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March 30, 2007

Mr. John Kessler
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

DOCKET 06-AFC-7	
DATE	MAR 30 2007
RECD.	MAR 30 2007

Re: Humboldt Bay Repowering Project (06-AFC-07):
Responses to CEC Staff Workshop Queries 3, 11, 14 and 15 and Data Requests 11, 55,
82 and 83

Dear Mr. Kessler:

On behalf of the Pacific Gas and Electric Company, please find attached one original and 12 copies of a document titled *Responses to CEC Staff Workshop Queries 3, 11, 14 and 15 and Data Requests 11, 55, 82 and 83* filed in support of the Application for Certification for the Humboldt Bay Repowering Project (06-AFC-07).

If you have any questions about this matter, please contact me at (916) 286-0278 or Susan Strachan at (530) 220-7038.

Sincerely,

for Douglas M. Davy, Ph.D.
AFC Project Manager

Attachment

cc: G. Lamberg
S. Strachan

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE
STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE
HUMBOLDT BAY REPOWERING PROJECT
BY PACIFIC GAS AND ELECTRIC COMPANY

Docket No. 06-AFC-7
PROOF OF SERVICE
(Revised 3/27/07)

INSTRUCTIONS: All parties shall 1) send an original signed document plus 12 copies OR 2) mail one original signed copy AND e-mail the document to the web address below, AND 3) all parties shall also send a printed OR electronic copy of the documents that shall include a proof of service declaration to each of the individuals on the proof of service:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 06-AFC-07
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

APPLICANT

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DECLARATION OF SERVICE

I, Jeannette Harris, declare that on March 30, 2007, I deposited the required copies of the attached Responses to CEC Staff Workshop Queries 3, 11, 14 and 15 and Data Requests 11, 55, 82 and 83 filed in support of the Application for Certification for the Humboldt Bay Repowering Project (06-AFC-07) in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above. I declare under penalty of perjury that the foregoing is true and correct.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.



[signature]

Supplemental Filing

**Responses to CEC Staff Workshop Queries 3, 11, 14 and 15
and Data Requests 11, 55, 82 and 83**

In support of the

Application for Certification

for the

Humboldt Bay Repowering Project

Eureka, California

(06-AFC-7)

Submitted to the:
California Energy Commission

Submitted by:



With Technical Assistance by:



Sacramento, California
March 2007

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Introduction

Attached are Pacific Gas and Electric Company's (PG&E) responses to the California Energy Commission (CEC) Staff's data requests 82 and 83 and also responses to workshop queries, or additional informal questions that were raised during the Data Request Response Workshop that was held on February 1, 2007. PG&E has provided responses to some of the identified workshop queries in previous submittals. This document provides additional responses, as identified below.

The workshop queries have been given unique workshop query (WSQ) numbers, listed by discipline and, within discipline, in the order in which they were discussed at the workshop. The WSQ responses appear in this document grouped with the data request responses that are for the same discipline. Because the workshop queries were not formally transmitted by the Staff in written form, they are listed here.

Air Quality

WSQ-3 Please provide an update on the status of the acquisition of the emission reduction credits PG&E is purchasing.

Cultural Resources

WSQ-11 Please provide a cultural resources survey of the wetland mitigation land proposed for the HBRP.

Soil and Water Resources

WSQ-14 Please provide an update on the design of the discharge structure to convey stormwater to Buhne Slough.

WSQ-15 Please provide a conceptual drainage plan for construction.

New or revised graphics or tables are numbered in reference to the Data Request or Workshop Query number. For example, the first table used in response to Data Request 60 would be numbered Table DR60-1 (or Table WSQ9-1 for WSQ 9). The first figure used in response to Data Request 72 would be Figure DR72-1, and so on.

Additional tables, figures, or documents submitted in response to a data request (supporting data, stand-alone documents such as plans, folding graphics, etc.) are found at the end of a discipline-specific section and are not sequentially page-numbered consistently with the remainder of the document, though they may have their own internal page numbering system.

PG&E looks forward to working cooperatively with CEC Staff as the HBRP proceeds through the siting process. We trust that these responses address the Staff's questions and remain available to have any additional dialogue the Staff may require.

Air Quality

Data Request Response 11, Workshop Query Response 3

Air Quality (DR11, WSQ3)

Emission reduction credits

11. Please identify and describe the following:

- a. Sources of the offsite ERCs for NO_x, VOC, and PM₁₀;
- b. Any ERCs held by the applicant to be used for HBRP; and
- c. Status of the negotiations.

WSQ-3 Please provide an update on the status of the acquisition of the emission reduction credits PG&E is purchasing.

Response: In Data Request Response 11, the PG&E indicated that they were in negotiations with the owner regarding purchase of the ERCs and hoped to have a signed purchase contract by January 31, 2007.

The emission reduction credits were issued by the District on March 1, 2007, and a revised certificate was issued on March 29. The purchase agreement between PG&E and the owner of the credits was executed on March 26, 2007. Copies of the District's engineering evaluation of the proposed credits and of the ERC certificate are attached. Once the certificate has been reissued, we will provide a copy of the certificate showing PG&E as the owner.

Attachment DR11-1
Emission Reduction Credit Certificate

**North Coast Unified
Air Quality Management District**

2300 Myrtle Avenue, Eureka, CA 95501
(707) 443-3093 FAX (707) 443-3093
<http://www.ncuaqmd.org>



**STATIONARY SOURCE
CERTIFICATE OF EMISSION REDUCTION CREDITS (ERC)
No. 07-098-12**

CERTIFICATE ISSUED TO	Eel River Sawmills
ADDRESS	703 Main Street Fortuna, CA 95540
AUTHORIZED DESIGNEE	Dennis Scott, President
ORIGIN OF EMISSION REDUCTIONS	Eel River Sawmills 26011 Avenue of the Giants Redcrest, CA 95569

TYPE OF POLLUTANT	QUANTITY OF REDUCTION CREDIT (TONS PER CALENDAR QUARTER)			
	1 ST	2 ND	3 RD	4 TH
OXIDES OF NITROGEN (as NO ₂)	1.40	1.34	1.35	1.33
REACTIVE ORGANIC COMPOUNDS (as Carbon)	0.62	0.59	0.59	0.59
FINE PARTICULATE MATTER (PM-10)	2.45	2.35	2.37	2.34
OXIDES OF SULPHUR (as SO ₂)				
CARBON MONOXIDE				

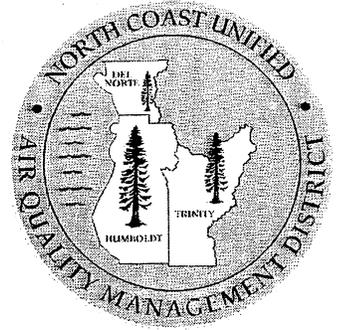
DATE ISSUED: March 29, 2007

Richard L. Martin Jr., Air Pollution Control Officer

Use or transfer of this Certificate of Emission Reduction Credit (CERC) shall comply with all existing and future District Rules and Regulations and all applicable provisions of state law, including applicable provisions of the California Health and Safety Code, and all applicable provisions of federal law. This CERC evidences all approved reductions in the emissions of air contaminants and is issued to the owner or owners of the emissions source. Such reductions shall be banked until they have been used according to District regulations. This CERC shall not constitute an instrument, security, or any other form of property. This CERC shall not grant the owner or owners of the emissions source any waiver of any applicable local, state, or federal air quality standard. This CERC may be modified, suspended, revoked or terminated by the District in accordance with District Regulations and applicable state and federal law.

<u>ERC ACTION</u>
Initial _____
Transfer From _____ To _____
Replaces Certificate No. _____
Revocation _____

NORTH COAST UNIFIED AIR QUALITY MANAGEMENT DISTRICT
2300 Myrtle Avenue, Eureka, CA 95501
Phone: (707) 443-3093 · Fax: (707) 443-3099



December 14, 2006

Dennis Scott, President
 Eel River Sawmills
 703 Main Street
 Fortuna, CA 95540

RE: Emissions Reduction Credits Initial Assessment Notice

Dear: Mr. Scott:

The purpose of this correspondence is to notify Eel River Sawmills, Inc. that the Air Quality Management District (AQMD) Air Pollution Control Officer (APCO) has completed the Initial Assessment of Eel River Sawmills' application for emission reduction credits (ERCs) from the former Redcrest facility. A copy of the Initial Assessment is enclosed. Table 1 below identifies the quantity of ERCs requested.

Table 1 – Emissions Reduction Credits Requested

Quarter	ROG				NOx				PM10			
	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th
Emissions (tons)	.65	.62	.62	1.47	1.47	1.41	1.42	1.4	2.58	2.47	2.49	2.46
Less 5%*	.03	.03	.03	.07	.07	.07	.07	.07	.13	.12	.12	.12
Requested ERCs (tons)	.62	.59	.59	.59	1.34	1.34	1.35	1.33	2.45	2.35	2.37	2.34

The APCO has determined that Eel River Sawmills should receive a certificate for the requested ERCs.

Pursuant to AQMD Regulation I, Rule 106.14.5, publication of this notice shall commence a thirty day public comment period during which the APCO shall accept written comments on the merits of the ERC application.

Mr. Dennis Scott
Eel River Sawmills
RE: ERC Application Initial Assessment
12/14/2006

Page 2 of 2

Please do not hesitate to contact this office if you have any questions regarding this issue.

