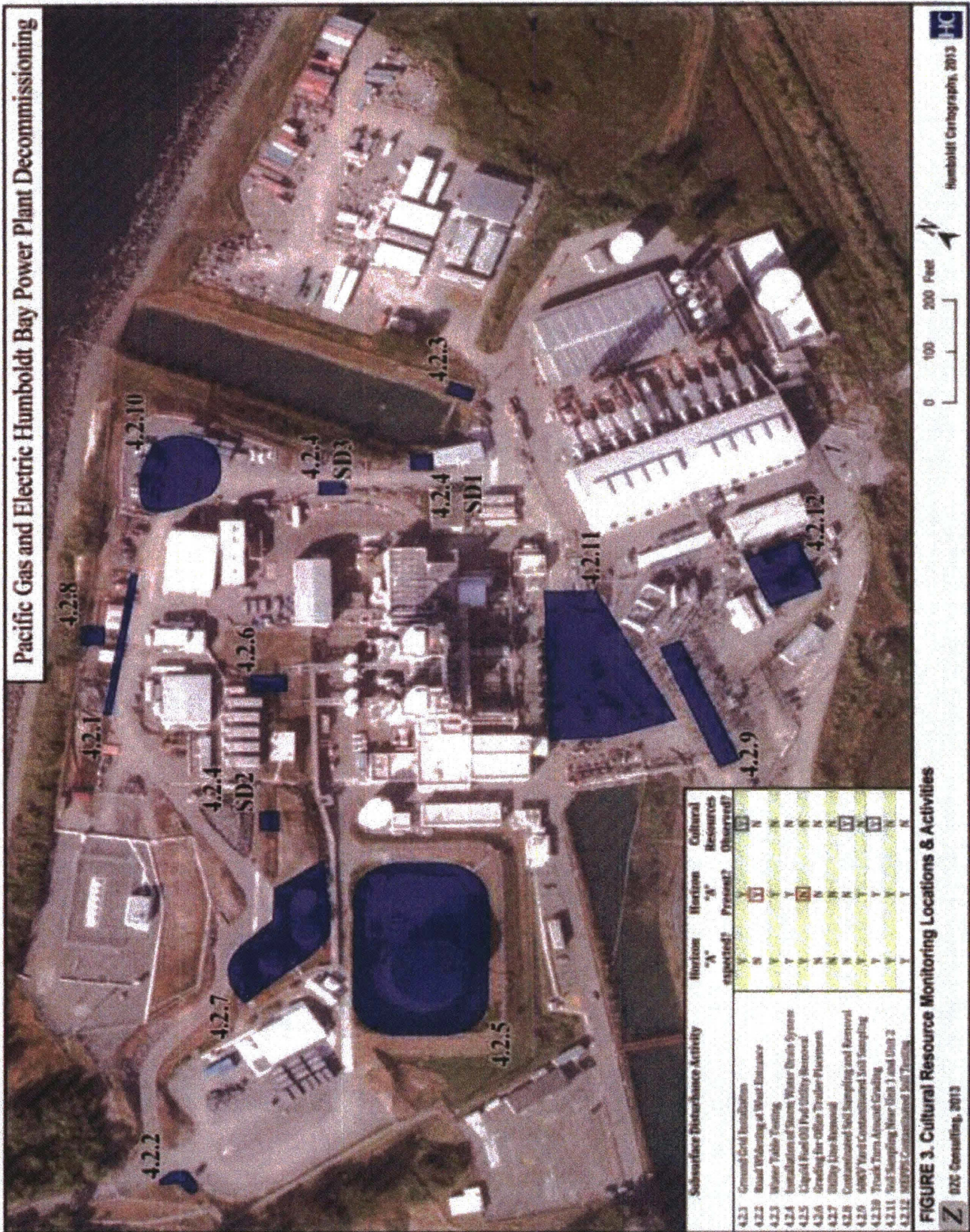




Table 1. Cultural Resources Monitoring Sensitivity Map Results

Subsurface Disturbance Activity	Horizon "A" expected?	Horizon "A" Present?	Cultural Resources Observed?
4.2.1 Ground Grid Installation	Y	Y	Y
4.2.2 Road Widening at West Entrance	N	Y	N
4.2.3 Water Table Testing	Y	Y	N
4.2.4 Installation of Storm Water Drain System	Y	Y	N
4.2.5 Liquid Fuel Oil Pad Utility Removal	Y	N	N
4.2.6 Grading for Office Trailer Placement	N	N	N
4.2.7 Utility Line Removal	N	N	N
4.2.8 Contaminated Soil Sampling and Removal	N	N	Y
4.2.9 60KV Yard Contaminated Soil Sampling	Y	Y	N
4.2.10 Truck Turn Around Grading	Y	Y	Y
4.2.11 Soil Sampling Near Unit 1 and Unit 2	Y	Y	N
4.2.12 MEPPs Contaminated Soil Testing	Y	Y	N

Of the twelve locations, the expected presence or absence of the culturally sensitive Horizon A was accurate in ten of twelve locations. The red boxes in Table 6 indicate the locations where the soil presence prediction was inaccurate. This equals an 83% (n=12) accuracy for the CRMSM in terms of usefulness for denoting the presence of the culturally sensitive Horizon A. The blue boxes in Table 1 denote the presence a cultural resource discovery for that activity.