Sincerely,



Simona Altman
Permit Services Division Manager
NCUAQMD

Enclosure: Initial Assessment

CC: Gary Rubenstein, Senior Partner
Sierra Research
1801 J Street
Sacramento, CA 95814

Mike Tollstrup, Chief
Project Assessment Branch
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

Gerardo Rios, Chief
Operating Permit Section
US EPA Region 9
75 Hawthorne Street
Mail Code: AIR-3
San Francisco, CA 94105

NORTH COAST UNIFIED AIR QUALITY MANAGEMENT DISTRICT

2300 Myrtle Avenue, Eureka, CA 95501

Phone: (707) 443-3093 · Fax: (707) 443-3099



**EMISSION REDUCTION CREDIT APPLICATION
INITIAL ASSESSMENT**

PERMIT NO:

FID #098-12

NS-073

NC-388

NC-389

NC-390

NC-413

NC-419

NC-391

NC-392

NC-393

NC-394

NC-395

NC-420

DATE:

December 14, 2006

EVALUATION BY:

Simona Altman, Permit
Services Division Manager

A. FACILITY NAME:

Eel River Sawmills

B. HISTORIC LOCATION OF EQUIPMENT:

26011 Avenue of the Giants, Redcrest, CA 95569

C. PROPOSAL:

Eel River Sawmills has submitted an application for Emission Reduction Credits (ERCs) for the following pollutants:

1. Reactive Organic Gases (ROGs)
2. Nitrogen Oxides (NOX)
3. Particulate Matter less than 10 microns (PM10)

D. INTRODUCTION:

Eel River Sawmills operated a wood-fired boiler, used to heat their lumber kilns, and a sawmill at the Redcrest facility. The boiler and the sawmill operated independently of each other.

Eel River Sawmills surrendered their Permits to Operate (PTO) for the Redcrest mill on July 7, 2004. Their letter stated that on April 15 and 16, 2004, the equipment was auctioned off and dismantled.

On May 19, 2006 the AQMD received an application for ERCs from Sierra Research on behalf of Eel River Sawmills. The application was ruled incomplete on May 27, 2006 and a revised application was received on September 7, 2006. The revised application was determined to be complete on September 25, 2006.

E. EQUIPMENT DESCRIPTION:

Table 1

Permit No.	System	Make/Model	Rated Capacity
NS-073	Wood-fired Boiler	Wellons	20,000 lb/hr steam output
NC-388	Green Planer	Unidentified	Unidentified
NC-389	Dry Planer	Unidentified	Unidentified
NC-390	Trim & Hula Saws	Unidentified	Unidentified
NC-413	Molder	Wienig	Unidentified
NC-419	Molder Trim Saw	Watkins	Unidentified
NC-391	Fingerjoint Machine	Unidentified	Unidentified
NC-392	Ripsaw	MOI	Unidentified
NC-393	Cutup Saw	Dimter	Unidentified
NC-394	Planer	Yates	Unidentified
NAC-420	Scanner Trim Saw	Woodeye	Unidentified
NC-395	Chipper	Soderham	Unidentified

Collection Equipment for above systems

Table 2

Permit No.	Collector Type	Rated Capacity
NS-073	Multiclone	Unidentified
NC-388	Cyclonel; alternate = target box	100 HP (Cyclone)
NC-389	Cyclone (option of 2 different cyclones) & Water Spray	250 HP 144 in. dm & 132 in. dm
NC-390	Dual Cyclones (parallel)	50 HP 48 in. dm
NC-413	Cyclone	40 HP 54 in. dm
NC-419	Cyclone	50 HP 84 in. dm
NC-391	Cyclone	50 HP 60 in. dm
NC-392	Cyclone	50 HP 60 in. dm
NC-393	Cyclone	50 HP 60 in. dm
NC-394	Dual Cyclone (parallel)	75 HP 60 in. dm
NAC-420	Cyclone	30 HP 38 in. dm
NC-395	Cyclone	20 HP 60 in. dm

AQMD Regulation I, Rule 106 governs the procedures for issuance of ERCs. The following is an evaluation of the Eel River Sawmills ERC application pursuant to Rule 106.

Section 4.3 *Have the emissions reductions actually occurred?*

Yes. The permits were surrendered on July 7, 2004, and staff observed the demolition of the site on January 20, 2005.

Section 12 – Eligibility *The Rule allows 365 days from time of emissions reduction for a source to apply for ERCs. Rule 106 was adopted by the Board of Directors on May 19, 2005, and limits eligibility for ERCs that occurred before the date of adoption to the following*

- a. *Emission reductions must have occurred between January 1, 2001 and May 19, 2005.*
Eel River Sawmills surrendered their permit in 2004, meeting this criterion.
- b. *Reductions must be formally recognized by the AQMD (in written form, emission databases, etc.)*
Eel River Sawmills Redcrest facility was included in the 2000 emission inventory report to the California Air Resources Board (CARB), indicating formal recognition.

Given that the above criteria are met, Eel River Sawmills is eligible for ERC banking.

There are 3 situations in which emission reductions are not eligible for banking:

- a. *Shut-down or curtailment of a retail gas station or retail dry cleaner.*
Not applicable
- b. *Shut-down or curtailment of source for which the offsets originally provided are no longer enforceable.*
The APCO can take enforcement action against Eel River Sawmills if they start operating again prior to obtaining new permits.
- c. *Shut-down or curtailment of source for which the AQMD originally provided offsets.*
There is no record of the AQMD providing offsets to this facility.

F. EMISSION REDUCTIONS CALCULATIONS:

Rule 106 Section 15 requires that calculations of emission reductions be determined by the methods described in Rule 110.

Rule 110 Section 6.3 requires that emission reductions be calculated separately for each calendar quarter. Section 6.4.2 requires that emissions reductions from a shut-down of an emissions unit be calculated as Historical Actual Emissions.

Rule 106 Section 3.15 defines Historic Actual Emissions as the actual emissions averaged over the two consecutive years immediately preceding the date of application. If the last 2 years are unrepresentative of normal operations, as determined by the APCO, then two consecutive years of the previous five years may be used.

The applicant has submitted that the 2 years of operation providing the basis for the emissions reductions are the 4th quarter of 1998 through the 3rd quarter of 2000. (The mill's fiscal year begins in the 4th quarter of the calendar year.) They state that this is the period for which the best data are available. The APCO does not object to the use of these years, given that the facility was not operating under normal conditions throughout the two years immediately preceding the application (May 2004 – May 2006).

According to Sierra Research, most of Eel River Sawmills' records were destroyed after the mill closure. Therefore, they used the AQMD emission inventory for 2000, Eel River Sawmills' financial records, and PG&E's power usage records to calculate the emissions reductions.

Boiler

The AQMD estimated boiler fuel throughput for the 1999 emission inventory. Eel River Sawmills maintained records on their kiln throughput; and Sierra Research correlated this throughput with the 1999 boiler fuel throughput to estimate the 2000 boiler fuel throughput. This estimate is considered valid, as the boiler was used primarily for heating the kilns. Sierra Research applied AQMD-approved emission factors to calculate the emissions from the boiler for 1999 and 2000. The fuel throughput was used to calculate the actual emissions for the boiler.

Collectors

Sierra Research used the AQMD emission inventory for 1999 emission calculations. They used the correlation between known 1999 hours of operation, as indicated in the AQMD's emission inventory, and kiln throughput to estimate the hours of operation for 2000. The hours of operation were used to calculate the actual particulate matter emissions. It was estimated that 47% of particulate matter, by weight, was PM10. This proportion was used to estimate the quantity of PM that would have been PM10 at Eel River Sawmills.

Quarterly Emissions

Sierra Research used the PG&E power consumption records to calculate relative mill activity per month and then combined this data into quarterly power consumption as a percentage of total annual consumption. Their calculations indicate little variation between quarters (24% to 26% of annual).

G. HISTORIC ACTUAL EMISSIONS:

Based on the above method of calculation, the Historic Actual Emissions are identified in Tables 3 and 4 below:

Table 3 – System-specific Emissions

System	PM10 (tons/year)	ROG (tons/year)	NOx (tons/year)
Boiler	7.6	2.5	5.7
Green Planer	0.56		
Dry Planer	0.09		
Moulder	0.38		
Trimmer	0.19		
Fingerjoint	0.19		
Ripsaw	0.19		
Cutline	0.38		
Yates Planer	0.09		
Chipper	2.4		

Table 4 – Facility-wide Quarterly Emissions

Quarter	ROG				NOx				PM10			
	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th	1 st	2 nd	3 rd	4 th
Emissions (tons)	.65	.62	.62	1.47	1.47	1.41	1.42	1.4	2.58	2.47	2.49	2.46
Less 5%*	.03	.03	.03	.07	.07	.07	.07	.07	.13	.12	.12	.12
Requested ERCs (tons)	.62	.59	.59	.59	1.34	1.34	1.35	1.33	2.45	2.35	2.37	2.34

* NCUAQMD Rule 106.5.1 requires that the AQMD retain 5% of all emission reductions prior to issuance of ERCs.

H. State Requirements

California Health and Safety Code Section 40714.5(b)(2) requires that credits issued by a District meet the following requirements:

1. *The credits shall not result in the crediting of air emissions which are already contemporaneously required by an emission control measure in a plan necessary to achieve state and federal ambient air standards.*
The cause of the emission reductions for which the credits are requested is a voluntary shut-down of the emission source, not a required control measure.
2. *The credits shall not provide for an additional discount of credits solely as a result of emission reduction credits trading if a district has already discounted the credit as part of its process of identifying and granting those credits to sources.*
There is no record of the requested emissions reductions credits having been previously granted to any other sources.
3. *The credits shall not, in any manner, result in double-counting of emission reductions.*
There is no evidence of double-counting the applicable emission reductions.
4. *The credits shall be permanent, enforceable, quantifiable and surplus.*
The emission source has permanently shut down and surrendered their permits. This makes the credits permanent, enforceable and surplus. The applicant has demonstrated to the satisfaction of the APCO that they have been quantified based on the best available information.

I. Recommendation

The Eel River Sawmills, Redcrest facility application for emission reduction credits meets eligibility requirements for emissions reduction credits and should be issued a certificate for the requested credits in the quantities listed above.

Cultural Resources

Data Request Response 82, Workshop Query Response 11

Cultural Resources (DR82, WSQ11)

Wetland mitigation land survey

WSQ-11 *Please provide a cultural resources survey of the wetland mitigation land proposed for the HBRP.*

Response: PG&E has conducted a survey of all remaining portions of the PG&E parcel at Humboldt Bay Power Plant, including the lands proposed for wetland mitigation, and the report of this survey is included here as Attachment WSQ11-1. No cultural resources were identified within the mitigation area as a result of the survey.

Construction worker access trail

82. *Please provide information regarding the types of ground disturbing activities, if any, that may be necessary to construct the trail. Please survey the route for the Construction Worker Access Trails and provide the methodology, personnel, and results to staff. Please record any identified isolates or sites on a DPR 523 form and provide a copy of the form.*

Response: Please see the response to WSQ-11, above and Attachment WSQ11-1, a report of additional cultural resources survey that includes the construction worker pedestrian access trail. No cultural resources were identified within the mitigation area as a result of the survey.

Attachment WSQ11-1
Cultural Resources Addendum Survey Report

Pacific
Legacy

Incorporated

CULTURAL
RESOURCES
CONSULTANTS

ADDENDUM CULTURAL RESOURCES SURVEY
FOR
THE PG&E HUMBOLDT BAY RE-POWERING PROJECT
HUMBOLDT COUNTY, CALIFORNIA



Prepared for:

Roberta Tasse
Burleson Consulting, Inc.
1625 Creekside Drive, Suite 202
Folsom, CA 95630
&
Doug Davy
CH2M Hill
2485 Natomas Park Drive
Sacramento, CA 95833

Prepared by:

William Shapiro
Pacific Legacy, Incorporated
3081 Alhambra Drive, Suite 208
Cameron Park, CA 95682

INTRODUCTION

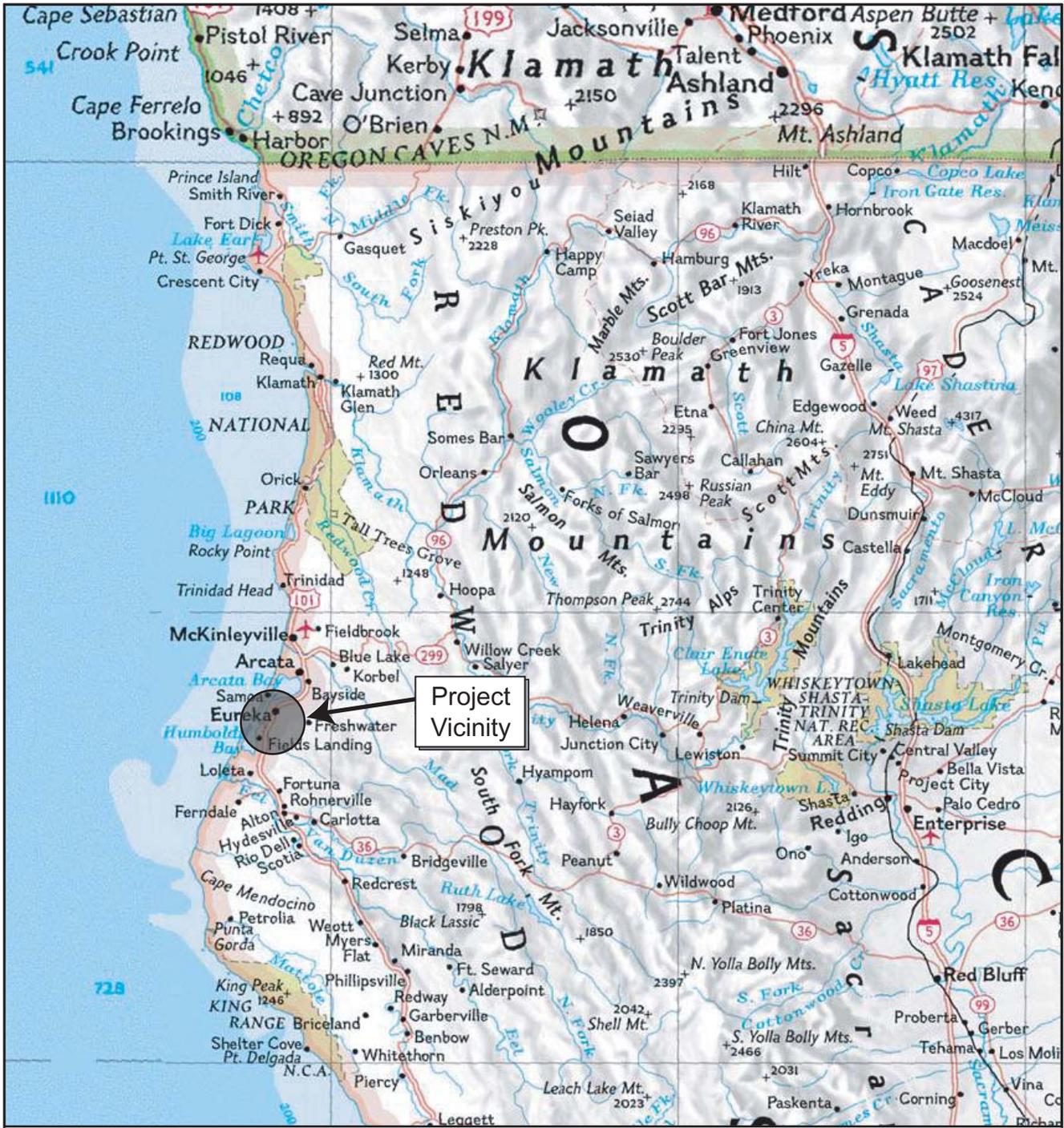
This cultural resources survey report is an addendum to a previous survey that was reported in the Application for Certification (AFC) before the California Energy Commission (CEC) for the Humboldt Bay Repowering Project (CEC Docket Number O6-AFC-07). This report describes pedestrian archaeological surveys of the previously unsurveyed portions of the PG&E property at the existing Humboldt Bay Power Plant, which is located three miles south of Eureka near Fields Landing, California (Figure 1). The cultural resource survey conducted in April 2006 for the AFC included the proposed new power plant site, laydown areas, and much of the existing PG&E facility. This addendum cultural resources survey report covers the remaining unsurveyed portions within the existing PG&E property at the Humboldt Bay Power Plant facility. This work was done by Pacific Legacy, Inc. for Burleson Consulting and CH2M HILL, who are assisting PG&E with the Application for Certification for the PG&E Humboldt Bay Repowering Project.

Since this is an addendum cultural resources survey report, much of the standard background sections (i.e., regional prehistory, ethnography, history, etc.) are incorporated by reference from the original report for the Application for Certification. Only the methods and results of the current survey are discussed in this addendum report with the reader referred to the original survey report for the related background sections.

RECORD SEARCH RESULTS

A record search request for the project area was submitted to the North Coastal Information Center of the California Historical Resources Information System at the Yurok Tribal Office in Klamath, California on May 4, 2006. Information was requested for all sites and previous surveys within one mile of the project area and to ascertain as to whether the existing power plant facility had been nominated or listed to the National Register of Historic Places (NRHP). The correspondence and confidential record search results are provided as an Appendix in the original cultural report.

Results of the record search were received in mid-June 2006. Results indicated that no previously conducted studies or sites were within or adjacent to the project area. However, three previously recorded sites are located within ½ mile of the project area. These are CA-HUM-79, the ethnographic village of Djorokegochkok, a small village which contained many marked graves; CA-HUM-83, the ethnographic village of Dolawotkok; and CA-HUM-80, known as Norolrok, which was occupied in 1852. Two other sites were recorded within a mile of the project area. These are CA-HUM-81, a Wiyot village site abandoned about a generation before 1850; and CA-HUM-82, the ethnographic village of Tolokobidjwotno or Tokobidjwotno. Four previous archaeological investigations had been conducted in the vicinity of the project area (Montizambert 1985, Roop et al. 1995, Sandelin 1995 and Sullivan and Allan 1984), with only Sandelin's report mentioning the presence of an archaeological site (CA-HUM-82). In addition, the Information Center checked for sites and eligible properties within the project area based on their records including the Ethnography & Archaeology of the Wiyot Territory (Loud 1918), Place Names of Humboldt County (Turner 1993); the Office of Historic Preservation's California Historic Property Inventory (OHP 2003a) and



SOURCE: TOPO! National Geographic Holdings, California CD-ROM, Eureka CD; 2001.

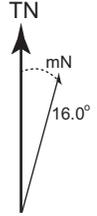
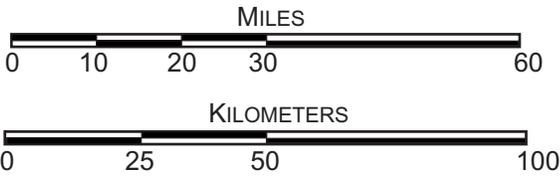


Figure 1. Project Vicinity Map.

the Office of Historic Preservation's California Inventory of Historic Resources (OHP 2003b) all which were negative for the presence of resources in the project area.

As described in the AFC and subsequent submittals to the CEC, Humboldt Bay Power Plant Unit 3 has previously been found to be eligible to be listed in the National Register under criterion consideration G, exceptional significance. Unit 3 is a nuclear-powered generating unit and was the first commercial reactor in the United States that was planned and constructed for the purpose of producing electric power cost-effectively for public utility use (as opposed to research and development). In a previous submittal, CH2M HILL prepared a cultural property form (DPR-523) addressing the related properties on the PG&E site as a district related to power generation. This district includes Units 1 and 2 (fossil-fired), Unit 3 (nuclear), a substation, railroad spur, and various outbuildings and ancillary facilities. Although Unit 3 is considered a historic property, together with its related facilities; Units 1 and 2 do not meet the criteria for listing in the National Register, either individually or as part of a district. No other cultural resources have been previously identified within the PG&E property boundary at the Humboldt Bay Power Plant.

NATIVE AMERICAN CORRESPONDENCE

The Native American Heritage Commission was contacted on May 4, 2006 to check their Traditional Cultural Property index to determine if such properties are reported within or near the project area. A list of local Native American groups and individuals whom could be contacted for comments and information with regard to the project was also requested. The correspondence regarding Native American concerns is presented as an appendix in the original cultural resources report.