In November of 2012, DZC Consulting concluded that all areas of HBPP that were potentially sensitive for cultural resources had been tested and that the research potential of the site had been exhausted. The results determined from monitoring and testing was that the HBPP Campus overall retained a very low sensitivity for intact, significant cultural resources. This was communicated by DZC Consulting to the PG&E Environmental Permitting Officer in a technical memo in December of 2012.

## 4.4 New Discoveries

Three new discoveries were made during the 2010-2012 time period. However, due to the close proximity of all three, and the absolutely firm association of two, all were combined into one DPR 523 for recordation. Two finds (HBPP Decom-IF1 and HBPP Decom IF-2) consisted of the same burnt, historic trash scatter. The third find is an unimproved road bed and was also incorporated in the DPR 523 for HBPP Decom IF-1 as it is within 20 meters of the other two discoveries. All finds were treated in accordance with the ARPP. Work in the vicinity of the finds was halted while the CRM assessed the discovery to determine if the constituents exhibited an age greater than 50 years old. DPR 523 forms and supporting documentation, which included digital photography and a location map, were prepared for these discoveries, as specified in the ARPP. The DPR 523 for HBPP Decom IF-1 is attached to this report in Confidential Appendix B.

**August 28, 2010.** During the installation of a subsurface ground grid segment on the upper west

side of Buhne Point, a small burnt historic trash scatter was discovered. Work was halted in the vicinity and the PG&E Environmental Permitting Officer contacted DZC Consulting for an assessment of the discovery.

The discovery contained one feature, consisting of a small burned trash deposit within a narrow trench. The excavated trench spoils contained the following items; **metal**: several small pieces of steel sheeting exhibiting bolt holes and welding trace, aluminum shavings from lathe processing, 1/2" wide metal strapping, and degraded wire nails; **glass**: blue ink bottle fragments with the makers mark //4 /Parker/Made in USA/2fl oz.59cc/M [within a circle]//, a green "Squirt" soda bottle fragment, milk glass fragments, an amber flask bottle with a machine threaded lip and plastic cap, a thick piece of industrial grade glass, and window glass fragments; **wood**: numerous fragments of redwood in widths of 2" x 4" and 2" x 6", ranging in length from 7-inches to 28-inches; **other**: a length of fire hose, multiple fire brick fragments with no makers marks, a caulking gun and caulking tube reading "Manville Type S All-Seal", and a partial 8-inch diameter pipe gasket woven of either fiberglass or asbestos. The entire deposit had been affected by fire. An inspection of the sidewalls indicated that the deposit may continue horizontally. As the trenching was completed and no further ground disturbance was expected, DZC Consulting recorded the find and recommended that installation of the ground grid continue as planned.

**August 22, 2011.** A continuation of the burnt historic trash scatter noted from August 28, 2010 (HBPP Decom IF-1) was observed during contaminated soil sampling on the upper west side of Buhne Point during August 2011. The CRM was expecting to find additional debris related to HBPP Decom IF-1, as the work was immediately adjacent to the ground grid trench excavated in August of 2010. Although clearly associated with HBPP Decom IF-1, none of the material in this part of the scatter was temporally diagnostic and was recommended for disposal after recordation.

**September 27, 2012.** During grading for the truck turn-around area at the upper northwest corner of Buhne Point, a distinct soil change was observed. While the soil matrices observed were both native (Horizon A and Horizon C), Horizon A appeared to form a distinctly linear feature within Horizon C, measuring approximately 15' wide x 40' long. The south-east end of the feature terminated in the current paved access-road, while north-west end appeared to pinch out, dissolving into Horizon C matrix. The feature is interpreted to be a former unimproved road bed cut into the mild slope of Buhne Point. Another interpretation could be a cut pad leveled for a structure. However, historic photographs from the Shuster Collection show this location to have multiple casual, unimproved access roads during the time of the dairy farm and during early operations at HBPP, and no structures are depicted in photographs for this location. As no artifacts were associated with this feature to aid temporal or functional interpretations, it was documented solely as an unimproved road feature.



## SECTION 5

# **5.0 Newly Recorded Cultural Resources**

This Section includes information about the newly recorded resources encountered during monitoring. The description is followed by a focused historic context specifying the pertinent theme, time period, and geographical limits appropriate for the resource.

The significance of the resource is considered in relation to the eligibility for the CRHR. This significance must be at the local, state, or national level under one or more of the following criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
2. It is associated with the lives of persons important to local, California, or national history.
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses a high artistic value.
4. It has yielded or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

To be significant, a resource must have sufficient integrity to be recognizable as a historic resource and to convey reasons for that significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association.

## **5.1 HBPP Decom IF-1**

### **5.1.1 Description**

HBPP Decom IF-1 Consists of a burnt historic trash scatter and an unimproved road bed. The Trash scatter was located during two separate activities. The the road feature was located during a third activity. Because of the proximity and potential association of the three finds, they were recorded on a single DPR 523.