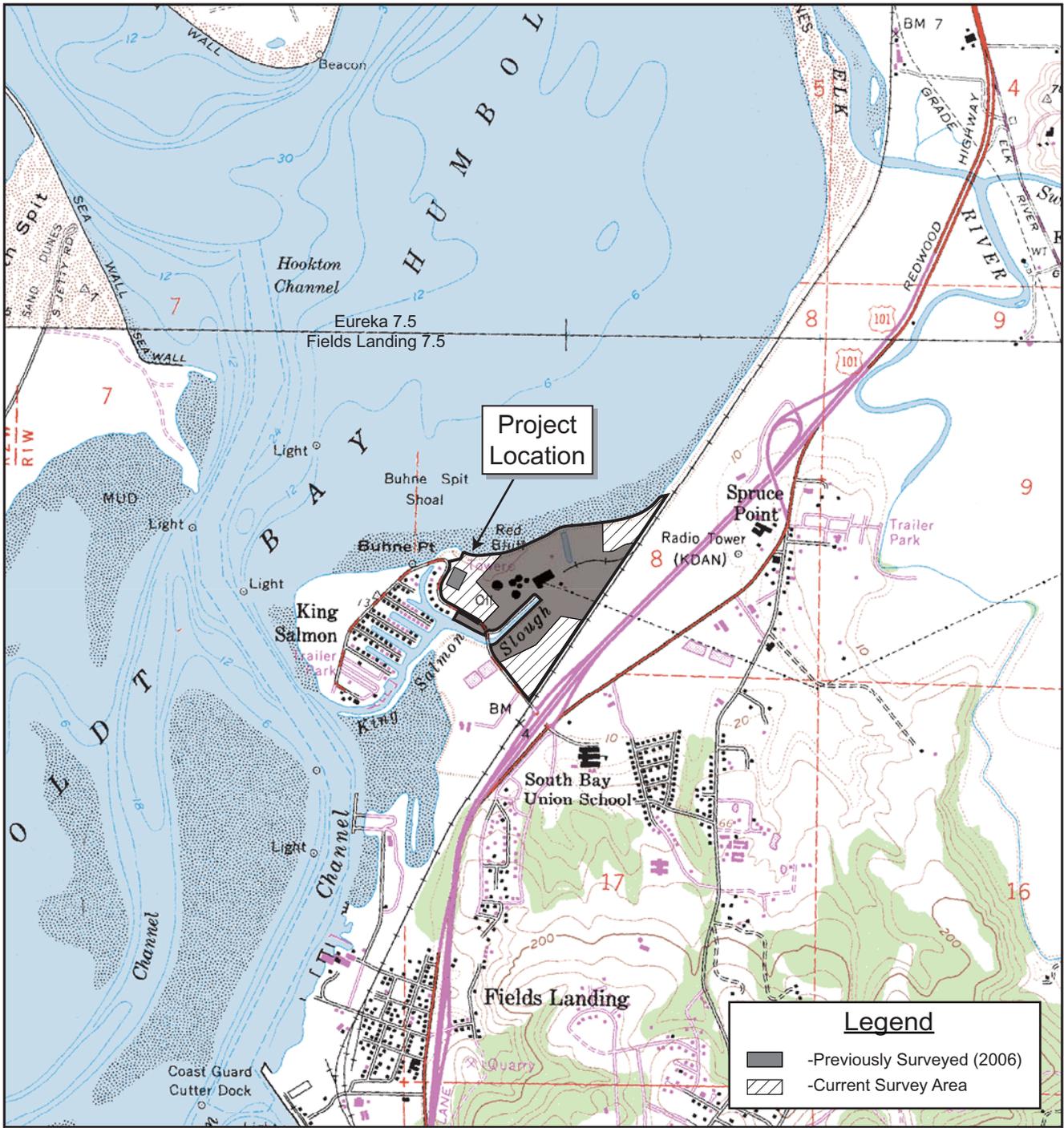
LOCAL HISTORICAL SOCIETIES

An inquiry was sent to the Humboldt County Historical Society seeking information in their files with regard to cultural resources, properties, and historical information that they may have with regard to the project area. The correspondence with the local historical society is provided as an appendix in the original cultural resources report.

METHODS AND RESULTS OF THE ARCHAEOLOGICAL FIELD SURVEY

William Shapiro, M.A. and Nichol Jordan, B.A. of Pacific Legacy, Inc. conducted the field survey of the remaining unsurveyed portions of the PG&E Humboldt Bay Power Plant facility on March 6, 2007. Mr. Shapiro has an M.A. degree in Anthropology from California State University, Chico; he is a current member of the Register of Professional Archaeologists; and has been actively involved in California archaeology and cultural resource management for 27 years. Ms. Jordan received her B.A. degree in Anthropology from California State University, Sacramento and has been involved in archaeology and cultural resource management for four years. Both individuals meet the qualification standards in *Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* for their roles related to this project.

Approximately 30 acres of land within the PG&E Humboldt Bay Power Plant facility had not been surveyed for cultural resources as part of the original survey for the Application for Certification for the proposed PG&E Humboldt Bay Re-Powering Project (Figure 2).



SOURCE: TOPO! National Geographic Holdings, California CD-ROM, USGS 7.5' Fields Landing, CA 1995.

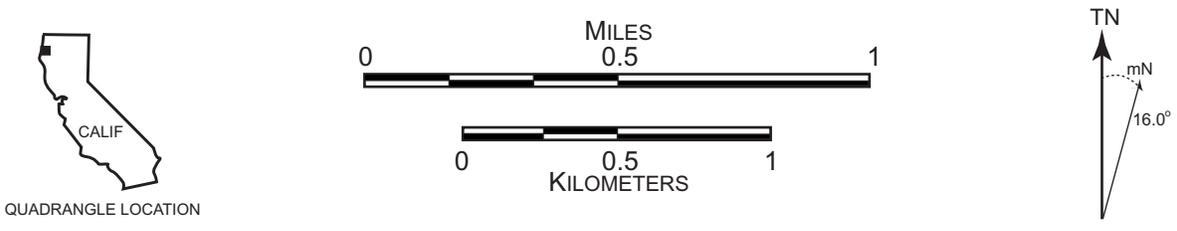


Figure 2. Project Location Map.

This included three sections within the PG&E plant facility: a roughly triangular parcel in the northeast corner of the property adjacent and west of the railroad tracks; a rectangular parcel in the southern portion of the property adjacent and west of the railroad tracks and adjacent and northeast of King Salmon Drive; and a parcel in the northwest corner of the property between the power plant fence line and King Salmon Drive. Approximately 50 percent of each parcel, which comprising the 30 acres to be surveyed, could not be inspected due to standing water and dense vegetation growth. The surveyed and unsurveyable portions of each parcel are depicted on the detailed survey coverage map (Figure 3) with representative photographs of the project area shown in Figures 4-7.

Prior to conducting the survey, the crew went through a safety orientation with Tom Miller, the Construction Project Manager for the Humboldt Bay Re-Powering Project. The accessible portions of survey area were inspected by systematically walking parallel transects with intervals spaced a maximum of 20 meters apart. When surface vegetation obscured visibility, a trowel was used to expose the mineral soil for the presence of cultural constituents (i.e., dark stained midden soil, shell fragments, faunal remains, lithic debitage, or historic refuse).

No newly identified resources were identified within or adjacent to the supplemental survey areas.

SUMMARY AND CONCLUSIONS

A supplemental survey of approximately 30 acres was conducted at the PG&E Humboldt Bay Power Plant for their proposed Humboldt Bay Re-Powering Project. Much of the 30-acre survey area was too wet for survey or covered in such dense vegetation that it was impossible to survey completely. No cultural resources or evidence to suggest the presence of intact cultural deposits were identified in the project area as a result of the current survey. Therefore, no additional archaeological investigation is recommended prior to project implementation. If previously unidentified cultural material is found during subsequent project construction, work should stop in the vicinity of the find until a professional archaeologist can assess the situation.

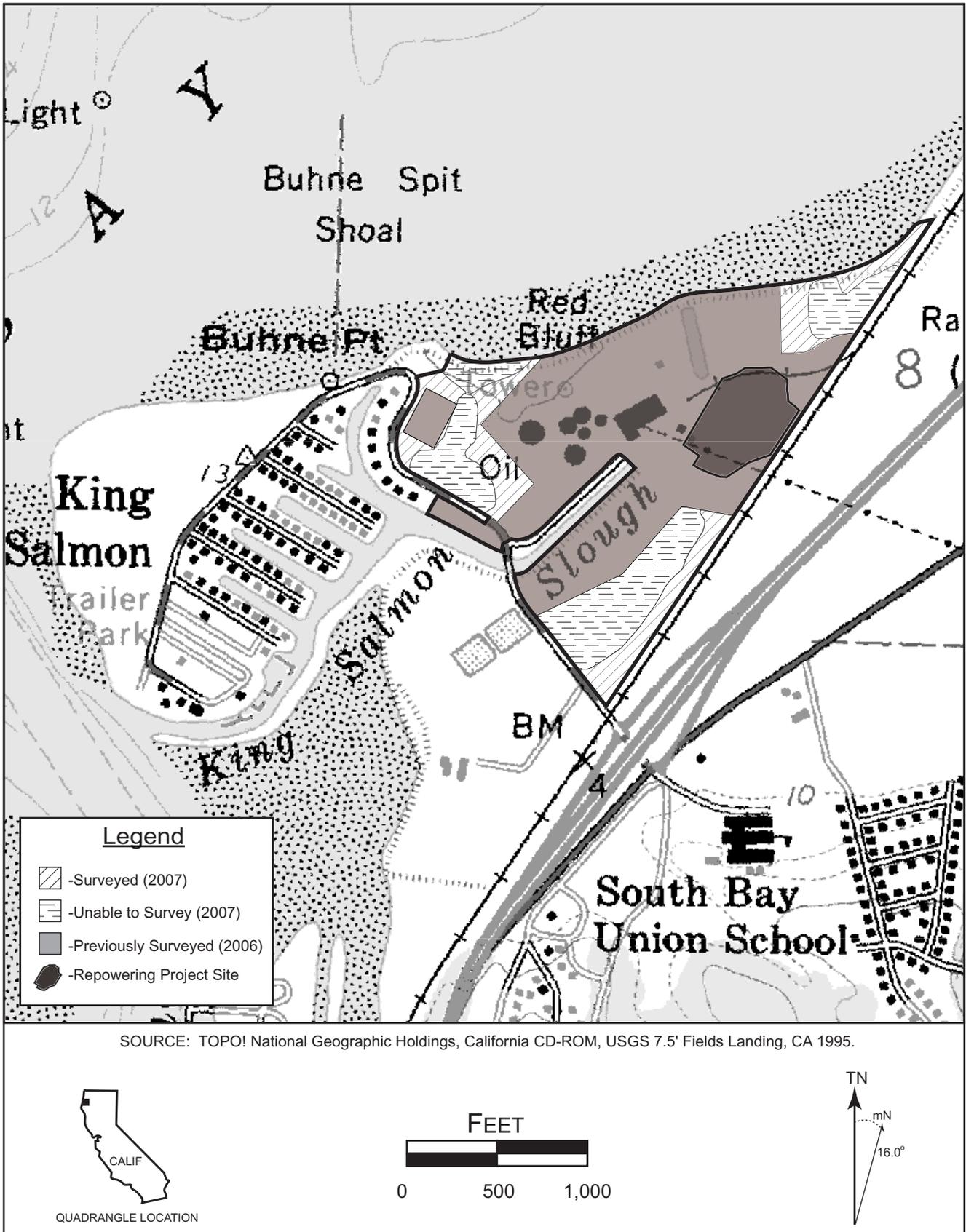


Figure 3. Survey Coverage.



Figure 4. Overview east of dense vegetation along hill slope in the northwest parcel.



Figure 5. Overview southeast of wetland area in the northwest parcel along King Salmon Ave.



Figure 6. Overview northeast of wetland area in northeast parcel with railroad spur PLI-2 in foreground.



Figure 7. Overview east of wetland area in southern parcel along King Salmon Ave.

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- Roop, William, Katherine Flynn & Jeff Parsons. 1995. An Evaluation of the Archaeological Potential within the North Coast Railroad, Eureka to Willits, California and a Field Inspection of 23 Repair Points Along the Route. On file at California Historical Resources Information System, North Coastal Information Center, Klamath, CA.
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Geological Hazards and Resources

Data Request Response 83

Geological Hazards and Resources (DR83)

Seismic hazard assessment

83. *Please provide a fault hazard study, consistent with guidelines published by the California Board for Geologists and Geophysicists, that identifies and maps the surface traces of any active faults that may cross the project site. These faults include but are not limited to, the Buhne Point Fault and the Discharge Canal Fault, which were identified during geologic studies related to licensing of the nearby Independent Spent Fuel Storage Installation (ISFSI) Project. Techniques that could be used include, but are not limited to, trenching and logging, contouring of marker beds identified in boreholes, and seismic reflection studies. Alternatively, please provide a description of the seismic hazard assumptions used in the facility design to ensure the project would maintain stability and structural integrity.*

Response: Response: The HBRP seismic design will assume the possibility of surface rupture at the project site and the resulting potential for shear and flexure. The project will minimize potential structural distress by designing and constructing the HBRP as per current earthquake resistance standards for Seismic Zone 4, in accordance with the California Building Code. Therefore, PG&E's response will address the alternative request for a description of the seismic hazard assumptions to be used in the design of the HBRP.

Detailed geotechnical studies were performed in support of the Safety Analysis Report for the Independent Spent Fuel Storage Installation (ISFSI) at Humboldt Bay Power Plant, NRC Docket No. 72-27. These studies, in conjunction with geotechnical investigations performed for the HBRP, were used to evaluate the safety of the proposed project from geologic hazards. The principal seismic hazards for the HBRP site are ground motion, surface fault rupture, and liquefaction. No geologic hazards or adverse geologic or geotechnical conditions were identified in the studies that would preclude construction and operation of the HBRP.

Ground Motion

Hazard characteristics for ground motion are addressed in the draft Geotechnical Report which was provided in Attachment DR28-1 of PG&E's Response to Data Requests 1- 57. The draft Geotechnical Report expanded upon the preliminary findings reported in the Field Memorandum previously submitted with the AFC (Appendix 10G, Attachment 1). PG&E anticipates completion of additional geotechnical investigations by the end of April 2007, and the final report should be available in June 2007.

The Geotechnical Report drew upon previous geotechnical investigations at the Humboldt Bay Power Plant, geological information and stratigraphic profiles developed from the 2003 Humboldt Bay Independent Spent Fuel Storage Installation Safety Analysis and Environmental Reports (ISFSI Report) as well as a project-specific boring and testing program.

Seismic design of the Repowering Project facilities will be in accordance with the 2001 California Building Code (CBC) as amended to date. Site-specific hazard criteria for the project are as follows:

1. Site is located in Zone 4, Zone Factor, $Z = 0.4$
2. The Little Salmon (onshore) fault is located within 2 kilometers of the project site. The Little Salmon Fault is a Seismic Source Type A (Max. Moment Magnitude greater or equal to 7.0 and Slip Rate greater than or equal to 5 mm/year). Therefore, the maximum code specified near source values of $N_a=1.5$ and $N_v= 2.0$ will be utilized for design.
3. Results of the geotechnical investigation predict the average shear wave velocity in the upper 100' of the project site to be approximately 724 feet/sec. Therefore, the soil is classified as a Soil Profile Type SD per the CBC, Table 16-J.
4. Based upon the near source factors and soil classification, the site specific seismic response coefficients are as follows:

$$C_a = 0.66$$

$$C_v = 1.28$$

Liquefaction

The liquefaction potential at the site is limited to the Holocene bay deposits that are up to 25 feet thick (Kleinfelder, 2006) estimated to lie beneath the site and illustrated in the stratigraphic figures from the ISFSI (See AFC figure 8.4-3). The underlying pre-Holocene deposits of the Hookton Formation were shown not to be liquefiable by Sun (2004). His relevant findings include geologic information and geotechnical analysis. The Hookton formation is 80,000 years old and generally, materials susceptible to liquefaction are Holocene (less than 10,000 years old) deposits and uncompacted fill. The extensive trenching in the Hookton deposits conducted for the ISFSI project found no geological evidence of past liquefaction. Analysis of the many borings drilled in the Hookton Formation on and adjacent to Buhne Hill the Humboldt Bay ISFSI site, showed that no strata are susceptible to unacceptable flow-type failure during strong ground shaking. If there was a layer of material that potentially could trigger initial liquefaction, it would be only a small pocket that would cause no significant liquefaction.

Kleinfelder (2006) confirmed the general findings from the ISFSI. They drilled three borings and made nine electric cone penetration tests (CPT) at the HBRP site. The borings ranged in depth from approximately 20 to 100 feet. The Cone Penetration Tests were completed to depths ranging from 45 to 100 feet. Downhole seismic measurements were taken at three of the CPT boring locations. Below the fill at the surface, they report highly variable Holocene bay and marsh deposits consisting of clay, silty clay, clayey silt, and lesser clayey sand. Organics including peat were found locally throughout. These deposits range in depth from 2 to 25 feet. Below the Holocene Bay Deposits and, in places, just below the artificial fill are laterally discontinuous beds of clay and silt, and sand and gravel that change laterally with inter-fingering and gradational facies changes. Clay beds have more lateral persistence than interbedded sand and gravel layers. Their preliminary findings indicate that none of the deposits are liquefiable.

Based on information on the deposits from the ISFSI investigations and the preliminary subsurface investigations by Kleinfelder (2006), the engines, engine building and slab, SCR, stacks and step-up transformers, and other heavily loaded or settlement sensitive structures

will be supported on deep foundations that derive their support from the dense beds in the Hookton Formation.

Surface Fault Rupture

Two faults were identified at Buhne Hill during the investigations for the ISFSI and reevaluated for the HBRP: The Buhne Point and the Discharge Canal faults. The characteristics and evaluation of the faults are discussed in Attachment DR83-1. The location of these faults is based on deep borings and information from trenches excavated for the ISFSI and seismic studies done for Unit 3 seismic safety assessments. The Buhne Point fault is about 1000 feet southwest of the HBRP site. The Discharge Canal fault forms the northeast side of Buhne hill near the Discharge Canal. Analysis of the existing data shows that potential tectonic deformation in the HBRP site area cannot be precluded. However, the potential for faulting and surface displacement is limited because the Discharge Canal fault is a small splay fault with limited displacement per event. That all the displacement on the Discharge Canal fault occurred in one event is unlikely as its recurrence would be longer than 80,000 years. A recurrence of ~8,000 years provides about 30 cm of displacement on the fault and any subsidiary faults within the hanging wall.

Because potential deformation on the hanging wall of the Discharge Canal fault cannot be precluded, the critical facilities for the HBRP will be engineered to accommodate small displacements. The design criteria are ground deformation up to one foot (30 centimeters) vertical displacement, southwest side with a potential lateral component less, estimated to be less than 10 cm. The deformation zone strikes northwesterly, is extensional (because it is in the hanging wall). The zone of deformation is estimated to be between 6 and 30 feet wide. Tilting of the site is possible, estimated to be less than 1 degree (PG&E, 2003).

The HBRP will be designed and constructed in compliance with the 2001 California Building Code (CBC) to prevent adverse impacts due to the identified seismic hazards, including surface fault rupture. Preliminary and design level geotechnical investigations will be performed. Chief Building Official (CBO) review and approval of structural engineering will insure minimization of potential impacts due to surface fault, and other, seismic impacts. CBO review and approval of final design plans will ensure earth-quake resistant design has been incorporated into the final site drawings per the 2001 CBC and recommended design standards of The Structural Engineering Association of California.

Final design has not commenced, therefore exact measures are not currently known, but could include geotechnical engineering and structural engineering techniques to reinforce project related structures. Techniques which may be employed include, but are not limited to:

- Develop an Importance Factor (I) and Ductility Factor (R) appropriate for each structure as well as for non-structural elements and equipment. These factors are based on the structure's intended function and structural system respectively.
- Incorporate ductility into the design of the structures to meet the project seismic performance goals (Life Safety, and Collapse Prevention) under the various scenario earthquakes (Design Basis Earthquake, Maximum Considered Earthquake).
- Support systems for architectural, mechanical, electrical, and other non-structural systems, and components and elements attached to the buildings and liquid holding

structures will be designed to withstand sliding and overturning forces due to earthquake motion in accordance with CBC Section 1632. This section of the code requires adequate lateral bracing of pipes, equipment, and other systems to minimize damage due to earthquake loads. Examples of non-structural seismic bracing include providing adequate anchor bolts for equipment or lateral bracing in the form of angles or unistruts for process piping.