The first trash scatter was located on August 26, 2010, during ground grid installation activities. This discovery exhibited one feature, consisting of a discreet, burned trash deposit. The extent of the deposit was unknown but was believed to possibly continue horizontally as a few pieces of the debris were still embedded in the sidewalls of the trench. The deposit consisted of **metal**: several small steel sheet pieces exhibiting bolt holes and welding, aluminum shavings produced by a metal lathe, metal strapping, and wire nails; **glass**: blue ink bottle fragments with the makers mark //4 /Parker/Made in USA/2fl oz.59cc/M [within a circle]//, a green "Squirt" soda bottle fragment, milk glass fragments, an amber flask bottle with a machine threaded lip and plastic cap, a hick piece

of industrial glass, and window glass fragments; **wood**: numerous fragments of redwood 2x4 and 2x6 ranging in length from 7-inches to 28-inches; **other**: a length of fire hose, multiple fire brick fragments, an old caulking gun and tube reading "Manville Type S All-Seal", and a partial 8 inch diameter pipe gasket woven of either fiberglass or asbestos. The entire deposit had been affected by fire. The CRM recorded the find, determined the temporal association of the deposit, and recommended that installation of the grid continue as no further trenching would occur.

An additional activity of auguring for contaminated soil sampling was conducted in August 2011, immediately adjacent to the grid trench in which IF-1 was discovered. In anticipation of the continuance of IF-1, a CRM examined all auger spoils from the soil testing. Fragments of unidentifiable metal and wood were present in three of the eight auger spoils. Consistent with the remainder of IF-1, all the debris exhibited affects from fire. However, due to the fragmentary nature of the debris, no temporally diagnostic items were discernible. The CRM recorded the find as an addition to HBPP Decom IF-1. As the debris observed indicated no temporal or significant diagnostic traits, the CRS recommended that the debris be disposed of in accordance with regulations consistent with the contaminated soil in which the debris was located.

A feature, also added to HBPP Decom IF-1, was discovered in September of 2011 during grading of the truck-turn around area on the north-west corner of Buhne Point. The feature appears to be an unimproved road bed cut into the mild slope of Buhne Point.

### 5.1.2 Context

Historic settlement of the Humboldt Bay area began in the 1850's with vigorous logging, fishing, and urban development activities in the immediate bay area, virtually eliminating the native peoples. As a result of this land use, both prehistoric and historic use signatures have been found at HBPP. Previous to the PG&E construction, the location of HBPP was used for agricultural purposes. Based on historic aerial photos (circa 1948), the operation was likely a dairy as opposed to a crop farm. By 1950 the land had been purchased by PG&E, who commenced building the two fossil fuel generators and the nuclear power facility.

Two diagnostic Makers' Marks were obtained from Decom IF-1 that indicated a temporal affiliation. The green "Squirt" soda bottle fragment was common c. 1959, while the blue ink bottle was associated with the Maryland Glass Company, producing this particular bottle from 1907 to 1970. Consultation with on-site PG&E metal workers confirmed that the bundles of aluminum "curly-cues" were indeed typical of metal lath shavings. The second trash scatter, Decom IF-2, did not exhibit any temporally diagnostic artifacts or characteristics. The road bed does not exhibit any improvements that would provide for long term use or the passing of heavy trucks and equipment, such as would be required during the long term operations of HBPP.

Therefore the interpretation stands that the trash deposit began during the time of agricultural use on this property and was continued for a short time during the construction of the Humboldt Bay Power Plant. The road bed is also interpreted to be related to the dairy farm operations.



### **5.1.3 Historic Significance Considerations**

Newly recorded HBRP-IF-1, a burnt historic refuse deposit and unimproved road bed, does not appear to meet any of the criteria for eligibility for the CRHR, and does not meet the criteria for significance under CEQA. Although the deposit is discreet, it lacks integrity because it was found in an area that has been highly disturbed by farming and industrial activities. The road bed too has been impacted by construction and maintenance of the HBPP effectively eliminating the continuance of the feature in both directions of travel.

The site does not appear to be associated with any events or persons that have made a significant contribution to local, California, or national history. Although the aluminum lathe shavings are potentially associated with HBPP, a firm correlation between the National Register Historic Property at HBPP (Unit 3) and the lathe shavings cannot be confirmed. None of the remaining artifacts are unique, nor do they embody any particularly distinctive characteristics of the period or methods of construction related to the farm house or HBPP. Finally, this site does not have any potential to yield new important information to local, state, or national history.

### **5.1.4 Management Considerations**

In all instances of discovery, the components of HBPP Decom IF-1 were completely documented on DPR 523 forms and planned activities for this area were allowed to proceed. The completed DPR will be submitted to the CHRIS. IF-1 is not eligible for the CRHR or significant under CEQA. No impacts to historical resources occurred during decommissioning activities of the HBPP.

## SECTION 6

# 6.0 Recommendations

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This section summarizes the current analysis of cultural resources at the PG&E Campus, and provides recommendations for the remainder of the HBPP Decommissioning with regards to cultural resources.

## 6.1 Cultural Resources Assessment of the PG&E Campus

In preparation for the decommissioning of HBPP, and the construction of HBGS, the PG&E Campus has undergone various evaluations and monitoring since 2003. Earlier documentation efforts followed standard procedures for assessing known or present resources, while the monitoring, which occurred from 2008 onward, focused on new discoveries.