- Design piping systems to be flexible where piping systems connect to structures. Flexible piping systems allow relative movement between structures and the piping systems during strong ground shaking. This flexibility minimizes the potential for pipe leaks where the pipes enter the structures. In addition, seismic shut-off valves may be incorporated to provide automatic shut off when a threshold ground shaking level is reached.
- Provide design and detailing of structures that are in conformance with the seismic provisions of the CBC.
- Consider development of a project-specific performance-based structural design criteria.

References

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- PG&E. 2003. Humboldt Bay ISFSI safety analysis report, December 2003, Section 2.6: report to the Nuclear Regulatory Commission, Washington, D.C.; produced from PG&E (2002), Seismic Hazard Assessment for the Humboldt Bay ISFSI Project: Humboldt Bay ISFSI Project Technical Report TR-HBIR-2002-01, revision 0 – 27 December 2002, Section 3, Regional Geology, 47 p.; Section 4, Site Geology, 49p.; Section 5, 47 p.; Section 8, Surface faulting potential, 26 p.; Section 9, Tsunami hazard, 64p.
- Sun, J.H., 2004, Assessment of liquefaction, Humboldt Bay ISFSI, Humboldt County California: PG&E Geosciences Report, 24 September, 2004, 32p.

Attachment DR83-1

Evaluation of the Potential for Surface Fault Rupture

EVALUATION OF POTENTIAL FOR SURFACE FAULT RUPTURE AT THE HBRP

Surface faulting

Two faults identified during the investigations for the HB Power Plant and the ISFSI in the vicinity of the HBRP, the Buhne Point and the Discharge Canal faults (Figure 1). The characteristics of the faults are discussed below.

The location of these faults is based on deep borings and information from trenches excavated for the ISFSI (PG&E, 2003) and the retired nuclear power plant and they are relatively well constrained on northwest part of Buhne Hill but less well constrained to the southeast of the hill. The Buhne Point fault forms the steep southwest slope of Buhne Hill best shown on the 1858 topography (Figure 2). The structure contour map on the Buhne Point fault (Figure 3) shows that the projected surface trace of the Buhne Point fault is about 1000 feet southwest of the HBRP site. The location of the fault with respect to the HBRP is relatively well constrained by two three borings that show the fault to be 800 to 900 feet below the site (Figure 4). It displaces the 160,000-year-old Unit F clay, a distinctive bed that underlies the area of Buhne Hill, by 6 to 10 meters and hence has a long term slip rate of 0.1 mm/yr.

The Discharge canal fault forms the northeast side of Buhne hill in the vicinity of the Discharge Canal. Analysis of borings on northwest side of Buhne Hill show that fault displaces the Unit F clay about 3 meters (Figure 4). The trenches show that the surface deformation is a monocline with normal faults offsetting the 80,000-year-old terrace that caps Buhne Hill. The vertical deformation is at least 3 meters (probably not much more because the Unit F clay is not offset more) in a zone about 6 meters (20 feet) wide (Figure 5) but most of the deformation is within 2 meters wide zone (6 feet) (Figure 6); the long-term-slip rate is 0.04 mm/yr. The normal faulting and monocline are interpreted to be the hanging wall deformation of a fault-bend-fold above the blind, reverse Discharge Canal fault blind whose tip projects northeast of the hill into or beneath the Holocene sediments northeast of Buhne Hill. The trench logs, however do not allow an interpretation of how many events produced the 3 meters offset, but the offsets appear older than the 1700AD Cascadia event because there are no 'young' fracture fills in the trench. It is likely that the deformation is the result of multiple events based on the fact that the 80,000 year-old terrace is faulted and the Little Salmon fault, the main fault in the zone, has had on the order of 2 events/1000 years, or ~160 events. The Buhne Point fault is a splay off of the Bay Entrance/Little Salmon fault with a slip rate an order of magnitude less than the main fault and based on the way fault-bend folds propagate, the Discharge canal fault moves when the Buhne Point fault moves. Hence, the displacement per event on the Discharge Canal fault is no more than 3 meters [one event causes all the displacement but is unlikely to repeat] or it has had multiple smaller events. The trench logs appear to record multiple events, but not the potential 160 that are postulated for the Little Salmon fault. Assuming that it has had 10 events since deposition of the 80,000

year old terrace (recurrence ~8,000 years), the displacement per event is about 30 centimeters.

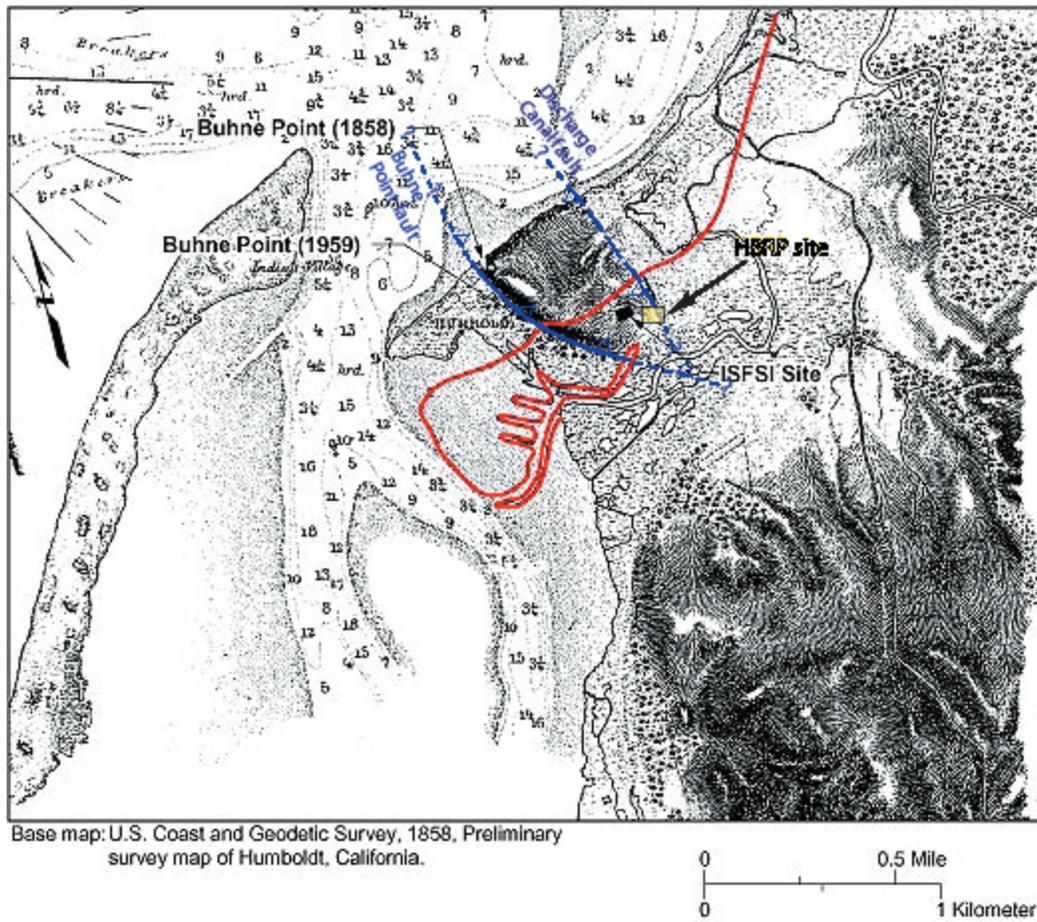
The location of the Discharge canal fault at the depth of the Unit F clay (Figure 5) is based on borings, but because the surface deformation is directly above the interpreted deformation of the Unit F clay in the area of the trenches, the potential deformation at the surface is above and in the hanging wall of fault. The fault location is moderately well constrained at and northwest of the Discharge Canal. Southeast of there the location is not well constrained but appears to lie east of Boring ESA76-B10. However, the divergent structure contours on the Unit F clay in the area east and southeast of the old Unit 3 Power Plant, and the possible small fault interpreted from the closely spaced line of borings (WCC80-CH1 to-CH5), points to changing deformation of the clay in the hanging walls of the Buhne Point and the Discharge Canal reverse faults as these two faults get closer together.

Conclusion - Potential tectonic deformation in the HBRP site area is not precluded by the data. However the potential for faulting and surface displacement is limited because the Discharge Canal fault is a small splay fault with limited displacement per event. That all the displacement on the Discharge Canal fault occurred in one event is unlikely as its recurrence would be longer than 80,000 years. A recurrence of ~8,000 years provides about 30 cm of displacement on the fault and any subsidiary faults within the hanging wall.

Design criteria – Because potential deformation on the hanging wall of the Discharge Canal fault cannot be precluded, the critical facilities for the HBRP will be engineered to accommodate small displacements. The design criteria are ground deformation up to one foot (30 centimeters) vertical displacement, southwest side with a potential lateral component less, estimated to be less than 10 cm. The deformation zone strikes northwesterly, is extensional (because it is in the hanging wall). The zone of deformation is estimated to be between 6 and 30 feet wide. Tilting of the site is possible, estimated to be less than 1 degree (PG&E, 2003).

REFERENCES

PG&E, 2003, Humboldt Bay ISFSI safety analysis report, December 2003, Section 2.6: report to the Nuclear Regulatory Commission, Washington, D.C.; produced from PG&E (2002), Seismic Hazard Assessment for the Humboldt Bay ISFSI Project: Humboldt Bay ISFSI Project Technical Report TR-HBIR-2002-01, revision 0 – 27 December 2002, Section 3, Regional Geology, 47 p.; Section 4, Site Geology, 49p.; Section 5, 47 p.; Section 8, Surface faulting potential, 26 p.; Section 9, Tsunami hazard, 64p.