The 2003 Archaeological Inventory Survey and National Register Evaluation of Unit 3 performed by PAR Environmental found no scenic or natural landmarks, and no previously recorded cultural resources within the PA. A pedestrian survey performed by Lynn Compass and Glenn Caruso (PG&E) did not identify any new cultural resources within the PA. The National Register Evaluation was limited to only Unit 3 but included a detailed context statement. Unit 3 was determined to be exceptionally significant under Criterion G in the history of the nuclear power industry, and under Criteria A and C at the National Level. As a NRHP Eligible property, a mitigation plan was required to proceed with demolition.

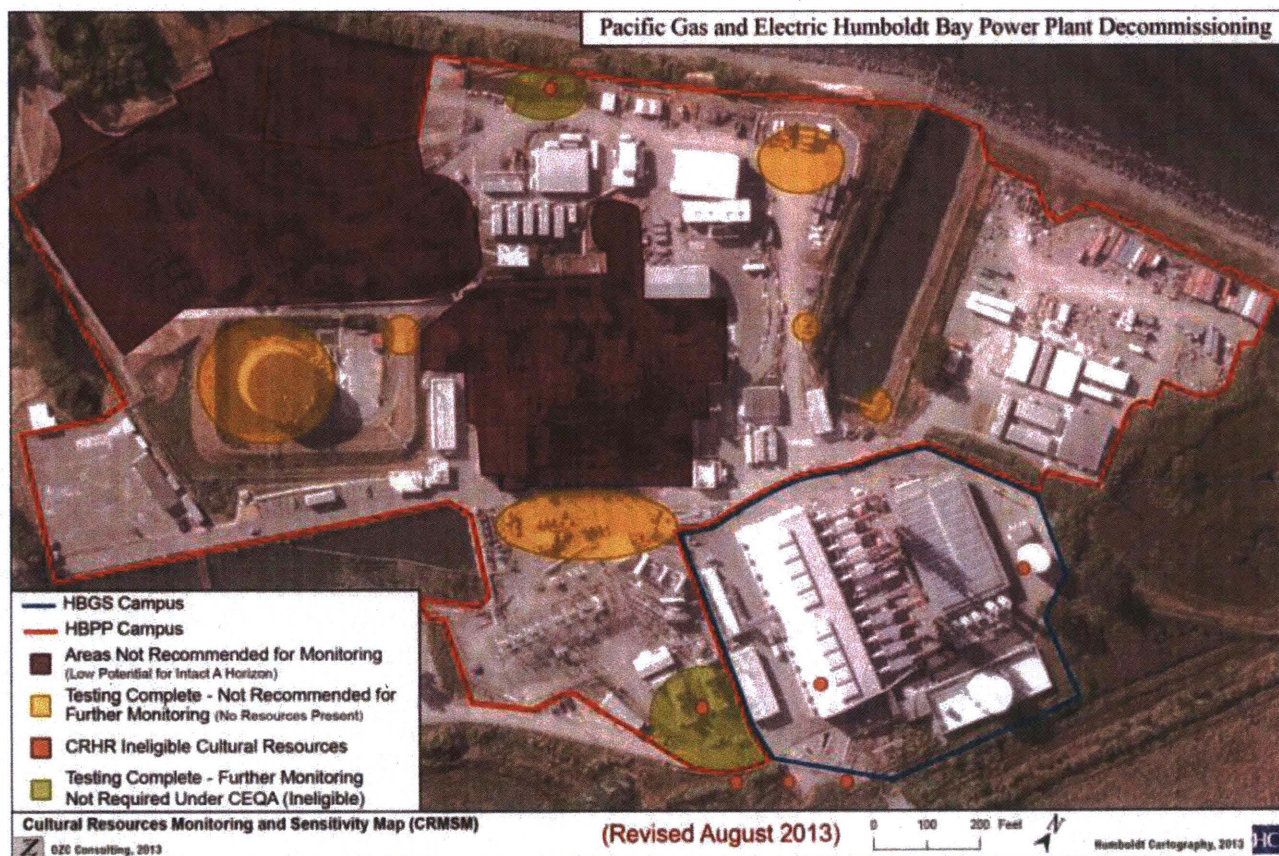
In 2009, JRP Historical completed the Mitigation Plan for the Humboldt Bay Power Plant, prepared in response to CEC CUL-10 for Demolition of Units 1, 2 & 3. This report evaluated the entire HBPP Campus as a whole, including Units 1 and 2, whereas the previous evaluation did not. It gave recommendations for the mitigation of the Units that were to be decommissioned which included a full Historic American Building Survey and Historic American Engineering Record (HABS/HAER) and the retention of select elements to be used in PG&E's interpretive historic displays. To date, Unit 3 is the only resource of significance present on the PG&E Campus.

Monitoring conducted by CH2M Hill and DZC Consulting from 2008-2013 over the PG&E Campus as a whole has resulted in the recordation of 1 prehistoric, 2 historic, and 4 multi-component archaeology sites. Only 1 of these sites, a historic refuse scatter, has been located within the HBPP project boundary.

Each new discovery was recorded and evaluated for inclusion to the California Register of Historic Resources and for its significance in accordance with CEQA. In all instances, the resources were unable to meet the significance criteria under CEQA or the CRHR. Every new discovery on the PG&E Campus has been found to have a high degree of physical disturbance from farming or industrial activities, thus all have been substantially affected and impacted prior to the



Figure 5 REVISED CRMSM (August 2013)



implementation of the Project. No newly discovered resources exhibited further research potential, demonstrated an association with events or persons that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States. No resources embodied distinctive characteristics of a type, period, region, or method of construction, or represented the work of a master, or possessed a high artistic value. With the exception of Unit 3, none of the resources associated with the PG&E Campus are historically significant. Additionally, as non-significant historical resources, and not eligible for listing on the CRHR, the newly discovered resources require no further consideration or mitigation under CEQA.

## **6.2 Efficacy of the CRMSM**

The application of the CRMSM to the monitoring processes at HBPP has resulted in extensive subsurface monitoring, and therefore testing, of the HBPP project area within the PG&E Campus. The CRMSM exhibited a high rate of success with regard to predicting locations of undisturbed stratigraphy on the PG&E Campus. However, subsequent testing and monitoring proved that ten out of twelve of these areas did not contain cultural resources, supporting the statement that the area does not contain a high density of archaeological material. In light of this analysis, the CRMSM has been revised (Figure 5) to reflect the current recommendations for monitoring and testing after August 2013.

## **6.3 Conclusion & Recommendations**

From 2003 to 2013, the PG&E Campus, as a whole, has been intensely evaluated and monitored for cultural resources. The results of the efforts to date support the statement that the PG&E campus is a highly disturbed environment containing only one NRHP Eligible resource (Unit 3). All newly discovered historical resources are not significant under CEQA. The remaining decommissioning activities involve building demolition in highly disturbed areas, and therefore unlikely to retain in-situ resources. In proceeding with the demolition of Unit 3, the required mitigation has been completed. Additionally, the demolition of Unit 3 will occur at such depth as there is no possibility of encountering cultural resources. Future plans for canal remediation and site restoration should not prompt cultural resource concerns due to extensive prior disturbance from initial construction and subsequent routine maintenance. Therefore, DZC Consulting makes the following recommended modifications to the HBPP ARPP:

1. No further testing or monitoring for cultural resources by a Cultural Resources Monitor or Cultural Resources Specialist is necessary during the remaining decommissioning activities given the low probability of their occurrence.
2. Implementation of the REVISED CRMSM (August 2013), Figure 5, to reflect the status of cultural monitoring requirements at HBPP, effective through the termination of the decommissioning process.



3. PG&E employees and contractors should continue receiving the required Worker Environmental Awareness Program (WEAP) training, as outlined in the AARP.
4. Construction should be halted by construction personnel if cultural resources are found.
5. The Cultural Resources Specialist should remain on-call in the unlikely event potential cultural resources are found.

## SECTION 7

# 7.0 References

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## **Appendix A**

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### **Archaeological Resources Protection Plan**



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# **Archaeological Resources Protection Plan**

for the

## **Humboldt Bay Power Plant Decommissioning Project**

**Humboldt County, California**

Submitted by:



***Pacific Gas and  
Electric Company™***

Submitted to:

**California Coastal Commission**

45 Fremont Street, Suite 2000  
San Francisco, CA 94105-2219

April 2010

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# 1.0 Introduction

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Pacific Gas and Electric Company (PG&E) is currently in the process of full decommissioning and license termination for its Humboldt Bay Power Plant (HBPP). This plant includes two operating natural gas units (Units 1 and 2), an inoperable nuclear unit (Unit 3) that has been shut down since 1976, and two diesel-fired combustion turbine Mobile Emergency Power Plants (MEPP 2 and MEPP 3).

On December 10, 2009, the California Coastal Commission approved PG&E's Coastal Development Permit (CDP) application for the decommissioning of the HBPP. Special Condition 4 of CDP E-09-010 requires that an Archeological Resources Protection Plan be prepared that includes the following:

- A description of the worker training program to be implemented to assist workers in identifying potential cultural resources;
- Monitoring to be conducted to identify potential resources that may be detected during clearing, trenching, and excavation activities;
- Identifying the cultural resources specialist to be retained on call to investigate any potential cultural resources found during project activities; and
- Procedures to be implemented for halting construction and evaluating resources should they be discovered.

Each of the requirements identified in Special Condition 4 is addressed in this Archeological Resources Protection Plan.

## 2.0 Worker Training Program

PG&E has developed a Worker Environmental Awareness Program (WEAP) which will be given to all decommissioning workers. This program includes training on the identification of cultural resources. It also provides information on the protection of biological and paleontological resources and storm water management. A description of the training program has been submitted to the California Coastal Commission under separate cover.

## 3.0 Cultural Resources Monitor

PG&E will have a qualified Cultural Resources Monitor (CRM) on-site to monitor clearing, trenching, and excavation activities in areas that have been previously undisturbed or undeveloped. The CRM will observe all activities involving native soil disturbance in areas where buried cultural resources may exist.

## **4.0 Cultural Resources Specialist**

In July 2010, Ms. Zalarvis-Chase will complete her Masters degree in Archaeology and will meet the State Historic Preservation Office qualifications for Cultural Resources Specialist (CRS). In the interim, Clint Helton, a Cultural Resources Specialist with CH2M HILL will be available. Once Ms. Zalarvis-Chase receives her Masters degree, she will serve as the on-call CRS for HBPP decommissioning. Mr. Helton will serve as an alternative CRS, if Ms. Zalarvis-Chase is not available.