EXPLANATION

- Coastline from U.S. Geological Survey (1959) Fields Landing 7.5' Quadrangle, California

Figure 2 – Interpretation of the Buhne Point and Discharge Canal faults from the 1858 map

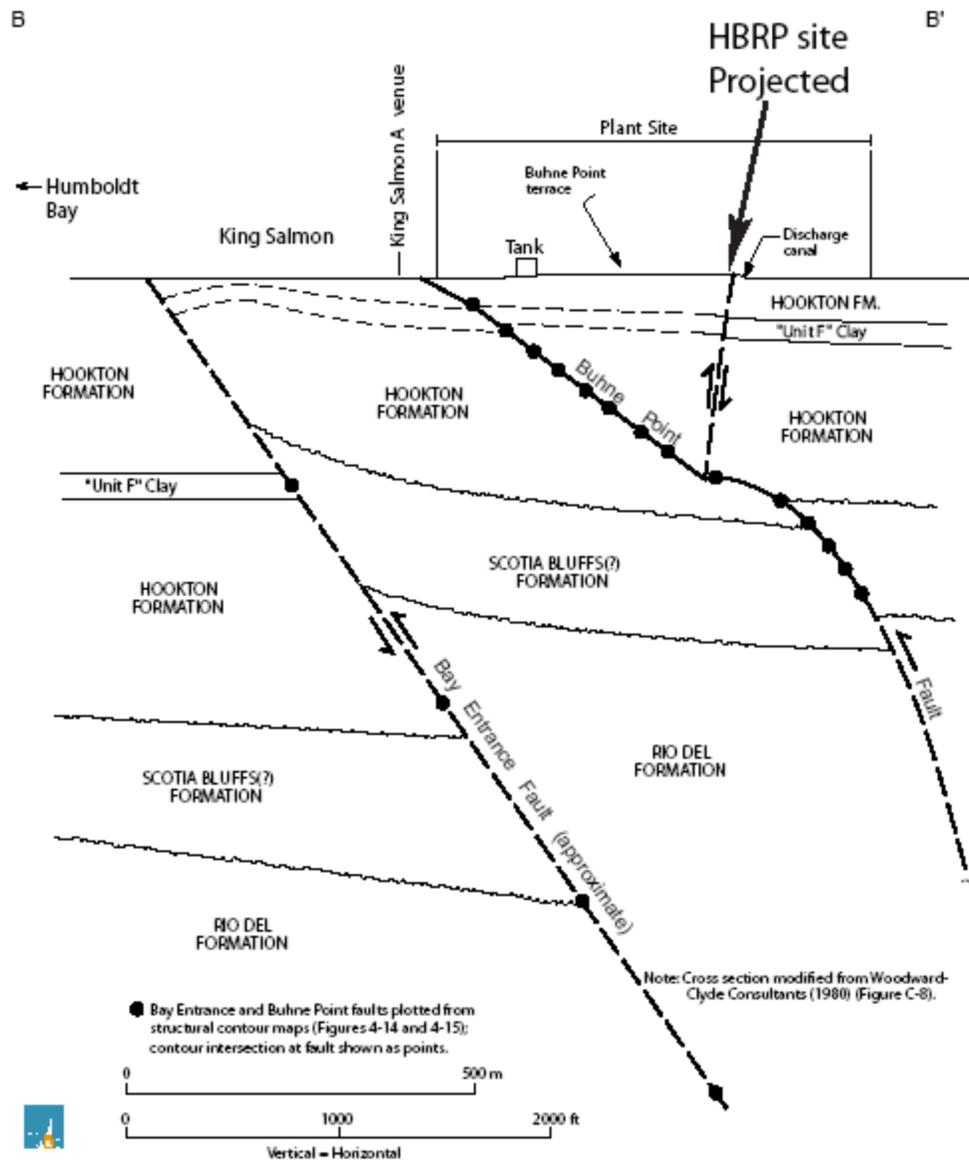


Figure 4 – Cross section showing relationship of the Discharge Canal fault to the Buhne Point and Bay Entrance faults

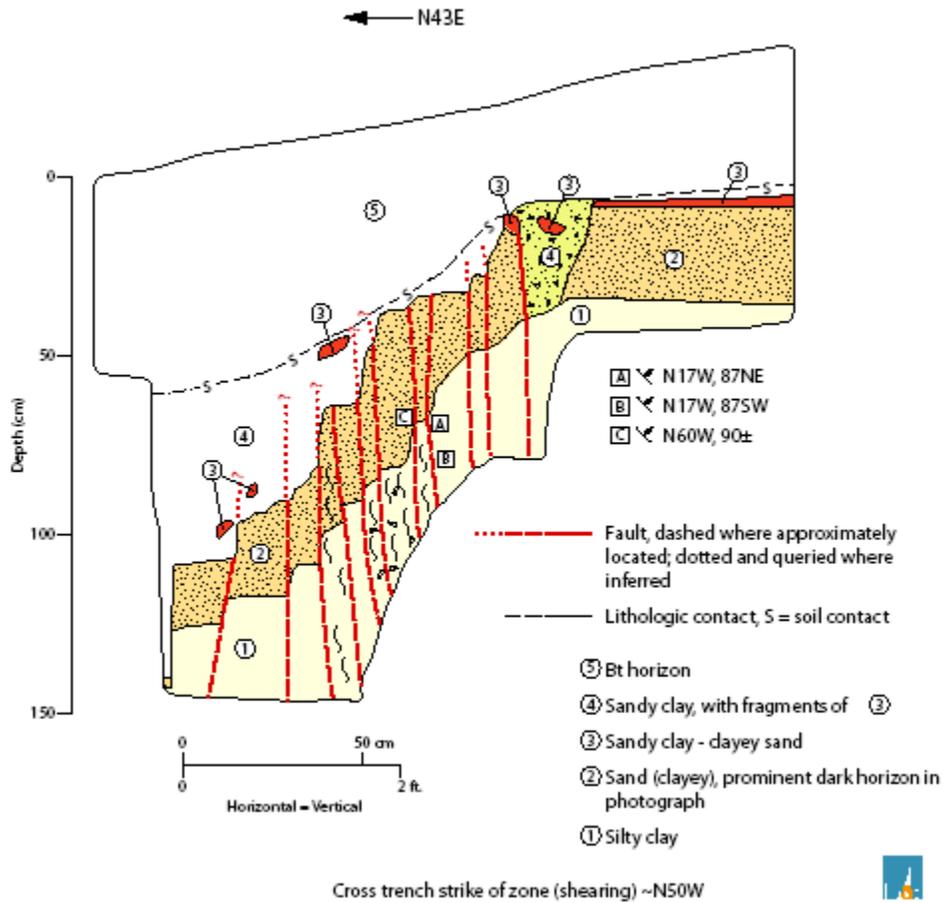


Figure 6 – Discharge Canal fault as exposed in the had-dug pit in Red Bluff (northwest side of Buhne Hill)

Hazardous Materials Handling

Data Request Response 55

Hazardous Materials Handling (DR55)

Humboldt Fire District

55. *Please identify any impacts this project will have on the Humboldt Fire District and its ability to respond to a fire, HazMat spill, or EMS issue at this project site. Also identify any training, personnel, or equipment needs of the Humboldt Fire District.*

Response: A letter from the Eureka Fire Department dated March 8, 2007 (see Attachment DR55-1) indicates the Department's concern regarding aqueous ammonia and requests that PG&E provide funding to purchase atmospheric monitors that will enhance their atmospheric monitoring capabilities and replace dated equipment. This is the only impact and mitigation that the department has identified. PG&E has agreed to this request.

Attachment DR55-1

Letter from Eureka Fire Department



CITY OF EUREKA

EUREKA FIRE DEPARTMENT

533 C Street • Eureka, California 95501-0340 • (707) 441-4000
fax (707) 441-4133 • email: eurekaafd@eurekaweb.com

March 8, 2007

Gregory Lamberg
Manager, Project Development
Energy Procurement
Pacific Gas & Electric Company
Mail Code N13R
P.O. Box 770000
San Francisco, CA 94117-0001

RE: Eureka Fire Department Regional Hazardous Material Team Response to
Proposed Facilities at Humboldt Bay Power Plant

Dear Mr. Lamberg;

Thank you for meeting with us to discuss emergency response of the Eureka Fire Department Regional Hazardous Material Response Team (HMRT) to the proposed facilities at Humboldt Bay Power Plant. Your presentation was very informative and we look forward to working with PG&E related to this project.

Although multiple hazards could be present in a complex facility such as this proposed energy generator, the primary hazard we discussed related to hazardous materials was a large quantity of aqueous ammonia. Although our HMRT is currently capable of responding to ammonia releases, our ability to provide atmospheric monitoring during a significant release at the proposed facility is limited.

To be successful during an emergency response at the proposed facility, we would need to enhance our atmospheric monitoring capability. I have reviewed our options and we would need to purchase equipment and supplies at a cost of about \$5,000.00, based on current availability and cost. This would provide us with two atmospheric monitors and funds to keep the systems functioning for at least five years.

These tools and supplies would become resources of our regional response team and be available to be used at emergency incidents in Humboldt and Del Norte counties, thus serving the community as a whole.

Thank you for your consideration in this matter.

Sincerely,


Rick Bennett
Assistant Chief

Soil and Water Resources

Workshop Query Responses 14 and 15

Soil and Water Resources (WSQ14-15)

Stormwater discharge structure

WSQ-14 *Please provide an update on the design of the discharge structure to convey stormwater to Buhne Slough.*

Response: The two figures included here as Attachment WSQ14-1 provide the conceptual design of the storm water outfall to Buhne Slough. Storm water generated from the Humboldt Bay Repowering Project will be routed to and collected in a new catch basin. The catch basin will be designed to accommodate a 50-year storm event. Flow will be directed from the catch basin through a new, 10-foot long, 24-inch diameter, culvert pipe to a new hydrodynamic separator. The hydrodynamic separator will retain suspended solids approximately 50 microns and larger in size, and be capable of storing up to approximately 1.8 cubic yards of sediment.

Flow from the hydrodynamic separator will be directed through a new approximately 36-foot long, 24-inch diameter, culvert pipe that will outlet to a new rip-rap energy dissipation feature. The rip-rap energy dissipation feature will be composed of Caltrans class 3 backing and lined with filter fabric.