## **5.0 Procedures on Halting Construction and Evaluating Discovered Resources**

The CRS and CRM will have the authority to temporarily halt clearing, trenching, or excavation activities within the immediate vicinity of a find or exposed resource as necessary for resource protection, to evaluate whether significant cultural resources are present and, if so, whether or not they will be adversely affected by continuing construction operations. The CRM will use flagging tape, rope, or some other means as necessary to delineate the area of the find within which construction will halt. The monitor will work with the Environmental Coordinator and determine proper handling of the find and operational impacts. The CRS will also be contacted, if not already on-site. Clearing, trenching, or excavation activities will not take place within the delineated find area until the monitor and PG&E have consulted with the CRS regarding the recommended eligibility of the discovery and proposed data recovery and mitigation, if necessary, has been completed.

If archaeological resources are discovered, the CRM will record and map the isolated find or archaeological site to the standards of the California Historic Resources Information System (CHRIS) on California Department of Parks and Recreation forms (Form DPR-523) and additional forms, as appropriate.

The area in which the resource is located will be recorded and evaluated as to whether it requires further testing or other mitigation measures.

The CRM will also photograph the site and record standard site information about the topography, physiography, vegetation, location, and artifacts and features (mapped in plan view and/or profile, as appropriate), and produce stratigraphic profiles of selected trench walls in which cultural materials are exposed for the archaeological site form. Soil colors will be recorded using the Munsell soil color charts. Any potential human remains must be treated as described in accordance with state law, the recommendations of the Most Likely Descendant as identified by the Native American Heritage Commission (NAHC) and the policies of the NAHC. The site form, along with maps and photos, will be submitted to the North Coastal Information Center of the CHRIS. Information on the location of Native American burials will also be provided to the NAHC.

Site avoidance will be the preferred method of dealing with cultural resources. However, if a newly discovered resource is potentially significant as identified by the CRS and if avoiding the resource proves infeasible (as determined through consultation between the CRS and PG&E), then site evaluation will proceed.



The following evaluation methods for a site will be used to identify potential resources. These methods consist of assessing the integrity of the site, inventorying and collecting surface artifacts (if any) to gather a representative sample of artifacts for analysis, conducting test investigations to determine whether the site has subsurface artifact component, and if necessary, conduct data recovery excavations. Site investigations under this plan will take place in two stages. The first stage, test investigations, will help determine the extent, depth, and contents of the site. The purpose of the test investigation phase will be to recover information about the site and whether or not it would meet National Register of Historic Places (NRHP) and California Register of Historic Resources (CRHR) criteria for a significant site. Test units consist of shovel test units (STUs) and test excavation units (TEUs). If the archaeological site is exposed within a construction trench, then test units may consist of column samples. Further discussion on STUs and TEUs can be found in Appendix A.

Based on the results of the test excavation, the CRS will determine either that full-scale data recovery is necessary or that test investigation has exhausted the research potential of the site. If data recovery excavations are warranted, information gathered during the test investigations will be used to develop a Data Recovery Plan.

A description of the evaluation procedures that would be used to examine newly discovered sites, including surface investigations, test investigations, and data recovery, can be found in Appendix A. If there is a discovery, the procedures and field methods outlined in Appendix A will be followed.

## References

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Helton, C. and Bard, J. 2008. California Energy Commission Compliance - Cultural Resources Monitoring and Mitigation Plan, Humboldt Bay Repowering Project. CH2MHill, Sacramento, CA.



# Appendix A

Below is a description of the evaluation procedures that would be used to examine newly discovered sites. These procedures include surface investigations, test investigations, and data recovery. Also included are the procedures and field methods which would be followed in the event of a discovery.

**Surface Collection**—The CRM would first attempt to gather as much information as possible without formal excavation. Surface sample collections often provide considerable information about the site's artifactual constituents. A systematic square grid pattern will be established over the area of the finds. Cultural material will be provenanced and identified on a site map, and the surface artifacts will be collected for curation under the state guidelines mentioned above.

**Auger Testing**—Auger testing may be used to examine and retrieve subsurface material and determine the depth of deposits or features. Further, augering can provide stratigraphic information, particularly when coupled with phosphate analysis of soil samples taken at various depths in the auger cores. Soil phosphate analysis assesses the quantity of phosphate chemicals in soils, which is a strong correlate, under most conditions, of artifact density. Auger holes 10 centimeters in diameter will be excavated with a screw type auger, in 10 or 20 centimeters lifts up to 1 meter or to the depth of the deposit. The auger lifts will be closely inspected for evidence of artifacts or anthrosols (midden), and will be screened through 1/8-inch mesh. The use of this technique must be considered in relation to the potential benefits and cost.

**Shovel Test Units (STUs)**—The CRM will excavate STUs to determine the depth and artifact density of the deposit. STUs are systematic units excavated in discrete, arbitrary levels. Initial STUs will be 50 cm squared and will be evenly distributed at corners and intersections on a square grid pattern where the squares are 10 meters on a side so that the intervals between STUs will be 10 meters. Additional STUs may be placed near the perceived center of the site, and others near the probable site boundaries, until no debitage is recovered. Shorter intervals, both along and between transects, may be necessary to confirm the subsurface site boundary. STUs will be excavated in levels 20-cm thick, to a depth at least 20 cm below surface for STUs which do not contain subsurface artifacts, or to a depth one level (20 cm) below the last level in which artifacts are found for STUs which contain subsurface artifacts. If the site deposits are sufficiently deep that excavation in an STU becomes impractical, the excavators will use a bucket auger from the lower limit of feasible excavation to gauge the deposit's depth.

All excavated materials will be screened using 1/4-inch or finer mesh for prehistoric sites. Material will be sorted into cultural classes: flaked stone, groundstone, bone, shell, charcoal, etc., for historic artifacts: glass, metal, ceramic, etc. The material will be collected and catalogued by level. The field crew will record the soil, stratigraphy, site disturbances, and artifact contents of the STU levels on standard STU level forms. They will describe soil color using the Munsell Soil Color Chart and will describe soil texture using standard U.S. Department of Agriculture Soil Conservation Service (SCS) terminology.

**Test Excavation Units (TEUs)**—TEUs will be excavated if the site exhibits subsurface midden or concentrations of material. The stratigraphy will be assessed to evaluate the integrity of the



deposit, and a profile will be drawn if stratigraphy is apparent. For the preliminary excavation phase, the field crew would first establish a grid of Cartesian coordinates relative to the site's permanent datum so that crew members can accurately describe any location on the site in terms of metric units east and north of the grid's off-site origin (relative to the site's baseline). Next, they will choose TEUs from within the areas greatest concentration, placing the units in relatively undisturbed areas. The number of units will depend upon site size, following the formula of one unit per 2,000 square meters of site. The units would be 1x1 meter squares excavated in 10-cm levels.

The field crew will excavate, keeping detailed notes on each level's contents, and collecting each level's artifacts and materials separately. The notes will be taken on standard level-note forms, printed on acid-free paper. The CRS or CRM will also keep a notebook for recording general observations and impressions about the site and excavation. Excavation will proceed using sharpened shovels and masonry trowels. The crew will screen all dirt through ¼-inch mesh and will collect all artifacts and possible ecofacts such as animal bones, shell, and charcoal, and will bag each material type separately, with a separate catalog number. The crew will photograph each excavation and draw a scale map of each level's floor. They will count and weigh fire-affected rock (FAR) from each level, but will discard in the field. Excavation will continue to and beyond the boundary with the culturally sterile site soil matrix. Each unit will be back-filled after completion.

If an archaeological deposit is identified in a built area within a construction trench, access to the ground surface around the find will be taken into consideration for testing procedures and locating site boundaries. If access to the archaeological deposits is limited within the construction trench right-of-way, excavation strategies must be adjusted and testing for cultural boundaries would be confined to the non-excavated linear portion of the trench. Shovel probe tests placed 5 meters apart will be implemented to locate the linear boundary of the deposit within the trench, and if the deposits are deeply buried, hand auguring procedures will be implemented. Placement of TEUs will be confined within the linear trench and will be dependent upon the boundary length of the archaeological deposit. Column sampling may be appropriate if an archaeological deposit is exposed in a construction trench. The field crew would first use trowels and other implements to smooth the trench profile and reveal the natural and cultural stratigraphy. The crew would then lay out an excavation unit on the surface, 100 cm wide (or the width of the trench if less than 100 cm) and 50 cm deep or to the depth of the deposit. Any non-cultural overburden would be visible in the trench profile and would be removed without screening. The remaining cultural stratigraphy would be removed from the profile by natural levels, if apparent, and screened through ¼-inch mesh. This sample would be analyzed to determine the density, contents, and integrity of the deposits.

Sites that qualify as sparse lithic scatters under SHPO's identification and data acquisition program (Jackson et al. 1988), will be evaluated in accordance with the guidelines for this site type. Sparse lithic scatters are sites that lack artifact types other than stone tool waste, that lack a substantial subsurface deposit, and that have a surface artifact density of three pieces of debitage or less per square meter. The SHPO guidelines provide a simplified method for evaluating these sites that frequently satisfies requirements for mitigation.

For sites of the historic era, test excavation would be most appropriate within ruined structures, refuse pits, and privy types. Otherwise, test excavation methods used would be similar to those



used for prehistoric sites, except that ¼"-inch screen would be more appropriate with a 1/8 - inch screen used at times for sampling.

**Data Recovery Excavation**— Planning for full-scale data recovery excavation to mitigate the loss of substantial and significant archaeological deposits will be guided by data gathered during the test investigations and by the research design. The CRS will consult, if necessary, with the NAHC and concerned regional Native Americans regarding data recovery excavations.

Sampling for data recovery excavations will follow standard statistical sampling methods, but will be confined to the direct impact area. The CRS may choose the units for excavation by consulting a table of random numbers, or the first unit may be chosen at random and the remainder located at some regular interval in relation to this unit (systematic sample). If structural features are present or are found, additional units will be placed non-randomly to expose the features. Depending on the site, the site-specific research design, and data needs to address specific research questions, different sampling techniques might be appropriate.