Storm water will flow from the rip-rap energy dissipater to a new bioswale feature. The new bioswale feature will have side slopes no greater than 5 horizontal to 1 vertical and will be approximately 20 feet wide in the upstream portion, extending to approximately 100 feet wide in the downstream portion. Storm water will flow for approximately 90 feet through the new bioswale feature before entering the existing channel. Flow capacity of the existing channel has been assessed and is estimated to have adequate capacity to convey flow generated on the subject area resulting from a 100-year storm event. Storm water will flow for approximately 230 feet within the existing channel to Buhne Slough, which flows to Humboldt Bay.

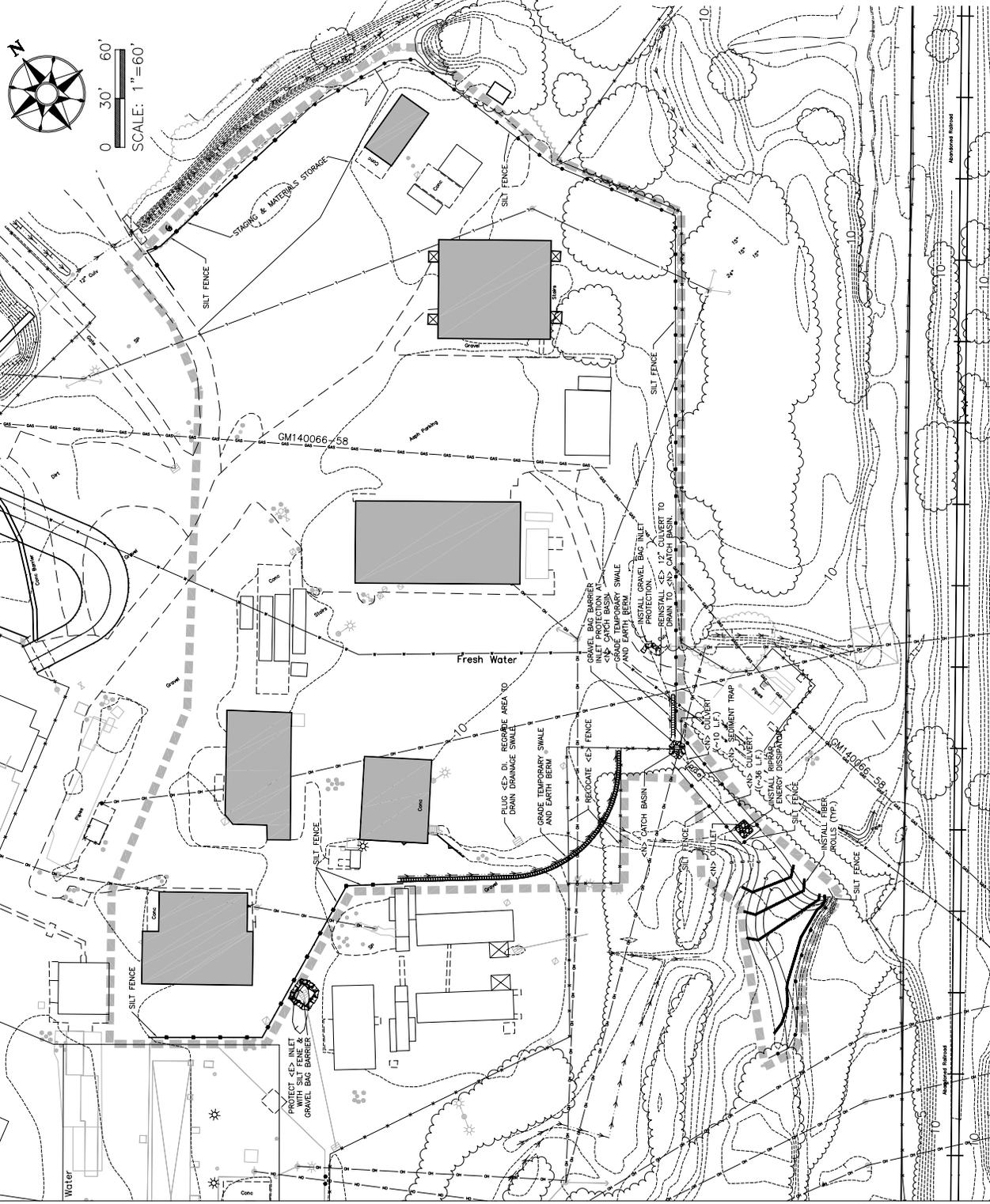
Construction drainage plan

WSQ-15 *Provide a conceptual drainage plan for construction, prior to the installation of permanent storm water control system.*

Response: Please refer to the response for WSQ-14.

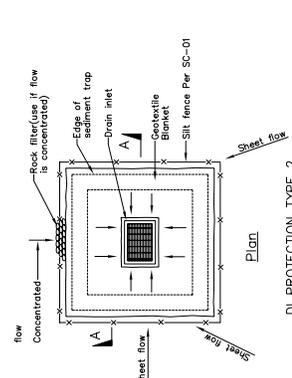
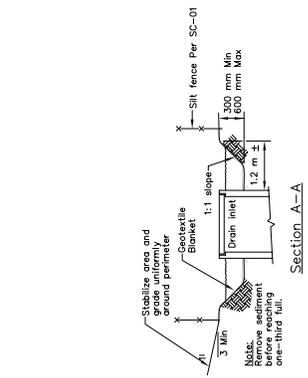
Attachment WSQ14-1
Storm Water Outfall Design

- LEGEND**
- <-> FENCE
 - GROUND CONTOUR
 - - - TREELINE
 - - - DITCH FLOWLINE
 - - - UNDERGROUND POWER LINES
 - - - OVERHEAD POWER LINES
 - - - WATERLINE
 - - - GASLINE
 - - - FINISH GRADE CONTOUR
 - - - DRAINAGE SWALE & BERM
 - - - FENCE LOCATION
 - - - SILT FENCE
 - - - FIBER ROLL / HAY BALE BARRIER
 - - - RIMPAD OUTLET PROTECTION
 - - - GRAVEL BAG INLET PROTECTION
 - - - STRUCTURES TO BE REMOVED
 - - - EXISTING FEATURES
 - - - NEW FEATURES

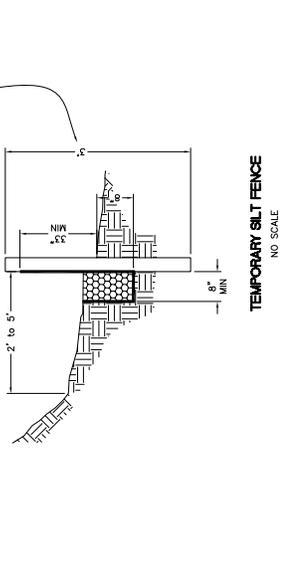
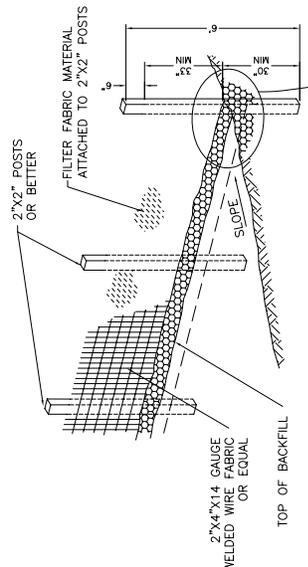
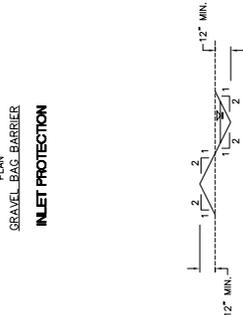
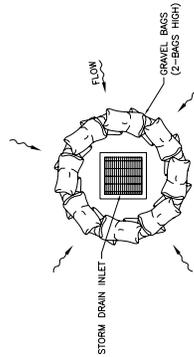


NO.	REVISION	BY	CHK	DATE

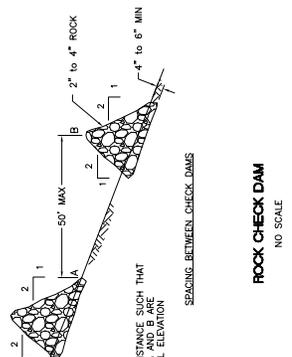
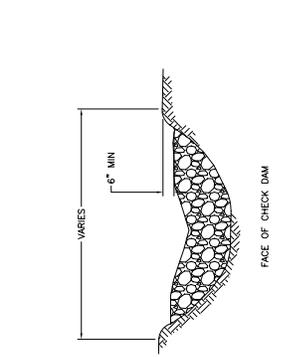
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DRAWN	WJL
CHECK	DRG
APP'D	CJR
DATE	3/27/07
JOB NO.	6433-02
SHEET	



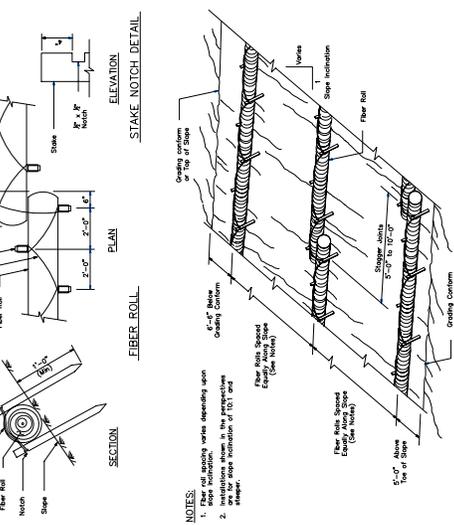
Notes:
 1. Inlet use in cleared and grubbed and is graded areas.
 2. Shape basin so that longest inflow area faces longest length of trap.
 3. For concentrated flows, shape basin in 2:1 ratio with length oriented towards direction of flow.



Notes:
 1. RP-RAP PROTECTION SHALL BE AS MANUFACTURED.
 2. RP-RAP SHALL CONFORM TO RECEIVING CHANNEL.



Notes:
 1. Fiber roll depth varies depending upon slope.
 2. Installations shown in the perspective views are for illustrative purposes only.



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 1. Fiber roll depth varies depending upon slope.
 2. Installations shown in the perspective views are for illustrative purposes only.