Excavation, collection, and cataloging methods will be similar to those used for the TEUs. All structural features discovered during excavation will be carefully excavated. After profiling the feature (excavating one-half of it), the feature will be drawn and photographed. If the feature is a hearth, storage pit, or ash dump, the field crew will collect its contents for flotation to recover floral samples.

The field crew will make every attempt to locate and collect datable carbon. Charcoal features will be carefully excavated to preserve and document the association of separate pieces so that the laboratory can use the standard method of radiocarbon assay. Very small pieces will also be collected, however, so that these can be submitted for dating using the more expensive Accelerator Mass Spectroscopy (AMS) method, if necessary, for prehistoric sites.

For sites of the historic era, very similar techniques would apply, except that large-scale excavations would take place in and around ruined structures and refuse deposits.

All artifacts and other archaeological samples or materials collected during test excavations or data recovery will be cataloged, prepared for curation, and curated at a qualified facility as specified in the "Guidelines for the Curation of Archaeological Collections" by the State Historical Resources Commission, May 7, 1993.

**Expansive Exposure of Discovered Resources Is Not Possible** – When discoveries possibly over 50 years of age are made in trenches within public roadways or areas where access is restricted, the possibility of completing a thorough evaluation of a discovery may be limited. Safety considerations may constrain excavation or testing of a cultural resource. Access to resources discovered at depth in a trench should not automatically be considered restricted. In cases where exposure of the resource is limited, evaluation of a portion of a deposit for the CRHR may not be sufficient to allow an eligibility recommendation for the entire resource. When expansive exposure is possible, the following information will be gathered:

1. The horizontal and vertical boundaries of the deposit or resource will be defined to the extent possible.
2. The stratigraphic relationships and the depth of the deposit will be identified by using subsurface testing. The content of the deposit, i.e., the date range and information potential, will be investigated. Where access is limited, the content and the date of the



deposit (if possible) will be described, and the information potential will be evaluated, utilizing the research design.

3. The site will be recorded on a DPR 523 form, including a location map, a scaled drawing, and a photograph of the resource.
4. If horizontal excavation is extremely limited, and the find cannot clearly be recommended as eligible or ineligible for the CRHR, the deposit will be assumed eligible. The deposit will be treated by preparing a DPR 523 Primary form to provide a record of the find, including a location map, a scaled drawing, and a photograph of the resource.

Construction-related excavations near the find will remain halted until all suspected cultural finds have been properly evaluated and any required mitigation is completed. All ambiguous materials, including suspected yet unfamiliar and/or not readily identifiable cultural materials, will be considered **significant** by the crew and foreman, until the CRS/CRM can observe the finds. If significant cultural resources are present and cannot be avoided, then impacts will be mitigated through data recovery or other means consistent with the research design.

**In The Event Of A Discovery** - If there is a discovery, the following collection procedures are recommended. Materials to be curated may include artifacts and archaeological samples of animal bone, charred seeds, charcoal, and other items, along with drawings, maps, level forms, photographs and photographic records, notes, and other records of excavation. Curation and laboratory processing of artifacts and materials collected will begin in the field. Archaeologists collecting artifacts from the surface or excavation screen will sort them into artifact and material classes, such as stone tools waste, groundstone, animal bone, shell, beads, chipped stone tools, cores or cobbles tools, charcoal, seeds, etc. They will label each bag with the site number, unit designation, level, date, and recorder's name. All bags from a single level will go into a larger level bag. All bags from a single unit will go into a unit bag or box before transport to the laboratory.

Recognizing the inherently destructive nature of archaeological excavation, the curation strategy will involve collecting a representative sample of all major artifact types. Fire-modified rock, however, will not be collected and curated. It will, however, be weighed, counted, and discarded in the field. One-liter samples of midden and fill in association with human remains will be collected for curation, if present.

In the laboratory, each lot of artifacts will receive a master catalog number. A lot consists of a group of similar items from the same location (a feature, unit level, or controlled surface collection grid unit). For example, all pieces of stone tool waste from the 20-30 cm level of a given excavation unit would be given a single, unique catalog number. Individual pieces of groundstone and chipped stone artifacts, however, will be given unique numbers. Other material assigned individual catalog numbers by unit and level lot will include mammal bone, sorted shell, charcoal, charred seeds, and miscellaneous artifacts.

The master catalog list will be entered on computer with the site number, excavation date, catalog date, provenience, artifact or material class, and pertinent comments. The final catalog list will be printed on acid-free paper to accompany the collection into storage. The laboratory crew will print the catalog information (catalog number, site number, provenience, date collected, and the excavator or company name) on acid-free paper catalog slips. They will place

these inside the appropriate bag. The laboratory crew will also write the catalog number on each artifact using permanent ink, sealed with acetate. They will not write the catalog number on each individual specimen in large lots (such as lithic debitage), however. Though some of the artifacts may require washing and drying prior to labeling, washing will be kept to a minimum to avoid removing blood, pollen, and other residues that may be subject to future analysis.

Cultural material and associated documents will be curated at a regionally appropriate qualified curation facility that meets the requirements of the US Secretary of the Interior standards for the curation of cultural resources.

All archaeological collections resulting from monitoring, site recording, test investigation, or archaeological data recovery excavations will be curated at a qualified facility pursuant to the "Guidelines for the Curation of Archaeological Collections" by the State Historical Resources Commission, May 7, 1993.